A NEW SPECIES OF *ORTHETRUM* (ODON., LIBELLULIDAE) FROM THE BAMENDA HIGHLANDS, BRITISH CAMEROONS

BY R. MOYLAN GAMBLES, M.A., B.SC., M.R.C.V.S., F.R.E.S.

During the course of a few days spent in the neighbourhood of Bamenda, in the British Cameroons (approximate latitude and longitude 6° N. and 10° E.; height above sea level about 5,000 feet), the writer found an *Orthetrum* resembling *O. chrysostigma* (Burm.), occurring fairly commonly over wayside ditches. As the pale lateral thoracic stripe was unusually conspicuous, the specimens were kept, and on critical examination were found to be a distinct species, belonging to the *'caffrum* group' (Longfield, 1955) and intermediate in position between *O. caffrum* (Burm.) and *O. chrysostigma* (Burm.). The hamules were almost indistinguishable from those of *caffrum*, but the general appearance, coloration, and the structure of the penis were more like those of *chrysostigma*. The penis was, however, quite distinct from that of the latter species, and the Bamenda forms are here described as new.

The only female taken (allotype) was found on the wing over a patch of grass opposite the Bambui Agricultural Farm on December 27th, 1957. The male was taken over a stream crossing the road between Bambui and Bamenda, four miles from the latter. Further males were taken on December 29th at Jakiri Veterinary Investigation Centre (on the wing over a well on the Farm), and over roadside ditches by the road between Jakiri and Bamenda, near the 49th and 44th milestones from Bamenda. A further male, old and very pruinosed, with the lateral thoracic stripe obliterated, was taken over a ditch in Bamenda on January 3rd, 1958. The countryside in this area is hilly or undulating grassland, above the forest zone through which the road climbs on its way from Mamfe on the Cross River up to the Bamenda Highlands.

Orthetrum camerunense sp.nov.

Male (type).—Head: labium, labrum, clypeus, post-clypeus, of a pale bluish or greyish brown; vertex dark brown, almost black, with the dark colour carried down laterally where the genae meet the eyes; occiput brown.

Pterothorax: dorsum (episterna), and centre of ante-alar sinuses, pale brown; borders of ante-alar sinuses dark: a very slender dark central longitudinal stripe (suture of episterna only); dark ante-humeral, humeral, and lateral stripes (all anterior to the metastigma), the last two enclosing a conspicuous lateral cream-coloured stripe similar to that of *O. chrysostigma*; mesostigma black; tergites pale, making a pale longitudinal stripe between the wings.

Abdomen: moderately slender, constricted between segments 3 and 4; darkened and pruinosed light blue for its whole length; accessory genitalia on segment 2 of the usual *Orthetrum* pattern; hamules almost identical with those of *O. caffrum*, with IH prominent, the hook conspicuous and pointing forwards and slightly outwards, and OH rounded and only about half the length of IH (fig. 2); lateral alae of glans penis shaped like the profile of a boot, rounded at the toe, also at the heel (fig. 5).

