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NOTES ON THE GOMPHINAE (ODONATA) WITH DESCRIPTIONS OF NEW SPECIES

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A study of gomphine wing venation extending over a period of 15 years or more has brought to my attention many specimens of unusual interest. It seems advisable at this time to publish notes on some of these under one title, though they bear no relationship other than that the specimens are to be found in the American Museum of Natural History. They are as follows:

1. A possible new species of *Diaphebia* from Venezuela, with notes on the venation of *Diaphebia* and *Desmogomphus*.
2. A new genus and species from Peru.
3. A new species of *Phyllogomphus* from the Congo, with notes on *Phyllogomphus coloratus* Kimmins.
4. A species of *Notogomphus* from Ethiopia which differs venationally from the genotype.
5. A new species of *Oxygomphus* from the Congo.

Diaphebia species

Figures 5, 6, 18

LENGTH: Abdomen, including appendages, 36.8 mm.; appendages, 2 mm.; hind wing, 32 mm.; stigma, 5.5 mm.

FEMALE: Lips and head pale brownish; labrum with lateral margins and a minute median spot black; postclypeus with a narrow black mark on the anterolateral corners; ocelli ringed with yellow; vertex dark brown, prominent, coming to a point behind each rear ocellus, these two peaks connected by a concave ridge; border of occiput concave.

Prothorax obscured. Synthorax pale brown with a pair of green dorsal stripes divergent forward and separated from

the narrow green collar; a narrow antehumeral stripe bent forward at its upper end and slightly widened at its lower end. Mesepimeron obscured but apparently with two irregular longitudinal pale stripes. Metepimeron with a broad pale band covering most of its area.

Legs pale with black spines; tibiae and tarsi darker. Wings hyaline with black veins and tawny stigma; widest at the proximal end of the stigma. Antenodal cross veins of the fore wing 16-17, the first and the seventh thickened; of the hind wing 12-13, the first and the sixth thickened. Postnodal cross veins of the fore wing 15, of the hind wing 14. Cross veins under the stigma, in addition to the brace vein, six to seven in the fore wing, eight in the hind. Fore and hind wing discoidal triangle crossed; subtriangle and supra-triangle free. Costal side of the fore wing triangle slightly longer than the proximal side; costal side of the hind wing triangle more than twice as long as the proximal side. Distal side of both triangles broken. Discoidal field of both wings of two rows of cells, in the fore wing increasing to three cells at the level of the nodus, and in the hind wing increasing halfway between the median fork and the nodus. Cross veins before the median fork seven in the fore wing, four in the hind; median fork slightly asymmetrical. Sectors of the arculus rising just below its middle and separated from each other by a distance greater than the width of either.

Abdomen brown, marked with yellow as follows: segment 2 with a narrow trilobed spot on the middorsal line and a ventral lateral band extending the length of the segment; segment 3 with the ventral lateral band its full length but reduced

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on the apical fourth; segments 4 to 7 with basal twin spots fused with the pale ventral margins, on 4 to 6 the spots are small, but on 7 they extend one-third the segment length and almost meet on the middorsal line. Segments 8 to 10 all brown. Apical carinae of 3 to 10 narrowly black and on each of these segments a minute, black lateroventral spot on the intersegmental membrane. Appendages pale brown, black tipped, longer than segment 10 and about as long as segment 9. Vulvar scale elongate, tapering, slightly protuberant, and bifid to two-thirds its length; the two lobes approximated, reaching almost to the end of segment 9.

MATERIAL: Female, Mt. Duida, Venezuela, March 3, 1929 (G. H. H. Tate), in the American Museum of Natural History.

Investigation has shown that there are very few specimens of *Diaphlebia* known. Since Selys' descriptions, only *D. nexans* Calvert has been described, and no other references have been made to the two Selysian species. In fact, when Selys described *semilibera* (1869) he suggested it might prove to be another *angustipennis*, its chief apparent difference being the absence of cross veins in all triangles except the discoidal triangles of the hind wing. In this respect the American Museum specimen is more like *semilibera*, but it is smaller, has a richer wing venation, and differs in the coloration of the abdomen.

It differs from *angustipennis* Selys in its richer wing venation, the presence of black marks on the labrum and postelypeus, and the distinct trilobed spot on abdominal segment 2. It differs from the description of the male of *nexans* Calvert in its larger size, the richer wing venation, the slightly longer triangles, and the coloration of the abdomen.

