

/883

TWO NEW SPECIES OF *ANAX*, WITH NOTES ON OTHER
DRAGON-FLIES OF THE SAME GENUS.

BY ROBERT McLACHLAN, F.R.S., &c.

ANAX WALSHINGHAMI, n. sp.

Length of abdomen (*cum appendic.*), ♂, 86 mm., ♀, 77 mm. Length of posterior wing, ♂, 60 mm., ♀, 58 mm. Expanse, ♂, 128 mm., ♀, 120 mm.

Wings hyaline (slightly tinged in the ♀). Neuration black or blackish; costal nerve yellow externally. Membrane blackish, white at the base. Pterostigma narrow, rather short (5 mm.), brown. 19 ante-cubital and 10 post-cubital nervules in the anterior wings in ♂, 15 and 8—10 in the ♀.

Face and mouth parts wholly yellow (? green in the living insect). Top of front with a circular (or slightly oval) black spot placed in a dusky (or slightly bluish) ring, the anterior portion of which becomes merged in a fine blackish line margining the groove. Vesicle blackish behind, yellowish in front, with a crest of black hairs; basal joints of antennæ black. Occiput very small, yellow, triangular, flat, scarcely emarginate. Back of head yellow, with a narrow blackish margin.

Thorax uniformly pale yellowish-green (in the dry insect), the double dorsal crest, and crests of the posterior cavities, brownish with black tubercles; there is a fine clothing of cinereous pubescence.

Legs black; femora pitehy-brown merging into black, the anterior yellowish beneath: length of posterior femora, ♂, 13½ mm., ♀, 11½ mm.

Abdomen slender and very long, slightly depressed in the ♂, shorter and more cylindrical in the ♀; third segment laterally constricted in the ♂; median transverse suture on the 2nd segment scarcely complete; 3rd to 6th segments very long, with the supplementary transverse suture placed considerably behind the base of each: colour greenish (or bluish) in life, with a dorsal longitudinal brown band, which becomes somewhat dilated at the supplementary sutures, and occupies the whole of the posterior portion of each segment from the 3rd, extending in an oblique manner along the sides of the segments, so that the pale colour is really indicated by long lateral spots enclosed in dark ground, but on the 3rd segment the sides are nearly wholly pale; 1st segment brownish at the base; 2nd with a large triangular posterior brown spot, and brown sutures; 7th to 10th nearly wholly brown, with pale lateral spots. Lateral depressions extending from the 3rd segment to the 9th, but only faintly indicated on the 3rd to 6th in the ♂ (more strongly so in the ♀). 9th and 10th segments more depressed, and somewhat widened in the ♂; 10th segment in the ♂ slightly broader than long; sides slightly dilated and rounded; rather more than the basal half of its upper surface slightly elevated, on which portion are three raised sinuate parallel keels, the median separated from the outer by a deep cavity on either side of it; beyond this portion there is a depression, but the apical border is raised, shining and blackish, with a faint central keel, the margin being nearly straight.

Superior appendages in the ♂ short (5½ mm.) and broad, brown, flattened and foliaceous, their apices upturned if viewed laterally; each is narrow at its base, but gradually expands, so that it is widest and sub-truncate at the apex; the inner:

1887

portion is piceous and is limited by an elevated blunt ridge, but before the apex this inner portion has a deep *grooved* excision, yellow within, each edge of which ends in a broad tooth directed inwardly and upwardly, whereof the upper is shorter than the lower; inwardly below the lower of these teeth is a very deep excision, followed more inwardly by a long and strong acute tooth, slightly curved and directed inward and downward, with small tubercles on its inner edge. (Thus these appendages are trifid at the apex inwardly if viewed from above, but only bifid if viewed from beneath, the shorter of the two outer teeth not then being visible; the whole arrangement is exceedingly complex). Inferior appendage one-half shorter, slightly longer than broad, and slightly narrower at the apex, which is shallowly excised, with upturned angles if viewed laterally. In the ♀ the appendages are short (5 mm.), long-oval, flattened, obtuse, brown plates, with a raised central longitudinal keel extending from base to apex. Valvules scarcely exceeding the 9th segment, ending in short, curved, cylindrical appendages, each of which has a bristle-like second joint.

Habitat: North California (*Walsingham*), and Guatemala.

Several examples were captured by Lord Walsingham, and the description has been made from a pair which have long borne the above name in my collection, but the species has never been described. A ♂ from Guatemala has been still longer in my collection; it is mutilated (wanting the apical half of the abdomen), but agrees entirely with the Californian ♂, excepting that there are only 16 antecubitals in the anterior wings (10 postcubitals); the size is the same.

This very fine insect agrees somewhat with the American *A. Junius* and *amazilis* in the design of the top of the front, but there all resemblance ceases, its excessively long slender abdomen, and very peculiar anal parts in the ♂ (which have no parallel), being especially characteristic.

N.B.—Hagen, in his "Synopsis of the *Odonata* of America" (Proc. Bost. Soc. Nat. Hist., 1875), indicates an *A. validus* from San Diego, California. This I strongly suspect of being identical with *A. Walsinghami*, but no description has ever been published.

ANAX RUTHERFORDI, n. sp.

I possess two males of a reddish-brown *Anax* from Sierra Leone (*Rutherfordi*) so similar to *A. speratus*, Hag. (Verh. z.-b. Ges. Wien, 1867, p. 46), from the Cape of Good Hope, that I was at first disposed to identify them therewith, according to the description of the latter; but there are certain discrepancies which induce me to retain my specimens as distinct, and I propose for them the above name. It appears to me that a tabular view of the discrepant points will suffice, and in giving this I retain Hagen's original words.

A. speratus.

Unterlippe, Oberlippe, und Rhinarium schwarz.

