

XLIX.—Notes on the smaller Genera of the Tabaninæ of the Family TABANIDÆ in the British Museum Collection. By GERTRUDE RICARDO.

TABANINÆ.

THE following table includes the genera comprised in the second division of the Tabanidæ, easily distinguished from those of Pangoninæ, the first division, by the absence of spurs on the hind tibiæ and of ocelli. The genus *Ditylomyia*, formed by Bigot, is not included, as the one species for which he created it belongs to *Gastroxides*, an older genus; Bigot's genus must therefore sink. As regards *Dasybasis*, a genus formed by Macquart for an Australian species, I have no knowledge of it, and its position in the table is only based on his description.

One new genus is included, formed for a species from Ceylon. Remarks on *Hæmatopota* will follow later.

Hind tibiæ with no spurs. Ocelli absent.

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|--|----|---|
| 1. Third joint of antennæ with four divisions, no tooth or angulation .....  | 2. |   |
| Third joint of antennæ with five divisions.  | 5. |   |
| 2. Rings of the third joint of antennæ so distinctly divided that the antennæ appear as six-jointed.....   |    | <i>Hexatoma</i> , Meig.                               |
| Rings not so distinctly divided; the antennæ always appear as three-jointed..  | 3. |   |
| 3. Wings marked with rings and circles of darker colouring .....   |    | <i>Hæmatopota</i> , Meig.                             |
| Wings not so marked .....  | 4. |   |
| 4. First and second joints of antennæ in the male pubescent, the third joint longer than the first. Eyes hairy .....   |    | <i>Dasybasis</i> , Macq.                              |
| 5. First joint of antennæ globular, situated on a protuberant projection of the forehead .....   |    | <i>Bolbodimyia</i> , Bigot.                           |
| First joint of antennæ not globular ....   | 6. |   |
| 6. Third joint of antennæ simple, not furnished with a tooth or distinct angular projection .....  | 7. |   |
| Third joint of antennæ furnished with a tooth or a distinct angular projection..   | 9. |   |
| 7. Body covered with metallic scales.....  |    | <i>Lepidoselaga</i> , Macq. [ <i>Hædrus</i> , Perty]. |
| Body metallic in colouring .....   |    | <i>Selasoma</i> , Macq.                               |
| Body without metallic scales and not metallic in colouring; the first antennal joint longer than is usual in <i>Tabanus</i> ; wings usually with brown markings .. | 8. |   |



8. Antennæ long, the third joint cylindrical, situated on a projecting tubercle . . . . . *Udenocera*, g. n.  
 Antennæ not very long, the third joint not cylindrical, not situated on a projecting tubercle . . . . . *Diachlorus*, Ost. Sacken  
 [ *Diabasis*, Macq. ].
9. Abdomen short, stout, very convex . . . . *Stibasoma*, Schiner.  
 Abdomen not short, stout, or very convex. 10.
10. Antennæ long and slender, the first joint long . . . . . *Acanthocera*, Macq.  
 Antennæ not very long and slender, first joint not long . . . . . 11.
11. Species of a slender build, usually with a banded thorax and abdomen, third joint of antennæ slender, mostly with brown markings on the wings . . . . . *Dichelacera*, Macq.  
 Species of a stouter build, third joint of antennæ stout . . . . . *Tabanus*, L. (in sens. lat.).

HEXATOMA, Meig., Syst. Besch. ii. p. 83 (1820).

*Heptatoma*, Meig., Illiger's Mag. ii. p. 267 (1803).

*Hexatoma pellucens*, ♂ ♀, Fabr., Gen. Ins. Mant. ii. p. 308 (1776) (*Tabanus*).

*Tabanus albipes*, Schrank, Ins. Austr. p. 480 (1781).

*Heptatoma bimaculata*, Meig., Klass. zweifl. Ins. i. p. 156, pl. ix. figs. 5-10 (1804).

For the full list of references see 'Katalog Paläarktischen Diptera,' Bezzi, vol. ii. p. 54 (Budapest, 1903).

One male and one female from Germany, 58. 80 (*Ruthe*).

One female from Prussia, 4. 6. 92 (*Kirby*).

Two males and one female from unknown locality.

#### DASYBASIS, Macquart.

*Dasybasis*, Macq., Dipt. Exot. Suppl. 2, p. 25 (1846); Loew, Dipt. Südafrik. p. 31 (1860).

This genus was formed for one species from Australia, and Bigot describes another from Chili. I have no knowledge of either.

The genus is distinguished by its hairy eyes, the hairy first two joints of the antennæ in the male, and by the presence of only four divisions on the third joint, with no tooth or angulation, but slightly swollen in the middle.

*D. appendiculata*, ♂ ♀, Macq., l. c. pl. i. fig. 1; Walker, List Dipt. pt. v. Suppl. 1, p. 267 (1854).—Australia.

*D. tristis*, ♂, Bigot, Mém. Soc. Zool. Fr. v. p. 621 (1892).—Chili.



## BOLBODIMYIA, Bigot.

*Bolbodimyia*, Bigot, Wien. ent. Zeit. xi. p. 162 (1892); Röder, *l. c.* p. 237.

This species was formed for one species from Venezuela, viz. :—

*Bolbodimyia bicolor*, ♀, Bigot.

Bigot describes this striking insect as having 13 or 15 rings on the third joint of the antennæ, but it is more correctly described as having *five* divisions only, of the ordinary size and shape, viz. the large basal division and the four others of about equal size, the last ending in a point. The fly is easily distinguished by the peculiar shape of the first antennal joint and by the protuberant projection on which the antennæ are placed; the front tibiæ are dilated.

## LEPIDOSELAGA, Macquart.

*Lepidoselaga*, Macq., Dipt. Exot. i. (1) p. 153 (1838) (*Lepiselaga*); Loew, Dipt. Südafrik. p. 31 (1860); Schiner, Reise der Novara, p. 96 (1866); Williston, Kans. Univ. Quart. iii. p. 192 (1895); id. Biol. Centr.-Am., Dipt. i. Suppl. p. 262 (1901).  
*Hadrus*, Perty, Del. Anim. Arctic. Brasil. p. 183 (1830).

As pointed out by Williston, *Hadrus* is preoccupied in the order Coleoptera; he agrees with Schiner that the differences between *Hadrus* and *Lepidoselaga* are trivial and that the two should be reunited. They also consider *Lepidoselaga* and *Selasoma* very nearly related, the chief difference between them being in the presence of metallic scales in the one (*Lepidoselaga*) and not in the other. The face in *Selasoma* is more protuberant and the antennæ have the third joint rather broader, with traces of the *Tabanus*-like angulation.

Four species of *Lepidoselaga* have been described, all from South America; but as Williston reunites his *L. parva* with *L. albitarsis*, Macq., the number is reduced to three.

*L. lepidota*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 193 (1828) (*Tabanus*); Macq., Dipt. Exot. i. (1) p. 154, pl. xviii. fig. 3 (1838) (*Lepiselaga*); Perty, Del. Anim. Arctic. Brasil. p. 183, pl. xxxvi. fig. 9 (1830); Walker, List Dipt. i. p. 209 (1848); id. pt. v. Suppl. 1, p. 272 (1854); Schiner, Reise Novara, p. 96 (1866); Loew, Berlin. ent. Zeit. xiii. p. 6 (1869); Townsend, Ann. & Mag. Nat. Hist. (6) xix. p. 19 (1897) (*Hadrus*); Williston, Kans. Univ. Quart. iii. p. 192 (1895); id. Biol. Centr.-Am., Dipt. i. Suppl. p. 262 (1901). [*Hæmatopota crassipes*, Fabr., Syst. Antl. p. 108 (1805); Wiedem., Dipt. Exot. i. p. 97 (1821); id. Auss. zweifl. Ins. i. p. 220 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 270 (1854) (*Diabasis*).]—New Granada, Brazil, Guiana.



- L. albitarsis*, ♀, Macq., Dipt. Exot. Suppl. 4, p. 36 (1850); Wulp, Tijds. Ent. xxiv. p. 161 (1881). [*L. parva*, ♀, Williston, Kans. Univ. Quart. iii. p. 192 (1895); id. Biol. Centr.-Am., Dipt. i. Suppl. p. 262 (1901).]—Buenos Ayres, Paraguay.
- L. recta*, ♀, Loew, Berlin. ent. Zeit. xiii. p. 6 (1869); Ost. Sack. Cat. Dipt. N. Amer. p. 55 (1878); id. Biol. Centr.-Am., Dipt. i. p. 57 (1886). [*Hadrus lepidotus*, ♂, Bellardi (nec Wiedem.), Ditt. Mess. i. p. 75 (1850); Loew, *l. c.*]—Central America.

