

64. *Nemoria unilinea*.*Nemoria unilinea*, Warren, Nov. Zool. v. p. 235 (1898).

a. Rusisi Valley, 3000 feet. May.

Family Pyralidæ.

65. *Filodes costivitalis*.*Filodes costivitalis*, Guen. Réunion, p. 65.

a. Ikomba. February.

Family Crambidæ.

66. *Crambus carpherus*.*Crambus carpherus*, Hampson, Ann. & Mag. Nat. Hist. (7) i. p. 159 (1898).

a. Karonga. January.

XL. — *Further Notes on the Pangoninæ of the Family Tabanidæ in the British Museum Collection.* By MISS GERTRUDE RICARDO.

For an alphabetical catalogue of the whole family of Tabanidæ the one published by Dr. Kertész, of Budapest, January 1900, will be found very useful.

Those species marked with an asterisk (*) are in the British Museum Collection. As regards the Bigot types, I am indebted to Mr. Verrall for his courtesy in lending them to me for examination.

Silvius and its allied genera are dealt with in this paper, as a continuation of that on *Pangonia*, Latr., and its allied genera in Ann. & Mag. Nat. Hist. (7) v. p. 97 (1900).

Scepsis, Walker, Dipt. Saund. i. p. 71 (1850), should have been included in the first paper and would follow at the end of the table as:—

13 a. First joint of palpus thickened *Scepsis*, Walk.

**Scepsis nivalis*, Walker, l. c. pl. ii. fig. 7; Loew, Dipt. Südafrik. p. 15 (1860).

South America.

The type in the British Museum Collection is a female, with the antennæ wanting, but they are well figured in the plate, though the spines present on the hind tibiæ are omitted. The type is labelled South America, 68. 4 (*Saunders Coll.*).

Among the Walker types of *Chrysops* I found what I believe is a specimen of *Apocampta nigra*, Schiner, a genus belonging to the *Pangonia* group and included in the table in Ann. & Mag. Nat. Hist. (7) v. p. 98 (1900).

APOCAMPTA, Schiner.

Apocampta, Schiner, Reise Novara, p. 96 (1866).

* *Apocampta subcanus*, ♀, Walker, List Dipt. pt. i. p. 204 (1848) (*Chrysops*).

A. nigra, ♀, Schiner, Reise Novara, p. 96 (1866).

The type (female) from Australia proved on examination to be not a *Chrysops*, but apparently identical with Schiner's species, as did also another female from Mackay, Queensland, 94. 61 (*Turner*).

They agree with the description given by Schiner, but the abdomen is not so broad in the second female. Schiner describes the second joint of the antennæ as ending in a bristle ("Dorn"); in these the joint is small, with a ring of fine bristles, and black hair on the sides; the palpi have the first joint cylindrical, the second wider at its base, curved, and tapering to a point; the thorax is brownish with three black obscure stripes.

PANGONINÆ.

Hind tibiæ with spurs. Ocelli usually present.

Third joint of antennæ with five divisions. Proboscis

short *Silvius*, &c.

The genera comprised in this division of the Pangoninæ are:—*Silvius*, Meig., *Rhinomyza*, Wiedem., *Gastroxides*, Saunders, *Pronopes*, Loew, and *Chrysops*, Meig., with *Esenbeckia*, Rondani, a subgenus formed from *Silvius*.

Attempts have been made to subdivide *Silvius*, creating new subgenera, which Loew in his Dipt. Südafrik. considers unnecessary owing to the few known species of *Silvius*; *Esenbeckia* is the only subgenus left to stand for the present.

Mesomyia, Macq., created for *M. decora*, from Natal, by Macquart (Dipt. Exot. Suppl. 4, p. 38, 1850), both Loew and Schiner agree must be merged again in *Silvius*; the former considers *M. decora* is the same as his *Silvius decipiens*, but Macquart's description is too meagre for him to form a definite opinion (see Dipt. Südafrik. p. 15).

Ectenopsis, Macq. (Dipt. Exot. i. p. 111, 1838), formed for *Chrysops vulpecula*, Wiedem., the above authorities also

agree must be sunk in *Silvius* (see Schiner, Reise der Novara; Loew, Dipt. Südafrik.), the species becoming *Silvius vulpecula*.

Rhinomyza, Wiedem. (Dipt. Exot. i. p. 29, 1821), is looked upon by Loew as a doubtful genus, the only character which divides it from *Silvius* being the greater deepening of the face in the centre; he leaves it standing for the present, adding a new species and suggesting that *Silvius denticornis*, Wiedem., should belong to it.

Erodiorhynchus, Macq. (Dipt. Exot. i. p. 110, 1838), formed for *E. cristaloides*, Macq., is a synonym of *Rhinomyza edentula*, Wiedem., according to Loew, whose remarks on this and the above genus do not agree with those of Schiner ('Reise der Novara'); but Loew is followed here, as being probably most correct, Schiner's remarks on *Rhinomyza* being clearly wrong. The latter makes a new species, *Erodiorhynchus pusillus*, which should perhaps belong to *Silvius*, or more probably to *Rhinomyza*, though he does not mention the face as being concave in the centre, as it should be, if belonging to *Rhinomyza*.

Macquart's description of the genus is most inadequate and seems to give no characters which would distinguish it from *Silvius* or *Rhinomyza*; it is therefore not maintained in this paper, but merged again in *Rhinomyza* for the present.

Rondani (Archiv. Canestr. iii. p. 85, 1863) subdivides *Silvius*, creating two subgenera, and taking the hairiness or nakedness of the eyes and the closed or open posterior cell as characters on which to found them, viz.: *Veprius* for those species of *Silvius* with hairy eyes, leaving those with naked eyes in *Silvius*. It does not seem worth while to retain this subgenus. *Esenbeckia* he establishes for two species from Brazil and Chili, which have the first posterior cell of the wings closed, a characteristic peculiar to them alone, I believe, so that for the present this subgenus may be allowed to stand.

Gastroxides, Saunders, and *Pronopes*, Loew, were each formed for one species.

Rondani established the genus *Nemorius* (Prodrome Dipt. Ital. i. p. 171, 1856) for *Chrysops vitripennis*, Meig., a species with clear wings, and differing somewhat from the other European species, as Loew remarks in Dipt. Südafrik. p. 16: see also Verh. zool.-bot. Gesell. Wien, viii. p. 616 (1858), where he regards it as unnecessary to separate it from *Chrysops*; I have therefore not included the genus *Nemorius* in the following table of genera:—

PANGONINÆ.

Third joint of antennæ with five divisions. Proboscis short.
[See first part of the table of genera in Ann. & Mag. Nat. Hist. (7) v.
p. 98 (1900).]

- | | |
|--------------------------------------------------------------------------------|----------------------------|
| 14. First and second joints of antennæ short .. | 15. |
| First and second joints of antennæ long .. | 20. |
| 15. Second segment of abdomen unusually large, spurs on tibiæ small | <i>Pronopes</i> , Loew. |
| Second segment of abdomen not unusually large, spurs not unusually small | 16. |
| 16. Face concave in the middle | <i>Rhinomyza</i> , Wiedem. |
| Face not concave in the middle | 17. |

SILVIUS, Meig.

- | | |
|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 17. Wings with first posterior cell open | <i>Silvius</i> , Rond. |
| 18. Wings with first posterior cell closed | Subgenus <i>Esenbeckia</i> , [Rond.] |
| 19. Third joint of antennæ with an acute spine on the first annulation | <i>Gastroxides</i> , Saunders. |
| Third joint of antennæ with no spine on the first annulation | 20. |
| 20. Second joint of antennæ as long or nearly as long as the first joint. Wings usually with a black or brown design | <i>Chrysops</i> , Meig. |

PRONOPES, Loew.

Pronopes, Loew, Dipt. Südafrik. p. 27, pl. i. figs. 12, 13, 15, 16, 17 (1860).

This genus was formed for one species, *P. nigricans*, from the Cape of Good Hope, which is not represented in the British Museum Collection. The correct numbering of the figures in plate is as above and not as given in the work itself.

RHINOMYZA, Wiedem.

Rhinomyza, Wiedem., Nova Dipt. Gen. p. 8 (1820); id. Dipt. Exot. i. p. 59 (1821); Loew, Dipt. Südafrik. p. 15 (1860); Schiner, Reise Novara, p. 97 (1866).

Erodiorhynchus, Macq., Dipt. Exot. i. p. 110 (1838).

The described species of *Rhinomyza*, including the two species of *Erodiorhynchus* and one transferred from *Silvius*, are:—

- R. fusca*, ♀, Wiedem., Nova Dipt. Gen. p. 8 (1820); id. Dipt. Exot. i. p. 59 (1821); id. Auss. zweifl. Ins. i. p. 104, pl. i. fig. 3 (1828); Henning Jensen, Bull. Soc. Imp. Nat. Moscou, iv. p. 313 (1832); Macq., Hist. Nat. Dipt. i. p. 196 (1834); Walker, List Dipt. pt. v. Suppl. 1, p. 146 (1854); Bigot, Cat. Orient. Dipt. (1891); Wulp, Cat. Dipt. S. Asia (1896).—Java.
- R. edentula*, ♂, Wiedem., Auss. zweifl. Ins. i. p. 105 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 146 (1854); Loew, Dipt. Südafrik.

pp. 15, 26 (1860); Schiner, Reise Novara, p. 97 (1866). [*Erodiorhynchus cristatoides*, Macq., Dipt. Exot. i. p. 111, pl. vi. fig. 1 (1838); Walker, List Dipt. v. Suppl. 1, p. 146 (1854).]—Cape of Good Hope.

