

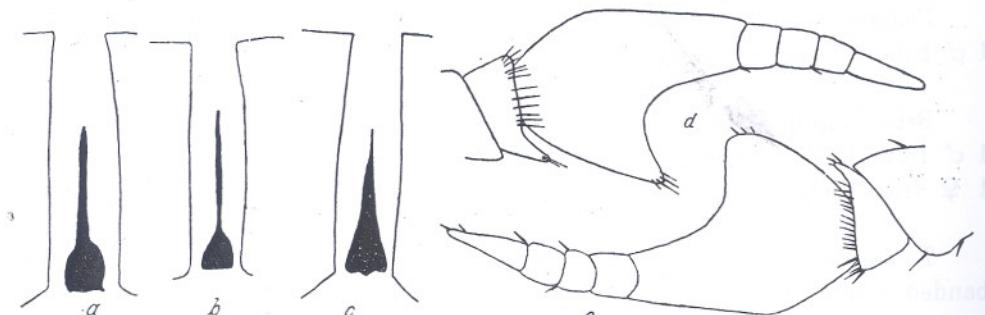
tudinal stripes on the scutum, yellowishbrown haired, scutellum broadly white at hindborder. Wings with brown crossband, not reaching the hindborder of the wing, base of wing reddishbrown. Tibiae largely yellowbrown with black, black haired apices. Abdomen rustybrown at base, then dull black, with yellowbrown, rustyyellowbrown haired segmentations to the 2d—6th segment, these segmentations elevated in the middle to low white triangles on the segments 2—5.

The Female.

Table of dimensions

Bodylength	varying from	13,2	m.M.	to	18	m.M.
Width of thorax	"	4,2	"	—	6,5	"
Width of abdomen	"	5	"	—	7	"
Wingexpanse	"	27,8	"	—	36,2	"
Length of head	"	2	"	—	3,2	"
Length of thorax	"	5	"	—	8	"
Length of abdomen	"	7	"	—	11,2	"
Length of wing	"	10,4	"	—	15	"
Breadth of wing	"	4	"	—	5,8	"
Foreheadindex	"	3,12		—	4,83	

The Head. (Textfig. 281). Forehead from  $\frac{1}{8}$ — $\frac{1}{4}$  narrower at vertex than it is at base. In a single case it showed almost the same width throughout. It is covered with rufous tomentum, in some instances the linear extension is accompanied by a darker tomentose shadow. The linear extension varies in shape and in length, sometimes it is broad at base and gradually narrows to a fine point, in other cases it starts from a knob-shaped incassation of the apex of the callus, whether extending on the basal  $\frac{2}{3}$  of the frontal stripe or even reaching the vertexspot, which is oval reddishbrown, triangular or even may be absent. Eyes in life bright



Textfig. 281.  
*T. optatus* Wlk. ♀. a—c. forehead, d, e. antennae.

coppergreen, in death this colour soon fades away. Proboscis yellowbrown, with dark pubescence. Antennae, first joint brownyellow, thick black haired on dorsum, distal lateral border yellowbrown haired; in other females the black pubescence on dorsum is reduced to a median row of black hairs, second joint black fringed, dorsal hump distinct, third joint blackbrown, basal annulation 1,3 times as long as its widest part, analogous index in other females 1,16), 1,1 times as long as the stylus. Tooth acute crowned with some black hairs.

**Thorax.** Scutum deep dullbrown, slightly paler on foreborder, rustybrown haired. Tufts at base of wings and more behind white. Scutellum havannabrown, havannabrown haired at base, hindborder white, rustybrown haired. Breast and sides yellowbrown, brown-yellow haired. In some females the hindborder of the scutum is more blackbrown. Wings with a brown crossband, starting from the redbrown to dark brown stigma, passing over the radial, cubital, disc cells and the apices of the first 3 posterior cells, not reaching the hindborder, although the veins enclosing the 4th and 5th posterior cells are accompanied by brownish shadows. Base of wing, including the foreborder of the wing, both basis cells and the anal cell pale reddishbrown. The disc cell may be uniformly brown or may show a paler centre, either in one or in both wings. Legs. First leg. Coxa yellowbrown, black at apex, yellowwhite to brownyellow haired. Femur reddishblack, black haired on dorsum, some redbrown hairs being intermixed at distal lateral border, knee paler. Tibia yellowbrown, yellowbrown and black haired at base, apical half black, black haired. Tarsalia black. The basal yellowbrown area of the front tibiae may vary to a certain extent. Second leg. Coxa as in first leg, yellowbrown haired, trochanter redbrown, black haired. Femur black haired on dorsum, distal lateral border brownyellow haired, proximal lateral border short, rustybrown haired, ventral surface bare, blackbrown, knee paler yellowbrown, black haired. Tibia yellowbrown, yellowbrown haired, distal lateral border long, black haired, apical ring narrow, black haired. First tarsale redbrown at base, then black, black haired. In other specimens the tibia bears a dorsal median row of black hairs. Third leg. Femur dull blackbrown, mainly yellowbrown haired, intermixed with some black hairs on dorsum and on venter at base, lateral borders reddishyellowbrown haired, knee pale reddish yellow. Tibia yellowbrown, with black haired apical ring, mainly black on dorsum, with a median row of black hairs, distal lateral border black haired on apical half, yellow haired to the base, on the proximal lateral border yellow hairs are intermixed between the black ones. Ventral surface rustyyellow haired. Tarsalia redbrown, black haired.

A bdomen rustybrown on basal 2 segments, elsewhere brownblack, black haired, segmentations yellowbrown, rustyyellowbrown haired, the mentioned median white spots are triangular or halfmoon-shaped, the segmentations are broadened to the lateral borders. Lateral borders of the first and second tergite bearing a reddishbrown spot, those of the other tergites being rustybrown, rustybrown haired, intermixed with some white hairs. Apex of seventh segment white haired on ventral surface. Ventral surface blackbrown, rustyyellow haired, with broad white, white haired segmentations. In a single female I observed the trace of a median spot on the first abdominal tergite, whereas in other instances a white median spot was present on the sixth segmentation.

#### The Male.

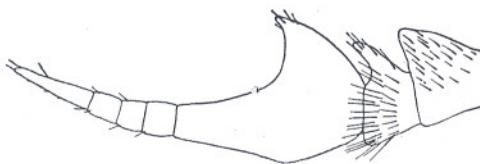
Table of dimensions.

Bodylength	15,2	m.M.
Width of thorax	6,2	„
Wingexpans	33,8	„
Length of head	4,5	„
Length of thorax	6,5	„
Length of wing	18,8	„
Breadth of wing	5,5	„

**The Head.** (Textfig. 282), Eyes violetyellowbrown on large-facetted part, lower third black, small-facetted, this area being prolonged to the vertex as a narrow border,

finally becoming less distinct. Subcallus reddishbrown at apex, elsewhere goldenyellow tomentose. Cheeks and face same colour, honeyyellow haired. Beard yellowwhite. Proboscis blackbrown.

**T h o r a x** as in the female. Scutum dark brownred, with 3 faint longitudinal stripes, foreborder yellowbrown. Shoulders and pteropleura, long black haired. Breast and sides reddish velvety-yellowbrown, brown haired. Wings identical. Legs more or less reddishbrown. First leg, femur dark redbrown, black haired on dorsum, distal lateral border yellowbrown haired, basal half of fore tibiae coppered haired. Second leg almost wholly yellowbrown, coppered haired, extreme base blackish, apical ring narrow, black haired, distal lateral border long, black haired. Third leg. Femur redbrown, copperyellowbrown haired, some black hairs being intermixed at base on dorsum, knee yellowbrown. Tibia dark yellowbrown, black haired on dorsum,



Textfig. 282.

*T. optatus* WLK. ♂. antenna.

ventral surface cinnamonbrown, coppered haired, apical ring reddishblackbrown, black haired. Tarsalia blackbrown, black haired.

A b d o m e n, wanting in type, complete in the Korinchi female, pale reddishbrown on basal 4 segments, following segments chestnutbrown to blackbrown, segmentations yellowbrown, yellow haired, lower in the middle, median triangles only faintly indicated on the 2d—4th segment, the triangles being not purely white. Ventral surface, with narrow, white haired segmentations and black, halfmoon-shaped median patches, forming together a longitudinal band, which is interrupted at the segmentations only.

SAUNDERS ♂ presents more distinct white segmentations and triangles on the 2d—5th segment, latter ones even higher than in the ♂ type. Bodylength 17 m.M., wingexpanse 33 m.M., width of thorax 5 m.M.

A female in the N.A.M. collection labelled as *T. equestris* WULP by VOLLENHOVEN does not belong to *T. optatus* WALKER, the type after which WULP has described his *T. equestris* is quite certainly identical with *T. optatus* WLK., confer the description, therefore *T. equestris* WULP is a synonym of *T. optatus* WLK. and the mentioned specimen from VOLLENHOVEN belongs to a new species, confer my *T. rufiscutellatus* nov. spec.

### 263. *Tabanus rufiscutellatus* nov. spec. (♀, ♂) Pl. 17, Fig. 6; Textfig. 283.

#### Habitat:

Isle Java

Type ♀ and 2 other females from Rangkas Dengklok, Krawang, Res. Batavia on buffalo 30.11.'21 Coll. V.S.L.

1 ♀ from Teloekdjambé, Krawang, Res. Batavia on buffalo 9.12.'21

1 ♀ „ Stomachcontents from *Bubulculus coromandus*, caught in Tjitaroem delta by BARTELS Coll. V.S.L.

1 ♀ from Mlangi, O. D. Widang, Toeban, Res. Rembang on buffalo 11.12.'22, DE WILDE (Textfig. 283) Coll. V.S.L.

1 ♂ from Java, JACOBSON Coll. N.A.M.

1 ♀ „ Java, BLOEM, VOLLENHOVEN det. *T. equestris* WULP „

Isle Sumatra

8 ♀♀ from Djambi, MARSIDI

Coll. V.S.L.

respectively 4 ♀♀ on buffalo 4.22

1 ♀ „ „ 22.1.28

3 ♀♀ „ cattle 22.1.28

*T. rufiscutellatus* is closely related to *T. optatus* WLK., but differs inter alia in the shape of the callus, the colour of cheeks and face, the yellow beard, the colour of the antennae and the uniformly coloured thorax and abdomen. Eyes green. Forehead ochrebrown, yellow and blackbrown haired, the latter especially at vertex on the small dark vertexspot. Callus pale olive-yellowbrown to reddishbrown, irregular square to club-shaped, linear extension rather long. Subcallus rustyyellow. Face and cheeks ochraceous, ochraceousyellow haired. Beard same colour. Palpi reddish- orchaceousyellow, acuminate, mainly yellow haired, intermixed with a few black hairs on outer border. Antennae ochraceous-yellow, black haired on basal joints, third joint redyellow to orangeous, tooth distinct. Thorax uniformly reddishbrown on scutum with indistinct paler stripes, black and rustybrown haired, lateral borders paler yellow tomentose. Scutellum same colour as scutum. Wings with brown crossband. Legs yellowbrown with tawny tibiae, darker at the apices. Abdomen wholly orangeous-yellow, darker to the apex, copperedbrown haired, no paler segmentations or white median spots. Male identical.

## The Female.

Table of dimensions

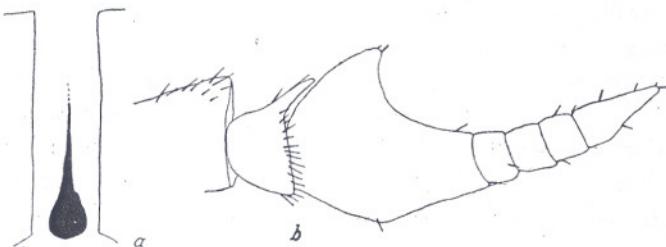
Bodylength	varying from	15,2 m.M.	to	17,5 m.M.
Width of thorax	„	4,2	„	6,2 „
Width of abdomen	„	5,5	„	7 „
Wingexpanse	„	30,2	„	35,8 „
Length of head	„	2,2	„	3 „
Length of thorax	„	6,2	„	7,8 „
Length of abdomen	„	8,2	„	10,5 „
Length of wing	„	13	„	14,8 „
Breadth of wing	„	4,8	„	5,5 „
Foreheadindex	„	3,29	—	4

The Head. (Textfig. 283). Forehead almost the same width throughout, either narrower anteriorly or narrower at vertex. The green eyes present some short hairs. Linear extension extending on the basal  $\frac{2}{3}$  of the frontal stripe. Palpi, first joint rustyredbrown, long yellow haired, second joint ochraceousyellow, slender, ending acute. Proboscis black, black haired, with some yellowbrown hairs on the sugarflaps. Antennae, first joint dull yellowishbrown, coffee-coloured to ochraceousyellow, black haired, second joint black fringed, dorsal hump

distinct, third joint, broad at base, curved, basal annulation orangeousyellow, almost equal in size to its widest part, slightly shorter than the long blackishredbrown stylus. Tooth blunt distinct, black haired.

*T horax* uniformly reddishvelvetybrown with indistinct paler stripes. Pteropleuron darker brown, with short black and yellowbrown pubescence. Tufts at base of wings and behind ochraceousyellow. Schutellum copperredbrown, with long pubescence along the hindborder. Breast and sides rustyyellowbrown haired, mesosternumlobus black haired. Wings with similar crossband as in *T. optatus* WLK., stigma darkbrownred. Foreborder and base of wings, including

basal cells and the anal cell, yellowbrown. Disc cell with clear centre in all specimens. Halteres, stalk deep rustybrown, club clearer yellowredbrown. Legs. First leg. Coxa yellowbrown, loose yellowbrown haired, apex darker mahoganybrown, black haired. Femur reddishbrown, dorsum black haired, distal lateral border black haired, intermixed with some yellow-



Textfig. 283.

*T. rufiscutellatus* s.s. ♀. a. forehead, b. antenna.

brown ones. Tibia incrassated and curved, reddishbrown at bases, apical third black, almost the whole tibia black haired, intermixed with some yellowbrown hairs. Tarsalia black. Second leg. Coxa yellow, rustybrown tomentose at base, blackbrown at apex, black haired, intermixed with some yellowbrown hairs, femur violetredbrown on ventral surface, dorsum yellowbrown, short black haired along the proximal lateral border, yellowbrown haired elsewhere. Tibia tawnyyellowbrown haired on dorsum, intermixed with black hairs, ventral surface black haired, intermixed with some yellowbrown hairs. First tarsale tawny redbrown, following ones darker reddishbrown, all black haired. Third leg. Coxa yellowbrown tomentose, yellowbrown haired, black haired at apex; trochanter redvioletbrown, black haired, femur reddishyellowbrown, dorsum mainly yellowrustybrown haired, distal lateral border covered with longer black pubescence, intermixed with some yellowbrown hairs, black haired on ventral surface. Tibia tawny, dorsum mainly black haired, with a row of yellowrustybrown hairs along the distal lateral border, ventral surface yellowbrown haired. Tarsalia redbrown, black haired. In the Widang female the fore femora are more chromateyellow, black haired on dorsum, yellow haired on ventral surface, fore tibiae of the same female orangeous rustybrown at apex. Middle femora chromateyellow, yellow haired, intermixed with some black hairs on dorsum, middle tibiae orangeous, some black hairs being found on dorsum in the middle. Hind tibiae paler than the middle tibiae.

*A b d o m e n* uniformly ochraceous-orangeyellow, copperred haired, segmentations slightly darker, chocolatereddishbrown. Black hairs are intermixed between the copper-coloured hairs. Lateral borders of tergites yellowrustybrown. Ventral surface yellow, with redyellow segmentations, pubescence ferruginous.

#### 264. *Tabanus melanognathus* BIGOT (♀, ♂) Textfig. 284.

Syn. *T. non optatus* RICARDO.

#### References:

BIGOT, Nouv. Arch. Mus. Hist. Nat. Paris (3) II, p. 204 (1890).

- RICARDO, Rec. Ind. Mus. IV, p. 226 (1911).  
 „ Rec. Ind. Mus. IV, p. 140 (1911).

**Habitat:**

Type ♀ of unknown locality. AUSTEN stated the synonymy of both species by comparison of the types.

