

NEW AFRICAN SPECIES OF TABANUS.—PART I.

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The types of the new species described in the following pages are in the British Museum (Natural History).

Tabanus necopinus, sp. n. (fig. 1).

♀.—Length (3 specimens), 14·75 to 16·5 mm. ; width of head 5·4 to 5·8 mm. ; width of front at vertex just under 1 mm. ; length of wing 13 to 14·4 mm.

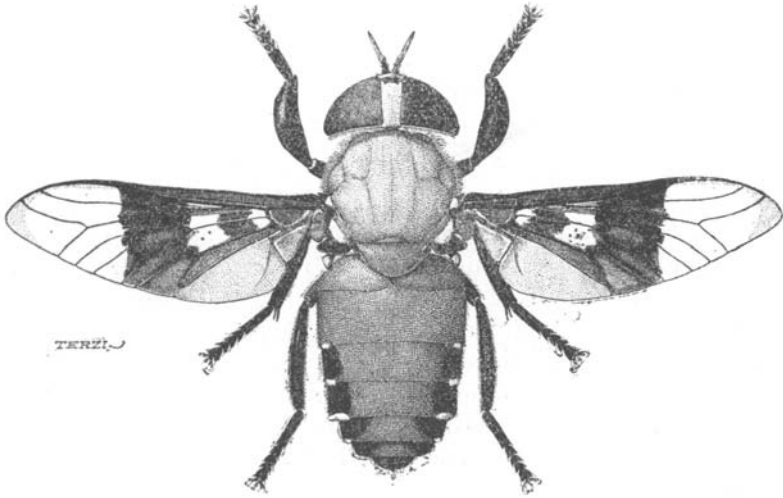


Fig. 1.—*Tabanus necopinus*, Austen, ♀. × 3.

Closely allied to Tabanus africanus, Gray, and T. latipes, Macq., and—except for certain small differences in the wing-markings and the usually greater extent of the black lateral blotches on the abdomen, at any rate on the third and fourth segments—agreeing absolutely with these species in the coloration, appearance, and markings of the dorsal surface, as also in the uniformly black coloration of the legs, and in the shape of the front tibiae; distinguishable from both species mentioned by the ventral surface of the abdomen (except its basal angles and the hind margins of the second to the sixth segments inclusive) being entirely black.

Head and palpi as in *T. africanus*; antennae as in the same species and in *T. latipes*, except that third joint is less elongate and less attenuated. Thorax as in the two species mentioned. Abdomen: dorsum as in the same two species, with the difference as regards the black lateral blotches already pointed out in the diagnosis printed in italics above; venter, except as stated in diagnosis and

a narrow, ochraceous*, lateral edging to anterior two-thirds of second segment, uniformly *shining black* and clothed with black hairs; hind margins of ventral scutes of second to sixth segments inclusive whitish grey, and clothed with silvery-white hairs. *Wings* hyaline, strongly marked with clove-brown or blackish brown, as shown in fig. 1, except that (at least in the case of the three specimens available for examination) the clear spaces in the first and second basal cells are a little smaller than would be supposed from the figure; transverse band, which covers discal cell, extending right across wing, as in *T. africanus* (not abbreviated before reaching hind margin as in *T. latipes*), distal margin of band less irregular than in wing of *T. africanus*; tip of wing as in *T. latipes*, *i.e.* merely with a grey border composed of minute hairs, the tips of the second longitudinal and anterior branch of the third longitudinal veins not, as in *T. africanus*, suffused with dark brown. *Squamae* and *halteres* as in *T. latipes*, though base of knobs and distal extremity of stalks of halteres sometimes dark brown.

NORTHERN NIGERIA and SIERRA LEONE PROTECTORATE: type from Amageddi, R. Benue, Bassa Province, Northern Nigeria, 23. ix. 1909, and a second example from South Bornu, Northern Nigeria, between September and December, 1908 (*Dr. H. A. Foy, W.A.M.S.*); a third specimen from the vicinity of Wankefu, Karene District, Sierra Leone Protectorate, December, 1909 (*Dr. J. C. Murphy, W.A.M.S.*).

