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LX.—*On some Odonata of the Subfamily Æschnina.*
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THE new species here noticed form a portion of the undescribed material I possess in the subfamily. The sequence adopted is that of Dr. Karsch (1891), which in several respects seems an improvement on that of Baron de Selys (1883), especially in the discovery of important neural characters. But I am of opinion that the formation of the tenth ventral segment in the female will prove of more importance than the later system allows to it, more especially as the condition seen in *Gynacantha* is repeated in a North-Indian genus (not here characterized) allied to *Cephalæschna** and *Callicæschna* by neuration.

In the descriptions that follow I have adopted the minute details of neural characters used by Dr. Karsch. It is probable that eventually a plan of grouping species will obviate the necessity for such exactitude. A certain amount of latitude must be accorded to the interpretation of these details, for at present they are often drawn up from very limited material.

Anacæschna triangulifera, sp. n.

♂. Face dingy whitish or yellowish; top of front clothed

* Of *Cephalæschna sikkima*, Karsch.

with blackish hairs, with a black T-spot, the top of which is thickened in the middle, the tail dilated into a *broad, nearly equilateral triangle*, the base of which extends nearly to the outer angles of the front; vesicle with two yellowish or bluish spots; eyes connected in a long space; occiput very small, yellowish or brownish; back of head black. Thorax green above, brown on the sides, interalar area spotted with greenish white; no antehumeral or humeral bands, but on the sides there is a rather narrow oblique greenish-yellow band under each wing, not extending to the legs. Legs black; the coxæ and trochanters and the anterior femora beneath at the base reddish. Abdomen slender, inflated at base and constricted afterwards; oreillettes small, acute, the apex incurved; when adult the general colour is blackish brown, paler at the base; on the sides the apex of segment 1 and base of segment 2 are occupied by a greenish-yellow transverse band divided by the black suture; there are indications of pale apical and subapical spots on segments 4 to 7; above there is a large and nearly round median pale spot on each side of 10 and an apical spot on 7 to 9 (a less mature male shows a whitish lateral band on segments 1 and 2 and half of 3, and a small dorsal spot on each side of the false suture on segments 2 to 7, the apical spots less distinct); tenth segment with a median dorsal carina, which near its base is *elevated into a strong triangular black tooth, with a tubercle placed in a fovea on either side of it*; superior appendages (5 millim.) as long as the ninth and tenth segments united, black, slightly curved and narrowed at the base internally, the inner edge forming a gradual curve to the apex, which is narrower than the base, acute, and curved downward; there is a strong median carina from base to apex, dilating almost suddenly at the commencement of the apical third, the internal edge fringed with long hairs; inferior appendages more than one half shorter, elongately triangular, slightly notched at tip, curved upward, brownish above.

Wings hyaline; pterostigma very small (3 millim.), ochreous, surmounting $2\frac{1}{2}$ cellules; membranule conspicuous, smoky black, with whitish base; nodal sector suddenly elevated under the pterostigma; subnodal sector furcating before the level of the pterostigma, 3 rows and 5 marginal cellules between its branches; 3 or 4 rows of cellules between the subnodal and the interposed sector at the widest part; one row of cellules between the sectors of the triangle (more towards the apex) in the anterior, two rows and afterwards one in the posterior; no basal subcostal nervule; 15 to 17

antenodals and 7 to 9 postnodals in the anterior and 10 or 11 and 8 to 10 in the posterior; 5 (rarely 6) cellules in the principal triangle in anterior and 4 (rarely 5) in posterior, 2 (rarely 1) in the inner triangle; 2 to 4 supra-trigonals, 3 or 4 in the median area; anal triangle 3-celled.

Length of abdomen (*cum append.*) 49 millim.; length of posterior wing 44 millim., greatest breadth 14 millim.

Hab. Delagoa Bay, two males.

This insect is clearly an *Anaciæschna* (distinct from *A. jaspidea*), but the lateral impressions on the sides of the abdomen are very faintly indicated *.

Gynacantha † *lhasiaca*, sp. n.