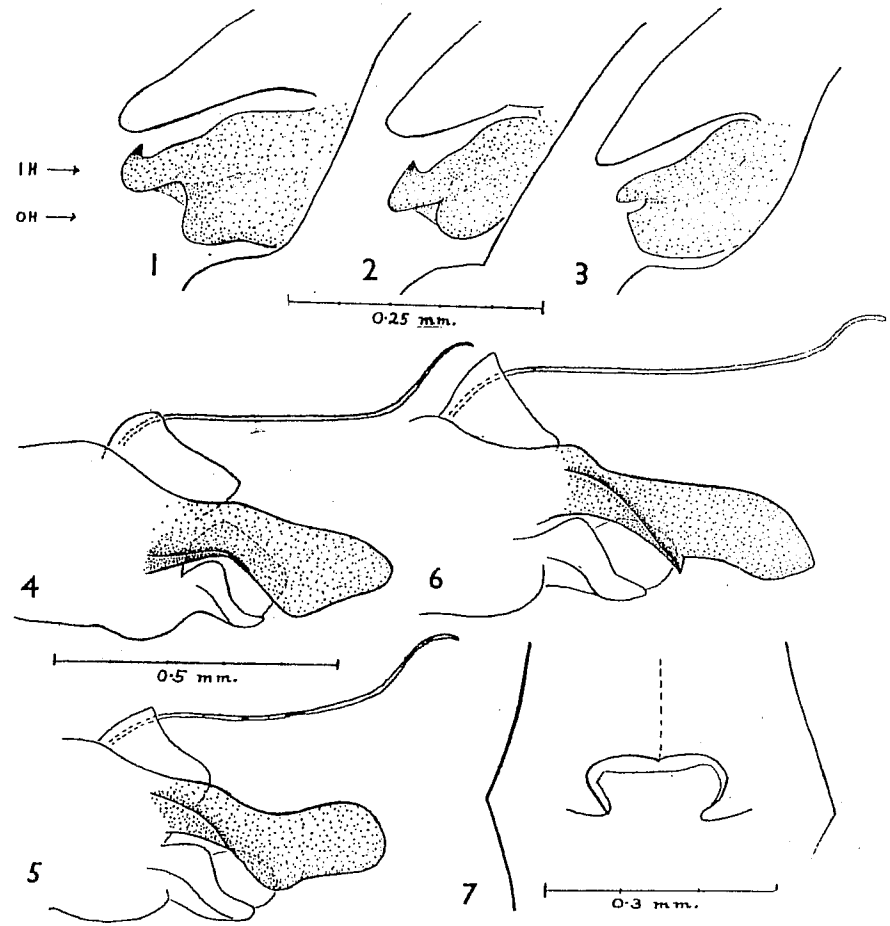
Wings: nodal formula $\frac{9|13\|12|10}{10|10\|10|10}$; subcostal antenodals yellow; Rspl with only one cell doubled in the forewings and a single row of cells in the hindwings; triangle of forewing crossed once, discoidal field starting with three rows of cells in the forewing and two rows in the hindwing; anal loop closed one row before the margin; pterostigma golden brown, bounded by blackish brown veins; amber-brown spot at the base of the hindwings.

Length of abdomen (including appendages) 27 mm.; hindwing 30 mm.

Female (allotype): Pattern and general coloration similar to that of the male; lateral pale thoracic stripe and longitudinal stripe between the wings especially conspicuous; thorax a darker and more chocolate brown: abdomen slightly more robust than that of the male, brown dorsally, with a dark dorso-lateral stripe running from segment 4 to the end of the body; vulvar scale as in fig. 7.

Wings: nodal formula $\frac{8|13\|12|\ 8}{9|10\ 10|11}$; a double row of cells in the Rspl of the forewings (3 cells doubled in the left, 4 in the right), one cell doubled in the left hindwing, and a

The remaining male paratypes are generally similar in coloration, except that one of those taken on 29.xii.57—a young specimen, and only very lightly pruinosed—shows a pattern on the abdomen similar to that of the female, and the colour of the face is more of a yellowish brown than a bluish or greyish brown; and that of 3.i.58—a very old specimen—is uniformly darkened and heavily pruinosed with all the stripes on the thorax, both the dark and the pale, including that between the wings, obliterated; nodal



FIGS. 1-3.—Accessory genitalia on abdominal segment 2 of the male, viewed from the left (hamule shaded for emphasis): 1, *Orthetrum caffrum* (Burm.); 2, *O. camerunense* sp. nov.; 3, *O. chrysostigma* (Burm.) IH, inner branch of hamule; OH, outer branch of hamule. FIGS. 4-6.—Tip of penis, viewed from the left (lateral ala shaded for emphasis): 4, *O. caffrum*; 5, *O. camerunense*; 6, *O. chrysostigma*. FIG. 7.—Vulva of female *O. camerunense*.

formulae $\frac{10|13\|12|10}{12|\ 9\|10|10}$ and $\frac{10|11\|12|10}{9|\ 9\|\ 9|11}$ (both of 29.xii.57), and $\frac{|13|}{10|14\|12|11}$ $\frac{}{11|10\|\ 9|11}$ (that of 3.i.58); one of those of 29.xii.57 had two rows of cells in the Rspl of the forewings (3 cells doubled in each), 2½ doubled in the left hindwing, and a single row in the right; those of 29.xii.57 had the length of the abdomen 27 mm. and the hindwing 29.5 mm.; that of 3.i.58 had the abdomen 25.5 mm.