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|--|--------------------------------|
| 1. Antennæ ferruginous, black at the apex. |                                |
| Forehead wide .....                        | <i>albitarsis</i> , ♀, Macq.   |
| Antennæ wholly ferruginous. Forehead       |                                |
| not so wide.....                           | 2.                             |
| 2. The space between the antennæ and the   |                                |
| frontal callus is brownish .....           | <i>lepidota</i> , ♂ ♀, Wiedem. |
| The space between the antennæ and the      |                                |
| frontal callus is yellowish.....           | <i>recta</i> , ♀, Loew.        |

Williston does not think that the distinction given by Loew for *L. recta*, as above, is valid, and he reunites it to *L. lepidota*.

*Lepidoselaga lepidota*, ♀, Wiedem.

Two females from Para, 49. 1 (Bates Coll.); one female from Honduras (Miller Coll.), 283; two females, voyage H.M.S. 'Herald,' Panama, 60. 45; one female from Conrany, Guiana, Oct. 23, 1895 (*Goeldi*), 96. 238; six females from Montalegre, on S.S. 'Faraday,' 27. 1. 96 (*Austen*); one female from W. end of Parana de Bugassu, 15. 1. 96 (*Austen*); one female from near Breves, S.S. 'Faraday,' 14. 1. 96; one female from Brazil, 99. 195 (*Piffard*); eleven females from Brazil, 24. 4. 1901 (*Durham*), 1901. 232; five females from Tylor-Townsend Coll.; five females from below Itacoatura, R. Amazons, S.S. 'Jerome' (Tylor-Townsend Coll.), purchased from E. Brunetti, 1903. 16.

There is a note attached to one of the specimens by Bates as follows:—"The Motúca of the Indians; it is the scourge of the Upper Amazon. H. Bates, 1859."

This is the insect mentioned by Bates in his 'Naturalist on the River Amazons,' chap. vii. p. 681:—"The mouth of the channel lies about twenty-five miles from Villa Nova; the entrance is only about forty yards broad, but it expands a short distance inland into a large sheet of water. We suffered terribly from insect pests during the twenty-four hours we remained here. . . . In the daytime the Motúca, a much larger and more formidable fly than the mosquito, insisted upon levying his tax of blood. We had been tormented by it for many days past, but this place seemed



to be its metropolis. The species has been described by Perty, the author of the entomological portion of Spix and Martius's travels, under the name of *Hadrus lepidotus*. It is a member of the Tabanidæ family, and, indeed, is closely related to the *Hæmatopota pluvialis*, a brown fly which haunts the borders of woods in summer time in England. The Motúca is of a bronzed black colour; its proboscis is formed of a bundle of horny lancets, which are shorter and broader than is usually the case in the family to which it belongs. Its puncture does not produce much pain, but it makes such a large gash in the flesh that the blood trickles forth in little streams. Many scores of them were flying about the canoe all day, and sometimes eight or ten would settle on one's ankles at the same time. It is sluggish in its motions, and may be easily killed with the fingers when it settles."

In chap. viii. p. 693, he mentions a sand-wasp, *Monedula signata*, which provisions its cells with the Motúca:—

"The *Monedula signata* is a good friend to travellers in those parts of the Amazons which are infested by the blood-thirsty Motúca. I first noticed its habit of preying on this fly one day when we landed to make our fire and dine on the borders of the forest adjoining a sand-bank. The insect is as large as a hornet and has a most waspish appearance. I was rather startled when one out of the flock which was hovering about us flew straight at my face; it had espied a Motúca on my neck, and was thus pouncing upon it. It seizes the fly not with its jaws, but with its fore and middle feet, and carries it off tightly held to its breast. Wherever the traveller lands on the Upper Amazons in the neighbourhood of a sand-bank he is sure to be attended by one or more of these useful vermin-killers."

*Lepidoselaga recta*, ♀, Loew.

One female (Tylor-Townsend Coll.).

One female from Panzos, Vera Paz (Biol. Centr.-Am. Coll.) (*Champion*).

SELASOMA, Macquart.

*Selasoma*, Macq., Dipt. Exot. i. (2) p. 187 (1838); Loew, Dipt. Süd-afrik. p. 31 (1860).

This genus was formed by Macquart for one species from S. America, and he suggested *Tabanus cyaneus*, Wiedem., would belong to it, locality unknown.



For remarks on the relationship of this genus to *Lepidoseлага* see under the latter.

It is distinguished by its short, flat, metallic-coloured abdomen, thickened fore tibiæ, and simple third joint of antennæ.

*S. tibiale*, ♂ ♀, Fabr. Syst. Antl. p. 102 (1805); Wiedem. Dipt. Exot. i. p. 89 (1821); id. Auss. zweifl. Ins. i. p. 164 (1828) (*Tabanus*); Macq., Dipt. Exot. i. (2) p. 187 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 273 (1854); Röder, Wien. ent. Zeit. xi. p. 237 (1892). [*Hadrus chalybeum*, Perty, Del. Anim. Arctic. Brasil. p. 183, pl. xxxvi. fig. 20 (1830). *Hadrus cyaneum*, Walker, List Dipt. i. p. 208 (1848).]—Brazil.

*S. cyaneum*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 152 (1828) (*Tabanus*); Macq., Dipt. Exot. i. (2) p. 188 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 273 (1854).—Locality unknown.

The antennæ and legs were both wanting when described by the author; he speaks of it as being a steel-blue insect with hyaline wings.

*Selasoma tibiale*, ♂ ♀.

One male from Oajaca, Mexico, 58. 135; one female from Mount Roraima, British Guiana, 3500 feet (*Quelch*), 99. 68; one female from Brazil, 45. 56, presented by Mrs. T. P. G. Smith; two females from unknown localities.

#### UDENOCERA, gen. nov.

This genus is nearly related to the two South-American genera *Diachlorus*, Ost. Sack., and *Acanthocera*, Macq., and is formed for a species from Ceylon which bears a general resemblance to the latter genus, but is distinguished from it by the absence of a tooth on the third joint of the antennæ, which also divides it from *Dichelacera*, Macq. It is distinguished from *Diachlorus* by the length of the first joint of the antennæ, which is nearly as long as the third joint, and by the altogether longer slender antennæ, the third joint being cylindrical; the fore tibiæ are neither curved nor broader; these differences, together with the presence of a tubercular projection situated more than halfway down the face on which the antennæ are placed, seem to justify the formation of a new genus.

*Generic characters*.—Antennæ long, cylindrical, with no tooth or projection on the third joint; the first joint is quite two thirds the length of the third joint, the second more than half as long as the first joint, the third joint has the first division as long as the four last divisions together, the



latter being of equal length, with the exception of the last one, which is a little longer, ending in a blunt point; they are situated on the lower edge of a protuberant tubercle which reaches the eyes on each side and is itself placed more than halfway down the face; the forehead is long, gradually narrowing to the vertex. The palpi are *Tabanus*-like in shape, ending in an acute point. The abdomen is long and narrow, the same width throughout. The wings are longer than the body and rather large. The legs are long and slender.

*Udenocera brunneus*, ♀, sp. n.

Three females from Kandy, Ceylon (*Yerbury*). The type is numbered 31. 5. 92, the others 18. 5. 92 and 30. 5. 92.

Brown. Face shining brown below the antennæ, forming a triangular convex tubercle, with the apex reaching the proboscis, and longer than the cheeks; on each side of the face is a brown shining stripe bordering the eyes for a short distance and then the facial tubercle to its apex; the cheeks are ashy grey, with long white hairs. The proboscis short, the palpi nearly as long; the first joint short, the second stout at its base, curved, ending in a point, yellow, with black pubescence. The first two joints of the antennæ yellow, with black pubescence, the third black; the antennal tubercle brown, shining, grey below; the forehead brown, shining, convex in the middle, with a transverse groove near the tubercle. Eyes bare, the facets of equal size; on the posterior border the eyes project beyond the vertex of the forehead. Thorax brownish, shining, with indistinct linear yellow stripes on each side, yellow at the sides; the breast brown with black hairs, then grey with whitish hairs. Scutellum yellow-brown at extreme base, with yellow pubescence. Abdomen of a uniform brown, somewhat shining, with brown pubescence, the underside yellowish at the base. Legs pale yellow, with the femora, apices of tibiæ, and apices of all the joints of the tarsi except the first one brown; the last joint of the tarsi wholly brown, with pulvilli and claws; the pubescence of the legs is yellow on the yellow parts and black on the brown parts. Wings hyaline, the veins yellowish brown, the fore border and the apex brown; some light spaces are apparent in the brown of the apex; the brown shading extends along the posterior border faintly into the fourth posterior cell; on one wing of the type the apical brown is reduced to a shading of the veins.