**R. denticornis*, ♂ ♀, Wiedem., Auss. zweifl. Ins. i. p. 111 (1828); Walker, List Dipt. pt. i. p. 192 (1848), pt. v. Suppl. 1, p. 275 (1854) (*Silvius*); Loew, Dipt. Südafrik. pp. 21, 26 (1860); Ricardo, Ann. & Mag. Nat. Hist. (7) vi. p. 163 (1900). [*Dichelacera binotata*, ♂ ♀, Macq., Dipt. Exot. i. p. 113 (1838); Schiner, Reise Novara, p. 97 (1866).]—Cape of Good Hope.

R. costata, ♂, Loew, Dipt. Südafrik. p. 26 (1860).—Cape of Good Hope.

R. pusilla, ♂ ♀, Schiner, Reise Novara, p. 97 (1860) (*Erodiorhynchus*).—Cape of Good Hope.

RHINOMYZA, Wiedem.

The third joint of antennæ with a long tooth-like projection 1.

The third joint of antennæ with no tooth-like projection 4.

1. Black, shining. Eyes hairy..... *costata*, ♂, Loew.
2. Brown. Legs blackish brown..... *fusca*, ♀, Wiedem.
3. Yellow. Legs yellow. Eyes bare..... *denticornis*, ♂ ♀, Wiedem.
4. Black, shining. Legs black and brown .. *edentula*, ♂, Wiedem.
5. Blackish brown. Legs reddish yellow.
Abdomen with white bands on posterior
borders of segments. Eyes hairy..... *pusilla*, ♂ ♀, Schiner.

The antennæ in the type of *costata* were defective, so that it is only placed under those species with a tooth-like projection of the third joint of antennæ on supposition. The species *pusilla* is placed under *Rhinomyza*, but may prove to belong more correctly to the genus *Silvius*.

Rhinomyza denticornis, Wiedem.

Three males and six females from Natal.

SILVIUS, Meigen.

Silvius, Meigen, Syst. Besch. iii. p. 27 (1820); Loew, Dipt. Südafrik. pp. 15, 21 (1860); Schiner, Reise Novara, p. 97 (1866).

Mesomyia, Macq., Dipt. Exot. Suppl. 4, p. 38 (1850).

Ectenopsis, Macq., Dipt. Exot. i. p. 111 (1838).

Veprius, Rond., Archiv. Canestr. iii. p. 18 (1863).

Loew, in his Dipt. Südafrik., should be consulted for the characters of this genus, the species of which are not very numerous.

Owing to want of material, the tables of the species have been drawn up in great part from the descriptions and are only published in the hope that they may be of some use in the identification of species, and may soon be replaced by others based on the examination of the species themselves.

In the following tables I have assumed the antennæ are simple, with no tooth or angle, when there is no express mention of such a tooth or angle in the description; the eyes in all the species not expressly mentioned as hairy are assumed to be bare.

Palæarctic Region.

The description of *S. dorsalis*, by Coquillet, seems to point to its being very nearly related to *S. vituli*, Fabr.

For the species from this region Loew's paper in the Wien. ent. Monat. ii. p. 350 (1858) should be consulted.

- **S. vituli*, ♂ ♀, Fabr., Syst. Antl. p. 97 (1805); Meig., Klass. i. p. 172 (1804); id. Syst. Besch. ii. p. 27 (1820); Loew, Wien. ent. Monat. ii. p. 350 (1858); Gobert, Rev. Monogr. d. Tabanidæ, Mém. Soc. Nord France, l. p. 45 (1883). [*? Tabanus italicus*, Fabr., Spec. Ins. ii. p. 457 (1781). *Tabanus decius*, Walker, List Dipt. pt. i. p. 171 (1848); id. pt. v. Suppl. 1, p. 274 (1854).]—Europe.
- S. alpinus*, ♀, Drapiez, Ann. Génér. d. Sc. Phys. p. 136, pl. vii. fig. 7 (1819) (*Tabanus*); Bergroth, Ent. Nachr. xiii. p. 150 (1887). [*S. hirtus*, ♂, Loew, Wien. ent. Monat. ii. p. 350 (1858); Bergroth, l. c. p. 151.]—Alps.
- S. algirus*, ♂, Meig., Syst. Besch. vi. p. 319 (1830); Macq., Hist. Nat. Dipt. i. p. 214 (1835); Lucas, Explor. Sci. Alg. iii. p. 427 (1849); Walker, List Dipt. pt. v. Suppl. 1, p. 275 (1854); Loew, Wien. ent. Monat. ii. p. 350 (1858). [*? Tabanus italicus*, Fabr., Spec. Ins. ii. p. 457 (1781); see Loew, Wien. ent. Monat. ii. p. 350 (1858).]—Algeria, S. Europe.
- S. appendiculatus*, ♂, Macq., Dipt. Exot. Suppl. 1, p. 45, pl. iv. fig. 10 (1846); Lucas, Explor. Sci. Alg. iii. p. 426 (1849); Walker, List Dipt. pt. v. Suppl. 1, p. 275 (1854); Schiner, Reise Novara, p. 97 (1866).—Algeria, Europe.
- S. ochraceus*, ♀, Loew, Wien. ent. Monat. ii. p. 351 (1858).—Mermeriza, Asia Minor.
- S. bicolor*, ♀, Bigot, Mém. Soc. Zool. France, v. p. 625 (1892).—Morocco.
- S. dorsalis*, ♀, Coquillet, Proc. U. States Mus. xxi. p. 309 (1898).—Japan.
- **S. irritans*, ♀, sp. n.—Hari-rud Valley and Khorasan, Afghanistan.

1. The third joint of antennæ simple, without a tooth or projecting angle.
2. Abdomen with spots 3.
Abdomen with no spots 4.
3. Reddish yellow. Abdomen with four whitish-yellow spots *algirus*, ♂, Meig.
Yellowish. Abdomen yellow with triangular grey dorsal spots *appendiculatus*, ♂, Macq.
4. Yellow. Abdomen brownish yellow with a yellowish central stripe. Thorax and scutellum black *bicolor*, ♀, Bigot.
5. Yellow. The pubescence on the first two joints of the antennæ and on the anterior border of the abdominal segments black. *vituli*, ♂ ♀, Fabr.

6. Yellow. Abdomen brownish yellow, browner on the posterior segments; the black pubescence more widely distributed than in *vituli*. *alpinus*, ♀, Drap.
7. Yellow. Pubescence as in *vituli*. Thorax with three brown-grey pruinose vittæ. Scutellum yellow. *dorsalis*, ♀, Coquillet.
8. Yellow. Abdomen yellow. Pubescence wholly yellow on the antennal joints and on the abdomen *ochraceus*, ♀, Loew.
9. Grey. Abdomen black with reddish-yellow bands. Eyes bare. Legs yellowish. *irritans*, ♀, sp. n.

Silvius vituli, ♂ ♀, Fabr.

One female from Polish Ukraine, 387. 43. 57 (*Dowler Coll.*), which was named *Tabanus decisus* by Walker; it is clearly identical with *S. vituli*, Fabr. Walker's name must therefore sink.

Silvius bicolor, ♀, Bigot.

Having examined the type I think this species is very probably the female of *S. algirus*, Macq. The abdomen is brownish yellow with a light yellowish stripe in the centre, formed of indistinct triangular spots, most distinct from the third to the sixth segment. The first two joints of the antennæ have black pubescence. The wings have an appendix.

Silvius irritans, ♀, sp. n. See Trans. Linn. Soc. London, (2) v. p. 133 (1889).

Eight females from Hari-rud Valley and Khorasan, mentioned in the above 'Transactions,' with the following note by Dr. Aitchison, the collector on the Afghan Boundary Commission:—

"Near Mt. Do Shakh my ponies were nearly driven mad with the numbers of this very small species; although in ones or twos they did not give much trouble, when in large numbers, as I saw them, they were extremely irritating to the cattle, chiefly attacking the head and fore legs."—J. E. T. A.

The species does not seem to have been previously described.

Grey. Antennæ with the third joint simple; reddish, grey at apex of first and second joints, the third joint black except at its base, the space around the antennæ reddish. Face grey, with a black shining spot in the middle of the forehead above the antennæ; the ocelli are placed on a small

tubercle which rises out of a triangular depression; there are also two black shining spots each side of the antennæ; the cheeks are finely punctured, with a longitudinal furrow ending in a cavity; there is some slight light-coloured pubescence on the face. Palpi greyish yellow, rather large, broad at base, tapering to a point; the first joint is short, the second has a longitudinal furrow. Beard grey. Proboscis as long as head. Eyes bare. Abdomen with the first two segments largely reddish yellow, with a black dorsal stripe, the remaining segments are black, the posterior borders yellow; in some of the specimens the yellow border is wider than in the others. Legs yellow, with the apex of the posterior femora, the base of the fore tibiæ and the tarsi black; the posterior tarsi are yellow with the apex of the joints darker. Halteres whitish. Wings hyaline, with pale yellow veins. Length $6\frac{1}{2}$ millim.

The spurs on the hind tibiæ in this species are small and easily overlooked.

Type A. 20. 89. 65.

Nearctic Region.

**S. gigantulus*, ♀, Loew, Centur. x. p. 12 (1861); id. Berlin. ent. Zeit. xvi. p. 57 (1872) (*Chrysops*); Osten Sacken, Western Diptera, p. 215 (1877); id. Cat. N. Amer. Dipt. note 70 (1878). [*Silvius trifolium*, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 395 (1876).]—California, British Columbia.