- ♂ from Purnea District Ind. Mus. Coll.  
 ♀ „ unknown locality, BR.M. Coll.  
 2 ♂♂ from unknown locality BR.M. Coll.  
 1 ♂ „ (BIGOT's type) from Laos

*Tabanus melanognathus* BIGOT is distinguishable from *T. rufiscutellatus* SCHUURMANS STEKHoven, to which it is closely allied, by the shape of the callus, the colour of the beard, the shape and pubescence of the palpi. Peculiar distinct abdominal markings wanting. Forehead brown. Callus pears-shaped to triangular, darkredbrown, linear extension fine and short. Subcallus and cheeks greyishbrown. Beard white. Face brownish, white haired. Palpi acuminate yellowbrown, white haired. Antennae reddishyellow, black haired on basal joints, third joint missing. Thorax denuded, brown, with 2 or 3 longitudinal brown stripes. Breast brownishwhite haired. Wings with brown crossband. Legs yellowbrown. Abdomen bright brownyellow on the basal 3 segments, darker to the apex, yellowwhite haired on disc of tergites, narrowly black haired at bases of the segments. In certain lights median whitish triangles are visible. Ventral surface with white haired segmentations, elsewhere reddishbrown, with darker median, black haired patches. Length of female type 19 m.M. male type 14 m.M., other males 17—19 m.M.

**The Female.**

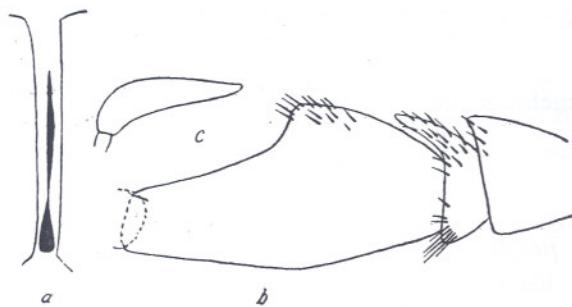
The Head. (Textfig. 284). Forehead almost the same width throughout, index 5. Palpi stout. Antennae incomplete, second joint with a distinct spine, third joint broken off.

The Thorax denuded on scutum, which shows 2 distinct longitudinal stripes, whereas probably a third brown stripe is present. Lateral borders of scutum whitish. Tufts at base of wings and more behind white. Pteropleuron reddishyellowbrown, black haired. Hindborder of scutellum greyish. Sides and breast greybrown, brownishwhite haired. The wings are brown banded, this crossband does not reach the hindborder, foreborder yellowbrown, stigma dark reddish havannabrown. Legs. First leg. Coxa greywhite, apex brown, white haired, trochanter yellowbrown, black haired. Femur reddish brownblack, black haired, knee yellowbrown. Tibia swollen, yellowishbrown on basal half, deep redbrown at apex, black haired. Tarsalia black, black haired. Second leg. Coxa greyishbrown, white haired, trochanter brown, femur darker than in first leg, mainly black haired. Tibia bright yellowbrown, goldenyellow haired, apical ring reddish blackbrown, black haired. Tarsalia black. Third leg, femur blackbrown, yellow haired at apex and on distal lateral border, elsewhere black haired, knee yellowbrown. Tibia yellowbrown to dark olivebrown, yellow haired with blackish, black haired apical ring. Tarsalia deep brownblack, black haired.

Textfig. 284.  
*T. melanognathus* BIGOT ♀ forehead.



segmentations on the segments 1—6 with broad yellowbrown, goldenyellow haired, elevated in the middle to distinct triangles, seventh segment wholly black haired. Lateral borders of the first 4 tergites brownish, yellow haired. Ventral surface, with basal 2 segments caramelbrown, yellow haired, following 4 segments redbrown, black haired at bases, yellowbrown, goldenyellow haired at segmentations and sides, 7th segment wholly black haired. Length 16—19 m.M. ♂ 16—19 m.M.



Textfig. 285

*T. flexilis* Wlk. ♀. a. forehead, b. antenna, c. palpe,

at base of wings yellowwhite. Breast citronyellowwhite, yellow and yellowwhite haired. Wings with peculiar markings and crossband, first posterior cell closed, foreborder reddish-yellow, stigma dull pale havannabrown, a smokybrown apical shadow being present. The apical crossband is attached to it and surrounds with its brown colour the cubital veins and the veins running from the disc cell to near the hindborder of the wing but does not reach it. Centres of cells paler. One may hardly speak from a second crossband, but the veinlets, surrounding the apices of both basal cells are accompanied by brown shadows, thus giving the impression of a crossband. Halteres, stalk redbrown, club ochraceousyellow. Legs. First leg. Coxa yellowbrown, yellow and yellowwhite haired, trochanter yellowbrown, femur yellowish olivebrown, black haired on dorsum in the middle, lateral borders and knee yellow haired. Tibia, reddishbrown, reddishyellow haired at base, apex chestnutbrown, black haired. Tarsalia black, black haired. Second leg. Coxa and trochanter redbrown, femur dull pale buffbrown, yellow haired, some black hairs being visible at apex, tibia orangeousyellowbrown at base, apex blackbrown, dorsum black haired, ventral surface reddishyellow haired at base elsewhere black haired. Tarsalia dark redblackbrown, black haired. Third leg. Coxa brownishyellow, yellow haired, trochanter reddishbrown, femur as in second leg, tibia blackish tawny, black haired on dorsum, ventral surface orangeousredyellow haired, except on the apical, black haired band. Tarsalia blackbrown, black haired.

A bdomen as described. A female from Menado has the first posterior cell of the wings not wholly closed, bot narrowly open at hindborder.

#### The Male.

The Head. (Textfig. 286). Eyes with equal facets over the whole surface. Subcallus orangeousyellowbrown. Face and cheeks yellow, yellow haired. Beard yellow. Palpi orangeousyellow, yellow haired. Antennae, first joint yellow, mainly yellow haired, a few black hairs present on dorsum, second joint olivebrown, third joint reddishyellow, basal annulation almost 2 times as long as its widest part, 1,34 times as long as the redbrown stylus.

#### The Female.

The Head. (Textfig. 285). Forehead 0,3 narrower anteriorly than it is at vertex, index 10. Antennae, first joint orangeousyellow, some black hairs being visible at apex on dorsum, elsewhere yellow haired, second joint reddishyellow, black fringed, dorsal spur long, third joint redyellow, basal annulation 1,83 times as long as its widest part, tooth distinct, blunt, black haired.

The Thorax goldenyellow haired on shoulders and pteropleura, tufts

**T h o r a x.** Scutum denuded, greyishyellow tomentose on foreborder, disc brownish yellow haired. Wings with yellowbrown foreborder, pale havannabrown stigma, the usual markings and the first posterior cell strongly narrowed at opening, but not wholly closed.



Textfig. 286.

*T. flexilis* WLK. ♂. antenna.

**A b d o m e n** conical, first segmentation with a small, median yellow spot, the 2d—6th segments have yellow haired segmentations with median triangles, which are less elevated than in the female sex. Lateral borders of 1st and second tergite yellow haired, those of the 3d and following tergites are partly black, partly yellow haired. Sternites yellow haired at the segmentations only, elsewhere black haired.

266. *Tabanus biatripunctatus* nov. spec. (♀). Textfig. 287.**Habitat:**

Locality unknown

A ♀, closely allied to *T. flexilis* WLK. distinguishable inter alia by the velvetybrown, black haired forehead. Callus blackbrown, hardly broader than the linear extension. Subcallus and upper cheeks velvetybrown, black haired. Lower cheeks and face as in *T. flexilis*. Orangeousyellow, yellow haired. Beard yellow. Palpi blackbrown, black haired. Antennae tawny, black haired, third joint orangeousyellow. Thorax dark olivebrown, goldenyellow haired. Wings almost as in *T. flexilis*, apical crossband broader, reaching the hindborder, no clear centres in the cells. Legs blackbrown to black. Abdomen partly denuded, colour as in *T. flexilis*, with a median black spot on the 2d and 3d segment.

The **H e a d**. (Textfig. 287). Forehead 1/3 narrower anteriorly than it is at vertex, index 10. Callus narrow. Palpi, second joint swollen at base, ending with a brown blunt tooth, black haired, with some yellow hairs at base. Antennae broad on basal annulation of the third joint, stylus short, blackbrown.

**T h o r a x** dark olivebrown, scutellum paler, yellowbrown, black haired at base, goldenyellow haired at borders, scutum without longitudinal stripes, goldenyellow haired. Pteropleuron yellowbrown, black haired. Breast grey-yellowbrown, yellow haired, intermixed with some long loose brownish hairs. Wings as in *T. flexilis*, apical crossband more continuous, concave at basal border, letting free the apex of the submarginal cell. Foreborder of wing reddishbrown, stigma reddish. Halteres, stalk redbrown, club yellowwhite. Legs. First leg. Coxa yellowbrown, yellow haired, apex blackishbrown, black haired, trochanter and femur brownblack, black haired, knee yellowbrown, tibia reddishblackbrown, black haired, tarsalia similar. Second leg identical, femur blackbrown, dorsum black haired, distal lateral border yellow haired on lower half. Third leg similar, tibia black, black haired.

**A b d o m e n**, first segment, with a black, black haired collar, embracing the scutellum, rest of 1st segment orangeousyellow, yellow haired, 2d and third segment orangeousyellow

Textfig. 287.  
*T. biatripunctatus*  
s.s. ♀a. forehead  
b. antenna.

with rectangular black, black haired spots at base of segmentations and sides, yellow haired. Segmentations 3—5 yellow haired, but not elevated to the huge triangles which *T. flexilis* shows, 5th segmentation narrower, yellowwhite. Segment 4—7 blackbrown, black haired. Ventral surface reddishyellowbrown, yellow haired on basal 2 segments, the 2d showing some black hairs in the middle. Third segment same colour, base black haired, segmentation yellow haired. Following 2 segments blackbrown, black haired at base, segmentations yellowbrown, yellow haired. Sixth and seventh segment wholly black haired.

#### GEOGRAPHICAL DISTRIBUTION OF THE SPECIES BELONGING TO THE GENUS TABANUS.

This list includes only those species, which are named in RICARDO's list and in my book and is therefore incomplete. The species which our Archipelago has in common with the neighbouring countries are printed in fat types

##### The Oriental Region

British India, including the Pundjab, Northern India, Nepal, Bengal, Assam (55 species.)

*Tabanus albocostatus*, *albofasciatus*, *andamanicus*, *auriflamma*, *auristriatus*, *avittatus*, *bicallosus*, *bicinctus*, *bombayensis*, ***brunnipennis***, *calidus*, *ditaeniatus*, *diversifrons*, *explicatus*, *flavicinctus*, *flavimedius*, *flavipus*, *flaviventris*, *hirtipalpis*, ***hybridus***, *imparicallosus*, *indianus*, *joidus*, *jucundus*, ***khasiensis***, *laotianus*, *laticinctus*, *latifrons*, *leucocnematus*, *leucohirtus*, *leucopogon*, *manipurensis*, *melanognathus*, *monilifer*, *monotaeniatus*, *nemocallosus*, *nephodes*, *nicobarensis*, *noctuinus*, *obconicus*, ***optatus***, *pallidiventer*, *palpalis*, *puteus*, *rectilineatus*, *rubicundus*, ***rubidus***, *rufiventris*, *speciosus*, *striatus*, *subhirtus*, *tenebrosus*, *tenens*, *tuberculatus*, *virgo*.

##### Ceylon (13 species)

*Tabanus atrohirtus*, ***ceylonicus***, *discrepans*, *flavissimus*, *fuscicauda*, *griseifacies*, *inflatipalpis*, *internus*, *jucundus*, *puteus*, ***rubidus***, *speciosus*, *tenens*.

##### Siam, including Burma, Annam, Cambodja (23 species.)

*Tabanus abbreviatus*, *abscondens*, *annamitus*, *birmanicus*, ***brunnipennis***, *burmanense*, *equicinctus*, *fuscomaculatus*, ***griseipalpis***, ***immanis***, *insidiator*, *leucosparsus*, *melanognathus*, ***multicinctus***, *nigrotectus*, *ochros*, *oxyceratus*, *pallidepectoratus*, ***rubidus***, *sexcinctus*, *siamensis*, *striatus*, *subcinerascens*.

##### Federated Malay States (25 species.)

*Tabanus albitriangularis*, *bicinctus*, *brunneus*, *ceylonicus*, *dissimilis*, *effilatus*, *flavothorax*, *fumifer*, *hirtistriatus*, ***hybridus***, *immanis*, *khasiensis*, *lentisignatus*, *minimus*, ***optatus***, *perakiensis*, *pratti*, *rarus*, ***rubidus***, *rufiventris*, *striatus*, *significans*, *simplissimus*, *tinetothorax*, *uniformis*.

##### Riouw Archipelago (4 species.)

*Tabanus hirtistriatus*, *immanis*, *malayensis*, *undulans*.

##### Sumatra (63 species.)

*Tabanus albicinctus*, *albitriangularis*, *angustistriatus*, *angustritriangularis*,

*atripilosus*, *atrohirtus*, *angustiventer*, *auriceingulatus*, *aurilineatus*, *bilateralis*, *brunneus*, *brunnipes*, *brunniventer*, *bubalophilus*, *canipus*, *ceylonicus*, *chrysater*, *citripilosus*, *dissimilis*, *effilatus*, *flavicornis*, *flaviscutellatus*, *flavistriatus*, *flaviti-biatus*, *flavitriangularis*, *flavothorax*, *fontinalis*, *fulvissimus*, *fumifer*, *fumipennis*, *fuscibarbus*, *fuscithorax*, *fusciventer*, *geniculatus*, *gilvus*, *griseipalpis*, *griseitho-rax*, *hirtistriatus*, *immanis*, *incultus*, *ingens*, *inobservatus*, *khasiensis*, *longirostris*, *malayensis*, *minimus*, *multicinctus*, *nexus*, *nigerrimus*, *ochroäter*, *optatus*, *ovi-ventris*, *parallelifrons*, *paralleliventer*, *perakiensis*, *pseudorufiventris*, *rubidus*, *rufiscutellatus*, *rufiventris*, *significans*, *striatus*, *tristis*, *ventriflavimarginatus*.

Nias (6 species.)

*Tabanus fumifer*, *immanis*, *malayensis*, *rubidus*, *rufiventris*, *striatus*.

Street Soenda.

Isle Sebesi (2 species.)

*Tabanus auriventer*, *longirostris*.

Bay of Batavia

Isle Leyden (1 species.)

*Tabanus platybasiannulatus*.

Isle Java (38 species.)

*Tabanus abbreviatus*, *albicinctus*, *albivittatus*, *albopunctatus*, *angustiventer*, *ardens*, *atripunctatus*, *auribundus*, *aurisparsus*, *basalis*, *brunneus*, *brunni-pennis*, *caerulescens*, *ceylonicus*, *chloropis*, *chrysater*, *flavistriatus*, *flavivitta-tus*, *fulvissimus*, *fumifer*, *griseipalpis*, *humillimus*, *immanis*, *javanus*, *longi-cornis*, *malayensis*, *minimus*, *monotaeniatus*, *multicinctus*, *optatus*, *rubidus*, *ruficornis*, *rufiscutellatus*, *rufiventris*, *servillei*, *striatus*, *subhirtus*, *tricoloratus*.

Isle Madoera (4 species.)

*Tabanus effilatus*, *madoerensis*, *rubidus*, *striatus*.

Isle Kangean (1 species.)

*Tabanus rubidus*.

Isle Borneo (28 species.)

*Tabanus atriventer*, *borniensis*, *canipus*, *crocitinctipennis*, *cylindricallosus*, *elegans*, *flavipilosus*, *fulvissimus*, *fumifer*, *fuscifrons*, *hybridus*, *ignobilis*, *immanis*, *justorius*, *latifascies*, *lativenter*, *lentisignatus*, *minimus*, *nexus*, *nigerrimus*, *optatus*, *parallelifrons*, *pauper*, *pratti*, *rubriscutatus*, *simplissimus*, *varicolor*, *ventriflavimarginatus*.