♂. Face dingy yellowish, almost fumose, a strongly defined black T-spot on the top of the front, which is otherwise conspicuously pale (yellowish); occiput minute, blackish, its margin raised; back of head yellowish, eye-margins blackish. Thorax dark greenish above, dorsal crest black; sides somewhat more yellowish, with indications of two narrow blackish bands, one on the humeral suture, the other on the interalar suture. Legs *pitchy black*; anterior coxæ and trochanters and anterior femora internally brownish. Abdomen moderate, the basal portion short and much inflated, considerably constricted at the third segment; oreillettes large, rounded, black, the edge with five or six coarse teeth; general colour black above, venter brownish on a portion of the third to seventh segments, the sides of segments 1 and 2 varied with greenish; tenth segment with a fine, slightly raised, longitudinal dorsal carina not quite reaching the apical margin, which is finely denticulate and slightly notched in the middle, the apical portion of the segment transversely excavated, and at the

* As a modification of Dr. Karsch's system I think it will prove preferable to cause *Anaciæschna* to follow instead of precede *Gynacantha* &c. Probably undue importance has been placed on the presence of lateral impressions on the abdomen, and I show that in the species above described they are virtually absent.

† *Gynacantha* is here applied in the sense indicated by de Selys in 1883. Mr. Kirby, in his Catalogue, retains the term for species placed in *Triacanthagyna* by de Selys, and substitutes *Acanthagyna* for *Gynacantha*. Dr. Karsch has objected to this on the ground that, according to him, there was no necessity for de Selys's subdivisions. I think, however, that these subdivisions will be maintained (and others probably be found necessary). My objection to the change made by Kirby is that the type or types of *Gynacantha* and *Triacanthogyna* were *first* indicated by de Selys when he subdivided the former in 1883 (Kirby's catalogue was published in 1890); he indicated no type of *Gynacantha* in 1857, as Kirby seems to imply.

base on either side of the carina there is a strong tubercle; superior appendages comparatively short and thick (6 millim.), about as long as the eighth and ninth segments united, black, externally nearly straight, slightly sinuate before the apex; internally they are thick at the base and scarcely excised on the edge, but triangularly dilated before the apical portion (at a point where a carina extending from the base finishes), which latter is very oblique, ending externally in an incurved sharp tooth; viewed laterally these appendages are gently curved, the inner edge ciliated; inferior appendages fully *two thirds the length of the superior*, very elongately triangular, strongly curved if viewed laterally, the apex slightly inturred (doubtfully emarginate).

Wings broad and obtuse, hyaline, tinged with yellow at the base in the subcostal and median areas, brownish in the former, extending nearly to the arculus in the posterior; pterostigma brownish yellow ($4\frac{1}{2}$ millim.), surmounting 4 or 5 cellules; membranule small, whitish; neuration moderately dense, black; subnodal sector furcating much before the level of the pterostigma, with 3 or 4 rows of cellules between the branches (9 on the margin); 4 cellules between the subnodal and interposed sector at the widest part, 2 on the margin; one row between the sectors of the triangle; no basal subcostal nervule; 24 antenodals and 24 postnodals in the anterior, and 18 to 22 in the posterior; 6 cellules in the principal triangle in the anterior and 5 in the posterior, 2 in the inner triangle, 6 supra-trigonals and 5 or 6 in the median area; 3 cellules in the anal triangle.

♀. As in the male, but the abdomen only slightly constricted at the third segment; appendages very slender and acute, as long as the ninth segment; tenth ventral segment with two long curved teeth.

Wings becoming fumose, especially at base and apex, in very adult individuals; the yellow of the base more strongly defined than in the male, extending nearly up to the triangles, and the brown much more evident, extending up to and beyond the arculus; 25-28 antenodals and 19 or 20 postnodals in the anterior, and 21-23 and 20-22 in the posterior.

Length of abdomen, ♂ (*cum append.*) 54 millim., ♀ 52-54 millim.; length of posterior wing, ♂ 45 millim., ♀ 46-50 millim.; greatest breadth $15-16\frac{1}{2}$ millim.

Hab. Khasia Hills, two males, three females; Annam, one female.

Quite distinct from *G. subinterrupta* and *basiguttata* (which also have the wings marked with brown at the base) by the

black legs and the appendages, the long inferior appendages of *G. tchasiaca* being remarkable.

De Selys (Ann. Soc. Ent. Belg. xxvii. p. 128, 1883) alludes to a *G. nigripes* from Thibet as having very acute appendages and *no* markings at the base of the wings, but with no further indication of characters.

Gynacantha bullata, Karsch.

Of this I possess two males and two females from "Cameroons" (*Rutherford*), one male from "Mahambé" (*Rutherford*), one male from Cape Coast Castle, and one male from "West Africa," without further indication of locality. They vary considerably in size, but the characters remain very distinct. In very mature examples the wings are strongly brownish fumose. The oreillettes are usually wholly black, but yellow margined with black in less mature individuals. (A very immature male and female from Sierra Leone are slightly doubtful.)