Length 11 mm.



There is an imperfect male specimen from Galagedara, Ceylon, June 1897 (*E. E. Green*), 1903. 150, which apparently belongs to this genus, but will form another species, having a yellow abdomen; the antennæ are placed on a similar tubercle and seem of an identical shape, but the third joint is wanting.

The specimen named by Walker *Chrysops parallelus*, and referred by me doubtfully to *Diachlorus* [see *Ann. & Mag. Nat. Hist.* (7) ix. p. 372 (1902)], from Batjan Island (Batchian) (Wallace Coll.), may possibly belong to this genus; but the antennæ are wanting, the formation of the forehead, of the antennal tubercle and face, besides the shape of the abdomen and legs, agrees with that of the species described above.

#### DIACHLORUS, Osten Sacken.

*Diachlorus*, Osten Sacken, *Mem. Boston Soc.* ii. p. 475 (1876).

*Diabasis*, Macq., *Hist. Nat. Dipt.* i. p. 207 (1834); *id.* *Dipt. Exot.* i. p. 150 (1838); Loew, *Dipt. Südafrik.* p. 31 (1860). ("*Diabasis*" being already occupied in Coleoptera, the name was changed by Osten Sacken.)

This genus was formed by Macquart for the exotic *Tabani*, *bicinctus*, *glaber*, *globicornis*, Wiedem., and *curvipes*, Fabr., presenting as he thought an intermediate conformation between *Tabanus* and *Chrysops*. The described species are all from S. America, with the exception of *D. ferrugatus* from N. America, *D. scutellata* from Central America, and *D. flavipennis* from the Philippines. Loew distinguishes it from *Lepidoselaga* and *Selasoma* by the absence of metallic colouring or scales and from *Tabanus* by the curved fore tibiæ. Osten Sacken considers it is only distinguished from *Tabanus* by the shortness of the face, the rather low insertion of the antennæ, and the rather broad fore tibiæ, the coloration of the eyes also differing from that of *Tabanus*, at least in *D. ferrugatus*. The greater length of the first joint of the antennæ, the general appearance, more slender build, and the markings of the wings seem to sufficiently distinguish it from *Tabanus*, in addition to the curved dilated fore tibiæ, as also the absence of any tooth or real projection on the third joint of the antennæ. In this respect the species of this genus may be confused with the smaller *Tabani*, in some of which the projection or angle of the third joint is very slight, so that there is very little difference in the shape of the third joint. Bigot thus confused specimens of a North-American *Tabanus* and called it *D. hæmatopotides*.

The five species placed in this genus by Bigot all belong to



other genera. His *D. maroccanus*, ♂ (Mém. Soc. Zool. Fr. v. p. 623, 1892), from Morocco, is a male species of *Silvius*, but I am not able to identify it with any description of a *Silvius* from the Palæarctic Region, many of the males of the described species being not yet known; the eyes are hairy in this specimen, and the face and the second joint of the antennæ moderately pubescent: his *D. barbatus*, ♂ (*l. c.* p. 622), from Piedmont, is also a male species of *Silvius* with the face and the first two joints of the antennæ densely pubescent; the eyes are bare: his *D. hæmatopotides*, ♀ (*l. c.* p. 624), from N. America, is a specimen of *Tabanus fratellus*, Will.: his *D. melas*, ♀ (*l. c.* p. 625), from Sidney, is a specimen of *Apocampta subcanus*, Wlk. (see Ric. Ann. & Mag. Nat. Hist. (7) viii. 1901, p. 287): his *D. notatus*, ♀ (*l. c.* p. 622), from California, is a species of *Silvius* apparently identical with *Silvius quadrivittatus*, ♀, Say, Journ. Acad. Phil. iii. p. 33 (1823); id. Compl. Wr. ii. p. 54 (1869); Wiedem., Auss. zweifl. Ins. i. p. 200 (1828) (*Chrysops*); Osten Sacken, Cat. Dipt. N. Amer. p. 226 (1878); Will. Trans. Kans. Acad. Sci. x. p. 131 (1888).

Williston distinguishes his species *S. pollinosus* from Say's species by the absence of blackish stripes on the thorax; these are present in Bigot's specimen. Williston suggests that these two species may belong to the genus *Nemorius*. Bigot's specimen certainly bears a strong general resemblance to *Chrysops* (*Nemorius*) *vitripennis*, Mg., though the first joint is considerably longer in *C. vitripennis*, as Williston remarks.

The latter author describes a species as *Dichelacera scutellata* from Brazil, but suggests it may belong to the genus *Diachlorus*, though the fore tibiæ, not being curved, seem to exclude it from this genus, and the absence of a tooth on the third joint of the antennæ from *Dichelacera*. If it should be finally placed under *Diachlorus*, the name will have to be changed, being already used for a species described by Macquart.

*Diachlorus varipes*, Rondani, is said by the author to be nearly related to *D. atænia*, Macq., which is a synonym of *D. ferrugata*, F.

The species named by Walker *Diachlorus varius*, ♂, belongs to the Pangoninæ, having ocelli, and spurs on hind tibiæ; the antennæ being lost, it is impossible to identify it further, but it probably belongs to the subgenus *Diatomineura* and comes from Chili. In List Dipt. pt. v. Suppl. 1, p. 269, Walker notes that the fore tibiæ are straight and slender, thus differing from other species of the genus.



The *Diachlorus guttatus* described by Townsend in Trans. Kansas Acad. Sci. xiii. p. 134 (1892), is referred by him to the genus *Tabanus* in 'Psyche,' viii. p. 147 (1897). With the elimination of the Bigot and other species mentioned above, the described species of *Diachlorus* are reduced to fourteen, not including Williston's doubtful species.