Isle Soembawa (3 species.)

*Tabanus rubidus*, *soembawensis*, *striatus*.

Isle Soemba (2 species.)

*Tabanus rubidus*, *striatus*.

Isle Timor, (3 species.)

*Tabanus argentisignatus*, *aurifer*, *striatus*.

The Phillipines 4 species (at the borders of the Oriental and the Australian Region).

*Tabanus factiosus*, *flexilis*, *reducens*, *striatus*.

## INDEX.

The synonyms are printed in italics

Page.	Page.	Page.			
Genus <i>Chrysops</i> . . . . .	12	atomaria . . . . .	127	amboinensis . . . . .	66
<i>albicincta</i> . . . . .	22	atriventer . . . . .	101	Genus <i>Silvius</i> . . . . .	48
<i>alter</i> . . . . .	25	borneana . . . . .	94	<i>atratus</i> . . . . .	57
<i>atrisignata</i> . . . . .	45	cingulata . . . . .	75	<i>atripes</i> . . . . .	54
<i>atrivittata</i> . . . . .	26	confluens . . . . .	111	<i>de Meyeri</i> . . . . .	53
<i>bifasciata</i> . . . . .	29, 36	elegans . . . . .	108	<i>dimidiatus</i> . . . . .	56
<i>cincta</i> . . . . .	45	ensifer . . . . .	79	<i>latistriatus</i> . . . . .	50
<i>clavigrus</i> . . . . .	46	equitibiata . . . . .	92	<i>variegatus</i> . . . . .	55
<i>dispar</i> . . . . .	29	fumigata . . . . .	106	<i>vittatus</i> . . . . .	49
<i>fasciata</i> . . . . .	39	intermedia . . . . .	83	Genus <i>Tabanus</i> . . . . .	137
<i>fixissima</i> . . . . .	16	irregularis . . . . .	101	<i>abbreviatus</i> . . . . .	210
<i>flaviventris</i> . . . . .	36	irrorata . . . . .	86	<i>abscondens</i> . . . . .	211
<i>flavocincta</i> . . . . .	20	jacobsonii . . . . .	129	<i>albicinctus</i> . . . . .	313
<i>impar</i> . . . . .	29, 36	javana . . . . .	113	<i>albidosegmentatus</i> . . . . .	332
<i>ligatus</i> . . . . .	29, 36	lata . . . . .	91, 100	<i>albimedium</i> . . . . .	186, 209
<i>mlokosciewiszi</i> . . . . .	29	lunulata . . . . .	123	<i>albitriangularis</i> . . . . .	372
<i>pellucida</i> . . . . .	21	maculata . . . . .	85	<i>albivittatus</i> . . . . .	308
<i>rufitarsis</i> . . . . .	39, 42	malayensis . . . . .	133	<i>albopunctatus</i> . . . . .	346
<i>semicirculus</i> . . . . .	29, 36	mediatirifrons . . . . .	132	<i>alboscutatus</i> . . . . .	533
<i>signifer</i> . . . . .	43	nigricans . . . . .	97	<i>alfourensis</i> . . . . .	220
<i>terminalis</i> . . . . .	36	nigrita . . . . .	100	<i>andamanicus</i> . . . . .	212
<i>testaceicallosa</i> . . . . .	16	pachycera . . . . .	130	<i>angusticallosus</i> . . . . .	401
<i>translucens</i> . . . . .	24	paucipunctata . . . . .	89	<i>angustipalpis</i> . . . . .	473
<i>unizonata</i> . . . . .	16	punctifera . . . . .	122	<i>angustistriatus</i> . . . . .	260
<i>v-nigrum</i> . . . . .	36	pungens . . . . .	103	<i>angustitriangularis</i> . . . . .	401
Genus <i>Chrysozona</i> . . . . .	68	raloris . . . . .	110	<i>angustiventer</i> . . . . .	525
,, <i>Diatomineura</i> . . . . .	61	rubida . . . . .	78	<i>annanitus</i> . . . . .	151
,, <i>Erephopsie</i> . . . . .	61	splendens . . . . .	95	<i>argentisignatus</i> . . . . .	364
<i>albibarbus</i> . . . . .	65	stantoni . . . . .	123	<i>aoeënsis</i> . . . . .	448
<i>caliginosa</i> . . . . .	62	truncata . . . . .	126	<i>assamensis</i> . . . . .	271
<i>novaeguineensis</i> . . . . .	64	tuberculata . . . . .	81	<i>atripilosus</i> . . . . .	508
Genus <i>Gastroxides</i> . . . . .	59	unizonata . . . . .	94	<i>atripunctatus</i> . . . . .	352
<i>aterrimus</i> . . . . .	60	validicornis . . . . .	130	<i>atrisignatus</i> . . . . .	356
<i>fuscus</i> . . . . .	61	Genus <i>Neobolbodimyia</i>	135	<i>atriventer</i> . . . . .	468
Genus <i>Haematopota</i> . . . . .	68	laticornis . . . . .	136	<i>atrohirtus</i> . . . . .	481
<i>annulipes</i> . . . . .	99	nigra . . . . .	136	<i>auribundus</i> . . . . .	255
		Genus <i>Pangonia</i> . . . . .	65	<i>auricingulatus</i> . . . . .	295

	Page.		Page.		Page.
<i>aurilineatus</i>	231	<i>equicinctus</i>	282	<i>immixtus</i>	297
<i>aurifer</i>	348	<i>erythrocephalus</i>	419	<i>imparicallosus</i>	325
<i>aurisparsus</i>	387	<i>exagens</i>	387	<i>incultus</i>	374
<i>auristriatus</i>	247	<i>extricans</i>	386	<i>indianus</i>	365
<i>auriventer</i>	423	<i>facilis</i>	415	<i>indistinctus</i>	332
<i>aurivittatus</i>	268	<i>factiosus</i>	370	<i>inflatipalpis</i>	300
<i>avittatus</i>	153	<i>fenestratus</i>	185	<i>ingens</i>	465
<i>basalis</i>	262	<i>flammeus</i>	505	<i>inobservatus</i>	470
<i>basifasciatus</i>	281	<i>flavicinctus</i>	323	<i>insidiator</i>	315
<i>biatripunctatus</i>	545	<i>flavicornis</i>	303	<i>insurgens</i>	446
<i>bicinctus</i>	310	<i>flavimarginatus</i>	527	<i>intempestivus</i>	457
<i>bilateralis</i>	344	<i>flavimedius</i>	215	<i>internus</i>	412
<i>bipunctatus</i>	519	<i>flavipennis</i>	500	<i>javanus</i>	379
<i>birmanicus</i>	259	<i>flavipilosus</i>	454	<i>jucundus</i>	147
<i>bombayensis</i>	320	<i>flavipus</i>	455	<i>khasiensis</i>	289
<i>breviusculus</i>	451	<i>flaviscutellatus</i>	341	<i>lacrymans</i>	186, 209
<i>brunneothorax</i>	222	<i>flavissimus</i>	489	<i>laetus</i>	333
<i>brunneus</i>	379	<i>flavistriatus</i>	252	<i>laglaizei</i>	415
<i>brunnipennis</i>	152	<i>flavitibiatus</i>	242	<i>laotianus</i>	414
<i>brunnipes</i>	520	<i>flavitriangularis</i>	391	<i>laticinctus</i>	305
<i>brunnitibialis</i>	185	<i>flavivittafus</i>	317	<i>latifascies</i>	288
<i>bubalophilus</i>	349	<i>flavothorax</i>	528	<i>latifrons</i>	472
<i>burmanense</i>	245	<i>flexilis</i>	543	<i>lativenter</i>	390
<i>caerulescens</i>	419	<i>fontinalis</i>	161	<i>lentisignatus</i>	506
<i>caesius</i>	419	<i>formosiensis</i>	458	<i>leucocnematus</i>	321
<i>calidus</i>	151	<i>fulgidus</i>	385	<i>leucosparsus</i>	271
<i>canipus</i>	229	<i>fulvissimus</i>	487	<i>lineatus</i>	148
<i>ceramensis</i>	377	<i>fumifer</i>	392	<i>longibasalis</i>	243
<i>ceylonicus</i>	431	<i>fumipennis</i>	476	<i>longicornis</i>	456
<i>chloropis</i>	250	<i>fuscibarbus</i>	515	<i>longirostris</i>	422
<i>chrysater</i>	264	<i>fuscicauda</i>	298	<i>orentzi</i>	447
<i>citripilosus</i>	218	<i>fuscifrons</i>	485	<i>luciliaeformis</i>	504
<i>cohaerens</i>	220	<i>fuscithorax</i>	531		
<i>conicus</i>	210	<i>fusciventer</i>	257		
<i>crassus</i>	291				
<i>crocinctinpennis</i>	499	<i>geniculatus</i>	516	<i>macfarlanei</i>	515
<i>cylindricallosus</i>	241	<i>gilvus</i>	240	<i>madoerensis</i>	459
<i>denticulatus</i>	490	<i>griseifacies</i>	455	<i>malayensis</i>	382
<i>designatus</i>	148	<i>griseipalpis</i>	312	<i>megalops</i>	163
<i>discrepans</i>	291	<i>griseithorax</i>	424	<i>melanognathus</i>	541
<i>dissimilis</i>	367	<i>griseiventer</i>	288	<i>mentitus</i>	355
<i>divisus</i>	335			<i>metallicus</i>	503
<i>doreicus</i>	496	<i>hilaris</i>	181	<i>minimus</i>	426
<i>effilatus</i>	154	<i>hirtistriatus</i>	226	<i>monilifer</i>	367
<i>elegans</i>	474	<i>hybridus</i>	235	<i>monotaeniatus</i>	156
<i>elesteēm</i>	148	<i>humillimus</i>	462	<i>multicinctus</i>	283
<i>equestris</i>	533				
		<i>ignobilis</i>	371	<i>nexus</i>	389
		<i>illustris</i>	504	<i>nigerrimus</i>	497
		<i>immanis</i>	402	<i>noctuinus</i>	467

	Page.		Page.		Page.
<i>nonoptatus</i> . . . . .	541	<i>puteus</i> . . . . .	234	<i>soembawensis</i> . . . . .	353
<i>novaeguineensis</i> . . . . .	417	<i>pyrausta</i> . . . . .	269	<i>sol</i> . . . . .	450
<i>obscuratus</i> . . . . .	468	<i>raffrayi</i> . . . . .	291	<i>speculum</i> . . . . .	329
<i>obtusipalpis</i> . . . . .	198	<i>rectilineatus</i> . . . . .	246	<i>spoliatus</i> . . . . .	354
<i>ochroäter</i> . . . . .	266	<i>recusans</i> . . . . .	507	<i>stantoni</i> . . . . .	402
<i>ochros</i> . . . . .	452	<i>reducens</i> . . . . .	158	<i>striatus</i> . . . . .	163
<i>ochrothorax</i> . . . . .	444	<i>rubicundus</i> . . . . .	413	<i>subhirtus</i> . . . . .	358
<i>olivaceus</i> . . . . .	453	<i>rubidus</i> . . . . .	186	<i>succurvus</i> . . . . .	376
<i>opalescens</i> . . . . .	513	<i>rubriscutatus</i> . . . . .	486	<i>sylviooides</i> . . . . .	294
<i>ophthalmicus</i> . . . . .	163	<i>rubriventris</i> . . . . .	417	<i>tenebrosus</i> . . . . .	466
<i>optatus</i> . . . . .	553	<i>ruficallosus</i> . . . . .	163	<i>tenens</i> . . . . .	181
<i>oviventris</i> . . . . .	509	<i>ruficornis</i> . . . . .	472	<i>tinctothorax</i> . . . . .	492
<i>oxyceratus</i> . . . . .	287	<i>rufinotatus</i> . . . . .	148	<i>tricoloratus</i> . . . . .	213
<i>pallidiventer</i> . . . . .	389	<i>rufiscutellatus</i> . . . . .	539	<i>tristis</i> . . . . .	511
<i>papouinus</i> . . . . .	297	<i>rufiventris</i> . . . . .	271	<i>umbrosus</i> . . . . .	186, 209
<i>parallelifrons</i> . . . . .	378	<i>sanguineus</i> . . . . .	271	<i>undulans</i> . . . . .	217
<i>paralleliventer</i> . . . . .	244	<i>selene</i> . . . . .	291	<i>uniformis</i> . . . . .	461
<i>partitus</i> . . . . .	163	<i>semicirculus</i> . . . . .	335	<i>univentris</i> . . . . .	402
<i>perakiensis</i> . . . . .	477	<i>serus</i> . . . . .	415	<i>vagus</i> . . . . .	186, 208
<i>picticornis</i> . . . . .	220	<i>servillei</i> . . . . .	269	<i>ventriflavimarginatus</i> .	495
<i>pictipennis</i> . . . . .	543	<i>sexcinctus</i> . . . . .	306	<i>wollastoni</i> . . . . .	493
<i>platybasiannulatus</i> .	421	<i>significans</i> . . . . .	331		
<i>pollinosus</i> . . . . .	494	<i>simplissimus</i> * . . . . .	440		
<i>pratti</i> . . . . .	328	<i>sinicus</i> . . . . .	184		
<i>pseudorufiventris</i> . .	276				

## ERRATA.

Page:

112. Heading *H. confluens*; read Pl. 2, Fig. 6, instead of Pl. 2, Fig. 7.
113. Heading *H. javana*; read Pl. 2, Fig. 7, instead of Pl. 2, Fig. 6.
163. Transfer the line 17 ♀ ♀ from Si Doeaa doeaa to the top of pag. 164.
165. last line: transfer the figures 6 and 25 to the columns Nov. resp. Dec.
166. first table; transfer the figure 4 in the column Dec. to the column Nov.
216. Read Key 13 instead of Key 31.
252. the fourth line from the foot: strike out the words „on buffalo”.
264. Heading *Tabanus chrysater*, Read Pl. 9, Fig. 1,2 instead of Pl. 9, Fig. 15
225. Line 16; Read Padang, Sidempoean instead of P. Sidempoena.

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## Explanation of the Plates.

Most of the coloured figures have been drawn by the native artist SISWOHAMIDJOJO, some others by another native artist DJAÄFAR, whereas another number has been made by my friend JOHN PRYS, whom I am indebted many tanks for his skilful help in this precious work.