N.B.—*Æshna africana*, Pal. de Beauv. (Ins. Afr. &c. p. 67, pl. iii. fig. 1). The figure indicates a somewhat large *Gynacantha* (probably female), larger than *G. bullata*; what it really is will probably remain problematical, for I am not aware that the type is extant.

Gynacantha sextans, sp. n.

♂. Face dingy yellowish; a strongly defined black T-spot on the top of the front; eyes connected in a long space; occiput very small, yellowish; back of head yellowish. Thorax above dingy fuliginous, paler in front, with cinereous pilosity; sides and first segment of abdomen dingy yellowish, with conspicuous black mesothoracic spiracle. Legs reddish yellow. Abdomen slender, much inflated at the base and very strongly and flatly constricted at the third segment; oreillettes large, yellowish, with three or four coarse blackish teeth; general colour fuscous, darker towards the apex, with no defined markings; first segment as above noticed, second more dingy but yellowish at the sides, which colour is continued conspicuously on the sides of the third (but not reaching the apex) and slightly at the sides of the base of fourth to sixth; tenth with a strong median longitudinal carina its whole length, the margin slightly rounded. Superior appendages long (7 millim.), longer than the eighth segment, slender, the outer margin nearly straight, the inner

narrow at the base, then gradually dilated, followed by a long excision and again gradually dilated to the apex, which is somewhat rounded, ending externally in a sharp tooth or spine; a dense fringe of long hairs nearly from base to apex internally. Inferior appendage less than one third the length of the superior, elongately triangular, obtuse and scarcely emarginate at apex, concave and yellowish above.

Wings hyaline, slightly fumose, more or less uniformly tinged with brownish when very adult; a brownish mark at extreme base, extending a short distance along the subcostal and median areas; pterostigma reddish brown (5 millim.), surmounting $5\frac{1}{2}$ to $6\frac{1}{2}$ cellules; membranule rudimentary, whitish; neuration very dense, blackish, costal edge dark purplish externally; subnodal sector furcating before the level of the pterostigma, the cellules between the branches commencing as one, then two, followed by three, five on the margin; 7 cellules between the subnodal and interposed sector in the broadest part, ending in two marginal cellules; one row between the sectors of the triangle in both pairs; no basal subcostal nervule (exceptionally one in a posterior wing); 28 to 30 antenodals and 24 postnodals in the anterior and 25 to 27 and 24 to 26 in the posterior; 6 to 9 cellules in the principal triangle, 2 in the inner; 8 to 10 supra-trigonals; 6 nervules in median area; 6 (exceptionally 5) cellules in anal triangle (two above, three in the middle, and one below).

Length of abdomen (*cum append.*) 59–60 millim.; length of posterior wing 50–53 millim., greatest breadth of same 16–17 millim.

Hab. Mongo-ma-Lobah, Cameroons (*Rutherford*), two males.

Quite distinct from other West-African species by the form of the appendages, the 6-celled anal triangle (which is perfectly constant in internal arrangement in three of the four wings examined), and the brown markings at the base of the wings.

Gynacantha quadrina, sp. n.

♂. Face dingy yellowish, margin of labrum and the nasus somewhat fuliginous; a black T-spot on the top of the front, the tail of which is very distinct and the top ill-defined, the whole placed in a deep sulcus (longitudinal and transverse); eyes connected in a long space, occiput rather elongate, dingy yellowish, its margin elevated; back of head dingy yellowish. Thorax brownish fuliginous above, paler anteriorly, with cinereous pilosity; sides dingy ochraceous, together with the

first and second abdominal segments; mesothoracic spiracle encircled with black. Legs purplish red, with concolorous spines. Abdomen slender, inflated at base, constricted at the third segment; oreillettes large, yellow, subquadrate, with 3 or 4 blackish teeth on the lower edge; colour brown, with ill-defined paler markings, sutures on all the segments narrowly black, and there is a fine black dorsal crest from the third to eighth, sides of the third broadly pale yellowish, venter paler; tenth segment with a much elevated longitudinal carina, highest at the apical margin, where it is cut off obliquely if viewed laterally, causing the apical margin of the segment to be angulated in its middle; a deep depression on either side of the apical portion of the carina. Superior appendages (7 millim.) about as long as the ninth and tenth segments united, dingy ochreous or slightly reddish, flattened above, with raised edges; externally straight, gradually curved inwards towards the apex; internally densely ciliated for the whole length, narrow at the base, then very slightly dilated for a short space, then excised to end of basal third, again dilated and regularly excised in a curved manner to the apex, which is inturned, dilated, and the broadest part of the whole length, *the apex itself truncated and very slightly excised*, the inner angle rounded, the outer ending in a short sharp tooth. Inferior appendages elongately triangular, reddish, the inturned apex blackish and sulcate, the sides slightly constricted from about the middle, one third the length of the superior, extending to the end of the inframedian excision.