As will have been gathered from the above description, *Tabanus necopinus* occupies an intermediate position between *T. africanus*, Gray, and *T. latipes*, Macq. (that it is not, however, a mere variety or form of either of these species is proved by, *inter alia*, the difference in the shape of the third joint of the antennae). These three handsome, tawny-ochraceous species constitute a well-defined group, the members of which, owing to the characteristic pattern of their wing-markings, cannot be confused with any other of their congeners at present known. In tabular form their mutually distinctive characters may be indicated as follows:—

- | | | |
|---|--------|----------------------------|
| 1. Ventral surface of abdomen (except its basal angles and the hind margins of the second to the sixth segments inclusive) entirely black | | <i>necopinus</i> , Austen. |
| Ventral surface of abdomen not entirely black | | 2. |
| 2. Transverse band on wing reaching hind margin; tips of second longitudinal and of anterior branch of third longitudinal vein infuscated with dark brown | | <i>africanus</i> , Gray. |
| Transverse band on wing not reaching hind margin; tips of veins mentioned not infuscated with dark brown | | <i>latipes</i> , Macq. |

* For names and illustrations of colours, see Ridgway, "A Nomenclature of Colors for Naturalists" (Boston: Little, Brown and Company, 1886).

Tabanus copemani, sp. n.

♀.—Length (5 specimens) 12·4 to 14 mm.; width of head 4·2 to 4·8 mm.; width of front at vertex 0·6 to 0·75 mm.; length of wing 9·6 to 11·5 mm.

Medium-sized or smallish, dark-coloured species.—Dorsum of thorax blackish slate-coloured, somewhat shining, with two conspicuous, grey, admedian, longitudinal stripes; dorsum of abdomen clove-brown, hind border of first segment and greater part of second and third segments greyish cinnamon-rufous, hind borders of fourth and following segments greyish isabella-coloured and, except in case of last segment, clothed on each side with appressed, whitish hair; wings faintly tinged with drab, stigma narrow and elongate, mummy-brown; legs clove-brown or black, tibiae, except tips of middle and hind pairs and rather less than distal half of front pair, cream-coloured, and clothed with appressed, glistening white hairs.

Head grey (subcallus when denuded dark brown), face, jowls, and basioccipital region clothed with whitish hair; front of moderate breadth, about three and a half times as long as broad, inner margins of eyes bordering it almost or quite parallel, upper two-thirds of front clothed with short black hair, lower third, on each side of callus, clothed with short white hair; frontal callus oblong or roughly quadrate, often with its upper angles more or less rounded off or otherwise obliterated, dark brown or chestnut-brown, narrowly separated from eye on each side, and prolonged above into a raised median line; palpi dusky (mouse-grey or dark grey), clothed on outer side with whitish hair, terminal joint acuminate, moderately stout at base; first and second joints of antennae greyish clove-brown or brownish grey, clothed with black or blackish hair, third joint more or less chestnut, chestnut-brown, or cinnamon-rufous (sometimes entirely dark brown except at extreme base, sometimes entirely cinnamon-rufous except at extreme tip), expanded portion of third joint moderately broad, not elongate, terminal annuli fairly long. *Thorax*: dorsum clothed with erect, black or blackish hair, denser on scutellum, in front of suture also with minute, appressed, buff-yellow hairs; immediately above base of each wing is a small tuft of whitish hair; sides and front of dorsum grey, swelling in depression at each end of transverse suture drab-grey; dorsal stripes running from front margin to presutural groove, broadening out posteriorly and almost in contact; pleurae and pectus grey, clothed with whitish or blackish hair, either the one or the other colour sometimes predominating. *Abdomen*: hind border of dorsum of first segment clothed with glistening white hair; dorsum of second and third segments each with a large, though not sharply defined, clove-brown, median spot, resting on base but not reaching hind margin (occupying approximately anterior two-thirds of each segment); on each side of same two segments is a more or less distinct clove-brown blotch (often larger and more conspicuous in case of third segment), in contact with base, but not approaching hind margin nearer than median spot; immediately behind median spots on second and third segments is a patch of minute, appressed, glistening, whitish hairs, extending to hind margin in each case, while behind each of the lateral spots on the same segments is a larger, transversely elongate patch of similar hair, extending to the posterior angle; fourth and fifth segments each with a similar patch of minute, appressed, glistening, whitish hair on posterior half on each side, and also with a smaller,