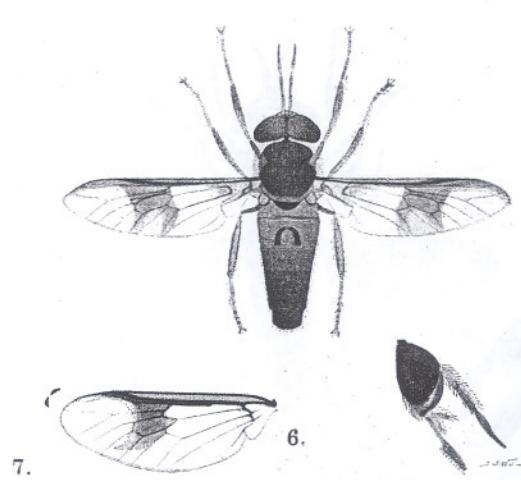
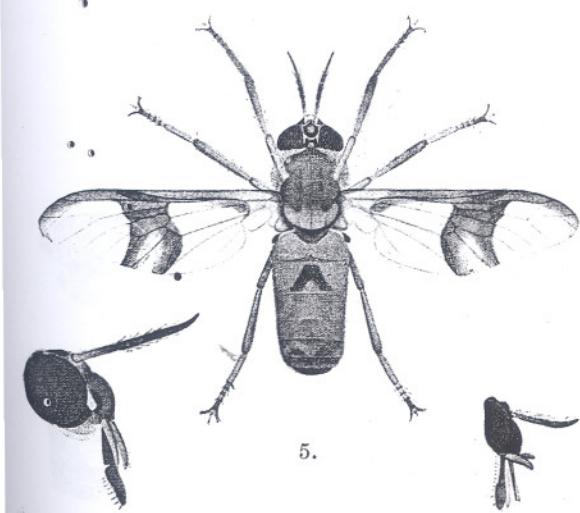
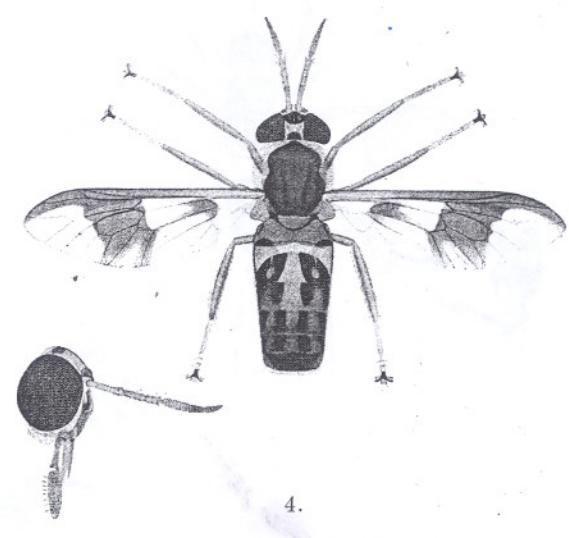
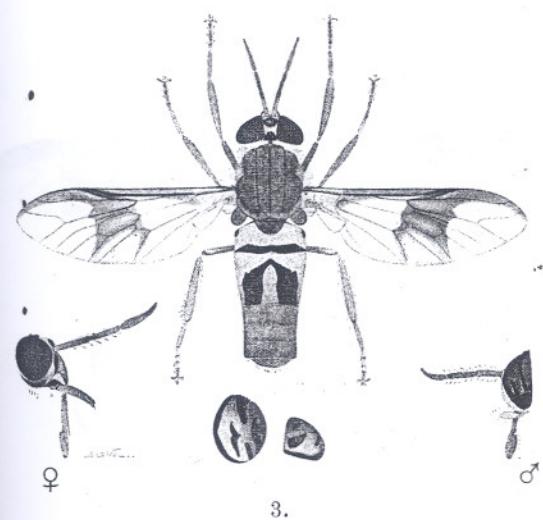
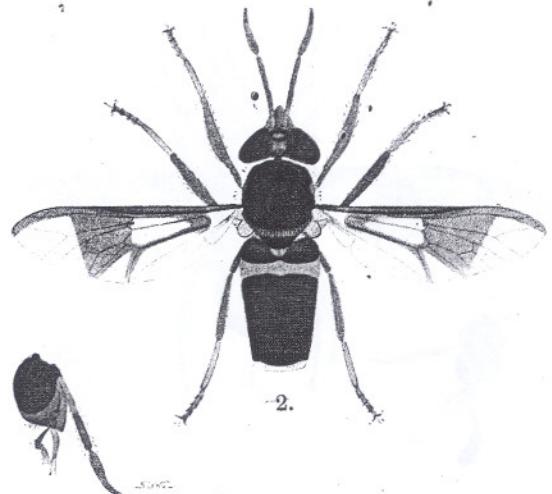
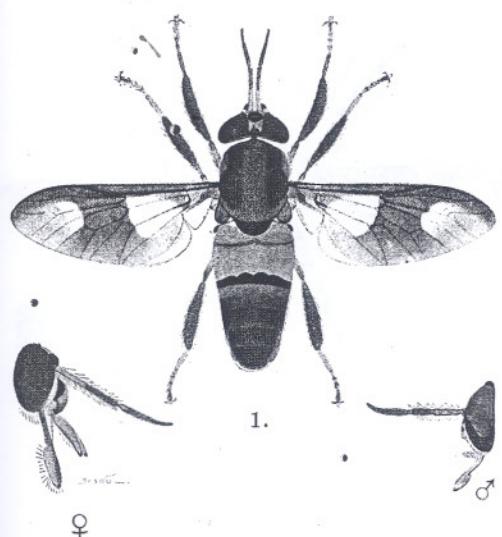
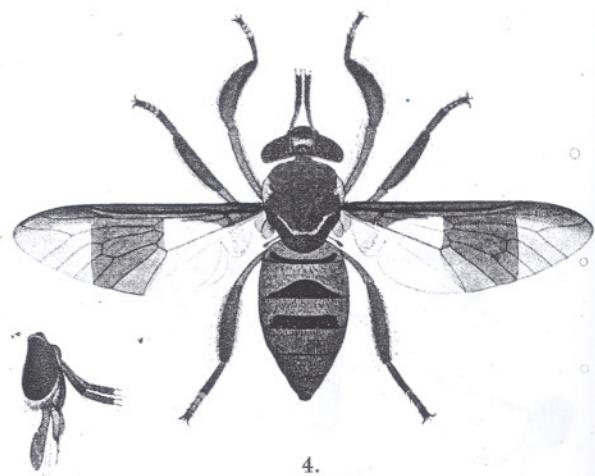
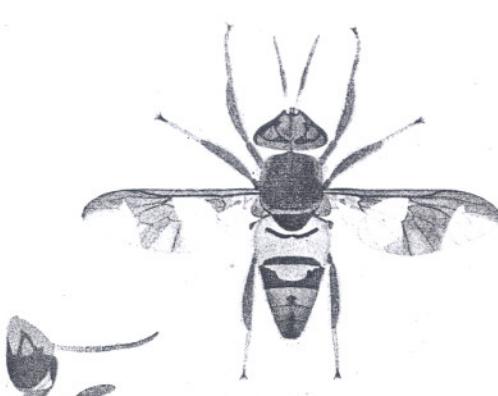
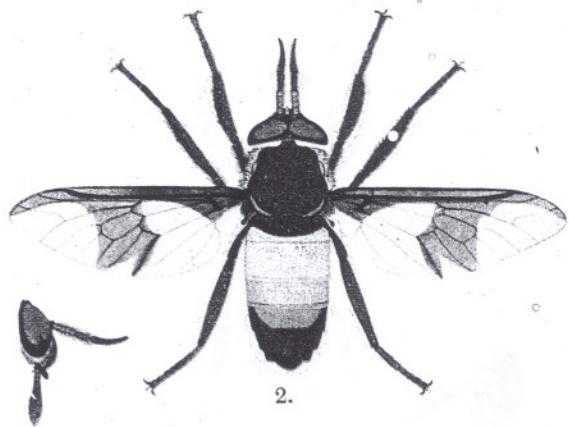
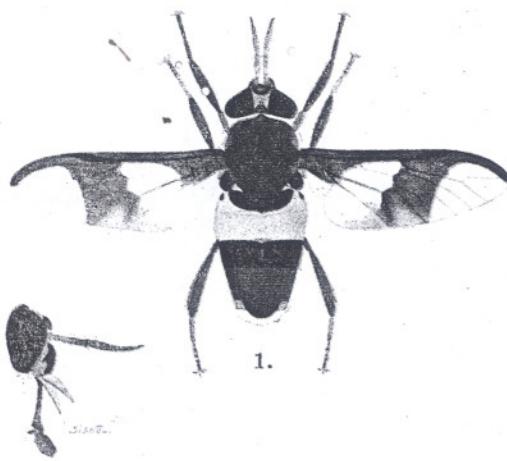
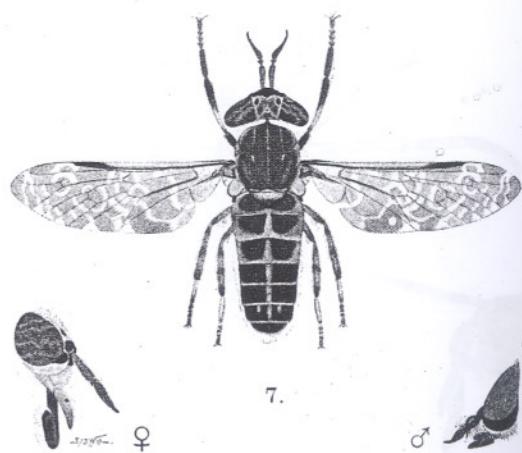
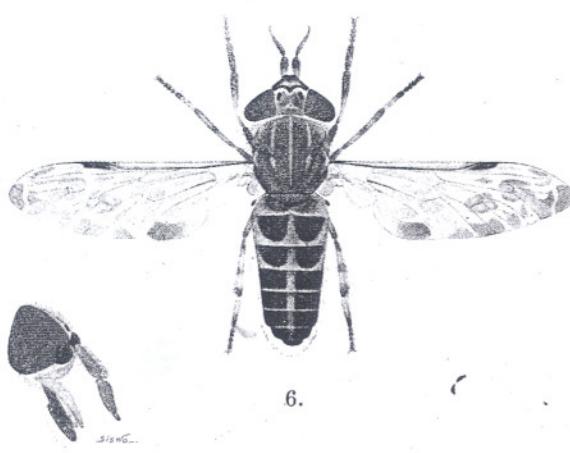


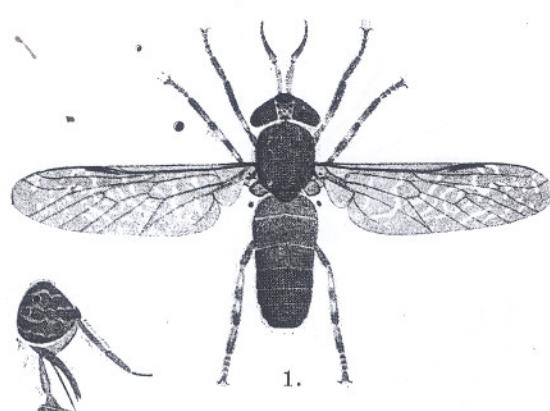
Fig. (1) *C. fixissima* ♀  $\times 3,1$ ; head ♀  $\times 4,4$ ; head ♂  $\times 3,7$ , PRIJS del. (2) *C. albicincta* ♀  $\times 4,4$ ; head ♀  $\times 5,6$ . (3) *C. dispar* ♀  $\times 3,1$ ; head ♀  $\times 5$ ; head ♂  $\times 3,7$ , PRIJS del.; in the middle: eyes in natural colours a - side view, b - seen from above. (4) *C. atrivittata* ♀  $\times 3,1$ ; head ♀  $\times 3,7$  (5) *C. fixissima*



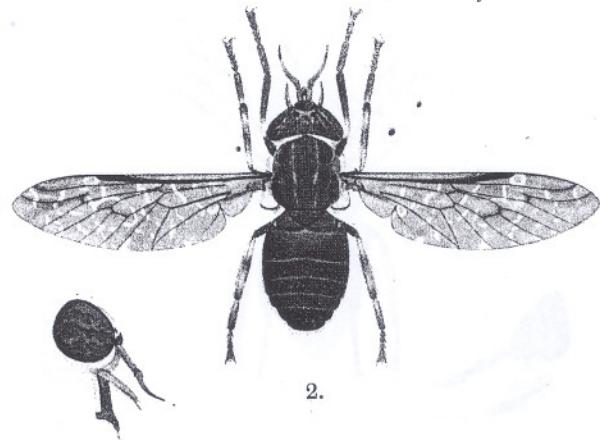
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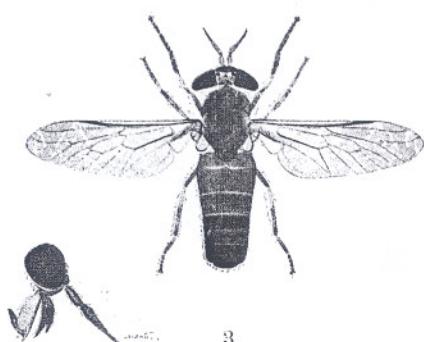
3. (1) *C. fasciata* ♀ × 3,4; head ♀ × 4,2. (2) *C. fasciata* ♂ × 3,4; head ♂ × 3,4, PRIJS del. (3) *C. nifer* ♂ × 2,8; head ♂ × 4. (4) *C. atricincta* ♀ × 3,4; head ♀ × 3,4, PRIJS del. (5) *C. translucens* × 3,4, PRIJS del. (6) *H. confluens* ♀ × 3,4; head ♀ × 5,7. (7) *H. javana* ♀ × 3,4; head ♀ × 5,7;



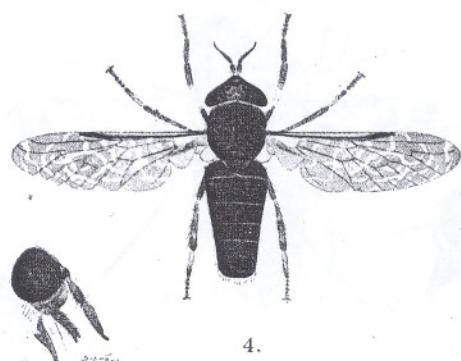
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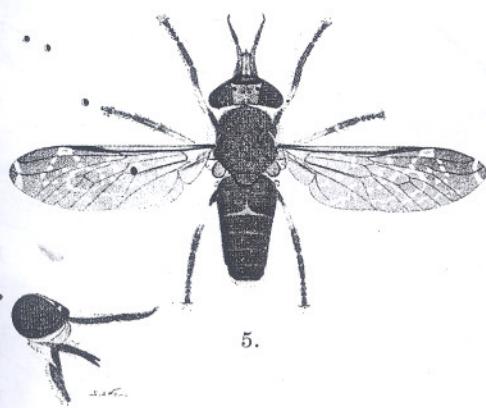
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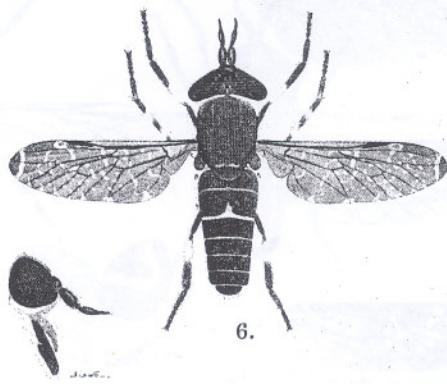
3.



4.



5.



6.

Fig. (1) *H. paucipunctata* ♀ × 3,1; head ♀ × 5,2. (2) *H. pungens* ♀ × 3,1; head ♀ × 4,2. (3) *H. elegans* ♀ × 3,1; head ♀ × 4,7. (4) *H. fumigata* ♀ × 3,1; head ♀ × 5,2. (5) *H. lunulata* ♀ × 3,2; head ♀ × 4,7. (6) *H. truncata* ♀ × 3,1; head ♀ × 4.