Wings hyaline, slightly fumose, *strongly tinged with yellow* (scarcely brownish) *at the base*, which colour extends nearly to the triangles, and occupies the anal triangle in the posterior; pterostigma small, yellowish ($5\frac{1}{2}$ millim.), surmounting 5 or 6 cellules; membranule small, whitish; neuration dense, dark brownish, almost black, the costal margin brown externally; subnodal sector furcating much before the commencement of the pterostigma, the area between the branches with 4 rows of cellules for the greater part, 6 marginal cellules; 6 irregular cellules between the subnodal sector and the interposed one below it at the widest part, ending in two marginal cellules; a single row of cellules between the sectors of the triangle except towards the apex; no basal subcostal nervule; 33 antenodals and 20 postnodals in the superior, 24 and 25 in the posterior; 9 or 10 cellules in the principal triangles, 2 in the inner; 12 or 13 supra-trigonals in the anterior, 9 in the posterior; 6 in the median area in the anterior and 5 in the posterior; anal triangle with *four* cellules,

one next the anal margin above and two placed against it on the other side, the fourth below.

Length of abdomen (*cum append.*) 66 millim.; length of posterior wing 56 millim., greatest breadth of same $16\frac{1}{2}$ millim.

Hab. Mahambé, West Africa (*Rutherford*), one male.

This species agrees with the description of *G. vesiculata*, Karsch, in the 4-celled anal triangle, and tolerably well in the form of the anal appendages (there is no mention of the strong elevated carina on the tenth dorsal segment), but its much larger size, darker colour of the body, yellow base of the wings, and apparently more constricted third segment seem opposed to specific identity. It is the largest African species known to me.

Assuming that *G. quadrina* is distinct and *G. africana* uncertain, *G. vesiculata* is the only described West-African species I do not possess.

Gynacantha membranalis, Karsch.

This fine species is distributed from the Amazons to Panama. As an item in the identification of the numerous American species unfortunately quoted with names in MS. or with "no description," it is well to point out that *G. membranalis* = "*G. falco*, Bates, Selys, MS."

Gynacantha tibiata, Karsch.

Described from a male from Ecuador. A pair (σ ♀) in my collection from Chiriqui (Panama) agree with the description in all essential points; the very short and broad inferior appendage of the male is, however, very slightly notched in the middle of the rounded apex. There can scarcely be any doubt as to the identity.

Gynacantha chelifera (Selys, MS.), sp. n.

σ . Face dingy yellowish, with cinereous pilosity; seen from above the top of the front is much elevated and almost angulate at its summit; T-spot ill-defined, the top evident only as a dingy margining of the edge, the tail distinct, dingy blackish; eyes connected in a very long space, the occiput flat, very small; back of head yellowish. Thorax yellowish fuliginous above, paler beneath and on the sides. Legs pale yellowish, with concolorous spines. Abdomen slender, cylindrical, scarcely thicker at the base, and *not constricted*

afterwards, smoky brown; venter yellowish, the incisions of the segments scarcely darker; oreillettes of the second segment triangular, yellow, acute, with 3 or 4 tuberculiform black teeth on the lower edge; tenth segment transversely elevated at its base, the margin regular. Superior appendages very long (6 millim.), nearly as long as the eighth and ninth segments united, brownish, inserted distantly at the base, narrow for nearly three fourths of their length (the inner edge slightly sinuous), then *suddenly enlarged into a flattened, obtuse, spoon-shaped concave apex*, the opposing apices contiguous; viewed laterally these appendages are regularly but slightly curved; viewed from beneath the dilated apical portion is convex, but with a circular terminal concave space, margined by a fringe of cinereous hairs. Inferior appendages rudimentary (not more than 2 millim.), triangular, whitish yellow, the apex notched, and produced into a small black tooth on either side.

Wings hyaline, *short, broad, and obtuse*; pterostigma brown, surmounting $3\frac{1}{2}$ cellules in the anterior, $2\frac{1}{2}$ in the posterior; membranule very rudimentary, whitish; neuriation moderately dense, dark brown (blackish in certain lights); subnodal sector furcating considerably before the level of the pterostigma, with three rows of cellules between its branches for the greater part, 4 marginal cellules; 4 cellules between the subnodal and interposed sector beneath it at the widest part, but for only one row, three on either side of it, ending in only one marginal cellule; one row of cellules between the sectors of the triangle in the anterior, one or two cellules sometimes transversely connected in the posterior; no basal subcostal nervule; 19 antenodals and 13 postnodals in the anterior, 14 and 16 in the posterior; 4 or 5 supra-trigonals, 5 in the median area in the anterior and 4 in the posterior; 5 or 6 cellules in the principal triangle, 2 cellules in the inner triangle in the posterior, 1 in the anterior; 3 cellules in anal triangle.