more or less distinct patch of similar hairs in and on each side of middle line, close to hind margin; sixth segment except at base largely clothed with appressed, glistening, whitish hair; seventh segment, base of sixth, and first five segments except as already stated clothed with black hair; ventral surface of first three segments greyish russet or greyish cinnamon, clothed, like greater part of ventral surface of following segment with minute, appressed, whitish hair; ventral scutes of second to fourth segments inclusive with a clove-brown blotch in each basal angle; ventral scute of fourth segment, except hind margin and as already stated, greyish cinnamon-rufous or greyish brown; ventral scutes of last three (except hind margins of penultimate and antepenultimate) segments greyish clove-brown, clothed with black hair; hind margins of ventral scutes of second to sixth segments inclusive cream-coloured, clothed with whitish hair. *Wings*: veins dark brown: anterior branch of third longitudinal vein sometimes provided at base with a minute stump or backwardly directed appendix, which may vary in size in the two wings of the same specimen, or even be present in one wing and absent in the other. *Squamae* clove-brown or dark sepia-coloured, borders darker than disc. *Halteres* sepia-coloured. *Legs*: coxae grey and clothed with whitish hair, except distal extremities of front pair, which are blackish and clothed with black hair (in some specimens front coxae are almost entirely blackish and clothed with black hair); hind femora clothed below with whitish hair, otherwise femora, tarsi, and distal extremities of front tibiae clothed with black hair; on middle and hind tibiae the glistening white hairs extend on to the clove-brown tips; front tarsi enlarged, and the three middle joints expanded.

NORTHERN RHODESIA and the NYASALAND PROTECTORATE: type and three other specimens from the Feira District, Northern Rhodesia, 1911 (*E. A. Copeman*); one specimen from Liwonde, Nyasaland Protectorate, 19. I. 1911 (*Dr. J. E. S. Old*: presented by the Entomological Research Committee).

This species, with which the author has much pleasure in associating the name of one of its discoverers, is allied to *Tabanus claritibialis*, Ricardo, which hitherto has been met with only in the Nyasaland Protectorate. Apart, however, from the markings and very different coloration of the abdomen, which in *T. claritibialis* is unicolorous or nearly so, *T. copemani* is distinguished by differences in the shape of the third joint of the antennae, as also by its thoracic stripes. In the species described above the annulate portion of the third antennal joint is longer and the expanded part is usually shorter and broader than in *T. claritibialis*, in which the grey thoracic stripes, so conspicuous in *T. copemani*, are absent or vestigial.

Tabanus pullulus, sp. n.

♂.—Length (13 specimens) 11 to 13·4 mm.; width of head 4 to 4·6 mm.; width of front at vertex 0·6 to 0·8 mm.; length of wing 9·5 to 11 mm.

Medium-sized or small, blackish, unicolorous species, closely allied to Tabanus claritibialis, Ric.—Dorsum of thorax and abdomen blackish slate-coloured, former, at least near front margin, with faint indications of grey longitudinal stripes, but otherwise thorax and abdomen entirely devoid of markings, except that hind margins of abdominal segments, excluding first segment and ventral scute of last, are pale;

dorsum of thorax and abdomen clothed with minute, appressed, glistening, ochre-yellow or yellowish hairs, intermixed with black hairs, scutellum clothed mainly with black hairs; legs black or clove-brown, tibiae, except tips (and in case of front pair extreme base and greater part of under surface) cream-coloured, and clothed with short, glistening white hair.

Head grey (subcallus when denuded shining mummy-brown), face, jowls, and basioccipital region clothed with whitish hair; *front* of moderate breadth, inner margins of eyes bordering it parallel, vertex and rather less than middle third of front clothed with minute black hairs, space on each side of and immediately above callus, and between the two patches of black hairs just mentioned, clothed with minute white hairs; *frontal callus* mummy-brown or russet-brown, extending nearly from eye to eye, roughly ovate in outline, with its lower margin flattened and its upper extremity produced in middle line into a clove-brown or dark-brown ridge, which is usually low and rounded off rather than sharp; *palpi* dark grey, clothed on outer side with whitish hair, terminal joint acuminate, moderately broad at base; first and second joints of *antennae* cinnamon, clothed with black hair, base of third joint chestnut-brown or cinnamon-rufous, remainder of expanded portion of third joint dark brown, terminal annuli clove-brown, expanded portion of third joint of moderate breadth, annulate portion of third joint in length equal to about four-fifths of expanded portion. *Thorax*: pleurae and pectus grey, clothed with whitish hair; dorsum on and near front margin with commencements of two light grey, admedian, longitudinal stripes, sometimes also in same region with a trace of a much narrower median stripe of same colour; swelling in triangular depression at each end of transverse suture clothed with black hair, postalar calli and area immediately above base of each wing clothed with whitish hair. *Abdomen*: hind margins of second and following segments on dorsal side raw-umber-coloured; ventral surface of first four segments slate-grey, clothed with minute, appressed, glistening whitish hairs, ventral surface of last three segments blackish slate-coloured, that of last segment clothed entirely with erect black hair, ventral surface of antepenultimate segment clothed like preceding segments, that of penultimate segment clothed partly with black partly with glistening white hair; hind margins of ventral plates of second to sixth segments inclusive cream-buff, buff, or raw-umber-coloured. *Wings* faintly tinged with smoke-grey; *stigma* elongate, light mummy-brown or raw-umber-coloured, sometimes paler; veins mummy-brown. *Squamae* light sepia-coloured, borders darker. *Halteres* isabella-coloured, base of knobs dark brown. *Legs*: coxae grey, clothed with whitish hair; distal third of front tibiae black, extreme base of front tibiae and greater part of under surface above distal third clove-brown; tips of middle and hind tibiae clove-brown or dark brown; front tarsi somewhat enlarged and their third and fourth joints expanded.