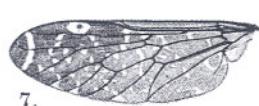
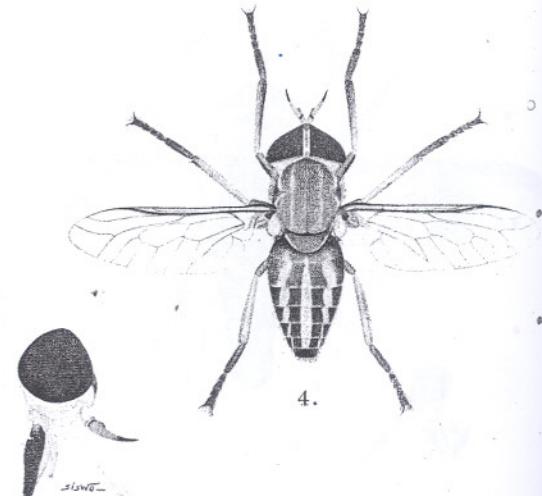
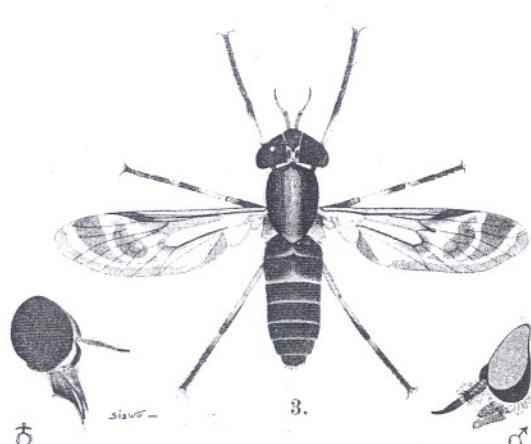
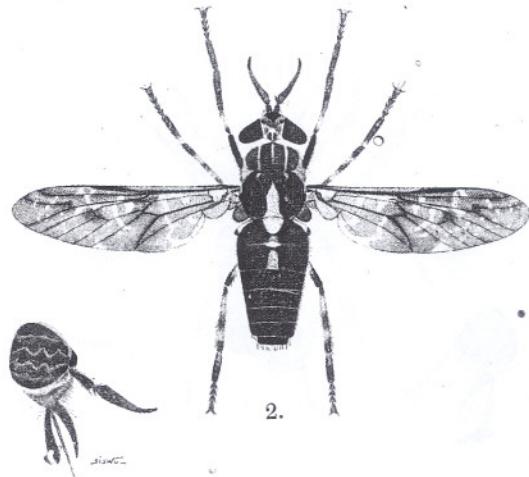
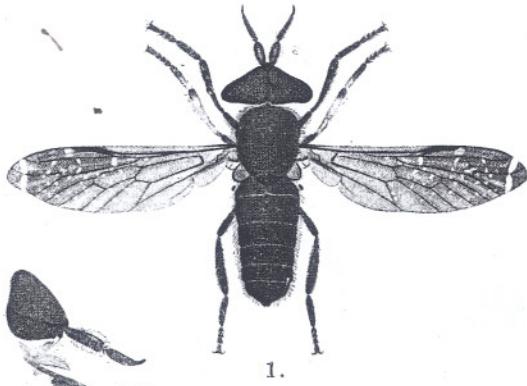


Fig. (1) *H. intermedia* ♂  $\times 4$ ; head ♂  $\times 5$ . (2) *H. ensifer* ♀  $\times 3$ , head ♀  $\times 6$ . (3) *H. cingulata* ♀  $\times 4$ ; head ♀  $\times 6$ ; head ♂  $\times 4$ , PRIJS del. (4) *T. striatus* ♀  $\times 2$ , head ♀  $\times 4$ . (5) *T. striatus* ♂  $\times 2$ , head ♂  $\times 4$ . Figures 6–13 all wings of ♀ ♀. ((enlarged  $\times 4$ .) have been delineated by PRIJS (6) *H. atriventer* (7) *H. lunulata* (8) *H. marginata* (9) *H. marginata* (10) *H. marginata* (11) *H. marginata* (12) *H. marginata* (13) *H. marginata*.

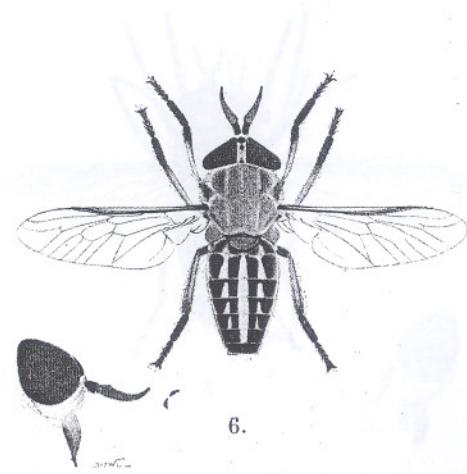
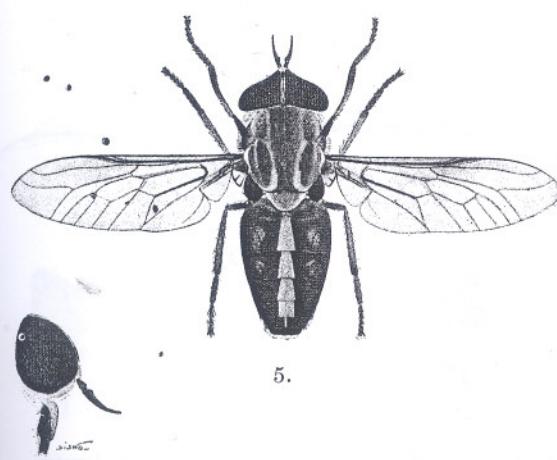
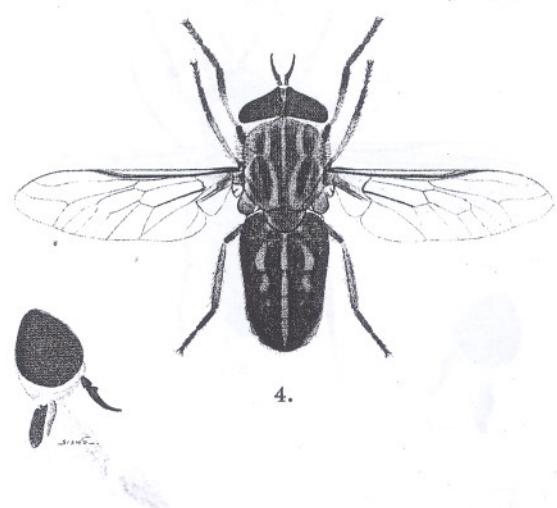
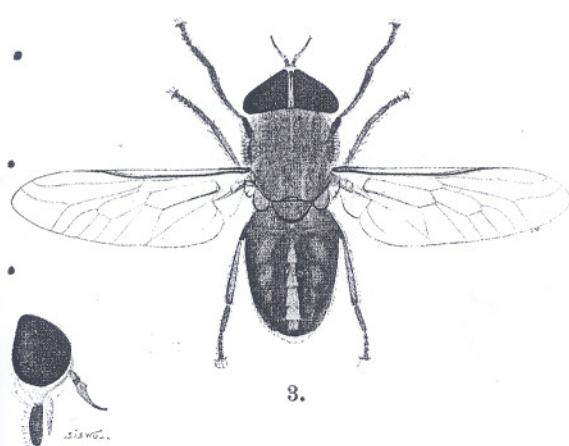
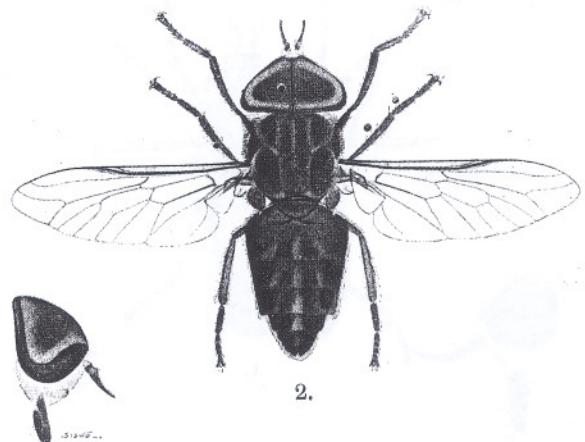
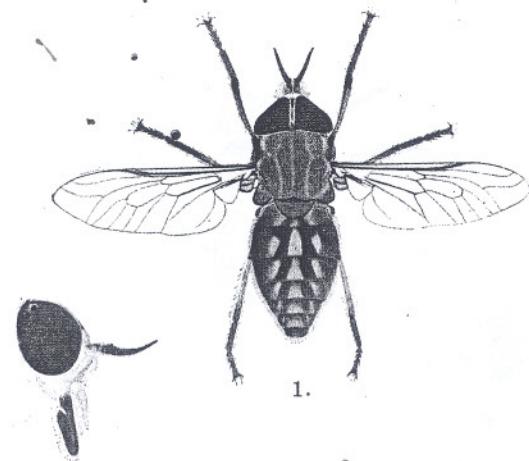
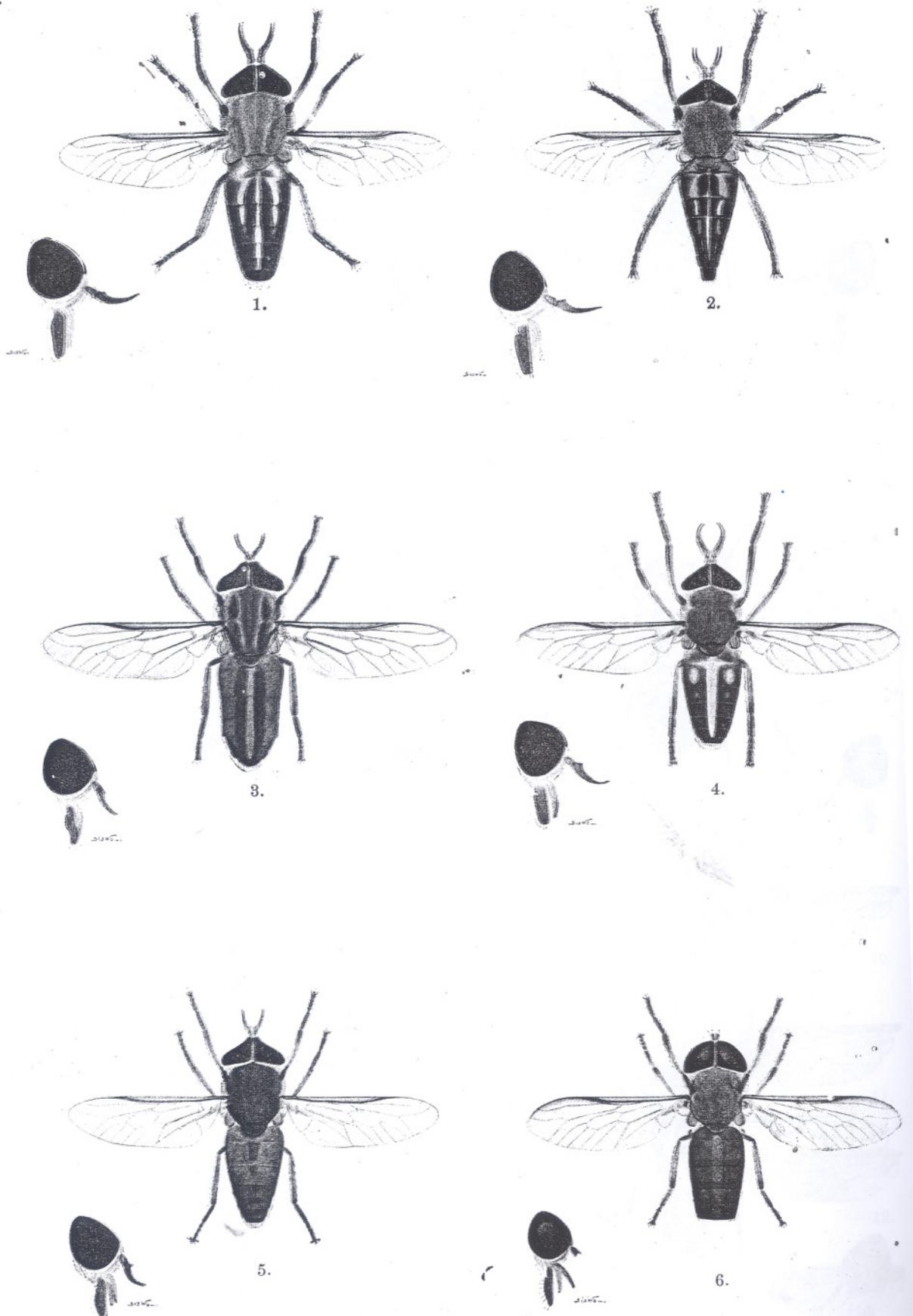
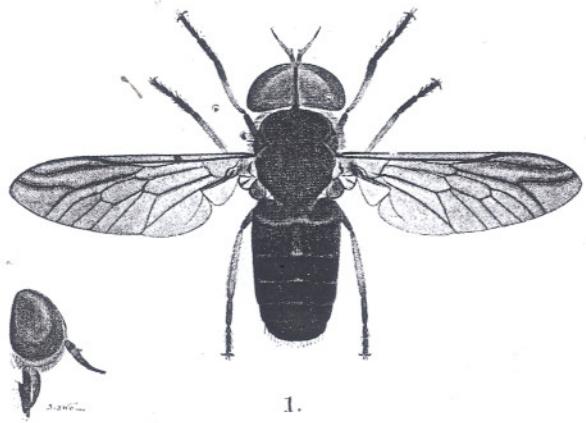


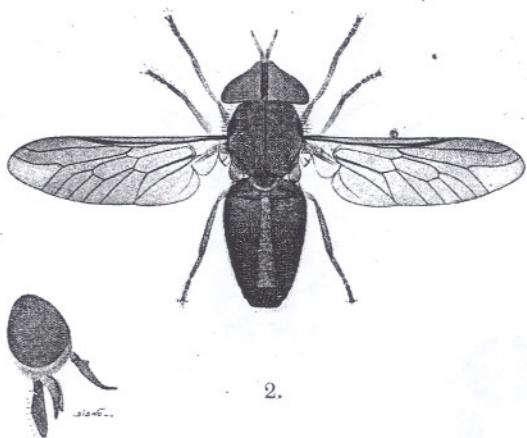
Fig. (1) *T. rubidus* ♀ × 1,8; head ♀ × 2,8. (2) *T. rubidus* ♂ × 2,2; head ♂ × 2,8. (3) *T. rubidus* var. *poides* ♀ × 2,1; head ♀ × 3,4. (4) *T. rubidus* ♀ × 2; head ♀ × 3,1. (5) *T. reducens* ♀ × 2; head ♀ × 1. (6) *T. rufinotatus* ♀ × 2,2; head ♀ × 4,2.



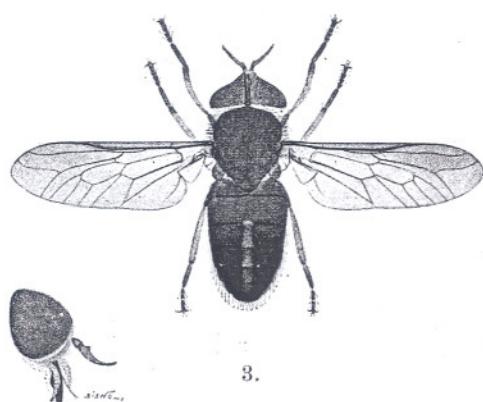
g. (1) *T. fontinalis* ♀  $\times 1.7$ ; head ♀  $\times 2.7$ . (2) *T. effilatus* ♀  $\times 1.9$ ; head ♀  $\times 3.3$ . (3) *T. tricoloratus*  $\times 2.2$ ; head ♀  $\times 3.3$ . (4) *T. brunnipennis* ♀  $\times 2.2$ ; head ♀  $\times 4$ . (5) *T. atripunctatus* ♀  $\times 2.2$ ; head ♀  $\times 3.3$ . (6) *T. citripilosus* ♀  $\times 3$ ; head ♀  $\times 4$ .