S. pollinosus, ♀, Williston, Trans. Conn. Ac. iv. p. 244 (1882); id. Trans. Kansas Acad. x. p. 131 (1887).—N. America.

1. Third joint of antennæ simple 2.
2. Yellow. Wings hyaline and non-pubescent... *gigantulus*, Loew.
3. Black, with greyish-white tomentum. Wings pubescent, clouded and spotted..... *pollinosus*, Williston.

Silvius gigantulus, Loew.

Nine females from Chulukweyah Trail, British Columbia, August 1859.

Neotropical Region.

S. Sylveirii, ♀, Macq., Dipt. Exot. i. p. 155, pl. xix. fig. 1 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 275 (1854).—(Called *marginatus* in Macquart's plate, evidently a misprint.)—Brazil.

S. rufipes, ♀, Macq., Dipt. Exot. Suppl. 4, p. 37 (1850).—Brazil.

S. nubipennis, ♀, Rondani, Nuovi Ann. del Sci. Nat. Bologna, (3) ii. p. 371 (1850).—(This is evidently a female by the description, though not expressly mentioned.)—Equatorial America.

S. presbiter, ♂, Rondani, Archivio Canestrini, iii. p. 84 (1863); id. Ann. Soc. Nat. Modena, iii. p. 84 (1866) (*Veprius*).—St. Jago, S. America.

S. rufopilosus, ♂, Bigot, Mém. Soc. Zool. Fr. v. p. 620 (1892) (*Veprius*).—Chili.

1. Third joint of antennæ simple, without a tooth or projecting angle.
2. Black species 3.
Yellow species 6.
3. Legs blackish 4.
Legs yellowish 5.
4. Abdomen with three white bands. Legs black and white. Wings clear, darker on the fore-border *Sylveirii*, ♀, Macq.
Legs black. Wings dark *presbiter*, ♂, Rond.
5. Abdomen with the incisions of the segments yellow. Wings hyaline. Antennæ reddish. *rufipes*, ♀, Macq.
Abdomen with greyish-yellow pubescence. Wings hyaline. Antennæ black *rufopilosus*, ♂, Bigot.
6. Legs reddish yellow and black. Wings hyaline with a dark apical spot *nubipennis*, ♀, Rond.

None of the species are represented in the British Museum Collection.

Silvius rufopilosus, ♂, Bigot.

The type, a male, and another male specimen are both from Chili.

This is a very hairy species and is apparently nearly related to *S. rufipes*, Macq., but the antennæ are entirely black, whereas Macquart describes his species as having the first two joints red. The abdomen is black with the posterior borders of the segments narrowly fulvous; the yellowish-grey hairs are scattered over the dorsum, but are thickest at the sides. The legs are yellow, the coxæ, the apices of the femora, tibiæ, and tarsi black; the fore femora are also black on their upperside; all the femora have long white hairs on their underside, otherwise the pubescence of the legs is chiefly black and short. Wings clear, yellow on the fore border, veins yellow, with an appendix.

Ethiopian Region.

- S. decorus*, ♀, Macq., Dipt. Exot. Suppl. 4, p. 38, pl. ii. fig. 10 (1850) (*Mesomyia*); Loew, Dipt. Südafrik. p. 15 (1860). [*?Silvius decipiens*, Loew, *l. c.* p. 25.]—Caffraria, S. Africa.
- S. pertusus*, ♂, Loew, *l. c.* p. 22 (1860).—Caffraria, S. Africa.
- **S. glandicolor*, ♂, Loew, *l. c.* p. 23, pl. i. figs. 8-10.—Caffraria, S. Africa.
- S. cuneatus*, ♂ ♀, Loew, *l. c.*—Caffraria, S. Africa.
- S. confluens*, ♀, Loew, *l. c.* p. 24, pl. i. fig. 11 (not fig. 10 as printed in the original work).—Caffraria, S. Africa.
- S. decipiens*, ♀, Loew, *l. c.* pp. 15, 25. [*?Silvius decorus*, Macq., *l. c.*]—Caffraria, S. Africa.
- ?*S. æstroides*, ♀, Karsch, Berlin. ent. Zeit. xxxi. p. 371, pl. iv. fig. 6 (1887).—East Africa.
- S. innotatus*, ♀, Karsch, *l. c.* pl. iv. fig. 1.—East Africa.

1. The third joint of antennæ with long tooth-like projection 5.
2. The third joint of antennæ produced to a sharp angle at its base as in *Tabanus* 7.
3. The third joint of antennæ simple, without a tooth or projecting angle 8.
4. Eyes bare 5.
Eyes hairy 12.
5. Black. Legs bright reddish yellow. Wings dark *pertusus*, ♂, Loew.
6. Yellow. Legs yellow. Wings clear with darker shading *innotatus*, ♀, Karsch.
7. Brown and shining. Legs dull yellow *glandicolor*, ♀, Loew.
8. Black. Abdomen with white-haired spots. Legs reddish *decorus*, ♀, Macq.
9. Greyish brown, ♂. Pitchy black, ♀. Legs brown and yellow *cuneatus*, ♂ ♀, Loew.
10. Discoidal cell open 11.
Discoidal cell closed 12.
11. Abdomen brownish, with bands. Legs brownish black *confluens*, ♀, Loew.
12. Abdomen dark brick-reddish, with spots *decipiens*, ♀, Loew.

Light yellow. Abdomen very long, hind borders of segments darker. Legs yellow... *æstroides*, ♀, Karsch.

This last species is placed under *Silvius* by Karsch as probably belonging to that genus, but the antennæ were broken off and the eyes are not mentioned, so that it cannot be included in the above table, but is placed last with a short description to aid its identification.

In No. 6 the eyes are not mentioned; it is presumed they are bare.

Silvius decorus, Macq., is inserted in the table after Macquart's description and figure, which do not bring it into line with *S. decipiens*, Loew, with which Loew supposes it may be identical.

Silvius glandicolor, ♂, Loew.

One male and one female specimen in poor preservation from Port Natal, 58. 13.

The female has the forehead shining, similar to the species described by Macquart, in Dipt. Exot. i. p. 32, as *Tabanus fallax*, which Loew suggests may be the same as the species he described as *S. glandicolor*, but the colouring of the legs differs in the two species.

Oriental Region.

S. dimidiatus, ♀, Wulp, Tijds. Ent. xi. p. 102, pl. iii. figs. 3-5 (1868); Osten Sacken, Ann. Mus. Civ. Genova, xvi. p. 478 (1880); Bigot, Cat. Orient. Dipt. (1891); Wulp, Cat. Dipt. S. Asia (1896).—Salwatty, E. Indies.

Third joint of antennæ simple, without a tooth or projecting angle. Eyes hairy.

1. Pale yellow. Abdomen with posterior segments darker. Wings clouded..... *dimidiatus*, ♀, Wulp.

Osten Sacken (Ann. Mus. Civ. Genova, xvi. p. 478) doubts this species being a true *Silvius*.

Australian Region.

**S. marginatus*, ♀, Walker, List Dipt. pt. i. p. 189 (1848) (*Tabanus*).—Port Essington, Australia.

*? *S. nitescens*, ♂, Walker, Trans. Ent. Soc. London, iv. p. 125 (1857).—Australia.

S. silvester, ♀, Bergroth, Ent. Zeit. Stettin, lv. p. 71 (1894).—Central Queensland.

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| 1. Third joint of antennæ simple, without a tooth or projecting angle | 2. |
| Third joint of antennæ produced to a sharp angle at the base | 3. |
| 2. Grey. Abdomen black and grey with darker spots. Legs black. Wings hyaline. | <i>silvester</i> , ♀, Bergroth. |
| Grey. Abdomen with marks and spots. Legs tawny | <i>nitescens</i> , ♂, Walker. |
| 3. Brown. Legs reddish brown | <i>marginatus</i> , ♀, Walker. |

The description of *S. silvester* is not very explicit, especially as regards the antennæ, which are only mentioned as having the first annulation of the third joint wider at its base than the others.

There is a large specimen of a female species from New Zealand, 81.43 (*Shelton*), measuring 15 millim., for which perhaps a new genus may be required; from the form of the antennæ it would belong to *Silvius*, but the extremely stout spines on the hind tibiæ, the rather short wings and long abdomen give it a very different appearance to the majority of *Silvius* species. In colour it is dull black, with grey pubescence, so that the abdomen appears greyish; the wings are hyaline with a short appendix; the legs are short and stout, reddish in colour.

Silvius marginatus, ♀, Walker.

Two females in poor preservation—the type from N. or N.W. coast of Australia (pres. Haslar Hospital), 44.4; the other from Port Essington, 42.1: they were incorrectly placed under *Tabanus* by Walker. The frontal stripe is dark brown; ocelli are present. The palpi are two thirds the length of the proboscis. The antennæ have the first annulation of the third joint broad and large, produced at its base to an angle.

Silvius nitescens, ♂, Walker.

The only specimen; the type has lost its abdomen and antennæ, it is therefore impossible to judge if it is really a *Silvius*, it has more the appearance of a *Pangonia*; the spurs on the hind tibiæ are present; it is simply labelled "Australia."

The *Mesomyia maoriorum*, ♂, described by Bigot, in Mém. Soc. Zool. Fr. p. 621 (1892), is exactly similar in appearance to the male specimens of Walker's *Tabanus truncatus*, from New Zealand, in the British Museum Collection, and after careful examination I can find no trace of real spurs on the hind tibiæ; there are also no ocelli, and the markings of the abdomen are typical of the *Tabani*. Mr. Hutton, of Christchurch, New Zealand, informs me he has a female specimen of this species, and remarks, "It agrees in the specific characteristics given by Bigot, but has an oval abdomen and no ocelli, thus differing from *Silvius*." There seems, therefore, no doubt that it must be regarded as a specimen of *T. truncatus*, Walker.