Although this specimen in the American Museum does show these differences from the other known species, there is too little comparative material available to warrant its description as new. It does add, however, to our knowledge of the venational range of the genus. It agrees with Calvert's characterization of the genus (1903) differing only in minor respects: the first and seventh antenodals

of the fore wing are the thickened ones instead of the first and fifth; the fore wing triangles are not so far removed from the arculus as the length of the proximal side of the triangle; the venation is richer throughout. It agrees with only three of the characters in Needham's verification table (1940, p. 389): the absence of the basal subcostal cross veins (and even this character may not hold, for there is a basal subcostal in one of the hind wings of this specimen), the possession of two cell rows in the discoidal field of the triangle of the fore wing, and the asymmetry of the median fork. It thus invalidates the presence or absence of cross veins in the fore wing triangle and the number of postanal cells as generic characters for distinguishing *Diaphlebia* from *Desmogomphus*, and raises the question as to whether these two genera can be distinguished on venational characters. The triangles of *D. angustipennis* in the Cornell collection are longer than those of the type of *Desmogomphus*, but an analysis of the five specimens of *Desmogomphus* which I have been able to study shows some variation in the character. If a value of 10 be ascribed to the length of the proximal side of the triangle, the ratios of the proximal, the costal, and the distal sides are as follows: *Desmogomphus*, fore wing 10:10-12:11-12, hind wing 10:16-21:16-24; *Diaphlebia* sp., fore wing 10:13:15, hind wing 10:23:26; *Diaphlebia angustipennis*, fore wing 10:14:15, hind wing 10:20:23. Any estimate of the proportions of the triangles of *nexans* taken from the figure would necessarily be very inexact, but the triangles do not seem to be so long as these other representatives of the genus.

The relation of the anal crossing and the origin of A_3 is also variable. In *Diaphlebia*, sp. it rises virtually under *ac*, in *angustipennis* it rises a little beyond *ac*, and in *Desmogomphus* A_3 rises before *ac* in eight of the hind wings and almost underneath in two.

Antenodals of the fore wing in the type of *Desmogomphus* number 12-13, but of the 10 wings which I have studied only one has 12 and three have 13, while four have 14 and two have 15. In *Diaphlebia* they

range from the 13-14 of described species to the 16-17 in this specimen.

The size of the stigma seems to remain a good distinguishing character. It is one-eighth the wing length in *Desmogomphus* and one-sixth in *Diaphebia*.

The hooking of the vein tips in *Diaphebia* also seems to be a good character. This can best be described, though inadequately, as a downward curve of the sectors M_2 , R_s , and R_{sa} , beginning at the level of the proximal end of the stigma and continuing evenly to the wing margin. This curve accompanies a blunt-tipped wing which is usually widest just before the stigma. In the specimens that I have seen of these two genera this serves as a distinguishing character.

PERUVIOGOMPHUS, NEW GENUS

Basal subcostal cross vein present; arculus at, or slightly beyond, the second antenodal cross vein; median fork asymmetrical; nine median cross veins in the fore wing, six in the hind wing; fore wing triangle directed outward, its costal side the shortest and its proximal and distal sides about equal to each other; one row of cells beyond the fore wing triangle as far out as the median fork; one paranal row in the fore wing widening to two rows behind Cu_2 . Hind wing triangle slightly broken on its distal side and with one cross vein; A_3 rising before the anal crossing; A_2 rising from under the subtriangle. Stigma braced and surmounting four additional cross veins.

GENOTYPE: *Peruviogomphus moyobambus*, new species.

This genus resembles *Archaeogomphus* and *Agriogomphus* in having a single row of cells beyond the triangle of the fore wing but otherwise seems to have no affinities with them. It resembles the *Progomphini* in having crossed triangles (in this specimen only the supratrangles and the triangle of the hind wing are crossed), a basal subcostal cross vein, a large number of median cross veins, no extra cubito-anal cross veins, nodus beyond the middle of the wing, the stigma with a brace vein, and a tendency for vein A_2 to converge with A_3 distally. It approaches the *Epigomphini*

in the distal position of the arculus, the narrow anal area of the fore wing, the slight hooking of the vein tips, the asymmetry of the median fork, and the large thick stigma. The unusual character of the genitalia of the second abdominal segment, as described for the species, is probably not generic: it has been observed in the genus *Progomphus*.