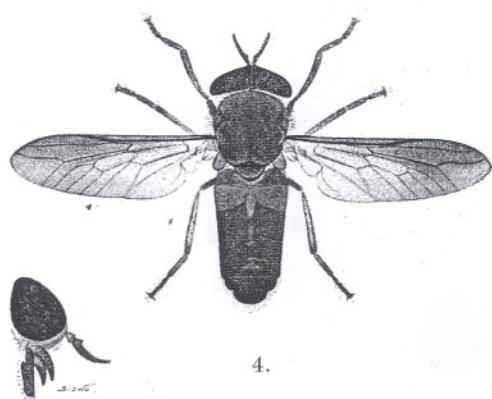
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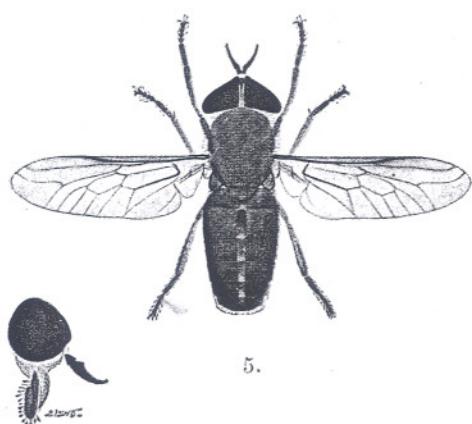
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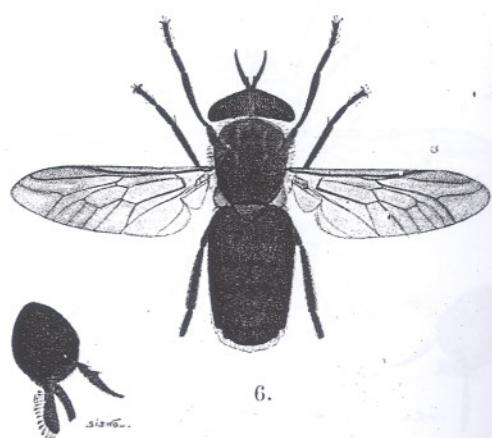
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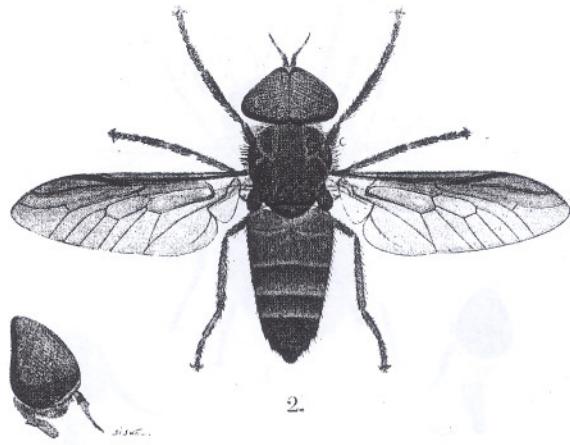


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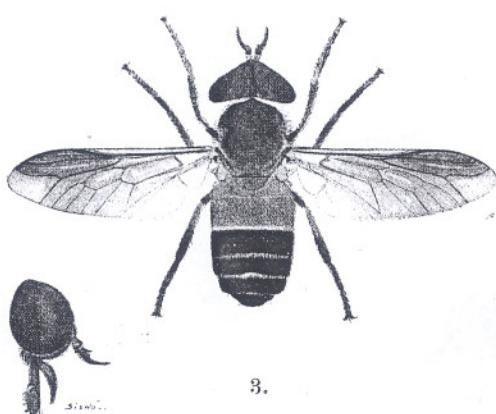
(1) *T. cloropsis* ♀ × 2,1; head ♀ × 2,7. (2) *T. fl. vistriatus* ♀ × 2,4; head ♀ × 3,2. (3) *T. auribundus* × 2,1; head ♀ × 3,2. (4) *T. fusciventer* ♀ × 2,1; head ♀ × 3,2. (5) *T. undulans* ♀ × 2,1; head ♀ × 3,2. (6) *T. tintothorax* ♀ × 1,6; head ♀ × 2,1.



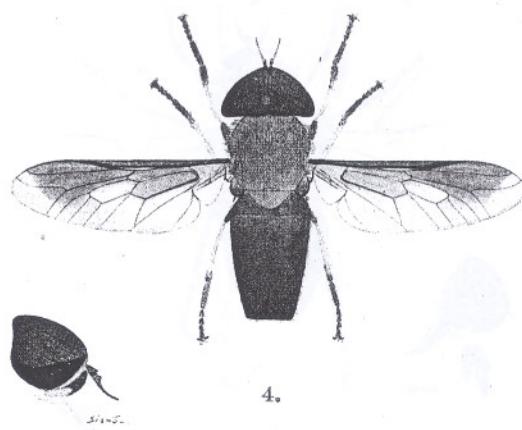
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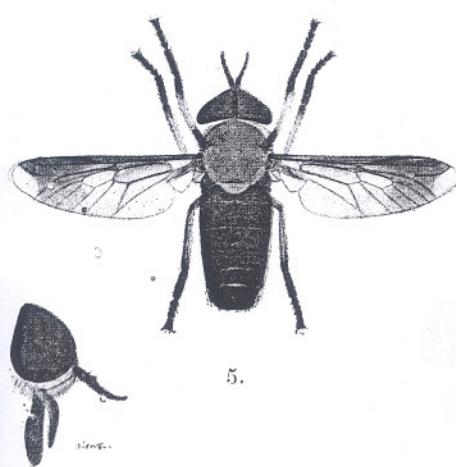
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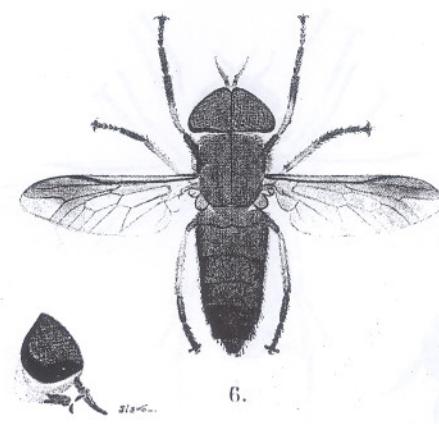
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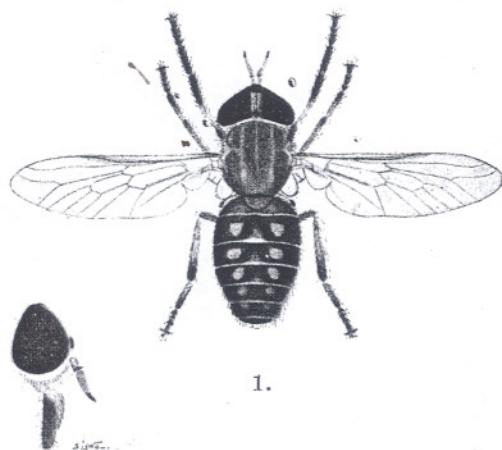


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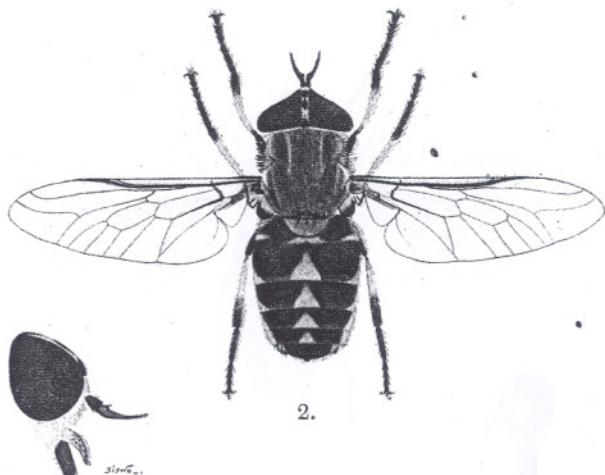


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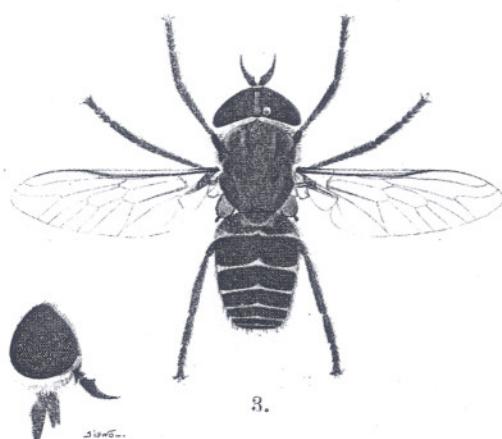
Fig. (1) *T. chrysater* ♀  $\times 2,3$ ; head ♀  $\times 2,9$ . (2) *T. chrysater* ♂  $\times 2,3$ ; head ♂  $\times 2,9$ . (3) *T. basalis* ♀  $\times 2,9$ . (4) *T. flavothorax* ♂  $\times 2,6$ ; head ♂  $\times 2,9$ . (5) *T. flavothorax* ♀  $\times 2,3$ ; head ♀  $\times 2,9$ . (6) *T. punctiventris* ♂  $\times 2,3$ ; head ♂  $\times 2,9$ .



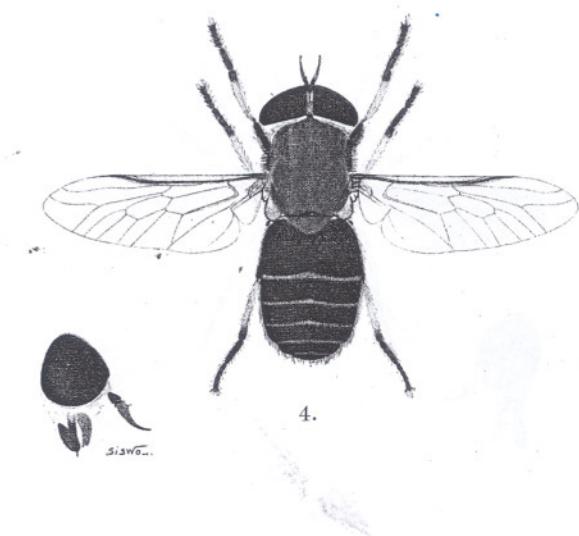
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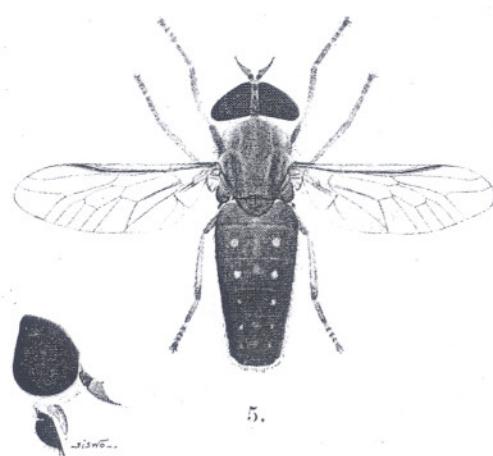
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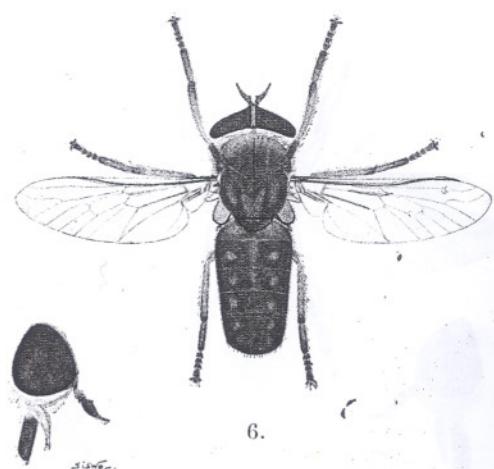
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4.



5.



6.

(1) *T. aurifer* ♀  $\times 3,7$ ; head ♀  $\times 6,2$ . (2) *T. rufiventris* ♀  $\times 2,2$ ; head ♀  $\times 3,75$ . (3) *T. multicinctus* ♀  $\times 3,75$ ; head ♀  $\times 3,75$ . (4) *T. equicinctus* ♀  $\times 2,8$ ; head ♀  $\times 3,75$ . (5) *T. bubalophilus* ♀  $\times 3,2$ ; head ♀  $\times 5,6$ . (6) *T. albopunctatus* ♀  $\times 3,2$ ; head ♀  $\times 4,3$ .

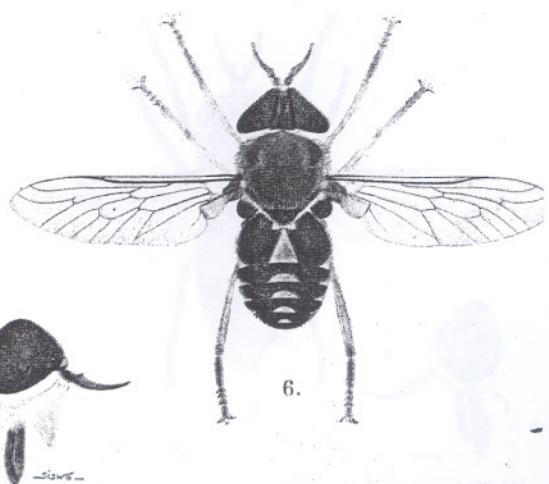
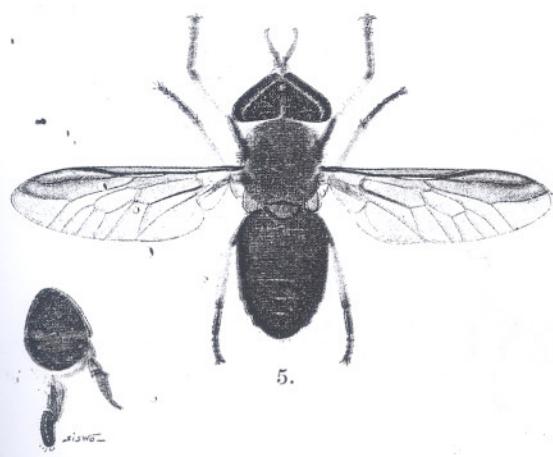
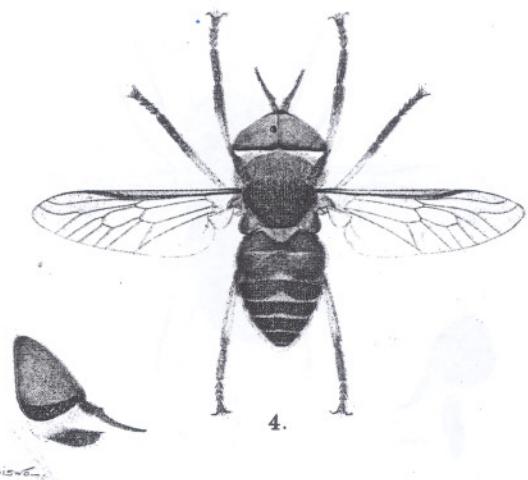
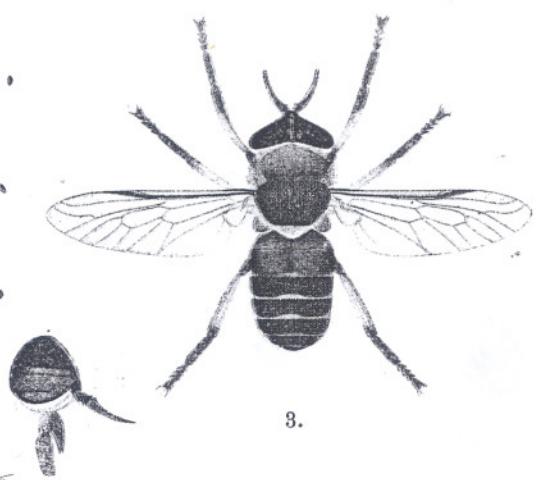
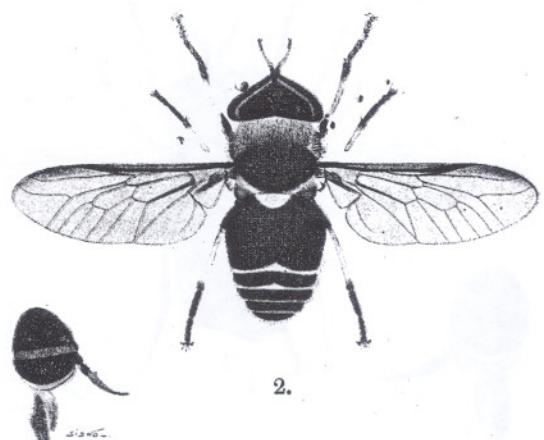
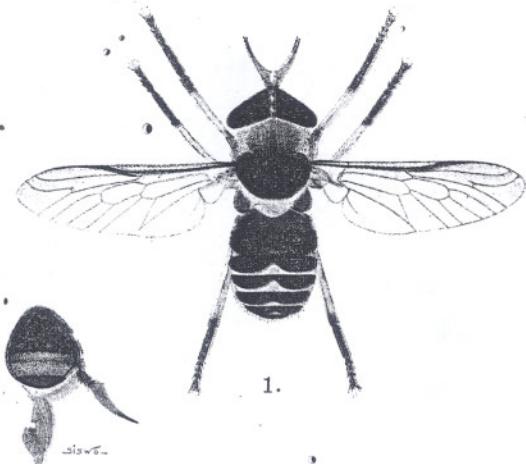
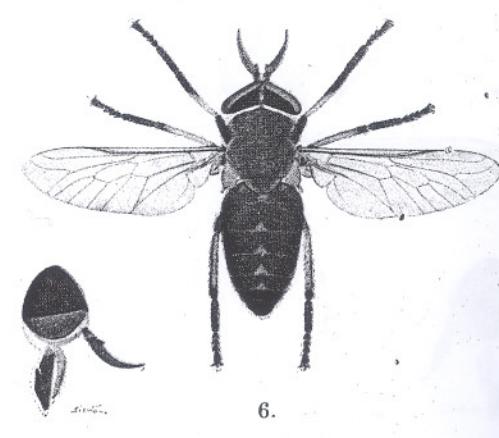
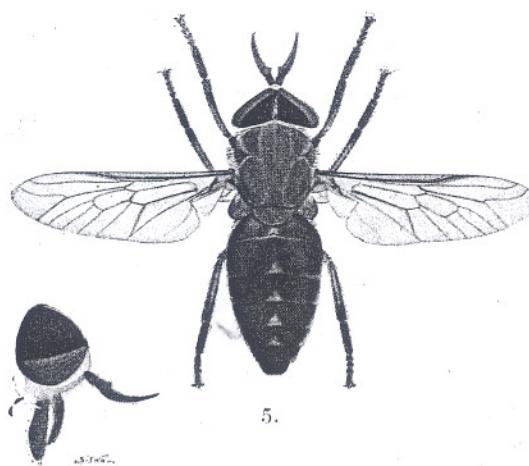
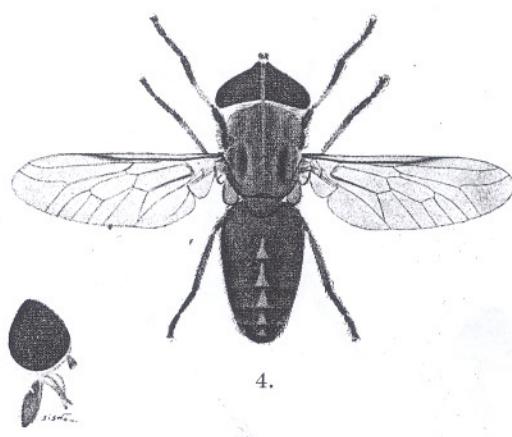
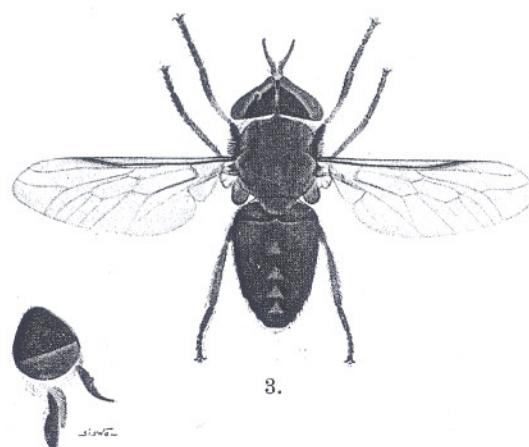
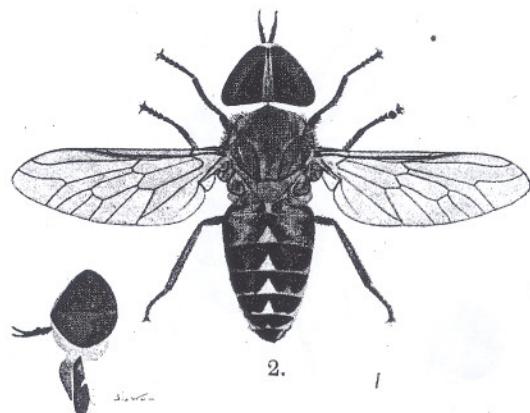
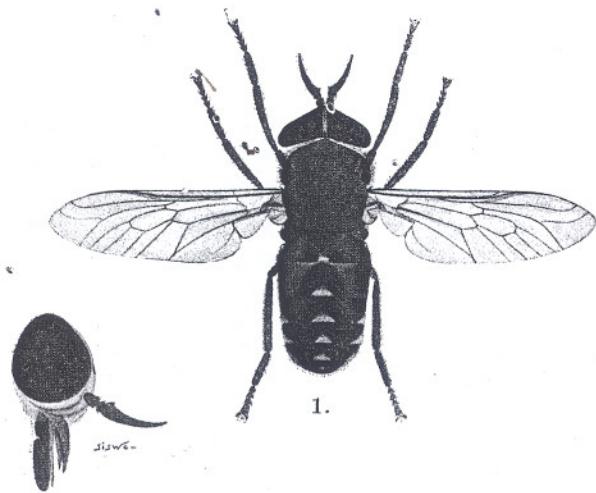
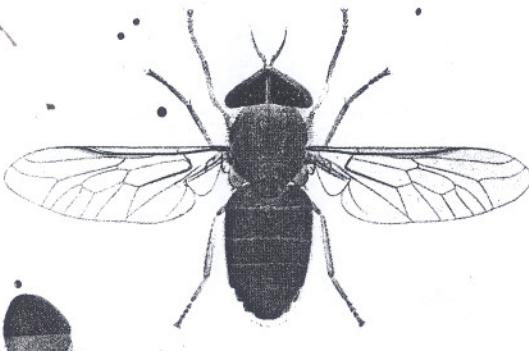