NYASALAND PROTECTORATE; NORTHERN RHODESIA; GERMAN EAST AFRICA: type from Fort Johnston, South Nyasa, Nyasaland Protectorate, alt. 2,000 ft., 20. iii. 1910 (*Dr. A. H. Barclay*: presented by the Entomological Research Committee); two ♀♀ from the Zomba District, Nyasaland Protectorate, 1909 (presented by Dr. S. K. Norris); 1 ♀ from the vicinity of the Livilezi River, South Nyasa, Nyasaland Protectorate, 2. ii. 1910 (*Dr. J. B. Davey*: presented by the Entomological Research Committee); 5 ♀♀ from the Feira

District, Northern Rhodesia, 1911 (*E. A. Copeman*); 1 ♀ from Kilima-Njaro, German East Africa, 1887 (*F. J. Jackson, C.B., C.M.G.*). In addition to the foregoing, all of which are in the National Collection, the following three specimens from the Nyasaland Protectorate (*S. A. Neave*), which are in the possession of the Entomological Research Committee, have also been examined:—1 ♀ from the Upper Shire Valley, February, 1910; 1 ♀ from Fort Johnston, February, 1910; and 1 ♀ from the south-west shore of Lake Nyasa, March, 1910.

From *Tabanus claritibialis*, Ric., to which, as mentioned at the commencement of the diagnosis printed in italics above, the new species is closely allied, *T. pullulus* is distinguishable by the abdomen—instead of being (except at the distal extremity) cinnamon-rufous and clothed above exclusively with black hair—being entirely dark, and clothed on the dorsum, at least in part, with minute, appressed, glistening, ochreous hairs. As regards external *morphological* characters, the only noticeable difference exhibited by *T. pullulus* as compared with *T. claritibialis* is to be found in the greater length of the annulate portion of the third antennal joint.

Tabanus crocodilinus, sp. n.

♀.—Length (18 specimens) 9·6 to 12 mm.; width of head 3·5 to 4·4 mm.; width of front at vertex 0·6 mm. to just under 1 mm.; length of wing 8 to 9·75 mm.

Small, compactly built, dusky species, with rather broad head (which, viewed from above, is regularly convex in front and noticeably concave behind), a sharply defined and conspicuous, clove-brown frontal callus, which does not send off any kind of prolongation above, and with characteristically spotted abdomen.—Dorsum of thorax blackish slate-coloured, clothed with short, appressed, tawny-ochraceous hair, mixed with fine, erect, blackish hairs; dorsum of abdomen clove-brown, with a double series of transversely elliptical-oval or nearly circular, light-grey spots.

Head: front, from a little way above callus to vertex, mouse-grey, brownish grey, or brownish, clothed with very short, dusky or blackish hair; front immediately above callus yellowish grey on each side, and clothed with minute ochreous hairs; sub-callus drab-grey or smoke-grey; face, jowls, and basioccipital region whitish grey and clothed with white hair; occiput light grey; *front* of moderate breadth above, narrower below; *frontal callus* normally quadrate, with its upper angles rounded-off, narrowly separated from eye on each side, in rubbed specimens sometimes somewhat more elongate; *palpi* small, pale cream-coloured, clothed on outer side with white hair, mixed in case of terminal joint with minute black hairs, terminal joint viewed from side broad at base and abruptly tapering to a point; *antennae* small, first and second joints cream-buff or buff, clothed above with minute black hairs mixed with glistening silvery hairs, third joint entirely ochraceous-rufous or ochraceous-buff, its expanded portion of moderate breadth, and the angle on its upper margin usually neither sharp nor prominent. *Thorax*: dorsum not striped, though the beginnings of three narrow grey stripes can sometimes be seen next front margin; a few whitish hairs on postalar calli, and above base of each wing; swelling occupying