Peruviogomphus moyobambus, new species

Figures 11-16

In the dried type specimen, the colors are obscured and badly faded. The eyes show distinct traces of iridescent emerald green, and there is some indication that these colors may also have been characteristic of the thorax.

LENGTH: Abdomen, including appendages, 33 mm.; hind wing, 24.5 mm.; stigma, 2.3 mm.

Face, frons, vertex, and occiput pale green, the labrum bordered and possibly crossed with yellow; the postclypeus with anterior margin narrowly bordered with yellow and the outer corners broadly yellow. Frons low, its upper border deeply concave on the median line. Vertex green, the ocelli and base of antennae ringed with yellow; the prominent ridges around the rear ocelli and across the rear border of the vertex yellow. Occiput green, its elevated border nearly straight and narrowly yellow.

Thorax pale, the middorsal black stripe but slightly wider than the pale green stripe on either side and connected above with the wide, black antehumeral; humeral suture with a narrow black stripe which is connected above and below with the antehumeral. Sides all pale green, yellow in the sutures and on the carinae and yellowish ventrally and posteriorly.

Legs yellow, femora streaked with brown on the outside and with two double rows of small irregular black spines; tibiae and tarsi darker. Wings hyaline; antenodal cross veins in the fore wing 17, postnodals 12; antenodals in the hind wing 13; postnodals 12; cells under the stigma four.

Abdomen with colors obscured. Segments 1 and 2 brown with pale markings on the sides, including the auricles which

are prominent and black bristled on their posterior surface. Segments 2 to 6 with a wide dorsal brown band forming a complete ring at the apex and partially invaded at the median carina with the yellow of the venter. This brown is finely but distinctly divided by a yellow line on the middorsal carina. Dorsum of 2 with a broad bilobed yellow spot. Segments 3 to 7 have minute blunt black spines scattered along on either side of the middorsal line. Segment 7 with the basal half diffusely yellow; 8 to 10 brown with diffuse dorsal and lateral pale spots. Segments 7 to 9 with a distinct black spot on the apical carina near the ventral margin; segment 10 with apical carina all black. Appendages brown, black-tipped; longer than segment 10. Penis with a pair of long, downward-curved bristles extending well beyond the end of the second segment.

TYPE MATERIAL: Holotype, male, Moyobamba region, Peru, March, 1936 (G. Klug), in the American Museum of Natural History.

***Phyllogomphus annulus*, new species**

Figures 8, 10

LENGTH: Abdomen, including appendages, 61 mm.; hind wing, 48 mm.; stigma, 5.5 mm. Width of hind wing at level of nodus, 12.8 mm.

Face and head mainly brown marked with green. Labium brown, its anterior half paler; mandibles pale green with brown tips; labrum with a pair of pale green spots and with the lateral margins bordered with darker brown; anteclypeus with its lower third horizontal, except on the median line, and with its upper two-thirds vertical and green; postclypeus brown with a large green spot on each side and with nasal punctures yellowish, the pale yellowish continuing laterally along the anterior border; frons brown with a pale green band across the top covering about one-third of the anterior surface and one-half of the upper surface. Vertex brown, black along the eyes; the transverse ocellary ridge with ends bent backward to run along the rear border of the ocelli; antennae brown, second segment black with

an apical ring of yellow. Occiput brown, its elevated rear border sinuous.

Prothorax brownish. Synthorax brown, marked with green as follows: the inverted "7," which is broadly interrupted at the corners and the cross piece of which is barely more than a hair line in width; a small spot on the basal half of the middorsal carina; two broad oblique bands on the sides, one under each wing, the first narrowly bordered with black and the second with a broad black band along its anterior margin. This black band is continuous across the dorsal end of the pale band and fades to yellow in the suture preceding it. There is a notal green spot between each pair of wings.

Femora brown, black at the apices; tibiae and tarsi black, tibiae paler basally. Trochanters and femora with many small, blunt, scattered spines.

Wings uniformly enfumed with yellowish, deeper at the wing bases, with black veins and stigma. Antenodals of the fore wing 17, the first and fifth thickened; postnodals 15. Antenodals of the hind wing 14, postnodals 15. No basal subcostal cross veins; arculus arising between the first and second antenodal cross veins; stigma covering five cells. Hind wing with anal loop of four cells; six postanal cells; A_3 rising under the anal crossing.