O. camerunense differs from *caffrum* (which is not a W. African species) by the absence of the characteristic three pale stripes on the side of the thorax. Only the central one of these three is to be seen in *camerunense*. The lateral alae of the penis of *caffrum* (fig. 4)) have been described and figured by Barnard (1937) and Longfield (1955), and their shape clearly distinguishes the two species. In *caffrum* the ala is not at all boot- or shoe-shaped, but may be likened to the foot of a horse as seen in profile. The general shape of the ala of *camerunense* is more like that of *chrysostigma*, but from this also it can be easily distinguished (figs. 5 and 6). The ala of *chrysostigma* is longer and more pointed, although still rather in the shape of a boot or shoe viewed from the side. Whereas the heel of the boot is rounded in *camerunense*, in *chrysostigma* it forms a sharp spur, caused by the lateral margin of the base of the ala being folded outwards, the fold running down to the 'heel'. A similar fold is present in *camerunense*, and to a slight extent in *caffrum*, but it is some way above the 'heel', which is not involved in the folding. The hamules of *camerunense* are very similar to those of *caffrum*, with OH rounded and very short (figs. 1 and 2). In *chrysostigma* OH is prominent and the same length as IH (fig. 3). The single lateral pale thoracic stripe of *camerunense* is similar to that of *chrysostigma*, but it is more conspicuous and more persistent. The stripe in the male *chrysostigma*, at least in W. African specimens, tends to disappear as soon as pruinescence commences, and it is rare for it to be visible by the time the specimen has assumed the typical blue body-colour of the mature insect. In *camerunense* all the blue males showed the stripe except for one very old, darkened, and heavily pruinosed specimen. *O. camerunense* also lacks the conspicuous orange radius described in the female of *caffrum*.

The writer wishes to express his thanks to Miss Cynthia Longfield who has very kindly read through the manuscript, inspected one of the paratypes, and confirmed that it is indeed a distinct species from those already described.

REFERENCES

Barnard, K. H., 1937, Notes on the dragonflies (Odonata) of the S.W. Cape, with descriptions of the nymphs, and of new species, *Ann. S. Afr. Mus.*, **32**(3):169-260.
Longfield, C., 1955, The Odonata of N. Angola. Part I, *Mus. Dundo. Public. Cult.*, **27**:13-63.

Department of Veterinary Research, Vom, Nigeria.
September 23rd, 1958.

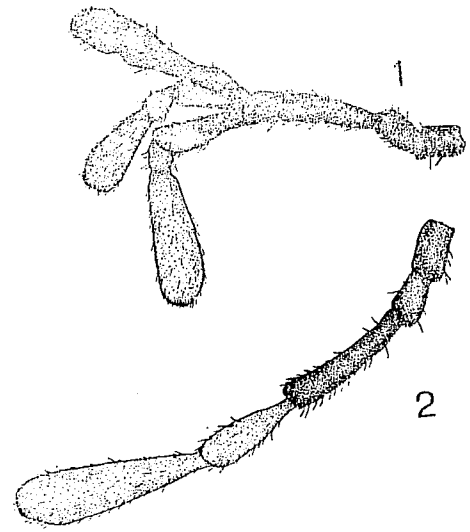
Stenus asphaltinus Er. (Col., Staphylinidae) recaptured in West Kent.—I was very pleased to find this autumn an example of the now extremely rare *Stenus asphaltinus* Er. at roots of grass, etc., at the top of a steep cutting in the chalk pit at Darenth, Kent, in mid-September. Whilst far from being a new record for the vice-county—indeed West Kent used to be its British headquarters—the capture is of interest in showing that the species, seemingly almost extinct for half a century, has survived in the district since it was taken in a chalk pit at Greenhithe in the same area over a hundred years ago (Waterhouse and Janson, 1855, *Trans. Ent. Soc.*, **3** (n.s.) part 5 (16):3). I had searched in vain for this *Stenus* in the chalk pits about Greenhithe; the Darenth pit has been rather well worked since 1947, yet *S. asphaltinus* had never before been found there.