From unknown Locality.

Silvius vulpecula, ♀, Wiedem., Auss. zweifl. Ins. i. p. 195 (1828); Walker, List Dipt. pt. i. p. 205 (1848); id. pt. v. Suppl. 1, p. 147 (1854) (*Chrysops*); Macq., Dipt. Exot. i. p. 111 (1838) (*Ectenopsis*); Loew, Dipt. Südafrik. p. 15 (1860).

Subgenus ESENBECKIA, Rondani.

Esenbeckia, Rondani, Archivio Canestrini, iii. p. 83 (1863).

E. vulpes, ♂ ♀, Wiedem., Auss. zweifl. Ins. i. p. 111 (1828); Walker, List Dipt. v. Suppl. 1, p. 274 (1854) (*Silvius*); Rondani, Archivio Canestrini, iii. p. 83 (1863).—Brazil.

E. pangonina, ♀, Wiedem., Auss. zweifl. Ins. ii. p. 623 (1828) (*Silvius*); Rondani, Archivio Canestrini, iii. p. 83 (1863). [*Silvius Esenbeckii*, Wiedem., l. c.]—The specific name was changed by Rondani, who made use of Wiedemann's name of his species for the genus.—Brazil.

- | | |
|-----------------------------------------------------------------|-------------------------------|
| 1. Third joint of antennæ simple. | |
| 2. Legs yellow | 3. |
| Legs black | 4. |
| 3. Reddish yellow. Posterior femora with black pubescence | <i>vulpes</i> , ♂ ♀, Wiedem. |
| 4. Brown. Abdomen with white transverse bands | <i>pangonina</i> , ♀, Wiedem. |

GASTROXIDES, Saunders.

Gastroxides, Saunders, Trans. Ent. Soc. iii. pt. i. p. 59 (1841); Loew, Dipt. Südafrik. p. 15 (1860).

**G. ater*, ♂, Saunders, *l. c.* pl. v. fig. 4; ♀, Saunders, *l. c.* iv. p. 233, pl. xiv. fig. 33 (1847); Walker, *List Dipt.* i. p. 209 (1848), pt. v. p. 293 (1854); Loew, *Dipt. Südafrik.* p. 15 (1860); Wulp, *Cat. Dipt. S. Asia* (1896).

One male from Barrackpore, Calcutta (*Rothney*), 82. 15; one male from India (*Saunders Coll.*), 54. 13; one female from Bengal, 42. 25 (*Campbell*); one male (*Saunders Coll.*), 68. 4.

Saunders described and figured both the sexes; the male type he mentions as belonging to a Colonel Hearsey, so that it seems probable that the Museum does not possess the male type, and certainly not the female type. There are said to be three specimens labelled *Saunders Coll.* in the Oxford Museum, which may perhaps include the types.

CHRYSOPS, Meigen.

Chrysops, Meigen, *Illig. Mag.* ii. p. 267 (1803); Loew, *Verh. zool.-bot. Gesell. Wien*, viii. p. 613 (1858); *id.* *Dipt. Südafrik.* pp. 16, 27 (1860).

Nemorius, Rondani, *Prodrome Dipt. Ital.* i. p. 171 (1856).

The same remarks as to the tables for the identification of the species in the genus *Silvius* will also apply here, especially as regards the South-American species. For the characters of the genus Loew should be consulted in the two works mentioned above.

Nearctic Region.

On the species of *Chrysops* from this part of the world, see Osten Sacken's "Prodrome" in 'Memoirs Boston Society Natural History,' ii. (1876), in which is a most useful synoptical list, his 'Western Diptera' (1877), his 'Catalogue of North American Diptera' (1878), Williston in 'Transactions Kansas Academy,' x. (1885), and others.

Walker seems to have fallen into hopeless confusion over the species of *Chrysops* he described from North America, and Osten Sacken, not having the types themselves before him, was naturally not always correct in his attempts at rectifying Walker, as he himself anticipated; but though some of his species must now give way to Walker's, his descriptions still hold good, and should be consulted rather than those of Walker. I append a list of the species described since the publication of Osten Sacken's Catalogue, and of those whose synonymy must now be altered, chiefly

Walker and Osten Sacken species. *C. approximans*, ♀, Walker, List Dipt. pt. i. p. 198 (1848), from Florida, is not a *Chrysops*, but a specimen of *Diachlorus ferrugatus*, Fabr., and is thus classified in Osten Sacken's Catalogue.

C. geminatus, ♀, Wiedem., Auss. zweifl. Ins. i. p. 205 (1828), excl. syn. Macq.; Walker, List Dipt. pt. i. p. 200 (1848); id. pt. v. Suppl. 1, p. 293 (1854); Osten Sacken, Cat. Dipt. N. America (1878). See v. der Wulp, Wien. ent. Zeit. iii. p. 139 (1884).

**C. niger*, ♀, Macq., Dipt. Exot. i. p. 161 (1838); Walker, List Dipt. pt. i. p. 202 (1848); id. pt. v. Suppl. 1, p. 282 (1854); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 377 (1876); id. Cat. Dipt. N. Amer. (1878); Wulp, Tijd. v. Entom. xxiv. p. 161 (1881); Towns- end, Trans. Amer. Entom. Soc. xxii. p. 57 (1895). [*C. carbonarius*, ♀, var. β, Walker, List Dipt. i. p. 203 (1848).]—United States, Canada.

**C. furcatus*, ♀, Walker, List Dipt. i. p. 199 (1848); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 391 (1876); id. Cat. (1878).—Canada.

**C. cincticornis*, ♀, Walker, List Dipt. pt. i. p. 201 (1848).—? N. America. [? *C. celer*, ♀, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 376 (1876).—Middle States.]

**C. mærens*, ♀, Walker, List Dipt. pt. i. p. 201 (1848). [*C. æstuans*, v. der Wulp, Tijd. v. Ent. x. p. 135, pl. iii. figs. 8, 9 (1867); Osten Sacken, l. c. p. 378 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. p. 132 (1887).]—United States, Canada.

**C. carbonarius*, ♀, Walker, List Dipt. pt. i. p. 203 (1848). [*C. carbonarius*, ♀, var. γ, Walker, l. c. *C. niger*, ♀, Walker (nec Macq.), l. c. p. 202. *C. provocans*, ♀, Walker, Dipt. Saund. pt. i. p. 73 (1850). ? *C. ater*, ♀, Macq., Dipt. Exot. Suppl. 4, p. 40 (1850). *C. fugax*, ♀, Osten Sacken, l. c. p. 375 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. p. 132 (1887).]—Canada, United States.

**C. divisus*, ♀, Walker, List Dipt. pt. i. p. 204 (1848). [*C. atropos*, ♀, Osten Sacken, l. c. p. 372 (1876); id. Cat. (1878).]—Florida.

**C. excitans*, ♀, Walker, Dipt. Saund. pt. i. p. 72 (1850); id. List Dipt. pt. v. Suppl. 1, p. 281 (1854); Osten Sacken, l. c. p. 373 (1876); id. Cat. 1878; Williston, Trans. Kans. Acad. x. p. 132 (1887).—Canada and Northern U. States.

**C. scalaratus*, ♀, Bellardi, Ditt. Mess. i. p. 72, pl. ii. fig. 9 (1859); Osten Sacken, Cat. (1878).—Mexico. [? *C. lateralis*, Wiedem., Auss. zweifl. Ins. i. p. 209 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 200 (1854); Osten Sacken, Cat. (1878).—Patria ignota (Wiedem.), Honduras (Walker).]

**C. mitis*, ♀, Osten Sacken, l. c. p. 374 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. p. 132 (1887).—Canada.

**C. sordidus*, ♀, Osten Sacken, l. c. p. 376 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. pp. 131, 134 (1887).—Canada, United States.

**C. striatus*, ♀, Osten Sacken, l. c. p. 391 (1876); id. Cat. (1878).—Illinois. [*C. vittatus*, Bell. (nec Wiedem.), Ditt. Mess. i. p. 74 (1859).—Mexico.]

**C. fulvaster*, ♂ ♀, Osten Sacken, Western Diptera, p. 221 (1877); id. Cat. Dipt. N. Amer. (1878); Williston, Trans. Kans. Acad. x. pp. 132, 134 (1887). [*C. coloradensis*, ♂ ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 605 (1892).]—Colorado.