- D. ferrugatus*, ♀, Fabr., Syst. Antl. p. 111 (1805) (*Chrysops*); Wiedem., Dipt. Exot. i. p. 94 (1821); id. Auss. zweifl. Ins. i. p. 186 (1828) (*Tabanus*); Walker, List Dipt. i. p. 191 (1848); id. ib. pt. v. Suppl. 1, p. 148 (1854) (*Dichelacera*); Ost. Sack. Mem. Boston Soc. ii. p. 396 (1876); id. Cat. Dipt. N. Amer. 1878, p. 55; id. Biol. Centr.-Amer., Dipt. i. p. 57 (1886); Williston, Biol. Centr.-Amer., Dipt. i. Suppl. p. 263 (1900); Hine, Ohio State Univ. Bull. (7) no. 19, p. 23 (1903). [*Tabanus americanus*, Pal. Beauv., Ins. Dipt. p. 223, pl. iii. fig. 6 (1805-1821). *Diabasis atænia*, Macq., Dipt. Exot. i. p. 152 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 271 (1854). *Chrysops convergens*, Walker, l. c. *Chrysops approximans*, Walker, List Dipt. i. p. 198 (1848). *Tabanus Rondanii*, Bell., Ditt. Messicana, i. p. 168, pl. ii. fig. 11 (1859).]—North America.
- D. curvipes*, ♀, Fabr., Syst. Antl. p. 107 (1805) (*Hæmatopota*); Wiedem., Dipt. Exot. i. p. 90 (1821); id. Auss. zweifl. Ins. i. p. 176 (1828) (*Tabanus*); Macq., Hist. Nat. Dipt. i. p. 208 (1834); Walker, List Dipt. pt. v. Suppl. 1, p. 271 (1854) (*Diabasis*). [*Chrysops varipes*, Walker, List Dipt. pt. v. Suppl. 1, p. 289 (1854); Ric., Ann. & Mag. Nat. Hist. (7) viii. p. 309 (1901).]—South America.
- D. bicinctus*, ♀, Fabr., Syst. Antl. p. 102 (1805); Wiedem., Auss. zweifl. Ins. i. p. 191 (1828) (*Tabanus*); id. Dipt. Exot. i. p. 105 (1821) (*Chrysops*); Macq., Hist. Nat. Dipt. i. p. 207 (1834); Walker, List Dipt. pt. v. Suppl. 1, p. 270 (1854) (*Diabasis*).—Brazil.
- D. podagricus*, ♀, Fabr., Syst. Antl. p. 108 (1805); Wiedem., Dipt. Exot. i. p. 98 (1821); id. Auss. zweifl. Ins. i. p. 219 (1828); Macq., Hist. Nat. Dipt. i. p. 212 (1834) (*Hæmatopota*); Macq., Dipt. Exot. i. p. 151 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 269 (1854) (*Diabasis*).—Brazil.
- D. globicornis*, ♀, Wiedem., Dipt. Exot. i. p. 96 (1821); id. Auss. zweifl. Ins. i. p. 190 (1828) (*Tabanus*); Macq., Hist. Nat. Dipt. i. p. 208 (1834); Walker, List Dipt. pt. v. Suppl. 1, p. 271 (1854) (*Diabasis*).—Brazil.
- D. glaber*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 192 (1828) (*Tabanus*); Macq., Hist. Nat. Dipt. i. p. 208 (1834); Walker, List Dipt. pt. v. Suppl. 1, p. 270 (1854) (*Diabasis*).—Brazil.
- D. livitatus*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 151 (1828) (*Tabanus*); Macq., Hist. Nat. Dipt. i. p. 212 (1834) (*Hæmatopota*); Walker, List Dipt. pt. v. Suppl. 1, p. 270 (1854) (*Diabasis*). [*Chrysops inornatus*, Walker, List Dipt. i. p. 199 (1848); Ric., Ann. & Mag. Nat. Hist. (7) viii. p. 309 (1901).]—Brazil.
- D. scutellatus*, ♀, Macq., Dipt. Exot. i. p. 151, pl. xviii. fig. 2 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 269 (*Diabasis*).—Cayenne.
- D. fuscipennis*, ♀, Macq., Dipt. Exot. i. p. 152 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 271 (1854) (*Diabasis*).—Brazil.
- D. interruptus*, ♀, Macq., Dipt. Exot. i. p. 152 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 271 (1854) (*Diabasis*).—Brazil.
- D. diversipes*, ♀, Macq., Dipt. Exot. Suppl. 3, p. 13 (1846); Walker,



- List Dipt. pt. v. Suppl. 1, p. 270, pl. i. fig. 5 (1854) (*Diabasis*); Wulp, Notes Leyden Museum, vii. p. 81 (1885).—Brazil.
- D. flavipennis*, ♀, Macq., Dipt. Exot. Suppl. 4, p. 35 (1850); Wulp, Cat. Dipt. S. Asia, p. 64 (1896) (*Diabasis*).—Philippines.
- D. ochraceus*, ♀, Macq., Dipt. Exot. Suppl. 4, p. 36 (1850) (*Diabasis*).—Brazil.
- D. varipes*, Rondani, Studi Entom. di Baudi Truqui, i. p. 105 (1848) (*Diabasis*).—Brazil.

The following table is drawn up for the species contained in the British Museum collection:—

- |  |                                |
|--|--------------------------------|
| 1. Abdomen black. Wings with a dark band..   | <i>scutellatus</i> , ♀, Macq.  |
| Abdomen yellowish. Wings with the apex dark .....                                    | 2.                             |
| 2. Abdomen with two black stripes .....  | <i>bivittatus</i> , ♀, Wiedem. |
| Abdomen with an indistinct yellow median stripe.....                                 | 3.                             |
| 3. Thorax yellow, with brown stripes. Wings with yellow fore border and stigma ..... | <i>curvipes</i> , ♀, Fabr.     |
| Thorax not striped. Wings with brown fore border and stigma .....                    | <i>ferrugatus</i> , ♀, Fabr.   |

*Diachlorus ferrugatus*, ♀, F.

One female from Mexico.

Five females from Belize, Orange Walk, Brit. Honduras, presented by the Colonial Secretary; one female from Arroyos, Isidro (Townsend Coll.).

Type of *C. convergens*, ♀, Wlk., 284 (Miller Coll.).

Type of *C. approximans*, ♀, Wlk. (*Doubleday*), Florida.

One female from Panzos, Guatemala (*Champion*), Biol. Centr.-Am. Coll.

*Diachlorus curvipes*, ♀, Wiedem. *Fabr.*

Type of *Chrysops varipes*, ♀, Walker, from Para (Saunders Coll.), and another female from the same place (Bates Coll.); one female from St. Paul's (Bates Coll.), 59. 74; one female from Manaos, 12. 2. 96 (*Austen*); one female from Gurupa, 23. 1. 96 (*Austen*). In the Walker type the fore legs are not so dark as is usual in this species, being a faint yellowish brown. This species is nearly allied to *D. ferrugatus*, but may be distinguished by the brown stripes on the yellow-haired thorax, consisting of a brown stripe on each side, beginning on a level with the shoulders far from the fore border of the thorax, continued to the posterior border, with a branch diverging from it and running to the base of the wing, which is yellow on the fore border, with the apex more



widely brown than in *D. ferrugatus*, but the stigma is yellow, not brown, and the veins yellow; the legs are also paler, the base of the hind tarsi white besides those of the middle tarsi, as stated by Wiedemann.

*Diachlorus bivittatus*, Wiedem.

This species is easily distinguished from *D. ferrugatus*, to which it is very similar in general appearance and colouring, by the dark stripes on the abdomen, and the dark brown of the wing is not so extended at the apex.

Female type, *Chrysops inornatus*, Walker, from Brazil.

One female from Rio de Janeiro, 4. 7. 99 (*Dr. Lutz*), presented by C. B. Rhind, Esq.

*Diachlorus scutellatus*, ♀, Macq.

One female from British Guiana (*Low*), 1901.

The scutellum, described by Macquart as red or yellow, is so densely covered with grey tomentum that it appears grey, as does also the base of the thorax; there are traces of yellow pubescence on the grey colour; otherwise this specimen agrees with Macquart's description.

STIBASOMA, Schiner.

*Stibasoma*, Schiner, Verh. zool.-bot. Gesellsch. Wien, xvii. p. 310 (1867); id. Reise Novara, p. 93 (1866); Ost. Sacken, Biol. Centr.-Am., Dipt. i. p. 57 (1886).

This genus is distinguished by the short, stout, strongly arched abdomen and the dilated curved fore tibiæ, which serve to separate it from *Tabanus*; the shape of the antennæ, with the third joint furnished with a tooth, and the absence of metallic scales or colouring distinguish it from *Selasoma* and *Lepidose/aga*. It was formed for *Tabanus theotænia*, Wiedem., and all the species, except one from N. America, belong to S. America.

The described species number six.

- S. theotænia*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 136 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 200 (1854) (*Tabanus*); Schiner, Reise Novara, p. 94, pl. ii. fig. 6 (1866); Williston, Kans. Univ. Quart. iii. p. 194 (1895).—Monte Video, Brazil.
- S. fulvohirtum*, ♀, Wiedem. l. c. p. 155; Walker, List Dipt. pt. v. Suppl. 1, p. 150 (*Tabanus*); Schiner, Reise Novara, p. 94 (1866); Ost. Sacken, Biol. Centr.-Am., Dipt. i. p. 57 (1886). [*Tabanus compactum*, ♀, Walker, l. c. p. 222.]—Brazil, Amazons.
- S. tristis*, ♀, Wiedem., l. c. p. 164; Walker, l. c. p. 200 (*Tabanus*); Schiner, Reise Novara, p. 94 (1866).—Brazil.



*S. dives*, ♀, Walker, List Dipt. i. p. 166 (1848) (*Tabanus*).—Amazons.  
*S. bicolor*, ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 636 (1892).—Brazil.  
*S. pachycephalum*, ♂, Bigot, l. c. p. 636.—Mexico.