Kopf hinten schwarz.

Obere Appendices: Die obere Fläche durchsetzt ein gewulsteter breiter Mittelkeil, der sich gleich an der Basis vom Aussenrande abläßt, und schräge gegen die Spitze geht. An seinem Ende am Innenrande im breitesten Theile des Ausschnittes vor der Spitze endet er seitlich in einen kleinen scharf nach innen gebogenen Hakenzahn.

Unterer Appendix kurz vor der Spitze etwas eingezogen.

Schenkel röthlich mit schwarzer Spitze.

Geäder bräunlich.

Pterostigma gelbbraun.

Membrana schwarz mit weißlicher Basis.

18 Antecubitales.

Hab.: Cap der guten Hoffnung.

In size, general coloration, and other points, *A. Rutherfordi* quite agrees with the description of *speratus*, but it appears to me impossible to believe that long immersion in alcohol could so have changed the coloration of the front as described for *speratus*, and the structure of the appendages appears to be also different, although the general peculiar plan is the same in both. Some points compared in the above table are of slight importance; the coloration of the face and the discrepancies in anal structure are the principal.

N.B.—Notes by the late Mr. Rutherford on the living insect say: "Head coffee-brown. Eyes blue. Thorax: front brown, sides testaceous, beneath paler. Abdomen: ridge and margins of joints blackish-brown, otherwise light brown, shining. Taken in a marsh at Sierra Leone."

ANAX LONGIFES, Hagen. In the Ent. Mo. Mag., x, pp. 227, 228 (March, 1874), I published some notes on a male *Anax* in the collection

A. Rutherfordi.

Front and mouth parts (excepting the black tips of the mandibles) uniformly pale yellowish.

Back of head brownish-yellow.

Superior appendages. The keel of the upper surface ends at the extreme portion of the dilated apex, and there forms a small, nearly obsolete, tooth; there is no tooth in the excision of the inner margin in the place indicated.

Inferior appendage gradually narrowing from base to apex.

Femora entirely red.

Neuration reddish-brown up to the nodus, merging into black beyond the nodus.

Pterostigma dark brown.

Membrana grey, whitish at the base.

20 antecubital nervules.

Hab.: Sierra Leone.

of the Royal Dublin Society (now Science and Art Museum, Dublin), which I was then inclined to refer to *A. longipes*, described from a ♀ in the Zürich Museum from Georgia (Abbot). Through the kindness of A. G. More, Esq., F.L.S., Curator of the Museum, I have been able to again examine this insect. I find one serious error in my original notes (p. 228); the length of the posterior femora is there given as "19 mm.," it should have been "14 mm.," The other measurements and notes agree. I omitted to notice the membranule; it is *entirely yellowish-cinereous*, with no indication of having originally been particoloured. The top of the front is utterly without markings, and concolorous with the face. Upon re-comparing Hagen's detailed description of the ♀ (Verh. z.-b. Wien, 1867) I note the following special discrepancies not previously alluded to: the neuration is said to be black, here the nervures are mostly pitchy-brown and the network reddish; the membranule is said to be black with white base, here it is uniformly pale as above stated; the markings on the abdomen there noticed are here absent, or have become obsolescent. Therefore, I now do not feel quite confident as to the identity of this example with *A. longipes*, which latter should rest on the authority of the ♀ in the Zürich Museum (which I have not seen). I thought it advisable to compare the Dublin mutilated ♂ with a ♂ of *A. Junius* of the same expanse of wings. Putting on one side the obvious discrepancies in the design of the top of the front, &c., I find structural differences of importance: in *Junius* the top of the front is narrower and more produced; the occiput is more extended between the eyes (hence the eyes are less contiguous); the posterior legs are perceptibly shorter; the abdomen (to the end of the 6th segment) is shorter; in the Dublin insect the transverse supplementary median suture on the 2nd segment is interrupted in the middle (as is stated by Hagen for *longipes*), and the space between is filled-in by a somewhat triangular coarsely-granulose plate (in *Junius* this suture is not interrupted, but is strongly angulose in the middle). If, therefore, this Dublin example be not *longipes* (and there are reasons why it should not be so), I do not know what it is. I have shown that other Dragon-flies in the Dublin collection *apparently* came from Abbot, but no record exists to that effect.

ANAX TRISTIS, Hag. (Verh. z.-b. Ges. Wien, 1867, p. 35), and A. GOLIARIE, De Selys (Rev. et Mag. d. Zool., 1872, p. 178). I incline to the opinion that these represent ♀ and ♂ respectively of one species. So far as I am aware, Hagen has only seen the ♀, and De Selys and

I have only seen the ♂. Hagen's ♀ (*tristis*) was from Guinea, De Selys' ♂ (*Goliarie*) from Madagascar: I have three ♂, one from Abyssinia, one from "West Africa," and one from Jellah Caffee (West Africa), indicating a very wide African distribution (such a powerful insect as this must be *very* difficult to capture). My three ♂ agree specifically, and also with the description of the type from Madagascar (excepting unimportant *slight* differences in size, &c.), but that from Jellah Caffee is evidently immature, having the brown margining of the membranule in the posterior wings only faintly indicated, and the large yellowish-brown space near the middle of the wings is undeveloped; nevertheless, it is only this immature specimen that shows what is no doubt the natural green colour of the body (which has become much changed in the others). The labium (as well as the labrum) is bordered with black as is indicated by Hagen, but not noticed by De Selys. The length of the abdomen given for *tristis* is much less than that given for *Goliarie*, and than in my specimens (82—87 mm.), but this is a usual condition in *Anax*. Most other points agree sufficiently, and I think the only discrepancies are due to sex and change of colour through desiccation. This is one of the largest and most powerful Dragon-flies in existence.

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