C. proclivis, ♀, Osten Sacken, Western Diptera, p. 222 (1877); id. Cat.

- Dipt. N. Amer. (1878); Williston, Trans. Kans. Acad. x. pp. 132, 134 (1887). [*C. atricornis*, ♂ ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 603 (1892).]—California.
- C. crassicornis*, ♀, v. der Wulp, Wien. ent. Zeit. iii. p. 141 (1884); id. Ent. Belg. xxviii. p. 289 (1884). [*C. geminatus*, Macq., Dipt. Exot. Suppl. 4, p. 39 (1850) (excl. syn. Wiedem.).]—Mexico.
- C. cuchix*, ♀, C. P. Whitney, Canada Ent. xi. p. 35 (1879); Williston, Trans. Kans. Acad. pp. 131, 134 (1887).—Milford, N.H.
- C. cursim*, ♀, C. P. Whitney, l. c. p. 36; Williston, l. c. p. 134.—Milford, N.H.—Williston thinks this may be the same as *C. pudicus*, Osten Sacken.
- C. nigrilimbo*, ♀, C. P. Whitney, l. c.; Williston, l. c. p. 131.—Milford, N.H.
- C. discalis*, ♀, Williston, Trans. Conn. Acad. iv. p. 245 (1880); id. Trans. Kans. Acad. x. pp. 132, 134 (1887).—N. America.
- **C. pertinax*, ♀, Williston, Trans. Kans. Acad. x. p. 132 (1887).—United States. [*C. nigriventris*, ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 604 (1892).]
- C. sequax*, ♂ ♀, Williston, l. c.—N. America.
- C. pachycerus*, ♂ ♀, Williston, l. c. p. 134.—N. America.
- C. altivagus*, ♂ ♀, Osten Sacken, Biol. Centr.-Amer. i. p. 45, pl. i. figs. 6, 7 (1886).—Durango, Mexico.
- C. coloradensis*, ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 605 (1892).
- C. ceras*, ♀, Townsend, Psyche, vii. p. 38 (1897).—New Mexico.
- C. fascialis*, ♀, Townsend, l. c. p. 39.—New Mexico.

Chrysops altivagus is included among the N.-American species, being just above the line of demarcation, as proposed by Wallace, between the two regions, and is expressly said by Osten Sacken to have an altogether northern physiognomy.

Chrysops flavidus, ♀, Wiedem., Dipt. Exot. i. p. 105 (1821); id. Auss. zweifl. Ins. i. p. 199 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 283 (1854); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 385 (1876); id. Cat. (1878).

Chrysops canifrons, ♀, Walker, List Dipt. i. p. 197 (1848); id. pt. v. Suppl. 1, p. 283 (1854).

Chrysops pallidus, ♀, Bellardi, Ditt. Mess. i. p. 73, pl. ii. fig. 16 (1859).

One female from Florida, $3\frac{40}{14}$ 19 (*Doubleday*).

Walker's type, which is a specimen of this species, *C. flavidus*, Wiedem., as suggested by Osten Sacken.

Chrysops vittatus, ♀, Wiedem., Dipt. Exot. i. p. 106 (1821); id. Auss. zweifl. Ins. i. p. 200 (1828); Harris, Ins. New Engl. p. 406 (1841); Walker, List Dipt. pt. i. p. 196 (1848); id. pt. v. Suppl. 1, p. 284 (1854); Macq., Dipt. Exot. Suppl. 5, p. 37 (1850); Osten Sacken, Mem.

Boston Soc. Nat. Hist. ii. p. 390 (1876); id. Cat. 1878; Townsend, Trans. Amer. Ent. Soc. xxii. p. 57 (1895).

Chrysops areolatus, ♀, Walker, List Dipt. pt. i. p. 197 (1848).

Chrysops lineatus, ♀, Jænnicke, Neue Dipt. Exot. p. 26 (1868).

One female (Walker's type *C. areolatus*) from New York, 44. 90 (*Doubleday*); three females from Nova Scotia (*Redman*); three females from Nova Scotia, 74. 84 (*Walker Coll.*); two females from Horse Landing, St. John's River, Florida, May 1894, 96. 155 (*Johnson*); one female from Nova Scotia, 58. 136 (*Piffard*); one female from unknown locality.

On examining the type of *C. areolatus* I can confirm Osten Sacken's statement that it is identical with *C. vittatus*. It has the underside of the abdomen similar to the specimens mentioned by Townsend.

Chrysops plangens, ♀, Wiedem., Auss. zweifl. Ins. i. p. 210 (1828); Walker, List Dipt. pt. i. p. 204 (1848); id. pt. v. Suppl. 1, p. 282 (1854); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 393 (1876); id. Cat. note 67 (1878); Williston, Trans. Kans. Acad. x. p. 134 (1885).

Chrysops fuliginosus, ♀, Wiedem., Dipt. Exot. i. p. 109 (1821); ♂, id. Auss. zweifl. Ins. i. p. 210 (1828); Walker, List Dipt. pt. i. p. 204 (1848); id. pt. v. Suppl. 1, p. 282 (1854).

One male and one female from Florida, $\frac{40}{15} \frac{19}{16} - \frac{40}{16} \frac{19}{16}$ (*Doubleday*); one male from Florida, 44. 12 (*Ent. Club*).

Chrysops niger, ♀, Macq., Dipt. Exot. i. (1) p. 161 (1838); Walker, List Dipt. pt. i. p. 202 (1848); id. pt. v. Suppl. 1, p. 282 (1854); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 377 (1876); id. Cat. (1878); Wulp, Tijds. v. Entom. xxiv. p. 161 (1881); Townsend, Trans. Amer. Entom. Soc. xxii. p. 57 (1895).

Chrysops carbonarius, ♀, var. β , Walker, l. c. pt. i. p. 203.

Walker's type and another female from Nova Scotia (*Redman*); three females from New York (*Foster*); one female from New York (*Doubleday*); one female, locality uncertain; two females from N. America, 81. 117 (*Lord Walsingham*).

Walker's type and another female of *carbonarius*, var. β , are specimens of *C. niger*, Macq., as Osten Sacken surmised, and the other specimens Walker placed here are correct

(and do *not* belong to *C. sordidus*, O. S.), with the exception of his type *C. niger* (nec Macq.), which belongs to *C. carbonarius*, Wlk.

Chrysops furcatus, ♀, Walker, List Dipt. pt. i. p. 199 (1848); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 391 (1876); id. Cat. (1878).

Type (female) from Hudson Bay District, Albany River, St. Martin's Falls, 44. 17 (not 47. 14) (*Barnston*). This species is *not* identical with *C. striatus*, Osten Sacken, as this author suggests, and I cannot find any other description of a North-American species similar to it, so that for the present at least it must stand as a distinct species. It differs from *C. striatus* in having the scutellum black, the second basal cell infuscated at the base, and the hyaline triangle reaching beyond the second longitudinal vein; it would follow *striatus* in Osten Sacken's synoptical list thus:

"Scutellum wholly black *furcatus*, Wlk."

Walker's description may hold good with these further particulars:—Wings with the first basal cell infuscated half its length, the second only at its base; the band does not reach the posterior border, the fourth posterior cell being hyaline in its apical half, and the fifth at its base and apex; the apical spot hardly reaches beyond the first submarginal cell, the hyaline triangle extends beyond it, but does not attain the costa.

Chrysops mærens, ♀, Walker, List Dipt. i. p. 201 (1848).

Chrysops æstuans, ♀, Wulp, Tijd. Ent. x. p. 135, pl. iii. figs. 8, 9 (1867); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 378 (1876); Cat. (1878); Williston, Trans. Kans. Acad. x. p. 132 (1887).

Walker's type from Nova Scotia (*Redman*) answers perfectly to the description of Wulp's species, as pointed out by Osten Sacken; Walker's name must therefore take priority.

Chrysops cincticornis, ♀, Walker, List Dipt. pt. i. p. 201 (1848).

? *Chrysops celer*, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 376 (1876).

Described by Walker from an unknown locality. It is no doubt a North-American species, from its general likeness to those of that continent, and I believe it to be a dark and

badly-preserved specimen of *C. celer*, O. S. It is impossible to speak with certainty owing to its condition.

Type (female) from unknown locality.

Chrysops carbonarius, ♀, Walker, List Dipt. i. p. 203 (1848).

C. carbonarius, ♀, var. γ , Walker, *l. c.*

C. niger, ♀, Walker (nec Macq.), *l. c.* p. 202.

C. provocans, ♀, Walker, Dipt. Saund. pt. i. p. 73 (1850).

? *C. ater*, ♀, Macq., Dipt. Exot. Suppl. 4, p. 40 (1850).

C. fugax, ♀, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 375 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. p. 132 (1887).

Type of *carbonarius*, ♀, Wlk., from Nova Scotia (*Redman*).

Type of *carbonarius*, ♀, Wlk., var. γ , from Nova Scotia (*Redman*).

Type of *niger*, ♀, Wlk. (nec Macq.), from New York, 44. 90 (*Doubleday*).

Type of *provocans*, ♀, Wlk., from Cape Breton; one female from New York, 44. 90 (*Foster*); one female from Nova Scotia; one female from Canada, 74. 84 (*Walker*); one female from Calgary, N.W.T. Canada, 1894, 1901. 65 (*Ricardo*).

Walker's type *carbonarius* and the variety γ both answer exactly to the description of *C. fugax* as Osten Sacken suggests; his name must therefore give place to that of Walker, but his description should be referred to. The type of the *C. niger*, Macq., redescribed by Walker, is also a specimen of *C. carbonarius*, Wlk., and not of *C. sordidus*, Osten Sacken, as the latter suggests; he was evidently led to think so by Walker's description of the abdomen as having tawny spots; there is no trace of tawny colour on the abdomen of this type. The type *provocans*, Wlk., is nothing but a specimen of *C. carbonarius*, Wlk., differing slightly from the other species in having the fourth posterior cell wholly filled out with the dark colouring, so that the transverse band almost touches the hind border. Respecting the var. β of *carbonarius*, Wlk., see notice under *C. niger*, Macq.

Chrysops divisus, ♀, Walker, List Dipt. pt. i. p. 204 (1848).

Chrysops atropos, ♀, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 372 (1876); id. Cat. (1878).

Type (female) from Florida, 40. 3. 19. 17 (*Doubleday*), and another female from same locality.