Abdominal segment 1 brown; segment 2 brown with a pair of green, lateral, basal spots, diffuse and tapering beyond the median carina, and with ventral margins pale as far as the carina; segment 3 brownish with a complete basal yellow ring extending to the median carina, or one-third the segment length, and continuous with the broad yellow ventral margins; segments 4, 5, and 6 all dark, brownish black except for the pale ventral margins; segment 7 brown with a yellow basal half ring extending halfway down the sides and to one-fourth the segment length, and with a small rectangular projection on the middorsal line, ventral margins pale; segments 8 and 9 light yellowish brown on the sides, darker on the dorsum; leaves of segment 8 pleated, black, extending the length of segment 9 and 4 mm. wide at their widest point; segment 10 light red-

dish brown. Segment 9 is one-half as long as segment 8 and two-thirds as long as segment 10. Segment 10, which bends downward, has a conspicuous dorsal carina with a slight arch in its basal fourth, striking lateral carinae, and many minute transverse encircling ridges.

Vulvar scale extraordinarily long, broad, scoop shaped to the end of segment 9 and then narrowed to a slender projection which ends in a broader, black-tipped fork which reaches to about one-third the length of segment 10. The scoop stands out from the abdomen, but the slender projection bends back and almost touches segment 10.

TYPE MATERIAL: Holotype, female, Medji, Congo, June 26, 1910 (Lang and Chapin), in the American Museum of Natural History.

This beautifully preserved specimen is clearly distinguishable from all described females. It differs from *aethiops* Selys in having but three pale stripes on each side of the middorsal carina of the thorax. It differs from the description of *coloratus* (Kimmins, 1931, did not describe the female because of its poor preservation) as follows: the frons is brown with a green band across the top instead of green margined with brown; the legs have considerable brown on the femora and tibiae; abdominal segment 3 has a distinct and complete basal yellow ring instead of lateral spots; segments 4, 5, and 6 are all brownish black with no lateral basal pale spots; and the lamellae do not seem to be "larger than in *aethiops*." It differs from the description of *selysi* Schouteden (1933) by the greater extent of brown on the face and head, by the yellow ring on segment 3, and by the absence of orange yellow spots on segments 4, 5, and 6. It differs from the MacLachlan female, described as *aethiops* by Selys (1878) and shown by Longfield (1936) not to be *aethiops*, in the greater extent of color on the wings (a character which is, of course, variable), the greater extent of brown on the face, the basal ring on segment 3, and the absence of basal spots on segments 4, 5, and 6.

The vulvar scale should be a good criterion for identification, but unfortunately the vulvar scale of the MacLachlan female

is the only one described. It has the forked tip reaching nearly to the end of segment 10, whereas this specimen has it reaching only one-third the length of segment 10.

In the American Museum there are three males of *P. coloratus* Kimmins, collected in the Cameroons, which agree with the original description except in the color pattern of abdominal segment 2. This segment has a middorsal lanceolate pale spot extending to the carina, instead of a thin pale dorsal streak. A female collected at the same time is larger and heavier but differs in color only inasmuch as the poor preservation of color conceals the original pattern of the face and the dorsum of the thorax. It has the vulvar scale very long, reaching nearly to the end of segment 10 (figs. 7, 9), thus resembling the scale of the MacLachlan female.

Notogomphus dorsalis Selys

Figure 19

A female collected in Addis Ababa, Ethiopia, July 5, 1920, altitude 5000 feet, is so different venationally from my conception of this genus that I at first thought to describe it as a new genus. It answers the description of this species so closely, however, that I shall not add further to the complexities of the *Noto-Podogomphus* group by describing it as new. But I do wish to note here the peculiarities of the venation in the hope that some one with more material will make a detailed study of the venational characters and define the limits of variation within this and closely related genera.

The basal subcostal cross vein is present; brace vein present and strongly aslant; stigma surmounting only two and one-half cells; median fork symmetrical with two median cross veins between it and the arculus; triangle large, slightly broken on the outer side, that of the fore wing but little larger than the subtriangle and with its proximal side but very slightly longer than its costal; sectors of the arculus widely separated; two paranal rows and three rows behind Cu_2 of the fore wing. Hind wing with one cubito-anal cross vein; five double postanal rows between A_1 and A_2 ; A_3 well before the anal

crossing; anal crossing distant from the subtriangle by its own length; Cu_1 and Cu_2 separated by four cells at the margin; anal loop of two or three cells.