triangular depression at each end of transverse suture drab-grey and clothed with black hair; pleurae and pectus light grey (upper portion of mesopleura drab-grey), clothed with greyish white hair. *Abdomen*: dorsum of first segment grey on basal angles, and with a small patch of pale yellowish hair in middle line, just beyond scutellum; distal angles of dorsum of first segment, and sides and distal angles of dorsum of five following segments clothed with pale yellowish hairs, which on second to sixth segments inclusive extend inwards along hind margins; dorsum of second segment grey at extreme base; hind margins of second and following segments isabella-coloured or smoke-grey; dark portion of dorsum clothed for most part with minute black hairs, but on second to sixth segments inclusive also clothed in and adjacent to middle line with minute, appressed, pale yellowish or ochreous hairs, which on the second segment of a specimen from the Anglo-Egyptian Sudan form a pale median triangle, the base of which rests on the hind margin while the apex extends to the grey anterior border; paired spots (described in diagnosis above) clothed with minute, appressed, pale yellowish hairs, and situate on dorsum of second to fifth (or sixth) segments inclusive, one spot midway between middle line and lateral margin on each side; on the second to the fourth segments inclusive the spots are not in contact with either the front or the hind margins, but on the fifth segment (and also, when present, on the sixth) they usually touch the front margin; when elongate, the spots usually have their longer diameters at right angles to the middle line of the abdomen, in which case there is often an indistinct greyish connection between the spots belonging to the same pair; occasionally the spots on the second segment are slightly oblique (in the case of the specimen from the Anglo-Egyptian Sudan referred to above the spots on the second and third segments are obliquely oval); *venter* light grey, clothed, except last segment, with whitish hair, hind margins of second and following segments, except last, cream-coloured. *Wings* hyaline, veins (except costa and first longitudinal, which are mummy-brown) pale cinnamon; *stigma* elongate, raw-sienna-coloured or paler, inconspicuous. *Squamae* pale isabella-coloured. *Halteres*: stalks cream-buff, darker at extremities; knobs cream-coloured, isabella-coloured above. *Legs*: front coxae drab-grey, middle and hind coxae grey, all coxae, like all femora and tibiae, clothed with silvery-white hair, which in case of tibiae is mixed with black hairs; femora and tibiae ochraceous-buff, femora greyish pollinose, sometimes more or less grey, hind tibiae ciliated on outer side with silvery-white hairs mixed with black hairs; front tarsi dark brown, not noticeably expanded, first joint (except distal extremity) and extreme bases of the three following joints usually cinnamon-coloured; middle and hind tarsi pale cinnamon or buff, tips of joints mummy-brown, last joint usually entirely or almost entirely mummy-brown, sometimes dark brown.

NYASALAND PROTECTORATE and the ANGLO-EGYPTIAN SUDAN: type and sixteen other specimens (five of them presented to the National Collection by the Entomological Research Committee) from the Lufira River, North Nyasa, Nyasaland Protectorate, 6. viii. 1909, "on crocodile" (*Dr. J. B. Davey*); one specimen from Dufile, Mongalla Province, Anglo-Egyptian Sudan, 19. vi. 1911, "on cattle" (*H. H. King*).

Tabanus crocodilinus, which should be readily recognisable by means of the characters mentioned in the diagnosis printed in italics above, does not appear to be especially closely allied to any one of its congeners at present described. Although the absence of an offshoot or upwardly directed prolongation from its single frontal callus would place it in Surcouf's "Fifteenth Group," the fact that its front tibiae are not swollen—apart from all other characters—is alone sufficient to show that the new species would be entirely out of place in this division, which consists solely of *Tabanus maculatissimus*, Macq. and *T. irroratus*, Surcouf.

Tabanus pertinens, sp. n. (fig. 2).

♂ ♀.—Length, ♂ (16 specimens) 11 to 13·6 mm., ♀ (30 specimens) 8·8 to 14 mm.; width of head, ♂ 4 to 4·5 mm., ♀ 2·75 to 4·4 mm.; width of front of ♀ at vertex just under 1 to 1·25 mm.; length of wing, ♂ 9 to 10·25 mm., ♀ 7 to 11·2 mm.