Walker's type is evidently the same species as that described as *atropos* by Osten Sacken, who was in doubt as to the identity of the two species, owing to Walker's statement "Chest and abdomen clothed with dark tawny hairs." On examining the type, I can only see a few such coloured hairs on the dorsum of the abdomen and none on the thorax; in the other female they are still less noticeable.

Chrysops excitans, ♀, Walker, Dipt. Saund. pt. i. p. 72 (1850); List Dipt. pt. v. Suppl. 1, p. 281 (1854); Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 373 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. p. 132 (1887).

Type (female) from Cape Breton; one female from British Columbia, 47. 86; two females from Hudson Bay district, Albany River, St. Martin's Falls, 44. 17 (not 47. 14) (*Barnston*); one female from Nova Scotia, 58. 136 (*Piffard*); one female from Inverness, Woodcock's Landing, mouth of the River Skeena, British Columbia, 90. 96 (*Keen*); three females from unknown localities.

The colour of the legs and of the antennæ is not quite the same in the type as in the description of this species by Osten Sacken, which is otherwise correct so far as the type is concerned. The first joint of the antennæ is wholly red, the second almost entirely so, only black at the apex, and the third joint is red at its base, then black. On the middle tibiæ the red is more widely extended, only the apex being black. One of the specimens was erroneously placed under *C. carbonarius*, Walker, and several under *C. sepulchralis*, Fabr.

Chrysops scalaratus, ♀, Bellardi, Ditt. Mess. i. p. 72, pl. ii. fig. 9 (1859); Osten Sacken, Cat. (1878).

? *Chrysops lateralis*, Wiedem., Auss. zweifl. Ins. i. p. 209 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 200 (1854); Osten Sacken, Cat. (1878).

One male from Vera Cruz, Mexico, 54. 66 (*Sallé*); two females from Honduras, 285 *a* & 285 *b* (*Miller*); one female from Chili, 81. 56 (*Edmonds*); one male from on or around volcano, Orizaba, Mexico, 56. 143 (*Sallé*); one female from unknown locality, labelled by Walker as *trypeta* (I cannot find any published description of a *Chrysops* from North America under this name).

I believe the males are those of *scalaratus*; they only differ from the females in having the basal cells of the wing

infuscated half their length; the first antennal joint is incrassated in both sexes.

It seems very probable that *scalaratus* is a synonym of *lateralis*, Wiedem.; but, as Bellardi figured his species and Wiedemann's description is inadequate, I have followed Bellardi.

Chrysops mitis, ♀, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 374 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. p. 132 (1887).

One male and one female from Calgary, N.W.T. Canada, 1894, 1901. 65 (*Ricardo*).

Chrysops sordidus, ♀, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 376 (1876); id. Cat. (1878); Williston, Trans. Kans. Acad. x. pp. 131, 134 (1887).

Two females from Nova Scotia (*Redman*); one female from Nova Scotia.

Walker's *C. niger* is *not* the same as this species, as surmised by Osten Sacken, but is a specimen of *C. carbonarius*, Wlk. The specimen from Nova Scotia was wrongly placed under *C. carbonarius*, var. γ , Walker, and the two collected by Redman were placed under *C. mærens*, Wlk.

Chrysops celer, ♀, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 376 (1876); id. Cat. (1878).

One female from Nova Scotia (*Piffard*). It was wrongly placed under *C. carbonarius*, Walker.

Chrysops frigidus, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. pp. 384, 474 (1876); id. Cat. (1878).

One female from N. America, 81. 117 (*Lord Walsingham*).

Chrysops morosus, ♀, Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. pp. 389, 474 (1876); id. Cat. (1878).

? *Chrysops trinotatus*, Macq., Dipt. Exot. i. p. 161 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 282 (1854).

One female from N. America, $\frac{40}{117}$ (*Childers*), was placed under *C. fuliginosus*, Wiedem. ? One female from Georgia (*Abbot*) is probably a specimen of this species; it was wrongly placed under *C. plangens*, Wiedem.

Chrysops fulvaster, ♂ ♀, Osten Sacken, Western Diptera, p. 221 (1877); id. Cat. (1878); Williston, Trans. Kansas Acad. x. pp. 132, 134 (1887).

Chrysops coloradensis, ♂ ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 605 (1892).

One female from Wet Mountain Valley, Colorado, 99. 522 (*Cockerell*).

The male type of *C. coloradensis*, Bigot, is a specimen of the above species, to which apparently *C. crassicornis*, v. der Wulp, is very nearly allied, if not the same, judging from the description of the latter.

Chrysops proclivis, ♀, Osten Sacken, Western Diptera, p. 222 (1877); id. Cat. (1878); Williston, Trans. Kans. Acad. x. pp. 132, 134 (1887).

Chrysops atricornis, ♂ ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 603 (1892).

The female type of Bigot's *C. atricornis* from Colorado answers exactly to Osten Sacken's description of his *C. proclivis*. The male type differs in the following particulars:—The face is yellow, only the pits of the callosities being black and clothed with long black hairs. The abdomen has the yellow on the first two segments less extended, the black spots being wider; the black dot on the sides of the second segment in the female is not present here, the yellow triangle intersecting the black spot on the second segment is reduced to a yellow margin; the black band on the third segment is continuous, not reaching the sides, with indentations of yellow on the posterior border. The fore legs are yellower, the apical half of the femora being yellow. The wings have the dark colouring extended into the second basal cell at its base and along its posterior margin, continuing the whole length of the fifth longitudinal vein.

Chrysops sequax, ♀, Williston, Trans. Kans. Acad. x. p. 132 (1885).

? One female from Georgia.

This was wrongly labelled *fascipennis*, var., Macq. I believe it to be a specimen of *C. sequax*; but the face does not altogether agree with Williston's description, being yellow, the callosities with only a brownish tinge, and the frontal callosity decidedly yellow, posteriorly with a black border; otherwise it agrees.

Mixed with some specimens labelled *C. sepulchralis*, Fabr., was one numbered 68. 4 among the N.-American species, Hudson's Bay being given on the label; but as this species

has not yet been found in N. America, this is hardly to be accepted as a proof of its occurrence, but is probably a mistake. Eight more specimens were also labelled *C. sepulchralis*, Fabr., but all belonged to other species.

Chrysops pertinax, ♀, Williston, Trans. Kans. Acad. x. p. 132 (1887).

Chrysops nigriventris, ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 604 (1892).

On comparing Bigot's type from Washington Territory with Williston's description of *C. pertinax*, I have no doubt that it is only a specimen of Williston's species; the only difference is in the wings, the fifth longitudinal vein being slightly shaded along its length in Bigot's type, which comes from the same locality as *C. pertinax*. There are six female specimens besides the type.

Chrysops coloradensis, ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 605 (1892).

A mixed species; the male type and four other specimens and three females belong to *C. fulvaster*, O. S.

The female type and one other specimen seem to be referable to a distinct species and are easily distinguished from *C. fulvaster* by the non-incrassated antennæ and the different pattern of the wings; they both come from Colorado.

I append a redescription of the type, which may be of use in identifying the species:—

Yellow. Abdomen with black spots; the second basal cell of wing slightly infuscated.

Face yellow, only the pits of the callosities being black, and a small black spot on the outer margin of each cheek. Palpi yellow. Antennæ black; the first two joints yellow, with black pubescence. Frontal tubercle yellow, with a black border; forehead yellowish, with yellowish pile and pubescence, the ocellar tubercle black. Thorax black, with four greyish-yellow stripes and yellow pubescence; the sides and breast with greyish tomentum and a black stripe on the latter. Abdomen yellow, with an oblong black spot on the first segment, slightly concave on its posterior border; two black pear-like spots on the second segment, converging on the anterior border, but not joined; on the third and fourth segments there are four black spots, divided up by the yellow colour; on the last three segments they coalesce into black bands with yellow posterior borders; on the other specimen there

is a faint black spot on the sides of the second segment; the pubescence is yellow on the yellow colour and black elsewhere; the underside of the abdomen is yellow and black. Legs yellow, the base of the femora, the knees, and the apical joints of the tarsi black; the fore tarsi are wholly black and the fore tibiæ brown on the apical half. Wings hyaline, with the usual dark base, transverse band, and apical spot; the first basal cell is infuscated for nearly two thirds of its length and again at the apex, the second is only very slightly so at its base; the band reaches to the posterior margin, completely filling the fourth posterior cell, but the fifth and the anal cell and the anal angle are clear; the fifth longitudinal vein is slightly clouded along its length; the apical spot is united to the dark colouring of the fore border, but the hyaline triangle reaches a little beyond the first longitudinal vein; the apical border of the band is slightly produced towards the base of the fork of the second longitudinal vein.

Length 9 millim.

This species in the markings of the abdomen and the wings is nearly allied to *C. furcatus*, Wlk., but the spots on the second segment distinguish it.

Neotropical Region.

There are thirty described species of *Chrysops* from the Neotropical Region, the greater number of these being from South America. Two of Walker's species belong to the genus *Diachlorus*, another is not to be found in the British Museum collection, and one of Rondani's is identical with a Fabrician species. One new species is here described, which brings the number to *twenty-seven*. I have attempted to form a synoptical list of these, but having very small material to work upon, I fear it is far from being a final one; the descriptions given by Wiedemann and others are very meagre, and I have been forced to make use of the markings of the abdomen, which do not constitute a very satisfactory specific character in this genus. It may be of use in at least grouping together those species related to each other, and in rendering the work of anyone who has larger material and access to the older types easier in compiling a more perfect list.