- |  |                                  |
|--|----------------------------------|
| 1. Black species. Abdomen yellow at base .   | 2.                               |
| Black species, with the first two segments yellow at the sides .....                         | <i>bicolor</i> , ♀, Bigot.       |
| Species with black abdomen, the posterior borders of segments white-haired .....             | <i>fulvohirtum</i> , ♀, Wiedem.  |
| Species with red-brown abdomen, the posterior borders of segments bright yellow-haired ..... | <i>dives</i> , ♀, Walker.        |
| 2. Wings black, lighter at apex .....  | <i>theotænia</i> , ♀, Wiedem.    |
| Wings yellow, smoky grey at apex .....   | <i>tristis</i> , ♀, Wiedem.      |
| Wings clear, with two brown bands ....   | <i>pachycephalum</i> , ♂, Bigot. |

*Stibasoma dives*, ♀, Walker.

Type ♀, no locality given, and another female from Amazons (*Bates*), 66. 53.

A large-bodied species, distinguished by the bright yellow hairs on the hind borders of the segments. The type has lost its head, but there is no doubt of the identity of the other perfect specimen with it.

Face black, with black pubescence; the palpi and antennæ black, the latter with the long horn on the first ring of the third joint, and the short four remaining rings ending in a point; forehead black, narrow. Thorax and scutellum brown, with black pubescence on the dorsum and at the sides. Abdomen reddish brown with ferruginous pubescence, the hind border of each segment fringed with bright yellow hairs; underside of abdomen brown with the yellow bands distinct. Legs black with black pubescence, which becomes fringe-like on the fore and hind tibiæ. Wings grey, yellow at the base and on the fore border, with yellow veins.

Length 18 mm.

*Stibasoma fulvohirtum*, ♀, Wiedem.

*Tabanus compactum*, ♀, Walker.

Type of *T. compactum*, ♀, Wlk., from Ega, Amazons (*Bates*), 51. 43, and another female specimen from Panama (*Champion*), Biol. Centr.-Am. Coll.

The remarks by Schiner and Osten Sacken amending the original description certainly apply to the two specimens mentioned above.

*Stibasoma pachycephalum*, ♂, Bigot.

Two males (*not* females as stated by the author) from Mexico.



These probably belong to this genus and form a distinct species; but the antennæ being defective, it is impossible to speak with certainty; it is the only species of the genus as yet described with brown markings on the wings.

*Stibasoma bicolor*, ♀, Bigot.

Two females from Brazil.

This is a small black species, the first two segments of the abdomen yellow at the sides, the wings hyaline tinged with yellow at the base and on the fore border and with yellow veins. The long tooth on the third joint of the antennæ reaches the second ring, which, together with the remaining three, is small and short, the last one ending in a point.

#### ACANTHOCERA, Macquart.

*Acanthocera*, Macq., Hist. Nat. Dipt. i. p. 209 (1834); Loew, Dipt. Südafrik. p. 31 (1860); Schiner, Reise Novara, p. 95 (1866).

This genus was not clearly defined by Macquart, who founded it on *Hæmatopota longicornis*, Fabr., which Loew states Macquart had never seen, and Schiner believes he had never seen any species belonging to the genus; he did not clearly distinguish it from *Dichelacera*, and actually re-described a specimen of *Acanthocera longicornis*, F., as *Dichelacera longicornis*. Schiner gives the shape of the antennæ as the chief characteristic, being long and slender, the first joint nearly as long as the third, which is divided into nearly equal divisions; in *Dichelacera* the lengthened first joint is always shorter than the third.

Loew considers the true characters of the genus are:—the long, slender, nearly cylindrical body, the depressed head, the face with tubercles, the lengthened first joint of the antennæ, the great length of the third joint, hairy to the point, with a long tooth at its base, and the unusually great development of the last four divisions.

The tooth of the third joint of antennæ seems to vary from the long one in *A. longicornis* to a small one in *A. extincta* and *A. coarctata*, if Wiedemann's descriptions are accurate. Schiner's statement that the first joint is nearly as long as the third will not hold good, at least in *A. marginalis*, Wlk.; the first joint is usually about twice the length of the second, but Schiner gives it as four times as long in his description of *A. trigonifera*.

The genus may be distinguished by the long, slender antennæ, the first joint long, which will distinguish it from *Dichelacera*, but not so long as the third, which is furnished



with a tooth; the long slender abdomen with yellow bands or spots, the wings marked with brown, and the whitish tibiæ or tarsi seem typical of the genus, at least for all the species as yet described.

There are five species known, all from South America:—

- A. longicornis*, ♀, Fabr., Ent. Syst. iv. p. 371 (1794); id. Syst. Antl. p. 103 (1805) (*Tabanus*); Wiedem., Dipt. Exot. i. p. 98 (1821); id. Auss. zweifl. Ins. i. p. 213 (1828) (*Hæmatopota*); id. Hist. Nat. Dipt. i. p. 209 (1834); Macq., Dipt. Exot. i. p. 114, pl. xvi. fig. 2 (1838) (*Dichelacera*); Walker, List Dipt. pt. v. Suppl. 1, p. 267 (1854). [*Hæmatopota triangularis*, Wiedem., Zool. Mag. iii. p. 44 (1819).]—Brazil.
- A. exstincta*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 214 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 268 (1854); Loew, Dipt. Südafrik. p. 46 (1860).—Montevideo.
- A. coarctata*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 578 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 295 (1854) (*Hæmatopota*); Bigot, Bull. Soc. Zool. Fr. xvi. p. 74 (1890).—Brazil.
- A. marginalis*, ♂, Walker, List Dipt. pt. v. Suppl. 1, p. 268 (1854).—Brazil.
- A. trigonifera*, ♀, Schiner, Reise Novara, p. 95 (1866).—South America.
- |   |                                  |
|---|----------------------------------|
| 1. Species with the tooth of the third joint of the antennæ small .....                                       | 2.                               |
| Species with the tooth of the third joint of the antennæ long .....   | 3.                               |
| 2. Abdomen constricted at the base .....  | <i>coarctata</i> , ♀, Wiedem.    |
| Abdomen not so constricted .....  | <i>exstincta</i> , ♀, Wiedem.    |
| 3. Wings black-brown, a clear spot in the middle, but no clear space between the apex and the anal cell ..... | <i>trigonifera</i> , ♀, Schiner. |
| Wings with brown markings, the space between the apex and the anal cell clear.                                | 4.                               |
| 4. Wings with a dark band across the middle.  | <i>longicornis</i> , ♀, F.       |
| Wings with no such dark band .....  | <i>marginalis</i> , ♂ ♀, Wlk.    |

*Acanthocera coarctata*, ♀, Wiedem.

Probably belongs to this genus, as Wiedemann states it belongs to the group comprising *A. longicornis* and *A. exstincta*, the tooth of the third joint of antennæ being more like that of the last-named species, of which he suggests it might be the other sex, yet he speaks of both the species as females only.

*Acanthocera marginalis*, ♂ ♀, Walker.

One female type from Para, Brazil (Bates Coll.), 51. 147; one male from River Amazons, Brazil (Bates Coll.), 66. 53; one female from same locality (Saunders Coll.), 73. 34; one female, Ega, River Amazons (Bates Coll.), 66. 53.

This species cannot be identical with *A. exstincta*, Wiedem.,



as Loew suggests, the tooth on the third joint of the antennæ in this type being long, not very short as Wiedemann states of *A. exstincta*; the brown apex of the anal cell is not mentioned by him in his description, and not all the segments of the abdomen are bordered with yellow in Walker's type.

Brown species with golden-yellow stripes on the thorax and bands on the abdomen, the wings almost wholly clear with no dark band across the middle of the wing. Face brown, under the antennæ shining brown, at the sides black with whitish tomentum, the forehead brown, the frontal callus above the antennæ triangular with the point towards the vertex, two grey stripes proceeding from the sides of the triangle meet at its apex. Antennæ longer than the thorax; the first two joints yellow with black pubescence, the first one long, the second barely half as long, cylindrical, the third nearly three times as long as the first joint, rufous at its base, then brown, the same width throughout, except at the extreme base where the tooth begins, where it is slightly broader, becoming narrower at its apex; the long tooth reaches the second ring, the last four rings being all of equal length, but together longer than the basal one. Thorax black-brown, two yellow stripes and a yellow spot at the side formed of yellow pubescence; the breast the same colour with a yellow stripe continued from the spot, with grey hairs and tomentum; scutellum yellow. Abdomen reddish brown, in the other specimens blackish brown with yellow pubescent bands on the posterior borders of the first two segments and a white pubescent band on the third; the white band is wanting in two of the specimens and is yellow in another; the pubescence on the dorsum black, some white hairs on the anterior segments, the underside with two white bands. Legs brown, the base of the anterior and posterior tibiæ, the whole of the middle tibiæ, and the first tarsal joint of all white, in some specimens the middle tibiæ are wholly brown or only white at the base. Wings with the fore border to the apex, the extreme base, and the apex of the anal cell brown.