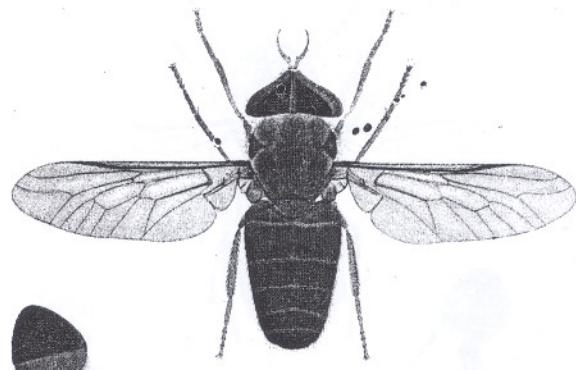
Fig. (1) *T. albivittatus* ♀ × 3,3; head ♀ × 4. (2) *T. griseipalpis* ♀ × 3; head ♀ × 4,2. (3) *T. flavivittata* ♀ × 3,4; head ♀ × 3,3. (4) *T. flavivittatus* ♂ × 2,4; head ♂ × 3,3. (5) *T. flavicornis* ♀ × 2,7; head ♀ × 4,2. (6) *T. flaviscutellatus* ♀ × 3; head ♀ × 4,8.



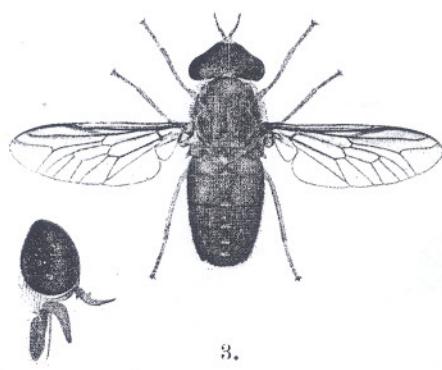
(1) *T. brunneus* ♀  $\times 1,7$ ; head ♀  $\times 2,5$ . (2) *T. malayensis* ♀  $\times 2$ ; head ♀  $\times 2,8$ . (3) *T. angustitriangularis* ♀ (Javanese form)  $\times 2,3$ ; head ♀  $\times 2,8$ . (4) *T. angustitriangularis* ♀ (Sumatra form)  $\times 2,6$ ; head ♀  $\times 2,8$ . (5) *T. immanis* ♀  $\times 1,7$ ; head ♀  $\times 2,8$ . (6) *T. fumifer* ♀  $\times 2$ ; head ♀  $\times 2,8$ .



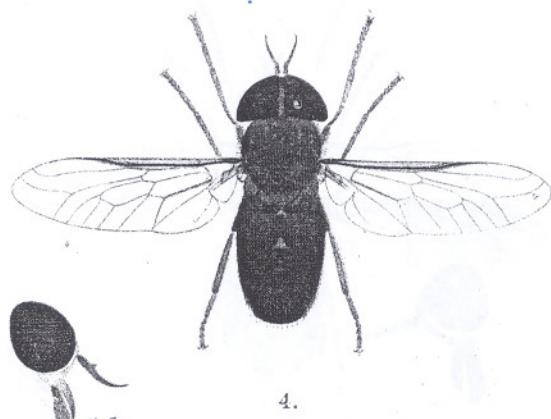
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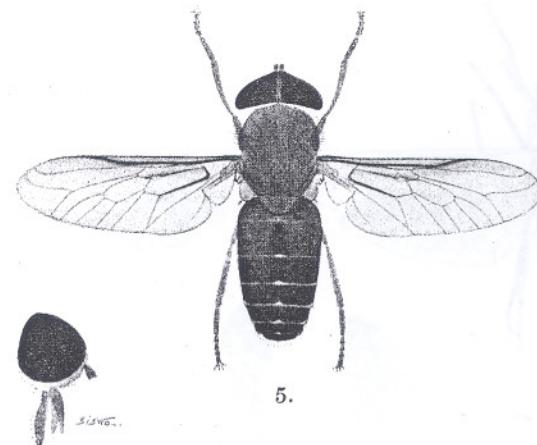
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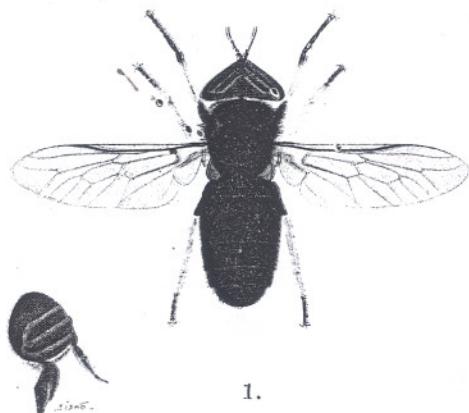
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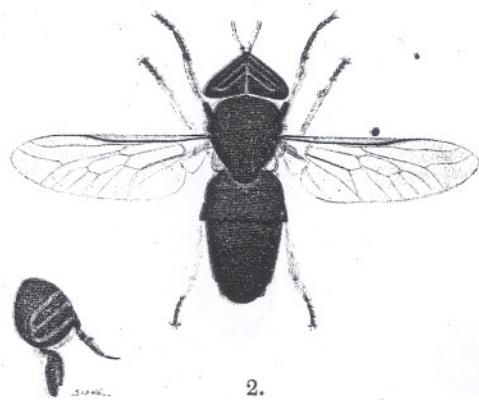
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Fig. (1) *T. aurisparsus* ♀ × 1,9; head ♀ × 2,7. (2) *T. nexus* ♀ × 1,6; head ♀ × 2,7. (3) *T. serus* ♀ × ♀ × head ♀ × 2,7. (4) *T. dissimilis* ♀ × 2,2; head ♀ × 3. (5) *T. albitriangularis* ♀ × 2,2; head ♀ ×

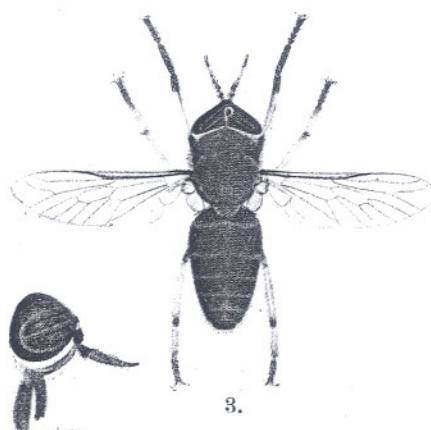
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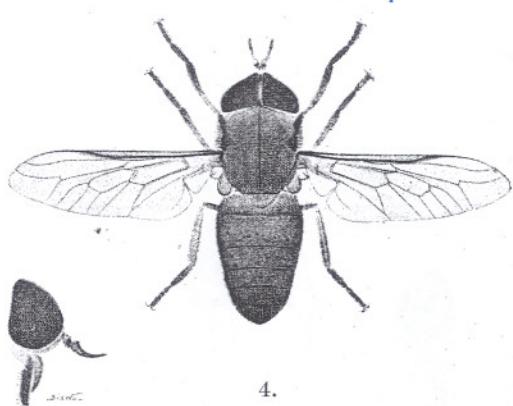
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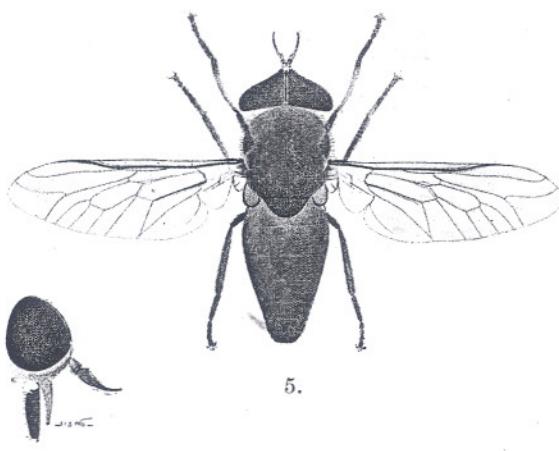
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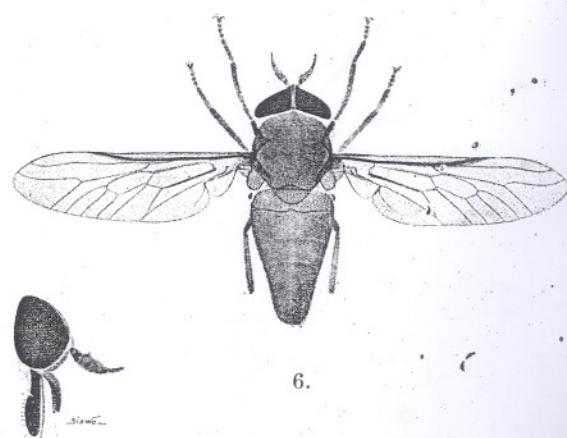
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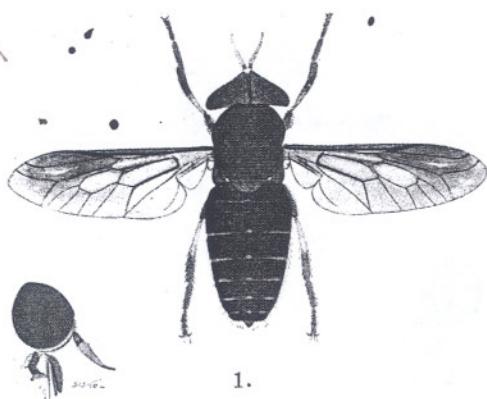


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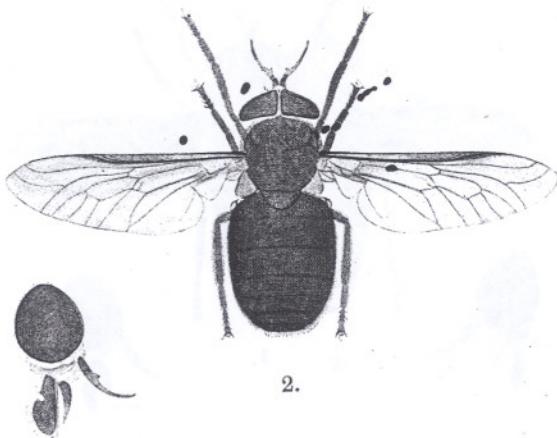


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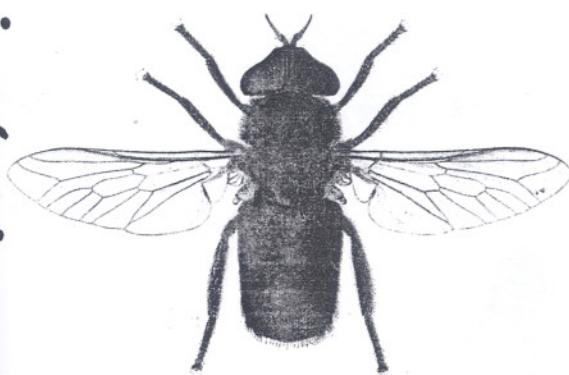
g. (1) *T. ceylonicus*, var. *ceylonicus* ♀  $\times 2,4$ ; head ♀  $\times 3,2$ . (2) *T. ceylonicus*, var. *nitidulus* ♀  $\times 2,4$ ; head ♀  $\times 3,2$ . (3) *T. minimus* ♀  $\times 2,4$ ; head ♀  $\times 4$ . (4) *T. aroeensis* ♀  $\times 1,8$ ; head ♀  $\times 2,7$ . (4) *T. maverensis* ♀  $\times 2,1$ ; head ♀  $\times 2,7$ . (6) *T. sol* ♀  $\times 2,2$ ; head ♀  $\times 2,6$ .