Many species seem very nearly related: thus *lætus*, F., *varians*, W., *lateralis*, W., are all said by Wiedemann to be very similar, *varians* being probably only a variety of *lætus*; *leucospilus*, W., he considers is nearly related to *guttula*, W., and Schiner says it only differs from *incisus*, Macq., by its

greater size and in the wing, as shown in my table. This latter author thinks *incisus* may be the same as *guttula*, W.; it appears to me that *crucians*, W., is allied to *incisus*; thus *incisus*, *crucians*, *leucospilus*, and *guttula* all seem to be very nearly related, and may prove to be one or more species only, when good series of them are obtained for comparison. I can find no real difference between *molestus*, W., and *intrudens*, Williston, judging from the descriptions only, neither of which are very plain; they are grouped together for the present in the table with *oculatus*, Bigot: *merula*, Philippi, a Chilian species, is placed first among those species with a band and no clear spot in the discal cell of the wing; but as it is not stated whether a male or female was being described, and the description is most meagre, it is impossible to distinguish it better: *trifarum*, Macq., and *latifasciatus*, Bell., seem very nearly allied; Macquart's type was from Chili, Bellardi's from Mexico, and it is also found in Central America. *C. fulviceps*, Wlk., List Dipt. pt. v. Suppl. 1, p. 286, is not to be traced; *immaculatus*, Wiedem., is bracketed with *bimaculatus*, Wiedem., as the author suggests it is only a variety of the latter. The plate of *C. lugubris*, Macq., is apparently incorrect. The *Chrysops varipes*, Walker, described on page 289 (List Dipt.), does not belong to this genus, but is a specimen of *Diachlorus curvipes*, Fabr.; the *Chrysops inornatus*, Walker, List Dipt. pt. i. p. 199, is a specimen of *Diachlorus bivittatus*, Wiedem.; the *Chrysops convergens* and *approximans*, Wlk. List Dipt. i. p. 198 (1848), are both specimens of *Diachlorus ferrugatus*, Fabr. (see Osten Sacken, Mem. Boston Soc. Nat. Hist. ii. p. 396, respecting this species and its synonyms).

The following is a list of the twenty-seven described species from this region, including one new, with a table for their identification:—

- **C. costatus*, ♂ ♀, Fabr., Ent. Syst. iv. p. 373 (1794) (*Tabanus*); id. Syst. Antl. p. 112 (1805); Pal. Beauv., Ins. p. 223, pl. iii. fig. 7 (1805–1821); Wiedem., Dipt. Exot. i. p. 104 (1821); id. Auss. zweifl. Ins. i. p. 198 (1828); Macq., Dipt. Exot. i. p. 160 (1838); Bigot, R. de la Sagra's Hist. Cuba, p. 798 (1857); Guérin, Icon. iii. p. 542, pl. xcvii. fig. 3 (1844); Osten Sacken, Cat. Dipt. N. Amer. (1878); id. Berlin. ent. Zeit. xxvii. p. 297 (1883); id. Biol. Centr.-Amer., Dipt. i. p. 46 (1887); Williston, Trans. Kans. Acad. x. p. 134 (1887); Townsend, Trans. Amer. Ent. Soc. xxii. p. 56 (1895); id. Ann. & Mag. Nat. Hist. (6) xix. p. 18 (1897). [*Tabanus variegatus*, De Geer, Ins. vi. pl. xxx. fig. 7 (1776). *Chrysops vulneratus*, Rond., Esame varie specie, &c. p. 44 (1848); Osten Sacken, Berlin. ent. Zeit. xxvii. p. 297 (1883). *Chrysops amazonius*, Rond., Archivio Canestrini, iii. p. 81 (1864).]—Central and South America, W. Indies.

- C. tristis*, ♀, Fabr., Ent. Syst., Suppl. p. 567 (1798) (*Tabanus*); id. Syst. Antl. p. 112 (1805); Wiedem., Dipt. Exot. i. p. 103 (1821); id. Auss. zweifl. Ins. i. p. 197; Walker, List Dipt. pt. v. Suppl. 1, p. 288 (1854).—Cayenne.
- **C. latus*, ♀, Fabr., Syst. Antl. p. 112 (1805); Wiedem., Dipt. Exot. i. p. 108 (1821); id. Auss. zweifl. Ins. i. p. 207 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 286 (1854); Schiner, Reise Novara, p. 103 (1866).—Brazil.
- { *C. bimaculatus*, ♀, Wiedem. Auss. zweifl. Ins. i. p. 201 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 287 (1854).—Brazil.
C. immaculatus, ♀, Wiedem., Auss. zweifl. Ins. i. p. 202 (1828).—Brazil.
- C. leucospilus*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 202 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 286 (1854); Schiner, Reise Novara, p. 104 (1866).—Brazil, Colombia.
- **C. guttula*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 203 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 286 (1854).—Brazil.
- C. afflictus*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 204 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 288 (1854).—Brazil.
- C. molestus*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 205 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 288 (1854).—Brazil.
- C. varians*, ♂ ♀, Wiedem., Auss. zweifl. Ins. i. p. 208 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 287 (1854); Schiner, Reise Novara, p. 104 (1866); Williston, Kans. Univ. Quart. Journ. iii. p. 192 (1895).—Brazil, Equatorial America.
- C. lateralis*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 209 (1828); Walker, List Dipt. pt. i. p. 200 (1848); id. pt. v. Suppl. 1, p. 286 (1854); Osten Sacken, Cat. Dipt. N. Amer. (1878).—Central and S. America.
- **C. crucians*, ♀, Wiedem., Auss. zweifl. Ins. i. p. 211 (1848); Walker, List Dipt. pt. v. Suppl. 1, p. 287 (1854); Jænnicke, Neue exot. Dipt. p. 4 (1868); Osten Sacken, Cat. Dipt. N. Amer. (1878).—Brazil, Cuba.
- C. tardus*, ♂, Wiedem., Auss. zweifl. Ins. i. p. 577 (1828); Walker, List Dipt. pt. v. Suppl. 1, p. 285 (1854).—Brazil.
- C. frontalis*, ♂, Macq., Dipt. Exot. i. p. 160 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 284 (1854); Osten Sacken, Cat. Dipt. N. Amer. (1878).—Brazil, St. Domingo.
- C. trifariam*, ♀, Macq., Dipt. Exot. i. p. 159 (1838); Walker, List Dipt. pt. v. Suppl. 1, p. 287 (1854); Blanchard, Gay, Hist. fis. y polit. de Chile, Zool. vii. p. 399 (1854); Philippi, Verh. zool.-bot. Gesell. Wien, xv. p. 724 (1865).—Chili.
- C. lugubris*, ♀, Macq., Dipt. Exot. Suppl. 1, p. 44, pl. iv. fig. 11 (1846); Walker, List Dipt. pt. v. Suppl. 1, p. 285 (1854).—Brazil.
- C. incisus*, ♀, Macq., Dipt. Exot. Suppl. 1, p. 44, pl. iv. fig. 12 (1846); Walker, List Dipt. pt. v. Suppl. 1, p. 285 (1854); ♂, Schiner, Reise Novara, p. 104 (1866).—New Granada.
- C. subfascipennis*, ♀, Macq., Dipt. Exot. Suppl. 5, p. 35 (1850).—S. America.
- C. terminalis*, ♀, Macq., Dipt. Exot. Suppl. 5, p. 36 (1850).—S. America.
- C. latifasciatus*, ♀, Bellardi, Ditt. Mess. i. p. 71, pl. ii. fig. 15 (1859); Osten Sacken, Cat. Dipt. N. Amer. (1878); id. Biol. Centr.-Amer., Dipt. i. p. 46 (1886).—Mexico, Central America.
- C. merula* (? ♂ or ♀), Philippi, Verh. zool.-bot. Gesell. Wien, xv. p. 724 (1865).—Chili.
- C. calogaster*, ♀, Schiner, Reise Novara, p. 103 (1866).—S. America.
- C. tanycerus*, ♀, Osten Sacken, Biol. Centr.-Amer., Dipt. i. p. 46 (1886).—Costa Rica.

C. Frazari, ♀, Williston, Trans. Kansas Acad. x. p. 132 (1887).—San Domingo.

C. oculatus, ♀, Bigot, Mém. Soc. Zool. Fr. v. p. 606 (1892).—Brazil.

C. intrudens, ♂ ♀, Williston, Kansas Univ. Quart. iii. p. 191 (1895).—Brazil.

**C. brasiliensis*, ♂ ♀, sp. n.—Brazil.

1. Wings with a distinct dark transverse band 2.
Wings without a distinct dark transverse band 15.
2. Wings with a clear spot in the discal cell. 3.
Wings without a clear spot in the discal cell 5.
3. Yellow species with black stripes on the abdomen 4.
4. Abdomen with the black stripes bifurcated posteriorly. Thorax with three brown stripes *costatus*, ♀, Fabr.
Abdomen with the black stripe simple. Thorax testaceous *subfascipennis*, ♀, Macq.
5. Abdomen wholly black *merula* (? ♂ or ♀), Philippi.
Abdomen black or brown, with yellow spots 6.
6. Abdomen with a yellow or whitish spot on each side of the second segment, and yellow spots, triangular, square, or oblong, in the middle of the posterior borders of the segments, sometimes forming a continuous stripe 7.
7. Abdomen with additional yellow spots on the sides or hind borders of the segments 8.
Abdomen with no additional yellow spots. 9.
Abdomen with the hind borders of the segments yellow or grey, forming more or less regular bands 12.
8. Abdomen dark brown, with two additional yellow spots on segments 2 to 5, those on the last three more or less confluent. Thorax with four yellow stripes *Frazari*, ♀, Williston.
Abdomen black, with the additional yellow spots on each side of the segments. Thorax black *latifasciatus*, ♀, Bellardi.
Abdomen black, with an extra yellow spot on the anterior margin of the second segment. Thorax with five yellow spots. *trifariam*, ♀, Macq.
9. Wings on inner edge of dark band with a broad hyaline sinus 10.
Wings with only a small clear spot in the band, on the inner edge, before its junction with the border 11.
10. Abdomen brown, with the usual yellow spots forming the letter T, and an additional yellow stripe on the sides of segments 4 and 5. Legs yellowish. Apex of the wing dark *crucians*, ♀, Wiedem.