Length 10 mm.

*Acanthocera longicornis*, ♀, Fabr.

Two females from Brazil.

*Acanthocera trigonifera*, ♀, Schiner, is described as a magnificent new species, the first antennal joint being nearly four times as long as the second, and the third distinctly longer than the first, the tooth reaching to the middle of the third joint.



## DICHELACERA, Macquart.

*Dichelacera*, Macq., Dipt. Exot. i. p. 112 (1838); Rondani, Nuovi Ann. Sci. Nat. Bologna, (3) ii. p. 192 (1850); id. Archiv. Canestr. iii. p. 78 (1863); Loew, Dipt. Südafrik. p. 31 (1860); Schiner, Reise Novara, p. 96 (1866).

This genus was formed by Macquart for the small group divided off from *Tabanus*, represented by *D. cervicornis*, *damicornis*, and *T-nigrum*, Wiedem., having a long tooth at the base of the third joint of the antennæ, all from S. America. In spite of his remark that this character was not distinctive of the genus, many South-American species of *Tabanus* possessing it (see Dipt. Exot. i. p. 113), other authors, especially Bigot and Walker, have indiscriminately placed any *Tabani* from S. America with the long tooth to antennæ in this genus, ignoring their dissimilarity in other respects to *D. cervicornis* &c. and their general *Tabanus*-like appearance. It would seem imperative to restrict to this genus (at least for the present till the South-American *Tabani* have been thoroughly worked out) the small group of which *D. cervicornis* is the type; these are distinguished as rather small flies of a long slender type, with a banded thorax and abdomen, and brown markings on the wings, with a slender third joint of the antennæ furnished with a tooth, and usually a rather lengthened first joint; these characteristics seem as yet all that divide them from *Tabanus*, though their general appearance and shape will easily distinguish them, as recognized by Loew.

Schiner distinguishes *Dichelacera* from *Acanthocera* by the rather lengthened first joint of the antennæ, which, together with the slender shape, he considers is the only safe distinction that divides it from *Tabanus*; the first joint being always shorter than the third, which is shaped and ringed as in *Tabanus*, with a long tooth at the base, will further distinguish it from *Acanthocera*.

Restricting the genus as suggested above, all Bigot's species (with the exception of *D. longirostris*, which is a species of *Silvius*) should be relegated to *Tabanus*, and will doubtless prove in many instances to be synonyms of previously described species from S. America. Of Walker's species, *D. bifacies*, *multifascia*, and *fasciata* will belong to *Dichelacera in sensu stricto*, the latter being a synonym of *D. cervicornis*; the remainder of his species will probably prove to belong to *Tabanus*. Of the Wiedemann species included in *Dichelacera*, some seem to have been placed there by Walker only, such as *D. flava* and *D. capreolus*, which may perhaps



more properly belong to *Tabanus*. *D. alcicornis* and *D. Januarii* may belong to the group represented by *D. cervicornis*, though the former is described as having stripes, not bands, on the thorax. Of the species described and placed by Macquart in his genus, I have seen only *D. marginata*, which resembles *D. cervicornis* in colouring &c. *D. unifasciata*, he states, is related to *D. alcicornis*, Wiedem., and *D. immaculata* to *D. flava*, Wiedem.; *D. binotata* and *D. longicornis* belong to the genus *Acanthocera*. *D. rufa*, he suggests, may be a variety of *D. Januarii*, Wiedem., but Rondani renamed it *Tabanus brasiliensis*. *D. testacea* and *D. fuscipennis* do not seem to have the typical colouring and shape of the *cervicornis* group. *D. scapularis* seems related, so far as the markings of the wing are concerned, to *D. marginata*, and from Bellardi's figure appears likely to belong to the genus *in sensu stricto*, though in colouring it is black.

Of Walker's species, *D. sparsa*, *repanda*, *prætereuns*, *transposita*, *vacillans*, and *abiens* will more properly belong to *Tabanus*. *D. fasciata* and *multifasciata* prove to be synonyms of *D. cervicornis*, *D. hinnulus* of *D. marginata*, and *D. bifacies* alone seems a distinct species. *D. nubipennis*, Rondani, has hairy eyes, apparently not usual in this genus, and from the description I should doubt its being correctly placed in this genus.

The following list includes the described species of *Dichelacera*, excluding those which appear more correctly to belong to *Tabanus*; one or two are inserted with a query as to which genus they belong:—

- D. cervicornis*, ♀, Fabr., Syst. Antl. p. 100 (1805); Wiedem., Dipt. Exot. i. p. 79 (1821); id. Auss. zweifl. Ins. i. p. 157 (1828); Macq., Hist. Nat. Dipt. i. p. 197 (1834) (*Tabanus*); Walker, List Dipt. pt. v. Suppl. 1, p. 153 (1854); Schiner, Reise Novara, Dipt. p. 94 (1866); Ost. Sack., Biol. Centr.-Amer., Dipt. i. p. 58 (1886); Will., ibid. Suppl. p. 263 (1900). [*D. fasciata*, ♀, Walker, Dipt. Saund. i. p. 68 (1848); Ost. Sack., Cat. N. Amer. Dipt. (1878) p. 55, note. *D. multifasciata*, ♀, Walker, l. c. p. 69.]—Central and S. America.
- ✓ *D. damicornis*, ♀, Fabr., Syst. Antl. p. 101 (1805); Wiedem., Dipt. Exot. i. p. 87 (1821); id. Auss. zweifl. Ins. i. p. 159 (1828); Macq., Hist. Nat. Dipt. i. p. 97 (1834) (*Tabanus*); id. Dipt. Exot. i. p. 112 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 151 (1854).—Brazil.
- ✓ *D. T-nigrum*, ♀, Fabr., Syst. Antl. p. 101 (1805); Wiedem., Auss. zweifl. Ins. i. p. 160 (1821) (*Tabanus*); Macq., Dipt. Exot. i. p. 112 (1838); Walker, List Dipt. pt. v. Suppl. 1, pp. 152, 325 (1854); Will., Kans. Univ. Quart. iii. p. 193 (1895), under *Tabanus T-nigrum*.—S. America.
- *D. Januarii*, ♀, Wiedem., Zool. Mag. iii. p. 43 (1819); id. Dipt. Exot. i. p. 94 (1828); id. Auss. zweifl. Ins. i. p. 162 (1828) (*Tabanus*); Macq., Dipt. Exot. Suppl. 3, p. 10 (1848); Walker, List Dipt. pt. v. Suppl. 1, p. 153 (1854); Schiner, Reise Novara, Dipt. p. 95 (1866).—Brazil and Rio Janeiro.
- D. alcicornis*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 158 (1828) (*Tabanus*);