I very much doubt if this and *Notogomphus ruppelyi* Selys (as figured by Ris, 1909, fig. 5) are congeneric. However, wings figured by Sjostedt (1909, pl. 2, figs. 3-5), Schouteden (1934, fig. 69), and Campion (1923, figs. 1, 3) show intermediate variations. It does seem to differ from them all in the short bridge (a character which I have not studied enough as yet to be able to define), the short stigma, and the double row of cells between A_2 and A_3 . The wide area indicated by this character is due, partially of course, to the sex of the specimen.

I add a brief description of the specimen for the benefit of those who may be able to compare it with type material; there is always the possibility that I have incorrectly determined it.

LENGTH: Abdomen, including appendages, 29 mm.; hind wing, 26 mm.; stigma, 2.6 mm. Width of hind wing at the level of the nodus, 9 mm.

Labium brown, median lobe paler basally; labrum yellow, entirely bordered with brown and crossed with a brown band which is marked in the center by a yellow depression; base of mandibles pale yellow; genae dark brown; anteclypeus brown with a pair of round yellow spots in the middle, almost touching; postclypeus and frons yellow with fine brown reticulations, the brown more dense towards the clypeal suture and in the depressions of the nasal punctures; frons high and swollen across the crest, which is slightly notched in the middle and punctuated with six or seven sharp black elevated points on either side; vertex dark brown, slightly lighter behind the postocellary ridge, which is curved to rearward on the midline; occiput convex, very low, light brown, fringed with long black hair. Rear of eyes yellowish brown with a wide black border along the eye margin on either side of the occiput.

Prothorax black with a wide middorsal yellow band. Thorax yellow, marked with brown as follows: the V of the crest, a broad band on each side of the dorsum ex-

tending from above the arms of the crest down across the prothorax, gradually widening to reach its greatest width before the collar, each of these bands wider than the middorsal yellow; a narrow band behind the humeral suture; faint narrow brown lines along the alar carinae and in the sutures.

Coxae yellow; femora yellow, lined with black; tibiae and tarsi black. (Hind femora missing.)

Abdomen with a middorsal yellow band extending from segment 1 to segment 8, narrowly interrupted at the apices of all segments and at the median carina of segment 7; separated from the yellow of the sides and venter by a black band which runs full length of the abdomen on each side, the two approximating on the apical fourth of segment 8 and fusing to cover the dorsum of segment 9. Segment 10 brownish with a pair of black spots on the base of the segment. Appendages brown. Vulvar scale broad, the width of the segment notched at the tip and extending not more than one-fifth the length of segment 9.

OXYGOMPHUS LACROIX¹

Fraser, the first to describe this genus, says that it is distinguished from all other genera by segment 10 which is longer than segment 9 and abruptly constricted, cylindrical in the second half and telescoped into 9; by the occiput which is elevated, recurved forward and surmounted by two or more spines; and by the posterior hamules which project far out and forward toward the base of the abdomen.

A specimen in the American Museum collection has genitalia so like those of *Oxygomphus agilis* (as figured by Fraser) that I place it in that genus without question in my own mind. Its unique tenth segment may well be that described by Fraser, but its simple occiput indicates

¹ Martin (1908) described *Notogomphus agilis* as having a recurved occiput and the last three segments of the abdomen fused. Ris (1909) expressed the opinion that *Notogomphus agilis* Martin was not a true *Notogomphus*. Fraser (1936) ascertained that Martin's *Notogomphus agilis* and the specimen in Martin's collection labeled *Oxygomphus agilis* were the same. When Lacroix described *Oxygomphus martinianus* (1921) the genus had not been described, but since he compared his specimen with the type of *O. agilis* this genus is attributed to him by Fraser (1936).

either that his description of the genus will have to be made more elastic or that a new genus should be described for this species and possibly *martininus* Lacroix.

***Oxygomphus chapini*, new species**

Figures 1-4, 17

LENGTH: Abdomen, including appendages, 38 mm.; hind wing, 29 mm.; stigma, 2.8 mm.