Length of abdomen (*cum append.*) 43 millim.; length of posterior wing 37 millim., greatest breadth of same 13 millim.

Hab. Brazil, Rio Janeiro (*Fry*). One male has been in my collection for about twenty years with the MS. name here adopted.

A singular species in its general form, in the appendages, and in the not constricted base of the abdomen in the male, possibly pertaining to the group of species placed in *Triacanthagyna*, Selys.

Heliceschna fuliginosa (Selys), Karsch.

I have before me five males and three females (collected by the late D. G. Rutherford), as follows:—

(1) One very mature male from Cameroons.—The wings entirely brownish fuliginous; 25 ante- and 18 postnodals in the anterior, and 22 and 20 in the posterior. Length of posterior wing 41 millim., greatest breadth 12 millim.

(2) One less mature male (wings not tinged) and one highly mature male and similar female (wings darkly tinged) from "Cameroons," and two highly mature and tinged males from "Mahambé."—In these there are about 31 or 32 ante- and 21 or 22 postnodals in anterior wings, and about 24–26 and 23 in the posterior. Length of posterior wing 51–54 millim., greatest breadth 15–16 millim.

(3) Two transitional (?) females (one from Old Calabar, and the other from Cameroons), in which the wings are strongly marked with blackish fuscous in the costal and subcostal areas nearly up to the arculus, and with a large smoky-yellowish space from the nodus to the pterostigma, extending half across the wing (somewhat as in *Amphiceschna ampla*).—There are 31 or 32 ante- and 23–25 postnodals in the anterior wing, and 24–26 and 26–28 in the posterior. Length of posterior wing 56 millim., greatest breadth 16 millim. In these examples the abdomen has conspicuous pale markings (almost obliterated in the others); the sides of the third segment are broadly whitish yellow; a like-coloured geminate spot at the base of segments 4 and 5 and a half-ring at the apex of segments 3 to 6. In these also the appendages are present (broken in the other), very long (11 millim.), somewhat similar in form to the superior pair in the male, but more slender at the base and less widened afterwards.

It will be seen from the foregoing that the range of size is almost as given by Dr. Karsch (*Ent. Nachr.* xix. p. 194) from a single pair only, and the neural details practically agree also; but the size is not dependent upon sex, as my statement proves. The two females (3) with parti-coloured wings have a different appearance, but I think are not specifically distinct.

It seems to me that the oreillettes in the male are 5- (not 4-) toothed. On the tenth abdominal segment in the male there is a slight raised longitudinal median carina, at the base of which on either side is a transverse elongate fovea with raised edge externally, and the apical margin is slightly notched in its middle. The legs have piceous-red femora and black tibiae and tarsi. In one of the large females there are *two*

basal costal nervules before the first thickened nervule in one anterior wing.

Helicæschna ugandica, sp. n.

General characters as in *H. fuliginosa*, and apparently not differing in anal structure. Colour (excepting the face, which is dingy) black, paler beneath, the abdomen showing traces of paler markings (more evident in the female). Legs *wholly reddish piceous*, or the tarsi sometimes blackish.

♂. Wings hyaline, not tinged; pterostigma black (3 millim.), surmounting nearly 4 cellules; neuration less dense, black; two rows of cellules between the branches of the sector, 4 cellules on the margin; 4 cellules between the subnodal and the interposed sector at the widest part; a single row between the sectors of the triangle for the whole length; 22 ante- and 13 postnodals in the anterior and 15 and 13 in the posterior wings; 5 cellules in the principal triangle, 2 in the inner; 5 supra-trigonals; 3 or 4 nervules in the basal area; anal triangle 3-celled.

♀. Wings as in male, but slightly tinged with yellow at the extreme base; pterostigma brownish yellow ($2\frac{1}{4}$ millim.); 23 ante- and 15 postnodals in the anterior and 17 ante- and postnodals in the posterior; two rows of cellules between the sectors of the triangle for a short distance on the margin in the anterior only; (other neural details mainly as in the male).

Length of abdomen, ♂ (*cum append.*) 49 millim., ♀ (*append. excl.*) 42 millim.; length of posterior wing, ♂ 42, ♀ 43 millim., greatest breadth, ♂ 14, ♀ $14\frac{1}{2}$ millim.