- Walker, List Dipt. i. p. 190 (1848); id. ib. pt. v. Suppl. 1, p. 154 (1854).—Brazil.
- ? *D. capreolus*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 162 (1828) (*Tabanus*); Walker, List Dipt. pt. v. Suppl. 1, p. 152 (1854).—Brazil.
- ? *D. flava*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 163 (1828) (*Tabanus*); Walker, List Dipt. pt. v. Suppl. 1, p. 153 (1854).—Montevideo.
- ✓ *D. immaculata*, ♀, Macq., Dipt. Exot. i. p. 115 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 153 (1854).—Brazil.
- ✓ *D. unifasciata*, ♀, Macq., Dipt. Exot. i. p. 115 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 155 (1854).—Brazil.
- ? *D. testacea*, ♀, Macq., Dipt. Exot. Suppl. 1, p. 29, pl. iii. fig. 10 (1846); Walker, List Dipt. pt. v. Suppl. 1, p. 153 (1854).—Colombia.
- D. rufa*, ♀, Macq., Dipt. Exot. Suppl. 2, p. 13 (1846); Walker, List Dipt. pt. v. Suppl. 1, p. 150 (1854). [*? Tabanus brasiliensis*, Rondani, Nuovi Ann. d. Sci. Nat. di Bologna, (3) ii. p. 192 (1850).]—Brazil.
- ? *D. fuscipennis*, ♀, Macq., Dipt. Exot. Suppl. 2, p. 14 (1846); Walker, List Dipt. pt. v. Suppl. 1, p. 150 (1854).—Brazil.
- D. scapularis*, ♀, Macq., Dipt. Exot. Suppl. 2, p. 15 (1846); Bellardi, Ditt. Messicana, i. p. 53, pl. ii. fig. 12 (1859); Walker, List Dipt. pt. v. Suppl. 1, p. 149 (1854); Osten Sacken, Cat. Dipt. N. Amer. p. 55 (1878); id. Biol. Centr.-Am., Dipt. i. p. 59 (1886).—Mexico.
- D. marginata*, ♀, Macq., Dipt. Exot. Suppl. 2, p. 30 (1846); Walker, List Dipt. pt. v. Suppl. 1, p. 152 (1854). [*D. hinnulus*, Walker, Newman, Zoologist, viii. Append. cxxii. (1850); Walker, List Dipt. pt. v. Suppl. 1, p. 153 (1854).]—Cayenne, Para.
- D. bifacies*, ♀, Walker, List Dipt. i. p. 191 (1848).—Brazil.
- ? *D. nubipennis*, Rondani, Ann. Soc. Nat. Modena, iii. p. 39 (1868).—Mendoza, Argentine.
- ? *D. scutellata* (? *Diachlorus*), Williston, Kansas Univ. Quart. iii. p. 193 (1895).—Brazil.
- D. pulchra*, ♂ ♀, Williston, Biol. Centr.-Am., Dipt. i. Suppl. p. 263, pl. iv. figs. 22, 22 a (1900).—Mexico.

The following Walker species described under *Dichelacera* are replaced in *Tabanus* for the present, though some of the species are not so distinctively *Tabanus*-like in form and appearance as those of Bigot:—

- Tabanus sparsa*, ♀, Walker, Dipt. Saund. p. 71 (1846). A species with brown spotted wings.—Brazil.
- Tabanus prætereuns*, ♀, Walker, l. c. p. 70, pl. ii. fig. 6. With dark brown wings.—South America.
- Tabanus vacillans*, ♀, Walker, l. c.—Brazil.
- Tabanus repanda*, ♀, Walker, List Dipt. i. p. 190 (1848). With brown spots on the wings.—Venezuela.
- Tabanus abiens*, ♀, Walker, l. c. p. 191; O. S., Cat. Dipt. N. Amer. p. 55 (1878). Has no large tooth, only a slight projection on the third joint of the antennæ. The type is a female, not a male as stated by Walker.—W. Indies.
- Tabanus transposita*, ♀, Walker, List Dipt. pt. v. Suppl. 1, p. 151 (1854). Besides the type there are four other females presented by Theobald (coll. Rosenberg) from Ecuador. This species is not of the usual type of *Tabanus*, having a long slender abdomen.—The type is from the West Coast of America.

The Bigot species described under *Dichelacera* but not



belonging to this genus are the following ; they all have a tooth on the third antennal joint :—

*Tabanus pachypalpis*, ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 631 (1892).

A large species.—Mexico.

*Tabanus japonicus*, ♀, Bigot, l. c. A smaller species.—Japan.

*Tabanus satanicus*, ♀, Bigot, l. c. A species with a dark red scutellum and brownish wings.—Brazil.

*Tabanus castaneus*, ♀, Bigot, l. c. The antennæ are broken off.—Brazil.

*Tabanus marmoratus*, ♀, Bigot, l. c. p. 633. These seem identical with *T. albopictus*.—Brazil.

*Tabanus albopictus*, ♀, Bigot, l. c. The wings have a brown band and a square brown spot on the fork of the third vein.—Brazil.

*Tabanus peruvianus*, ♀, Bigot, l. c. The wings have an irregular band.—Peru.

The species described by Bigot as *Dichelacera longirostris*, ♀, is a species of *Silvius* not previously described under this latter genus. I propose to redescribe it as

*Silvius longirostris*, ♀.

*Dichelacera longirostris*, ♀, Bigot, Ann. Soc. Entom. Fr. (3) vii. p. 128 (1859).

There are two females from Madagascar, either of which may have been Bigot's type. I have based my redescription on the one marked 35.

This species will come under those with a long tooth-like projection on the third joint of the antennæ after *S. pertusus*, Loew, in my table of species of *Silvius* from the Ethiopian Region (Ann. & Mag. N. H. 1901, viii. p. 295), thus :—

Brown. Legs dull yellow. Wings clear.

A brown species with clear wings and a rather long proboscis.

Face greyish yellow, shining brown under the antennæ, some silvery hairs bordering the eyes. Palpi long, yellow, with black pubescence ; the proboscis as long as the anterior femora. Antennæ yellow, the third joint redder, becoming darker towards the apex ; the first joint twice as long as the second, both with black pubescence ; the tooth of the third joint is long, reaching the first of the annulations, curved, with fine hairs on its outer edge ; the last ring is the longest of the four, ending in a point. Forehead reddish brown, narrow, consisting of a raised ridge along the whole length, the ocelli situated on it at the vertex. Thorax yellowish with four brown stripes ; the sides and breast greyish with a few yellowish hairs ; the scutellum brown. Abdomen brown, pale yellowish in the centre of the first segment and along the anterior border of the second segment ; this paler colour appears on the other segments under the dark colour on the anterior border ; the underside pale yellow, with some



dark shading of the brown colour. Legs dull yellow, the fore legs, all the femora, and the last four joints of the tarsi browner. Wings hyaline with a brown stigma, veins yellowish.

Length 10 mm.

Mr. Verrall has kindly presented these to the Natural History Collection (British Museum).

The following table is drawn up for the six species represented in the British Museum Collection :—

1. Wings hyaline, with two brown half-bands united, or one brown band, and brown shading in the anal cell . . . . .	2.
Wings yellowish, with the apex and the inner border brown . . . . .	<i>marginata</i> , ♀, Macq.
2. Abdomen yellowish, with only the apex brown . . . . .	<i>T-nigrum</i> , ♀, F.
Abdomen yellowish or whitish, with brown bands . . . . .	3.
3. Legs black, the middle and fore tibiæ white. Legs yellowish . . . . .	<i>dumicornis</i> , ♀, F.
4. The band of the wing as two half-bands . . .	4.
The band of the wing as one, with a brown stripe on the third longitudinal vein to border; tooth of antennæ very small . . .	<i>cervicornis</i> , ♀, F.
The band of the wing as one, but no brown stripe; tooth of antennæ not small . . . . .	<i>bifacies</i> , ♀, Walker.
	<i>grandis</i> , ♀, sp. n.

*Dichelacera cervicornis*, ♀, Fabr.

One male from St. Paul's, Amazons (Bates Coll.), 59. 74 (it was labelled *D. brunivitta*, evidently a MS. species of Walker's).

One female type of *fasciata*, Wlk. (Saunders Coll.), 68. 4; one female type of *multifascia*, Wlk., from Para (Saunders Coll.), 68. 4; three females from the Amazons (Bates Coll.), 66. 53; one female from Brazil; one female from David, Chiriqui, Panama (*Champion*), Biol. Centr.-Am. Coll.

This is a species that seems to vary in size and colouring, as remarked by Osten Sacken in Biol. Centr.-Am., Dipt. i. p. 58, the colour varying from pale yellow to dark brown. Walker's *D. multifascia* is nothing but a large specimen of *D. cervicornis*, measuring 11 mm., and, as surmised by Osten Sacken, his *D. fasciata* is a specimen of this species.

*Dichelacera damicoruis*, ♀, Fabr.

Two females from Para (Saunders Coll.), 68. 4; one female from Villa Nova, Amazons (Bates Coll.), 55. 75; one female from Para (Bates Coll.), 66. 53.

This species is distinguished from *D. cervicornis* by the yellow-brown shining tubercle on the face below the antennæ, and by the brown legs, with only the middle and anterior



tibiæ and the basal joint of the middle tarsi whitish. The wings may be more accurately described as having the fore border brown as far as the apex, and extending as a band across the wing through the upper half of the discal cell to the posterior border and anal cell, also prolonged on the third longitudinal vein and for one third of the length of the fifth longitudinal vein.

*Dichelacera T-nigrum*, ♀, Fabr.

One female from Santarem (Bates Coll.), 53. 72, with a label attached bearing the name *trifascia*, evidently a MS. name of Walker's.