Face and frons pale greenish, faintly margined with yellow; labrum with a median, transversely oval depression. Frons low and rounded over the region of the crest, slightly bulbous below the antennae. Vertex brown, the area around the median ocellus and across the front yellow. Antennae brown except for the pale green basal segment. Ocellary ridges completely surrounding the rear ocelli, most conspicuous on the outer side along the margin of the compound eyes. Rear of vertex sloping to the low ridge before the occiput. Occiput brown, almost straight, with only a slight depression on the median line. Rear of eyes brownish with a conspicuous yellow spot on the lateral margins.

Prothorax reddish brown, the vertical sides of the median lobe and a median dorsal twin spot yellow. Synthorax yellow on the dorsum, pale brown on the sides marked with brownish black as follows: a pair of dorsal stripes, widened below and confluent on the midline, forming a narrow triangle which becomes restricted below to form a small inverted cone interrupting the yellow collar and joining the black below; on each side a black antehumeral, connected above and below with the middorsal triangle, leaving an oblique elongate yellow spot on the black of the dorsum each side; a wide black humeral separated from the antehumeral by a yellow stripe one-third again as wide as the antehumeral but not quite so wide as the humeral. First lateral suture with a reddish spot at the top connected with the humeral stripe and a light brownish triangular spot above the spiracle; second lateral suture with a narrow tapering stripe interrupted on the lower third; metepimeron with a triangular dark spot on the posterior margin.

Femora pale; tibiae and tarsi darker.

Wings hyaline, veins, including the costa dark brown; stigma light brown, paler in the apical third, surrounded by dark veins. Antenodals 13-14 in the fore wing, 11 in the hind; postnodals 10.

Abdomen brownish with color pattern obscured. Segment 1 yellowish; segment 2 with prominent auricles and with a narrow, irregular, middorsal, pale, lanceolate band four-fifths the segment length; segment 3 with an attenuated middorsal triangle three-fourths the segment length, very obscure, in some lights scarcely visible, with median and apical carinae darker; segments 4, 5, and 6 reddish brown; segments 7, 8, and 9 black on the dorsum, 7 with a brown basal ring one-fourth the segment length; segments 8 and 9 with expanded lateral margins bright yellow and with a middorsal yellow spot on the apical intersegmental membrane; segment 10 brownish with the basal half black and an irregular apical black margin; segment 10 a little longer than 9, abruptly constricted, slender and cylindrical at base as though it might be telescoped into 9, encircled basally with minute ridges.

HOLOTYPE MALE: Lukeolela, left bank of the Congo River, 01° 05' S., October 13, 1930 (J. P. Chapin), in the American Museum of Natural History.

This species is named for Dr. James P. Chapin of the American Museum.

Oxygomphus chapini is slightly smaller than *agilis* (*agilis* abdomen, 43 mm., hind wing, 31 mm. long) and resembles it strongly as to color pattern and type of appendages, though the superior appendages are more widely divaricate than those of *agilis*, as figured by Fraser (1936). It differs from *agilis* most strikingly in its simple occiput. It differs from the description of *martininus* Lacroix in size (*martininus* abdomen, 51 mm., hind wing, 43.3 mm. long) and in color pattern.

Oxygomphus martininus is known only from a single female, the description of which makes no mention of the occiput or the shape of the tenth segment. In the absence of any description we can only conclude that there is nothing unusual or striking about them. Granting that the peculiarities of the occiput of *agilis* and

of the tenth segment of both *agilis* and the male here described as *chapini* may be sexual characters, I still decline to accept *martininus* as the female of either of these males. Martin agreed with Lacroix in

thinking *martininus* different from *agilis* (Lacroix, 1921, p. 49). If it was too large for *agilis* (*agilis* abdomen, 43 mm., hind wing, 31 mm. long) it is certainly too large for *chapini*.