Hab. Uganda, East Central Africa (*R. P. Denoit*, received from M. René Oberthür), one male and one female, slightly immature.

The pair above noticed appear to be specifically distinct by the very small pterostigma, less dense neuration*, and appreciably broader wings (especially the posterior) when compared with an example of *H. fuliginosa* of practically the same size; also in the nearly wholly reddish legs. In the right posterior wing of the female the first postnodal cellule is divided longitudinally, but exceptionally and not as a continuation of the subcosta.

Æschna erythromelas, sp. n.

♀. Face elongate, olive-green, labium and palpi brownish; crest of top of the front dusky posteriorly, ciliated with

* Compare the details given for *H. fuliginosa* by Dr. Karsch, *loc. cit.*

blackish, with no defined T-spot; vesicle olive-green; eyes connected in a long space, occiput very small, slightly excised on its margin, black; back of head shining black. Thorax dark blackish brown, with black villosity and green markings as follows:—a broad band on either side of the dorsal crest interrupted posteriorly by the crest of the antealar sinus; two large interalar spots; on each side two large oval bands or spots, one under each wing, not extending to the legs; pectus brown. Legs black; coxæ, anterior and intermediate trochanters, and anterior femora at base beneath brownish; claws red, tipped with black. Abdomen orange-red; a very distinct ring at the base of segments 2 to 7, segments 8 to 10 wholly (excepting some red spots on 8) and a ventral line black; at the apex of each segment from 1 to 7 is a greenish ring with indications of a narrower one on the transverse false sutures; margin of tenth segment above slightly excised in the middle and with a fovea at the insertion of each appendage. Appendages black (broken); tenth ventral segment rounded, denticulate, with 4 or 5 of the teeth much more prominent than, and twice the length of, the others; vulvar lamina with black side-sheaths and strong reddish spine.

Wings hyaline, very shining; pterostigma small (4 millim.), black; membranule whitish; neuriation open, black; subnodal sector furcating on a level with the pterostigma (slightly before in posterior), the space between the branches commencing by a single cellule, followed by two rows, and ending in 4 or 5 marginal cellules; 5 or 6 cellules in the space between the subnodal and the underlying interposed sector in its broadest part; no basal subcostal nervule; 19 ante- and 15 postnodals in the anterior wings, 13 and 16 in the posterior; 4 supra-trigonals in the anterior and 3 in the posterior; 5 cellules in principal triangle in anterior and 4 in posterior; 5 nervules in the median area in the anterior and 3 or 4 in the posterior (excluding the nervule forming the inner triangle).

Length of abdomen (*excl. append.*) 59 millim.; length of posterior wing 55 millim., greatest breadth of same 17 millim.

Hab. Sabathu, near Simla (N.W. India), July 1888, one female.

It will be necessary to see the male before attempting to define the nearest allies of this magnificent insect; the inequality of the teeth on the tenth ventral segment may be significant.

In this individual the abdomen had been "prepared" when fresh by the extraction of the contents and the substitution of cotton-wool, so that the colours are no doubt more vivid than

in examples not prepared ; but at the same time they probably fall far short of the brilliancy in the living insect.

Æschna minuscula, sp. n.

♂. Face and top of the front yellow, the latter with a black T-spot, the top of which is broad and crescentic ; the tail somewhat conical, connected with the top only at a point ; a fringe of black hairs on either side ; vesicle yellow above, in front with a narrow black line, which descends along the margins of the eyes to the base of the front ; eyes connected in a rather short space ; occiput yellow ; back of head blackish. Thorax brown, clothed with fine concolorous pilosity, and darker dorsal crest and antealar sinus ; each side above with a straight, rather narrow, greenish-yellow ante-humeral band extending into the sinus, but scarcely reaching the anterior margin ; sides with two broad oblique greenish-yellow bands, one under each wing, not reaching the legs ; interalar space and wing-roots spotted with yellow. Legs black ; coxæ, trochanters, and femora (except at apex) reddish brown. Abdomen somewhat slender, inflated at base and constricted afterwards ; oreillettes small, prominent, triangular ; colour brown, with black sutures ; a broad yellow band on the sides of segments 1 and 2, an elongate cuneate dorsal yellow spot on 2 ; lateral spots on the base of segments 4 to 8 ; the apex becomes gradually nearly black, with a large yellow spot above on each side of the apex of segments 4 to 10, vague on 4 to 6, afterwards very distinct, the spots on 10 being nearly quadrate, with a black margin anteriorly and posteriorly, and separated by a longitudinal black band in which is the dorsal carina, slightly elevated near its base (with a deep fovea on either side), but not forming a tooth if viewed laterally. Superior appendages (6 millim.) about as long as the ninth and tenth segments united, blackish brown, straight, contiguous, narrowest at the base, the inner edge gradually widening to end of inferior appendage and continued as a gentle curve almost from base to apex, which latter is about the same width as base, with the inner margin gently curved, the outer acute and slightly turned outward ; above there is a slight median carina from base to apex. Inferior appendage more than one half shorter, elongately triangular, the apex notched ; colour above reddish yellow with black margins.