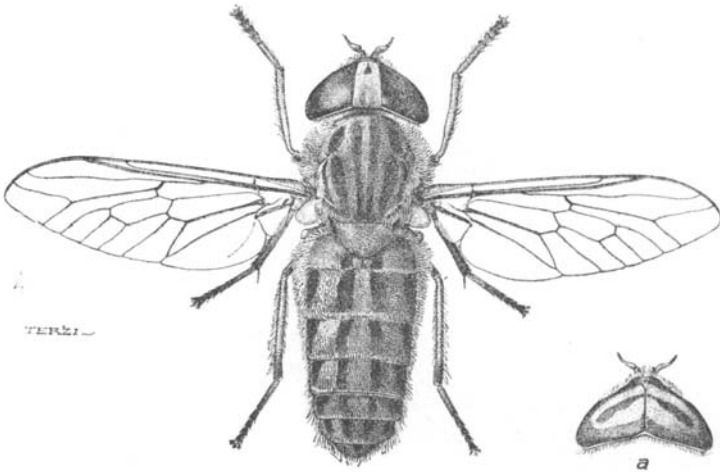


Fig. 2.—*Tabanus pertinens*, Austen, ♀. × 4. a, head of ♂ from above. × 4.

Small or smallish, greyish, elongate species, with eyes in ♂ densely clothed above with fine, short, pale hair, front in ♀ broad, frontal callus in ♀ absent or scarcely noticeable, and with dorsum of abdomen in both sexes marked (as shown in fig. 2) with four series of elongate black or clove-brown marks, forming four narrow longitudinal stripes, which are more or less interrupted on the hind margins of the segments.

♂.—*Head* (fig. 2a): wide (greatest transverse diameter of each eye considerably longer than greatest vertical diameter), light grey, face, jowls, and basi-occipital region clothed with whitish hair; *frontal triangle* raw-umber-coloured, shining (dull smoke-grey pollinose immediately above bases of antennae and also at apex); *eyes* (cf. fig. 2a) with a bluntly fusiform, horizontal area (bisected by the impressed median line formed by the division between them) of larger

facets, which even in dried specimens differ in colour from the remainder, the fusiform area being usually paler (drab-grey or smoke-grey, fawn-coloured, or chocolate), margined with dark brown, and marked with a curved transverse band of dark brown, which extends almost from end to end of the area; longer hair on eyes confined to fusiform area, below which the hair is so short and sparse as to be scarcely noticeable under a hand-lens magnifying 15 diameters (nominal); proximal joint of *palpi* mouse-grey (cream-buff at extreme tip), clothed with whitish hair, distal joint cream-coloured, oval or short ovate, clothed with long, outstanding whitish hair, mixed at and near tip of joint with minute black hairs; *antennae* small, first and second joints smoke-grey, upper distal angle of first joint considerably developed, prominent, and clothed with minute black hairs or bristles, third joint ochraceous-buff (terminal annulus dark brown), expanded portion viewed from side fairly broad, its upper margin produced into a prominent angle at about its middle point, the four distal annuli slender and together approximately equal to the expanded portion of the third joint in length. *Thorax*: ground colour blackish slate, pleurae and pectus light grey pollinose, swelling occupying depression at each end of transverse suture greyish fawn-coloured or smoke-grey, and clothed partly with blackish partly with greyish hair; dorsum longitudinally striped with grey, as in ♀ (see fig. 2), and clothed with fine, silky, erect, yellowish hair, mixed with fine blackish hair, pleurae and pectus clothed with outstanding greyish white hair. *Abdomen* narrow and elongate, gradually tapering to a point; dorsum marked as in ♀, the elongate marks forming the dark stripes clothed with fine black hair, the intervening light grey stripes clothed with fine cream-coloured hair, sides of dorsum clothed with long, fine, whitish hair; venter dark grey, covered with light grey pollen, and clothed (except last two segments, which bear coarse, erect, black hairs) with whitish hair; hind borders of ventral scutes of second to sixth segments inclusive cream-buff; ventral scutes of second and third, or second, third, and fourth segments sometimes each with a more or less indistinct, elongate, greyish fawn-coloured area near lateral margin on each side. *Wings* hyaline, veins for most part mummy-brown; *stigma* so pale as to be inconspicuous. *Squamae* semi-opaque waxen-white, borders cream-buff. *Halteres* cream-coloured. *Legs*: coxae grey, clothed with whitish hair; femora grey, at least at base, often more or less greyish ochraceous-buff at and towards distal extremities, clothed below and posteriorly with long, whitish hair; tibiae greyish ochraceous-buff (anterior surface of front pair sometimes mainly mouse-grey or dark grey), tips of middle and hind pairs usually brownish or dark brown, all tibiae clothed on anterior, upper, and posterior surfaces with minute, appressed, silvery hairs, which on upper surface are mixed with minute black hairs; front tibiae sparsely fringed antero-exteriorly with longer black hairs mixed with similar whitish hairs, middle tibiae with a loose, irregular fringe of fine, whitish hairs, on outer and inner surfaces, hind tibiae densely fringed on both inner and outer sides with long, fine, silvery-white hair, the fringe on the inside being the longer, and that on the outside mixed with a certain number of fine black hairs; tarsi dark brown (first joint of middle and hind pairs sometimes more or less ochraceous-buff, except at distal extremity), clothed above with minute, appressed, silvery white