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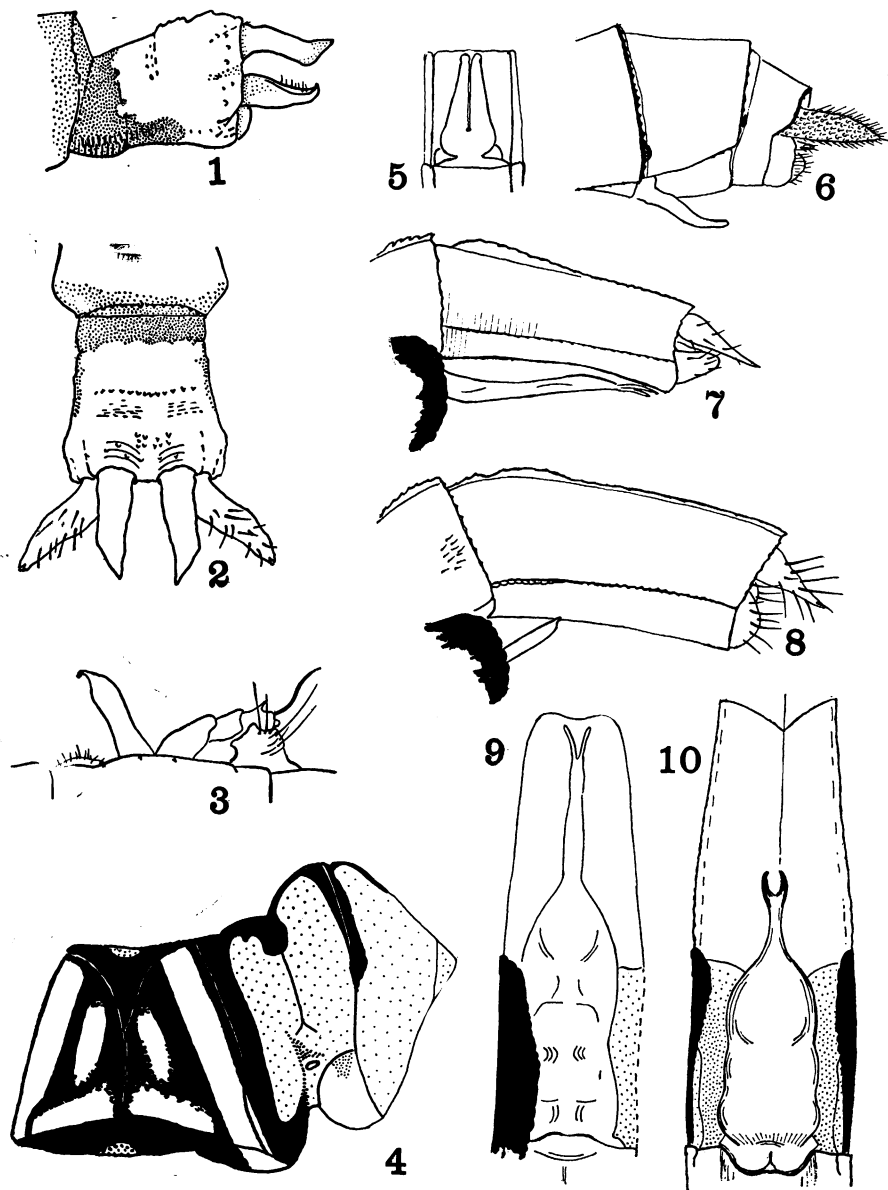


Fig. 1. *Oxygomphus chapini*, new species, terminal appendages, lateral aspect.

Fig. 2. Idem, terminal appendages, dorsal aspect.

Fig. 3. Idem, genitalia of the second abdominal segment, lateral aspect.

Fig. 4. Idem, diagram of thoracic color pattern.

Fig. 5. *Diaphlebia* species, vulvar scale, ventral aspect.