Wings hyaline, very slightly fumose ; pterostigma (3 millim.) narrow, dark brown, surmounting $2\frac{1}{2}$ cellules ; membrane conspicuous, whitish above, blackish below ; neuro-

tion moderate, blackish, the costa and nodal vein conspicuously yellowish, and most of the ante- and postnodals, and the nervules in the basal portion of the wing are yellowish if seen in certain lights; subnodal sector furcating before the level of the pterostigma, with 3 or 4 rows of cellules between its branches and 6 cellules on the margin; 3 cellules between the subnodal and interposed sector at the widest part, ending in one for some distance; a single row between the sectors of the triangle in the anterior, ending with 4 on the margin; two rows for the space of three cellules near the base in the posterior, then one, ending with two on the margin; no basal subcostal nervules; 13 antenodals and 9 postnodals in the anterior and 9 ante- and postnodals in the posterior; 3 (rarely 4) cellules in the principal triangles, 1 in the inner; 2 or 3 supra-trigonals; 2 or 3 nervules in the median area; anal triangle 3-celled.

♀. Similar to male; the abdomen not becoming darker towards the apex, and the spots above are found only on segments 8 to 10, occupying the whole of 10 excepting a narrow median line; the lateral spots are conspicuous on segments 6 to 8. Appendages black, formed nearly as the anterior in the male, but very short (2 millim.); tenth ventral segment with numerous minute black teeth nearly all over its surface.

Wings as in male, but the costal portion appears yellowish owing to the more decided pale coloration of the costal nervules; pterostigma yellowish; 13 ante- and 8 postnodals in anterior, 10 ante- and postnodals in posterior.

[An immature female has a semilunate pale spot on each side of the second segment on the false suture; the dorsal apical spots are visible only on 9 and 10 and the basal lateral only on 8; the wings are much tinged with yellowish. Possibly a distinct species.]

Length of body, ♂ (*cum append.*) 40, ♀ 44-47 millim.; length of posterior wing, ♂ 37, ♀ 38-39 millim., greatest breadth, ♂ 12, ♀ 13 millim.

Hab. Cape of Good Hope, one male and one female; Knysna (Cape Colony), one female.

Æschna subpupillata, sp. n.

♂. Face dingy yellow; top of the front with a fuliginous margin which expands on the sides above, forming a segment of an arc in which is enclosed a large black spot, the base of which is seated on the vesicle, and the apex acute but not reaching the margin (hence there is no T-spot); vesicle

yellow, black in front, which colour descends as a fine line along the eye-margins; eyes connected in a moderately long space; occiput yellow; back of head black. Thorax greyish ochreous, with cinereous villosity; dorsal crest and the crests of the antealar sinus blackish; a faint vestige (scarcely definable) of an antehumeral paler line anteriorly, sides with two broad whitish bands not reaching the legs, one under each wing. Legs: tibiæ and tarsi and the underside of posterior femora black; otherwise reddish. Abdomen moderately slender, somewhat inflated at the base and slightly constricted afterwards; oreillettes prominent, subtriangular, obsoletely toothed; lateral genital valves on second segment much elongated, truncate at the apex, enclosing a slightly longer laterally flattened piece (penis?), the apex of which is also truncate; general colour dark brown, with indications of paler markings consisting of basal, subbasal, and apical spots; tenth segment nearly wholly pale, with a blackish median tooth near the base, on either side of which are two subobsolete tubercles and a short well-defined longitudinal sulcus; the carina is continued from the tooth to the apical margin, which is slightly notched in the middle. Superior appendages longer ($5\frac{1}{2}$ millim.) than the ninth and tenth segments united, strong, blackish brown, the outer edge nearly straight, the inner slightly dilated immediately after the base, then gradually excised to before the end of the inferior appendage, then considerably dilated, and finally gradually excised to the apex, which is very obliquely truncate and acute externally; viewed laterally the apices are downturned; a carina extends from base to apex, dilated and elevated in the apical fourth; internal edges with a dense fringe of long hairs in the apical half. Inferior appendage nearly half the length of the superior, elongately triangular, slightly curved, brown and concave above, with black margins and apex.