hairs, which, on middle and hind tarsi, are mixed with minute black hairs ; distal extremities of joints of front tarsi fringed on each side with longer hairs.

♀.—*Head* light grey, face, jowls, and basioccipital region clothed with whitish hair ; *front* narrower below (at lower extremity about four-fifths as wide as at vertex), upper two-thirds (except sides) clothed with short, erect, blackish hairs, lower third clothed with minute, appressed, Naples-yellow hairs, which also extend on to sides of upper portion ; just below middle of front most specimens exhibit a mummy-brown mark, which is in contact with the eye on each side and is sometimes shaped like a wide V or nearly straight transverse band, but more usually consists of a downwardly directed median portion (generally the only part of the mark visible when the insect is viewed directly from above*), connected with each eye by a curved, transverse offshoot ; *frontal callus* in absolutely undenuded specimens entirely concealed by the grey pollinose covering of the head, but when exposed flat, small, yellowish horn-coloured and usually semi-circular in outline, with its straight edge resting on the upper margin of the subcallus, and elsewhere with a narrow mummy-brown border, which is widely separated from the eye on each side ; in specimens in which the frontal callus is not fully exposed, its position is nevertheless often indicated by its mummy-brown upper margin ; *eyes* sparsely clothed with minute pale hairs, just visible under a hand-lens magnifying 15 diameters (nominal) when the eyes are brightly illuminated and viewed against a dark background ; *palpi* cream-coloured, proximal joint clothed with long, whitish hair, distal joint viewed from side shortly acuminate (swollen or strongly swollen at base and tapering quickly to a point), clothed on outer side with minute, appressed, silvery white hairs mixed with minute black hairs, and at base below with longer whitish hair ; *antennae* agreeing generally in coloration with those of ♂, but expanded portion of third joint usually broader (sometimes much broader and dark brown or brownish above), and annulate portion of same joint stouter. *Thorax*: ground colour, pleurae, and pectus as in ♂, except that ground colour of distal extremity of scutellum is chestnut or cinnamon-rufous ; † dorsum greyer than in ♂, longitudinally striped with light grey as shown in fig. 2, the paired, admedian, grey stripes usually broader than in ♂ ; hairy covering of dorsum consisting of short, appressed, ochre-yellow or pale ochre-yellow hairs, mixed with longer and more erect blackish hairs, and with short black hairs on (at least posterior extremities of) admedian dark stripes, and on median portion of basal half of scutellum. *Abdomen* (cf. fig. 2) : grey stripes on dorsum clothed with minute, appressed, cream-coloured or pale yellow hairs, dark markings clothed with black hairs of a similar character ; on the penultimate and antepenultimate segments (frequently also on others as well) the pale yellow hairs on the grey markings are freely interspersed with longer black hairs ; dorsal surface of last segment almost exclusively if not entirely clothed with black hair ; sides of dorsum fringed with whitish hair, which however is not so long as in ♂ ; ventral surface of first

* It is this median portion which is shown in the figure on p. 286, where it appears somewhat too dark ; it must not be mistaken for the frontal callus.