There is another female from the forest, Santarem, Lower Amazons, 3. 96 (Austen Coll.), 96. 229, answering to the description of this species; but there are no brown spots on the third segment of the abdomen, which is yellow with a brown apex, and the thorax is more golden-haired than brown-haired as Wiedemann states.

*Dichelacera marginata*, ♀, Macq.

One female from Brazil (Bates Coll.), 49. 2; one female from Para (Wallace & Bates Coll.), 50. 2. These were described by Walker as *D. hinnulus*; I cannot distinguish which of the two is the type. One female from West Coast of America, from Surveying voyages of H.M.SS. 'Herald' and 'Pandora,' presented by Capt. Kellett and Lieut. Wood, R.N., 50. 12. Two females from Ecuador, 1903. 74 (Rosenberg Coll.), presented by Mr. Theobald.

The species described by Walker is apparently identical with *D. marginata*; the specimens from Ecuador are rather larger and the abdomen darker coloured. Macquart's type came from Cayenne.

The wings, rather vaguely described by Macquart, are hyaline, with the apex from just below the base of the fork of the third vein brown, which colour also extends over the apex of the discal cell and as far as the fifth posterior cell, and on the posterior border the apical cell is filled out with brown, but is yellow at its extreme base; the fore border is yellowish and the veins reddish yellow. The third joint of the antennæ, wanting in Macquart's type, is here yellowish at the base, brown on the upper half, the tooth long, reaching to the second ring; the last four rings are nearly all equal, with long hairs on the sides.

*Dichelacera bifacies*, ♀, Walker.

One female, type, from Para, presented by Mrs. T. P. G. Smith, 45. 56.



In the marking of the wings and the colouring of the abdomen and thorax this species is typical of the genus *in sensu stricto*, though the tooth of the third antennal joint is unusually small, it might be almost described as a spine, which is shorter than the basal portion of the antennæ below it, there are fine black bristles on its outer edge, and it ends in a sharp point; the last four divisions of the joint are together about the length of the first division, and are equal in size, the last one ending in a point, being a little longer, all bordered with fine black pubescence; the first two joints are yellow with black hairs, which are most conspicuous on the upper corner of the second joint; the third yellow, darker at the tip. Face yellow, shining under the antennæ; the palpi yellow, curved, with black pubescence; the frontal callus brown, shining, oval, reaching the eyes, with its apex on the anterior border towards the vertex. Thorax yellowish brown with a brown band; the shoulders, anterior border, and the part behind the brown band yellow-haired; the scutellum brown. The first two segments of the abdomen yellow with a brown median stripe; the third and fourth brown, each with a golden-yellow-haired band on the posterior border, equal in width to the brown part; the fifth with a narrow border of yellow hairs; the sixth brown; the underside yellow, brown at the sides and on the apex. Legs pale yellow, the hind legs browner.

Length 8 mm.

*Dichelacera grandis*, ♀, sp. n.

Three females from Belize, Orange Walk, British Honduras, Sept. 1899. Presented by the Colonial Secretary.

A large species distinguished from *cervicornis* by the shape of the band of the wing.

Face yellow, with an obscure black spot under the antennæ; the palpi yellow, long, curved, with black pubescence; the hairs under head scanty and yellow. Antennæ reddish yellow, the third joint black from the annulations, long, with a long tooth; the first joint twice as long as the second; the third stout, the tooth reaching the first annulation; all the annulations about equal in size. Forehead pale yellowish; the frontal callus dark brown, shining, almost square, a raised line runs from it to the vertex, which is dusky in colour.

The thorax yellowish, golden-haired, with a brown band in the centre; scutellum brown. Abdomen reddish brown, the first segment paler with golden hairs, the anterior borders of the other segments brown with reddish posterior borders covered with fulvous hairs; underside yellowish, the apex



brown. Legs reddish yellow, the posterior tibiæ and tarsi dark brown. Wings hyaline, the fore border brown, the band beginning from near the apex, crosses the fork of the third vein, and becoming narrower crosses the apex of the discal cell and ends in the fifth posterior cell; the apex of the anal cell and its interior border are brown.

Length 12 mm.

#### DITYLOMYIA, Bigot.

*Ditylomyia*, Bigot, Rev. et Mag. Zool. (2) xi. p. 305 (1859); id. Cat. Orient. Dipt. (1891); Wulp, Cat. Dipt. S. Asia, p. 63 (1896).

This genus was formed for one species from Ceylon, which, however, on examination, proves to be a specimen of *Gastroxides*, Saunders, a genus in the division Pangoninæ: see Ricardo, Ann. & Mag. Nat. Hist. (7) viii. pp. 289, 297 (1901). (*G. ater*, ♀, Saunders, l. c. pl. v. fig. 4; ♂, Saunders, l. c. &c., should read thus, not as printed on page 298.)

*Gastroxides ornata*, ♀, Bigot.

*Ditylomyia ornata*, ♀, Bigot.

The type, by the markings of the wings and the general shape of the abdomen, bears a general resemblance to *Gastroxides ater* (Saunders), the only heretofore known species of the genus. Bigot mentions the presence of ocelli, but did not note the spines on the hind tibiæ, these two characters dividing the division Pangoninæ from Tabaninæ. The antennæ have only five rings on the third joint, not eight or nine as he supposes. In the shape of the head, the insertion of the antennæ, and the presence of the tubercles on the forehead it resembles *G. ater*, but is larger and of different colouring.

Black, with lighter hind borders to the segments of the abdomen.

Face blackish, with grey tomentum, the tumid triangular projection in the middle shining red-brown; the palpi large, flat, as long as the proboscis, dark brown with black hairs. Forehead black, shining, with two prominent tubercles, one situated near the antennæ, the other about in the middle of the forehead, neither reaching the sides; vertex reddish; the yellow ocelli are placed on a brownish, not very prominent tubercle bordered with grey which is continued along the sides of the forehead. Antennæ longer than the head, red-brown, the long spine or tooth brighter red; the first joint stout, long, the second only half as long, both with black pubescence; the third joint twice as long as the first, its first ring as long as the remaining four together, stout, bearing the long spine at its base, the second ring is the



smallest, the third and fourth about equal, the fifth as long as the last two together. The hairs below the head are blackish. Thorax reddish brown, with indistinct grey tomentum and two yellowish stripes; the scutellum yellowish red; the breast reddish, with brown tomentum and black pubescence. Abdomen black, long and pointed; the second segment widest, the first and third with yellow, the second and fourth with grey hind borders, the remaining segments black with some red on the sides; underside black. Legs reddish brown with black pubescence, the fore femora stout. Wings dark brown with clear base; a clear band in the middle crossing the base of the discal cell and extending to the fifth posterior cell, another on the apex crossing the fork of the third longitudinal vein; there is also a clear space in the anal cell, and the axillary part of the wing is clear.

Length 18 mm.

Through the kindness of Mr. Verrall this species is now placed in the British Museum Collection with the species for which the genus *Gastroxides* was formed.

L.—On some Coccidæ in the Collection of the British Museum. By E. ERNEST GREEN, F.E.S.

IN the comprehensive 'Catalogue of the Coccidæ of the World' by Mrs. M. E. Fernald is a list of some sixty species "without description or not recognizable."

Of these, the following five names are cited from the Catalogue of the British Museum, Homoptera (1852), and credited to Walker, whose descriptions were too often inadequate for recognition:—

1469. <i>Coccus caudatus</i> .	1502. <i>Lecanium australe</i> .
1489. — <i>poterii</i> .	1503. — <i>capense</i> .
1492. — <i>sinensis</i> .	

I have been given an opportunity of examining the types of these species contained in the British Museum collection, with the following result:—

No. 1469. *Coccus caudatus*, Walker, Cat. Brit. Mus., Hom. p. 1085.

Represented in the National Collection by a single male, which is an unmistakable Monophlebid. The antennæ have typical whorls of hair on the nodes. There are no fleshy caudal processes. Walker speaks of abdominal bristles about five times the length of the body; but any such appendages have now disappeared. The existing characters suggest that the so-called bristles were probably in the form





Ricardo, Gertrude. 1904. "XLIX.—Notes on the smaller Genera of the Tabaninæ of the Family Tabanidæ in the British Museum Collection." *The Annals and magazine of natural history; zoology, botany, and geology* 14, 349–373. <https://doi.org/10.1080/03745480409443020>.

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