Fowler (1888, *Col. Brit. Isl.*, **2**:332) lists nine localities in West Kent and East Surrey—one of which, Erith, is only five miles from Darenth—but does not include the Greenhithe record already cited. He adds two localities in the Manchester district on the authority of J. Chappell, in connection with one of which 'decayed *Sparganium*' is mentioned; this point, in a species otherwise only recorded from a restricted area south-east and south of London,* always in dry chalky or sometimes sandy situations, makes these northern records appear very doubtful and in need of confirmation. Like other British authors, Fowler refers to the species as rare and no doubt the great majority of the records are based on single specimens. I have not seen any previous notice of its capture during the present century—unless two or three whose dates are unknown to me, subsequent to or not included by Fowler, relate to the early years thereof. At all events, if such exist they must be very few indeed.—A. A. Allen, 63 Blackheath Park, S.E.3: *December 22nd*, 1958.

A CASE OF UNILATERAL REDUPLICATION IN THE MAXILLARY PALP IN *PTERONEMOBIUS FASCIPES* WALKER (ORTH., GRYLLIDAE)

BY C. N. SMITHERS

Whilst examining some specimens of *Pteronemobius fascipes* Walker, it was noticed that one showed unilateral reduplication in the left maxillary palp. The specimen was normal in other respects, including the right maxillary palp.



FIGS. 1-2. — *Pteronemobius fascipes* Walker: 1, palp showing reduplication of segments IV & V; 2, normal maxillary palp.

The abnormal palp (fig. 1) has the membrane of the joint between the first and second segments somewhat abnormal, causing those parts of the palp distad of the joint to be held up against the side of the head. The first segment of this palp is a little shorter than normal; the second and third segments are of normal length. Reduplication of segments four and five has occurred, three branches arising from the apex of the third segment. Each branch consists of a fourth and fifth segment and in all three branches the fifth segment shows an indication of subdivision. In the innermost branch and that adjacent to it the fifth segment is clearly constricted near the base, but in that of the outermost branch there is an indentation in the distal half on one side of the segment only. In all three branches the fourth and fifth segments are somewhat shorter than normal, those of the innermost branch being the longest. In normal palps (fig. 2) segments one to three are dark brown, segments four and five are white. In the abnormal palp the basal halves of all three 'fourth' segments are tinged with more or less brown; their distal halves are white, as are the subdivided 'fifth' segments. Measurements (in mm.) of the segments of both palps of the abnormal specimen, and one palp of a normal specimen are given in Table I.

TABLE I.—Measurements (in mm.) of maxillary palps of *Pteronemobius fascipes* Walker

Specimen	*Segments* 1	2	3	4	5
Normal specimen	.20	.20	.47	.35	.70
Abnormal specimen (normal palp)	.20	.20	.47	.37	.72
Abnormal specimen (abnormal palp)	.15	.20	.47	.30 .25 .22	.62 .47 .47

Unfortunately the abnormality was not noticed in the field, but was seen on examining the preserved material in the laboratory; it is not possible, therefore, to give any indication of how, or to what extent, the abnormal parts of the palp were moved in life. The specimen is of interest, however, as comparatively few records of abnormalities in Grylloids have been published, and there are many more references to reduplication of structures in holometabolous insects than in hemimetabolous insects.

The abnormality described here occurred in one of several specimens (all females) collected from sand banks on the Shawanoe River (about 40 miles from Salisbury) Southern Rhodesia, August 17th, 1958, by Miss P.