Wings hyaline; pterostigma small ($3\frac{1}{4}$ millim.), brown, surmounting $2\frac{1}{2}$ – $2\frac{3}{4}$ cellules; membranule grey, whitish at base; neuration black, costal edge conspicuously yellow externally, and most of the nervules in the costal portion of the wing and in the triangles &c. are yellowish in certain lights; subnodal sector furcating before the level of the pterostigma, with mostly three rows of cellules between the branches, 4 cellules on the margins; 3 cellules between the subnodal and interposed sector at the widest part, 1 marginal cellule; a single row of cellules in the basal portion of the space between the sectors of the triangle in the anterior, two rows in the posterior, followed by one; 16 antenodals and 9 or 10 postnodals in the anterior, 11 and 10 or 11 in the posterior;

4 cellules in principal triangle, 1 in inner; 2 (rarely 1) supra-trigonals; no basal subcostal, 3 or 4 in median area; 3 (abnormally 2) cellules in anal triangle.

♀ (slightly immature). As in male; abdomen much varied with whitish at the sides of segments 1 to 3 and at the base of segments 4 to 9 (mostly in the form of a spot on each segment), a whitish lunule above on each side of the dorsal crest on segment 2. Appendages long ($5\frac{1}{2}$ millim.), brownish, in the form of flattened blades, narrowed internally at the base and rounded at the apex; tenth ventral segment apically covered with rather dense blackish teeth; there are mostly four rows of cellules between the branches of the sector, with 4 cellules on the margin, the neural details otherwise varying little.

Length of abdomen, ♂ (*cum append.*) 45, ♀ 45 millim.; length of posterior wing, ♂ 42, ♀ 45 millim., greatest breadth, ♂ 14, ♀ 15 millim.

Hab. British Caffraria (S.E. Africa), one male; Transvaal, one female.

Remarkable for the subpupillate markings of the top of the front and for the greatly produced genital parts of the second segment of the male.

I have examined the types of *Æ. Ellioti*, Kirby, from Central Africa, which species is perhaps allied to *Æ. minuscula*, but differs in the appendages &c.; it is not possible to define the form of the spot on the top of the front on account of the condition.

Æ. Rileyi, Calvert, should belong to another group, being much larger and with humeral as well as antehumeral bands.

BOYERIA (new name).

= *Fonscolombia*, Selys (1883), preoccupied by Lichtenstein in Hemiptera (1877).

The genus remains named in honour of E. L. J. H. Boyer de Fonscolombe.

PLANÆSCHNA, gen. nov.

♀. Face short, subglobose. Eyes connected in a rather long space; occiput very small. Thorax short. Abdomen moderate, inflated at the base and afterwards constricted; tenth ventral segment rounded, minutely denticulate.

Wings rather broad, reticulation moderately dense; membranule large; pterostigma moderate; subcosta not continued beyond the nodus; basal area not reticulated; supra-trigonal

area reticulated; triangles moderate in the anterior, *short in the posterior*; *subnodal sector furcated* midway between the nodus and pterostigma; *a single row of cellules in the area between the subnodal sector and the interposed sector below it.*

Type *Æschna Milnei*, Selys (Japan).

The type of *Æ. Milnei* is in my collection and is obviously not a true *Æschna*, differing in its subglobose face, and especially in the single row of cellules between the subnodal sector and the interposed sector below it.

According to the system of Karsch (Entom. Nachr. xvii.) *Planæschna* seems (in the absence of the male) nearest to the American *Epischna*, which differs from it mainly in the abdomen not being constricted near the base, in the much longer triangles, and in the presence of two rows of cellules in the space between the subnodal sector and that interposed.

LXI.—*On the Scorpions, Centipedes, and Millipedes obtained by Dr. Gregory on his Expedition to Mount Kenia, East Africa.* By R. I. POCOCK.

[Plate XVIII.]

Part I.—SCORPIONS.

Family Buthidæ.

Buthus Eminii, Poc.

Buthus Eminii, Pocock, Ann. & Mag. Nat. Hist., July 1890, pp. 98–100, pl. i. fig. 2.

Loc. Ndara and Athi Plains. A female example obtained at each locality. The male example was procured by Emin Pasha on the shores of Lake Victoria Nyanza.

I suspect this species will prove to be identical with *Centrurus trilineatus*, Pet., from Tete.

Parabuthus pallidus, Poc.

Parabuthus pallidus, Poc. Journ. Linn. Soc., Zool. xxv. p. 312.

Loc. Giriama, near Fuladoya. A single very young specimen.

The types of the species were from Mombasa.