- Abdomen black, with the usual yellow spots. Legs yellowish brown. Apex of the wing clear *incisus*, ♂ ♀, Macq.
11. Abdomen black, the spots on the sides of the second segment almost square, with four triangular whitish median spots. Legs black *leucospilus*, ♀, Wiedem.
- Abdomen black, the spots on the sides of the second segment almost triangular, with three subtriangular white median spots. Legs brown *guttula*, ♀, Wiedem.
12. Wings with the apical margin of the band straight 13.
- Wings with the apical margin of the band irregular 14.
13. Abdomen with two additional grey spots on the posterior margin of the second segment. Legs dark brown *varians*, ♂ ♀, Wiedem.
- Abdomen with yellow spots on the posterior margin of the third and fourth segments forming a lateral stripe. Legs brownish *lateralis*, ♀, Wiedem.
- Abdomen with the median spot on the second segment oblong, not triangular. Legs brownish *latus*, ♀, Fabr.
- Abdomen with the median spot on the second segment small and triangular. Legs reddish brown *brasiliensis*, ♂ ♀, sp. n.
14. Abdomen black, the median triangular spot orange-yellow *calogaster*, ♀, Schiner.
- Abdomen brown, with four additional whitish spots on each segment *tristis*, ♀, Fabr.
15. Wings clear or with only the apex darker. 16.
- Wings brown or black, with clear spots. 17.
- Wings clear, with brown markings and spots 23.
16. Abdomen yellow, with brown spots on the second segment and brownish markings. Wings clear *bimaculatus*, ♀, Wiedem.
- Abdomen with no brown spots *immaculatus*, ♀, Wiedem.
- Abdomen yellow. Apex of wing black.. *terminalis*, ♀, Macq.
17. Abdomen black or brown, with yellow spots or stripes 18.
- Abdomen black, unspotted, the hind borders of segments yellow 21.
- Abdomen wholly black or brown 22.
18. Abdomen with hind borders of segments yellow 19.
- Abdomen with hind borders of segments not yellow 20.
19. Wings black, with three clear spots and subhyaline apex *tardus*, ♂, Wiedem.
20. Wings brown, with one larger and three smaller clear spots. { *oculatus*, ♀, Bigot.
- Wings brown, with one larger and two smaller clear spots. { *molestus*, ♀, Wiedem.
- { *intrudens*, ♂ ♀, Williston.

- | | |
|------------------------------------------------------------------------------------|------------------------------------|
| 21. Wings brown, with four white spots.
Femora black..... | <i>frontalis</i> , ♂, Macq. |
| 22. Abdomen brownish black. Antennæ
and legs black | <i>lugubris</i> , ♀, Macq. |
| 23. Wings with a brown cloud round the
cross-veins and in the apex | 24. |
| 24. Abdomen brown, with faint white spots
and white hind margins of segments .. | <i>tanycerus</i> , ♀, Ost. Sacken. |
| Abdomen yellow, with brown spots and
markings..... | <i>afflictus</i> , ♀, Wiedem. |

Chrysops costatus, ♂ ♀, Fabr.

Three females from Jamaica, 45. 110 (*Gosse*); one male from Villa Nova, Amazons, 55. 44 (*Bates*); two females from St. Domingo, 55. 1 (*Tweedie*); six females from Amazons, 66. 53 (*Bates*).

The two females from St. Domingo approach the description of those from San Rafael, Vera Cruz, by Townsend, the outer branch of the two blackish abdominal markings being abbreviated and not longer than the inner one, and the distal border of the band of the wing is somewhat convex. The male differs only by the base of the wing being somewhat darker.

Rondani states his *amazonius* resembles *subfasciatus*, Macq. (I presume he means *subfascipennis*, Macq., as there is no *Chrysops* described under the former name), and *vulneratus*, Rond., of which last it is perhaps only a variety. Osten Sacken makes *vulneratus* the same as *costatus*, and I have little doubt that *amazonius* is also a synonym of the Fabrician species, to which *subfascipennis*, Macq., is evidently nearly related.

Chrysops lætus, ♀, Fabr.

Two females from Brazil, 68. 4 (Saunders Coll.), and another female labelled 68. 4.

One of the specimens has the face rather dark, which makes it doubtful whether it belongs to this species.

Chrysops guttula, ♀, Wiedem.

One female from Pará, 68. 4.

Chrysops crucians, ♀, Wiedem.

One female from South America, 54. 13 (Saunders Coll.).

Chrysops oculatus, ♀, Bigot.

There is only one specimen (the type female). On comparing it with the description of *C. molestus*, Wiedem., it

seems very similar; but Wiedemann's rather vague description of the wings of his species makes it doubtful whether the two species are identical; it is also very similar to *C. intrudens*, Will., but he makes no mention of the small round clear spot in the centre of the first submarginal cell seen in *C. oculatus*; it must therefore remain for the present bracketed with the two above-mentioned species.

The following is an exact description of the wings:—Brown, with one larger and three smaller clear spots; the larger one consists of the apical half of the two basal cells and of the anal cell with the exception of its extreme apex; the anal angle is subhyaline; the three other spots are thus situated—one round spot in the centre of the first submarginal cell, one in the second posterior cell extending into the third, and a triangular one in the fifth posterior cell; these last two become subhyaline on reaching the hind border.

Chrysops brasiliensis, ♂ ♀, sp. n.

Length 9 millim.

Type (male), Amazons, 66. 53 (*Bates*); type (female), Rio Tapayos, Brazil, 53. 27 (*Bates*); one female from Pará, 49. 2 (*Bates*); one female from the Amazons, 66. 53 (*Bates*).

Several of these specimens were labelled *frontalis*, Macq., by Walker incorrectly.

Brown. Abdomen with a small yellow-haired triangular spot in the centre of the second and third segments, and with yellow bands on the posterior borders of the fourth, fifth, and sixth segments.

Face and tubercles yellow. The callosity on the forehead yellow, with the posterior border black, the forehead black; between the callosity and the vertex is a band of yellow tomentum, divided in the middle. Antennæ yellow, the third joint darker; the first joint is slightly incrassated and a little longer than the second. Thorax brown, with indistinct stripes; the sides of the breast brown, with a yellow stripe. Scutellum brown. Abdomen brown, with an indistinct small pale yellow spot on each side of the first segment and a larger one on the second, and a triangular bright yellow-haired spot on the centre of the posterior borders of the second and third segments; there is a trace of a yellow band on the posterior border of the third segment, which becomes distinct on the three following ones. Underside of abdomen brown. Legs brown, the anterior and middle femora almost wholly yellowish, the posterior femora only so at their apex; the anterior and middle tibiæ likewise yellowish, and the tarsi

the same, with the last joints darker; the hind ones are slightly curved and covered with short pubescence. Wings clear, with the usual dark brown colouring at the base, on the fore border, and as a transverse band, this latter with a hyaline sinus on the inner border, leaving the fifth posterior cell clear except at its base; the apical spot is long and narrow, the apical border of the band is straight; the fifth longitudinal vein is slightly shaded with the darker colour.

The male is similar, but the yellow band on the third segment is as distinct as the others and the spots on the sides of the second segment obsolete; the triangle between the base of the antennæ and the eyes is wholly yellow; the tibiæ are browner and the pubescence on the posterior pair thicker; the basal cells of the wings are darker, as usual in the males of this genus, having only a narrow clear stripe between them and the band.

[To be continued.]

XLI.—*Descriptions of Fourteen new Species of Terrestrial Mollusca from South Africa.* By JAMES COSMO MELVILL, M.A., F.L.S., and JOHN HENRY PONSONBY, F.Z.S.

[Plate II.]

OUR last contribution towards the elucidation of the South-African non-marine molluscan fauna appeared in the 'Annals' for September 1899*, immediately before the outbreak of the Boer war. Notwithstanding the disturbed state of the country, however, several of our correspondents have been able to successfully continue the prosecution of their researches, with the following results. We would especially call attention to a most interesting Subulinoid form, with the last whorl partially evolute, and also a remarkable *Obeliscus*.

Ennea Berthæ, sp. n. (Pl. II. fig. 1.)

E. testa ovato-cylindrica, delicata, crystallina, læviuscula; anfractibus (apicali incluso obtusissimo) sex, parum ventricosis; apertura oblongo-ovata; peristomate apud basin paullum elongato, incrasato, albo, nitido, dentibus plicisve quatuor instructo, videlicet, plica parietali acuta, intrante, dente labiali crasso, indiviso, basali minuto, acuto, plica columellari interna, longa, tenui, acuta. Long. 3.50, lat. 1.25 mm.

* Ann. & Mag. N. H. ser. 7, vol. iv. pp. 192-200.



Ricardo, Gertrude. 1901. "XL.—Further notes on the Pangoninae of the family Tabanidae in the British Museum collection." *The Annals and magazine of natural history; zoology, botany, and geology* 8, 286–315.

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