† A trace of chestnut in the ground colour is often seen at the tip of the ♂ scutellum also.

six segments light grey, clothed with short, appressed, glistening, cream-buff or pale yellowish hairs, mixed on sixth segment and also to some extent on fifth with black hairs; ventral surface of seventh segment dark grey, and, as usual, clothed with coarse, erect, black hairs; hind borders of ventral scutes of second to sixth segments inclusive as in ♂. *Wings, squamae, and halteres* as in ♂. *Legs*: coxae light grey or smoke-grey, clothed with whitish hair; femora and tibiae greyish buff (tibiae brownish at tips), clothed above with minute, appressed, silvery-white hairs, femora clothed behind and below with longer, whitish hair, outer side of front tibiae sparsely fringed with blackish hairs, hind tibiae fringed as in ♂, except that the hairs are much shorter; tarsi brownish or dark brown, first joints of middle and hind pairs more or less ochraceous-buff except at tips, front tarsi loosely fringed on each side with blackish hairs, and their second, third and fourth joints somewhat expanded.

NORTHERN NIGERIA; ANGLO-EGYPTIAN SUDAN; EAST AFRICA PROTECTORATE; GERMAN EAST AFRICA; NYASALAND PROTECTORATE; NORTH-EASTERN RHODESIA. Type of ♂ from North-Eastern Rhodesia, near mouth of Lusangazi River, 1-3. ix. 1910 (*S. A. Neave*); type of ♀ from Zungeru, Northern Nigeria, November, 1910 (*J. J. Simpson*); both specimens, as well as a series of para-types from various localities, presented to the British Museum (Natural History) by the Entomological Research Committee.

Within the last twelve months, some hundreds of specimens of this species, chiefly collected by Messrs. Simpson and Neave, have been received by the Entomological Research Committee from the countries mentioned. In Northern Nigeria, Mr. Simpson, who, like other collectors in the same colony, has hitherto only met with the female, took *Tabanus pertinens* in large numbers on the polo ground at Zungeru, in November, 1910; additional specimens, collected at the same time and place, were received by the Committee from Dr. J. W. Scott Macfie. Other Northern Nigerian localities at which the species was met with by Mr. Simpson are:—Kateri (2. xii. 1910), Kumbaku and Kogin Sirikin Pawa (6, 7. xii. 1910), the railway-crossing over the Kaduna River (10. xii. 1910), and Izon (15. xii. 1910). One specimen, taken on the Benue River in January, 1910, was received from Dr. C. E. S. Watson, W.A.M.S., and a female from Anka, Sokoto Province, 24. xii. 1910 (*Dr. J. McE. Dalziel, W.A.M.S.*), is in the possession of Dr. J. H. Ashworth, of Edinburgh University.

In the Anglo-Egyptian Sudan, three females of *T. pertinens* were taken at Kadowah, Mongalla Province, 21. i. 1911, by Mr. H. H. King.

The following is a brief summary of the specimens of this species collected by Mr. S. A. Neave:—

East Africa Protectorate: 1 ♂, 6 ♀♀, Voi, 1,800 ft., 21-23. iii. 1911; 1 ♀, Tsavo River, 24. iii. 1911.

German East Africa: 19 ♀♀, Baka River, on road from Nwaya to New Langenburg, 17. xi. 1910; 1 ♀, Usangu District, 26. xi. 1910, "at water hole"; 8 ♂♂, 30 ♀♀, Little Ruaha River, South Usangu District, 3,500 ft., 28. xi. 1910.

Nyasaland Protectorate: 2 ♂♂, east of Mvera, 3,500 ft., 10, 11. x. 1910; 9 ♂♂, 1 ♀, Lower Lintipe River, 12, 13. x. 1910; 1 ♀, Lingadzi River, near Domira Bay, west shore of Lake Nyasa, October, 1910.

North-Eastern Rhodesia: 26 ♂♂, 150 ♀♀, chiefly from Hargreaves and the vicinity, September, 1910.

Tabanus pertinens, which is not especially closely allied to any of its congeners at present known, as regards the width and shape of the front, is not unlike *T. sufis*, Jaenn., which also occurs on both sides of the continent. Apart from all other characters, however, the female of the new species may be distinguished from that of *T. sufis* by the fact that the most conspicuous markings on the dorsum of its abdomen do not consist of a double longitudinal series of light-grey *oblique* spots on a slate-black ground, as well as by the absence of an appendix to and infuscation on the base of the anterior branch of the third longitudinal vein.

According to Mr. Simpson *Tabanus pertinens* is troublesome to human beings, whom the females attack with almost the pertinacity of a *Haematopota*.