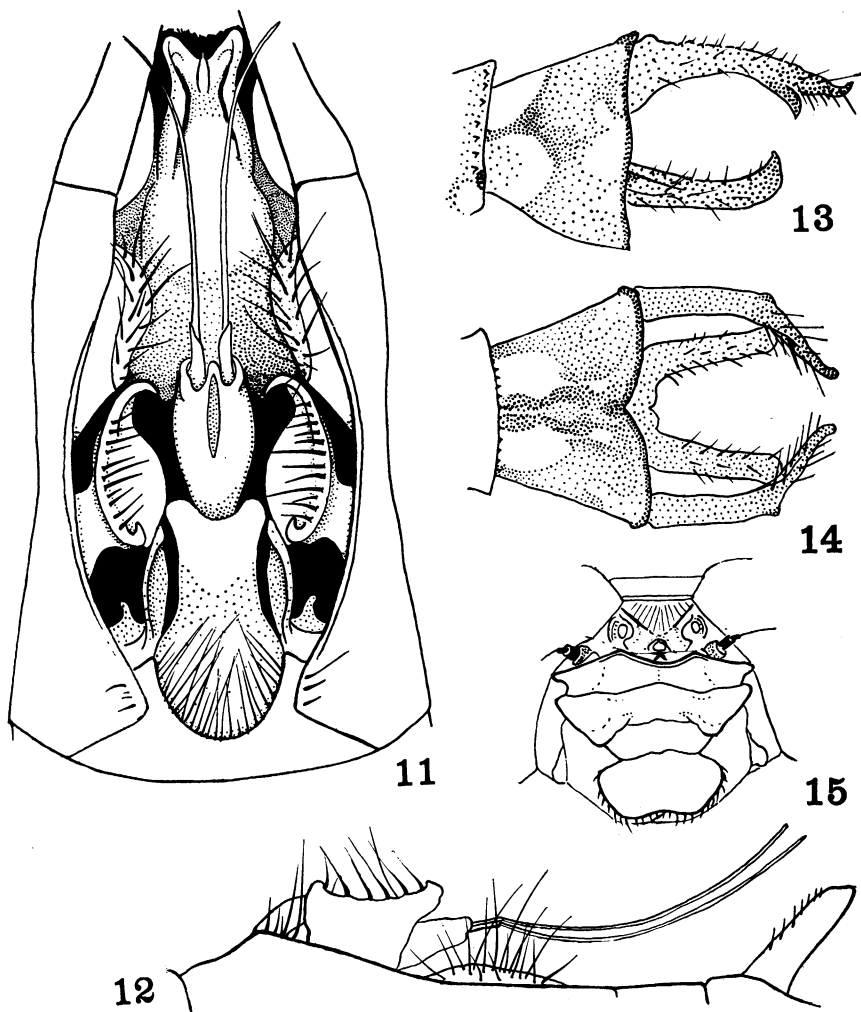
Fig. 6. Idem, vulvar scale, lateral aspect.

Fig. 7. *Phyllogomphus coloratus* Kimmins, vulvar scale and tenth segment, lateral aspect.

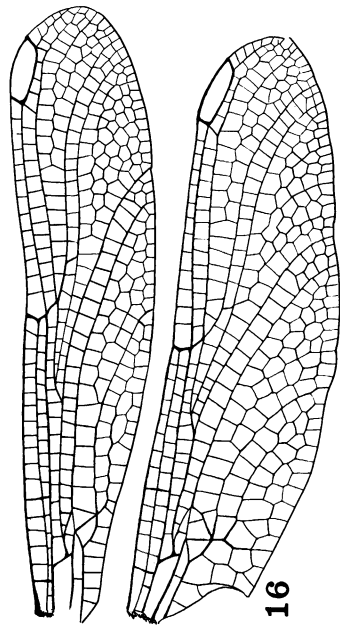
Fig. 8. *Phyllogomphus annulus*, new species, vulvar scale and tenth segment, lateral aspect.

Fig. 9. *Phyllogomphus coloratus* Kimmins, vulvar scale, ventral aspect.

Fig. 10. *Phyllogomphus annulus*, new species, vulvar scale, ventral aspect.



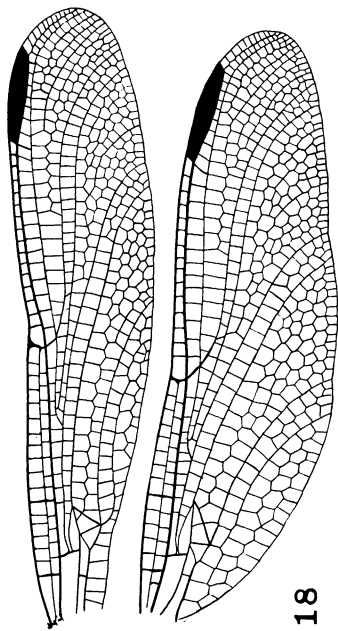
- Fig. 11. *Peruviogomphus moyobambus*, new species, genitalia of second segment, ventral aspect.
 Fig. 12. Idem, genitalia of second segment, lateral aspect.
 Fig. 13. Idem, terminal appendages, lateral aspect.
 Fig. 14. Idem, terminal appendages, dorsal aspect.
 Fig. 15. Idem, face.



16

17

Fig. 16. *Peruvigomphus moyobambus*, new species.
Fig. 17. *Oxygomphus chapini*, new species.



18

19

Fig. 18. *Diaphtlebia* species.
Fig. 19. *Notoomphus dorsalis* Selys.