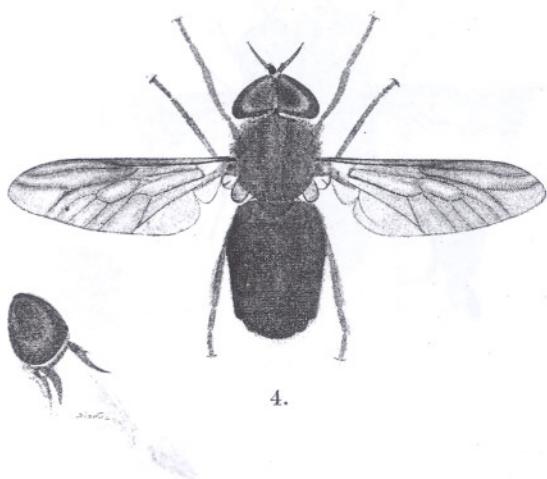
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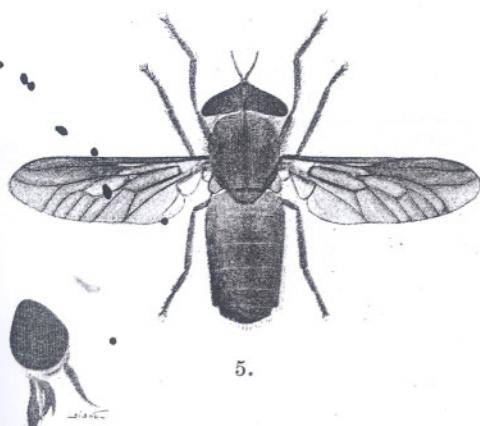
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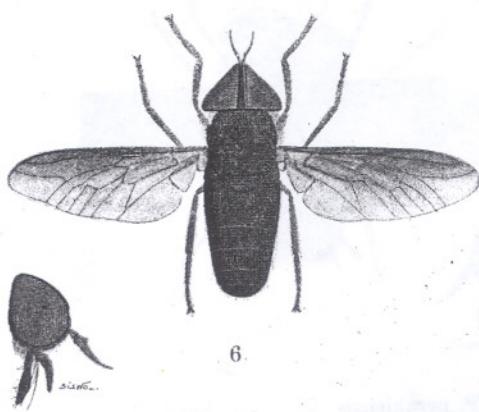
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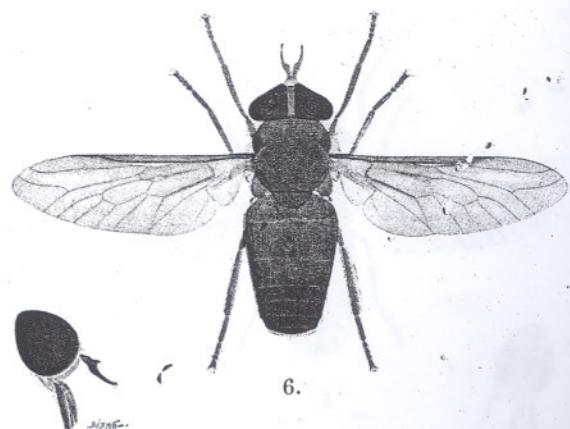
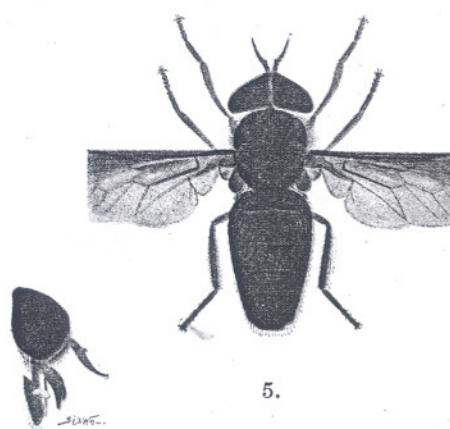
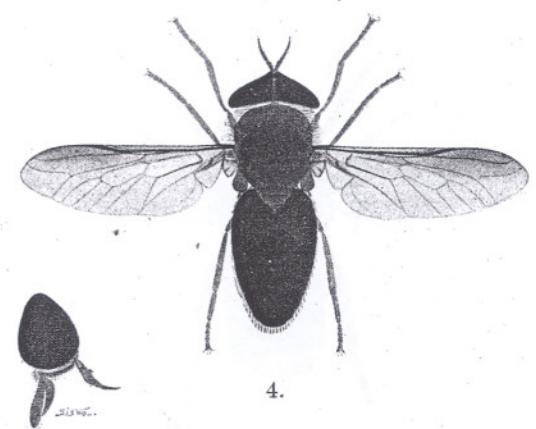
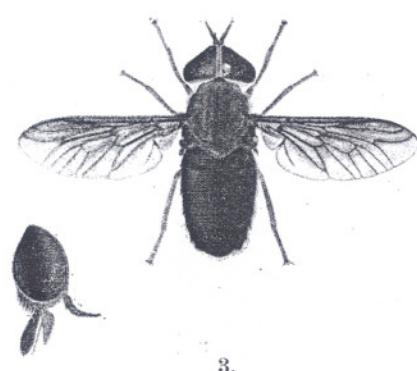
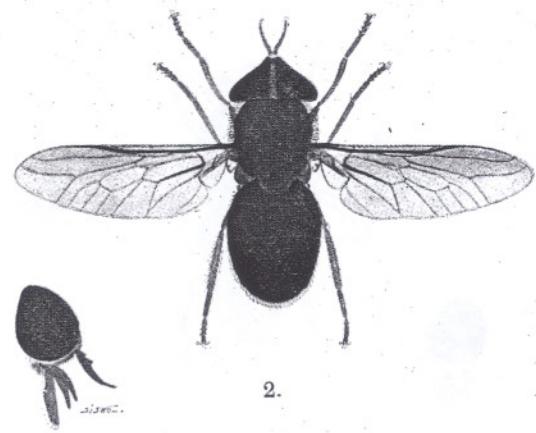
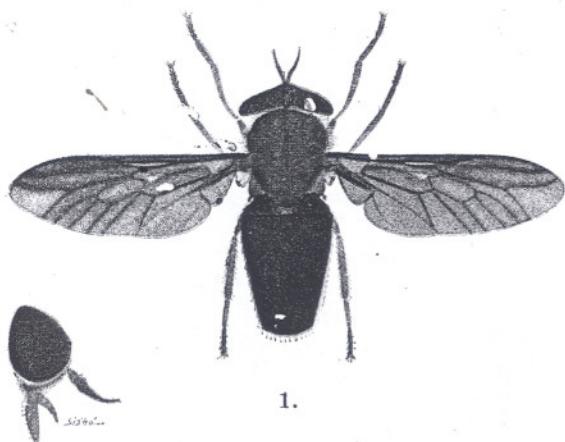


5.



6.

Fig. (1) *T. pratti* ♀  $\times 1,6$ ; head ♀  $\times 2,1$ . (2) *T. flavipennis* ♀  $\times 1,6$ ; head ♀  $\times 2,6$ . (3) *T. nigerrimus* ♀  $\times 1,5$ . (4) *T. caerulescens* ♀  $\times 2$ ; head ♀  $\times 2,6$ . (5) *T. fumipennis* ♀  $\times 2,1$ ; head ♀  $\times 2,6$ . (6) *inobservatus* ♀  $\times 1,8$ ; head ♀  $\times 2,6$ .



(1) *T. perakiensis* ♀  $\times 2,4$ ; head ♀  $\times 3,1$ . (2) *T. oviventris* ♀  $\times 2$ ; head ♀  $\times 3$ . (3) *T. obscuratus*  $\times 1,6$ ; head ♀  $\times 2,6$ . (4) *T. tristis* ♀  $\times 2,6$ ; head ♀  $\times 3,7$ . (5) *T. atrohirtus* ♀  $\times 1,8$ ; head ♀  $\times 2,6$ .  
 (6) *T. fulvissimus* ♀  $\times 1,8$ ; head ♀  $\times 2,3$ .

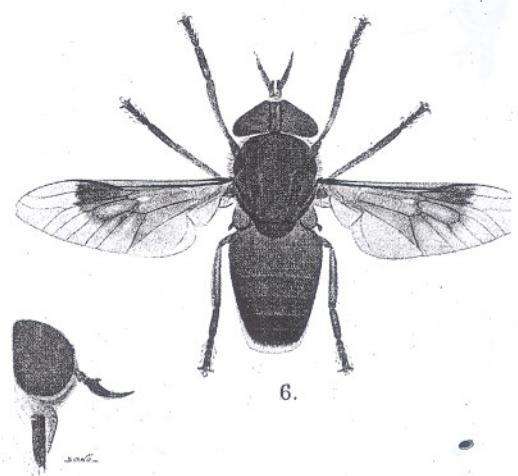
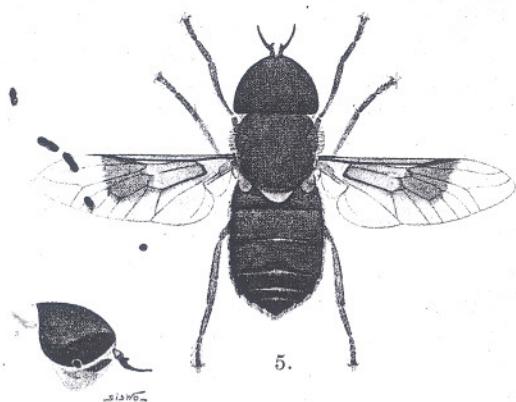
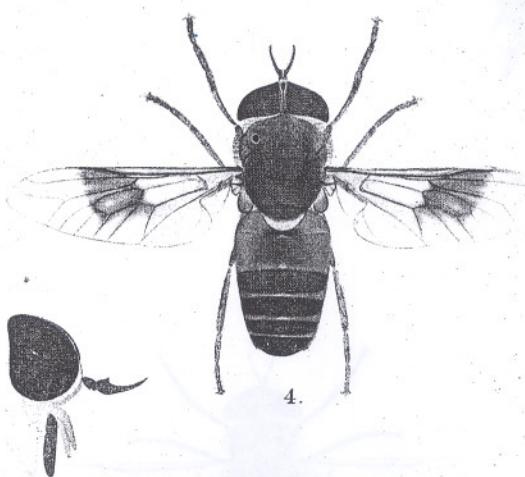
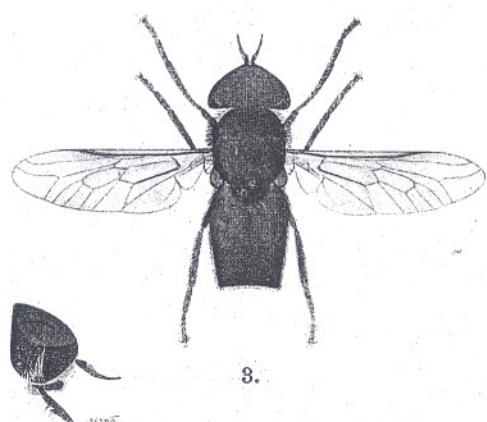
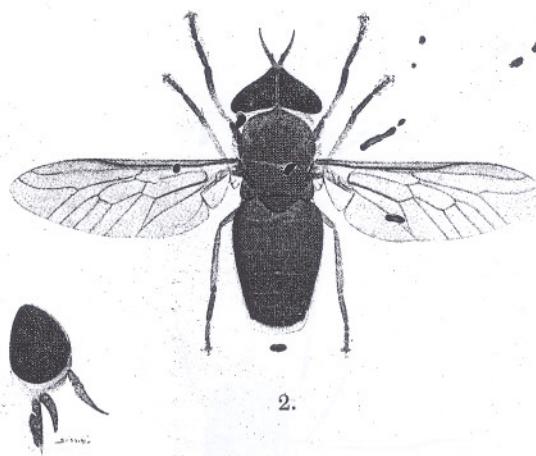
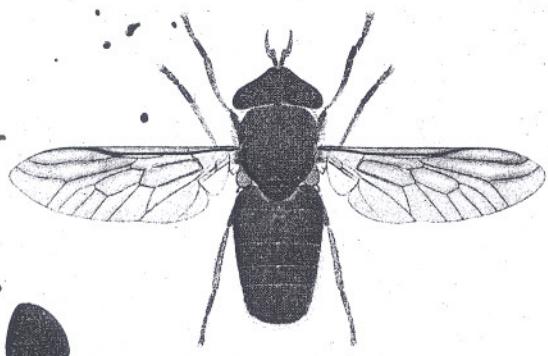
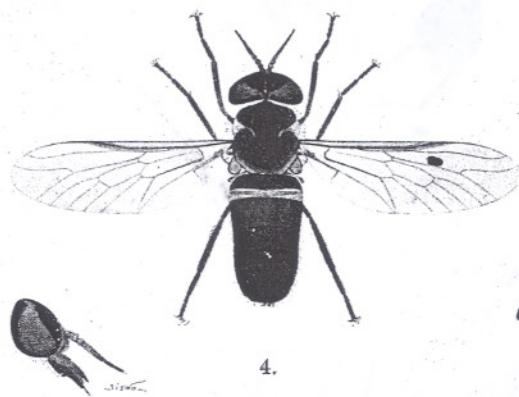
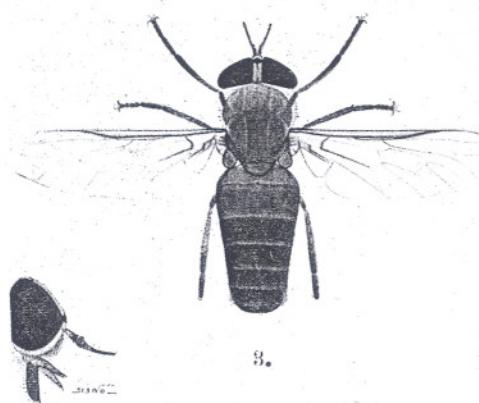
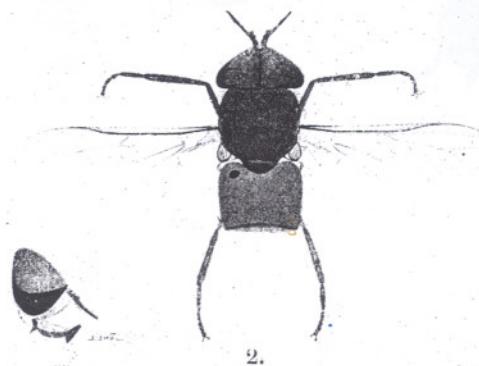
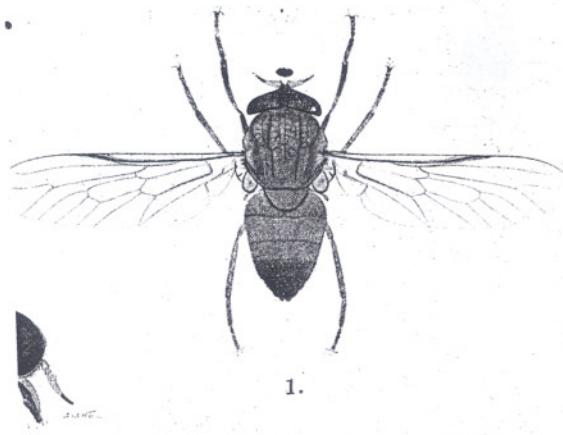


Fig. (1) *T. incultus* ♀ × 2; head ♀ × 2,8. (2) *T. brunnipes* ♀ × 2,3; head ♀ × 3,1. (3) *T. lenticis* ♂ × 2; head ♂ × 2,8. (4) *T. optatus* ♀ × 2,2; head ♀ × 3,4. (5) *T. optatus* ♂ × 2; head ♂ × 2,8. (6) *T. rufiscutellatus* ♀ × 2; head ♀ × 2,8.



(1) *T. ochrothorax* ♀  $\times 4$ ; head ♀  $\times 5,1$ . (2) *T. longicornis* ♂  $\times 2,8$ ; head ♂  $\times 2,8$ . (3) *T. longirostris* ♀  $\times 2,8$ ; head ♀  $\times 4$ . (4) *T. basifasciatus* ♀  $\times 4$ ; head ♀  $\times 5,1$ .