

# NOTES ON NEOTROPICAL TABANIDAE (DIPTERA) II. DESCRIPTIONS OF NEW SPECIES AND NEW RECORDS FOR PANAMA<sup>1</sup>

G. B. FAIRCHILD

Gorgas Memorial Laboratory, Panama, Republic of Panama

## ABSTRACT

The *Di cladocera-Dasychela* complex is found to include a *guttipennis* group, a *unicolor* group, and a *badia* group, and species belonging in each are listed. A ruling of the International Commission seems necessary to fix the type species of *Di cladocera* Lutz and thus to determine whether this name shall be applicable to the first or the second of these groups, which appear to be at least of subgeneric value. A ruling would also be necessary to

determine the validity of *Dasychela* Enderlein and its applicability to the *badia* group, which seems generically distinct. However, the synonymous *Stylochela* Enderlein, which unquestionably was validly proposed and which had line priority, is preferred here to the dubious *Dasychela*. Eleven new species, in six genera, are described and notes are given on 14 previously described species, one of which is newly reduced to synonymy.

The purpose of the present communication is to provide names for and to discuss the relationships of a number of somewhat anomalous species, mostly from northwestern South America, and to describe a species from Trinidad belonging to a group being revised by Dr. C. B. Philip. At the same time it seemed opportune to include some new species, additional records, and changes of names affecting the Panama fauna which have accumulated since 1953. Although the present additions to the Tabanid fauna of Panama raise the number of species now definitely known from the area to 121 in 18 genera, there are still too many unresolved nomenclatural tangles awaiting type comparisons to make the publication of a revised check list of much use.

The relationships and nomenclature of the group of flies variously treated as *Dasychela* End. 1922 and *Di cladocera* Lutz 1912 is complicated. The status of *Di cladocera* has been discussed by Bequaert and Renjifo (1947), Barretto (1950), and myself (1951). If, as seems probable, *Di cladocera* Lutz 1909 and 1911 with *D. guttipennis* Wied. as type is invalid, then *Di cladocera* Lutz 1912 with *D. unicolor* Lutz as type becomes the first available use of this name. *D. unicolor* however, in my opinion, is not closely related to *guttipennis* Wied., and in fact Barretto (1951) has placed *unicolor* Lutz in *Amphichlorops* on the basis of bare and unicolorous eyes. This action, however, raises a further problem, since if *Di cladocera* with *unicolor* is the first valid use of the name, and *unicolor* is in reality congeneric with *Amphichlorops flavus* Wied., the type of *Amphichlorops* Lutz 1913, then *Amphichlorops* will fall as a synonym of *Di cladocera*. However, I do not consider *unicolor* Lutz to belong in *Amphichlorops*.

The genotype of *Dasychela* End. was originally designated as *D. limbativena* End. 1922, at that time a *nomen nudum*. Enderlein (1925) described as new what is presumed to be the same species as

*Di cladocera limbativena*, but with no reference whatever to his previously proposed *Dasychela*. This description of *limbativena*, based on a specimen from Colombia, appears to apply to a member of this group, though the wing pattern, and light yellowish brown color indicate a species I have not seen. Kröber (1940) gives the type locality of *Di cladocera limbativena* as "Ecuador, Cordillera", apparently a slip of the pen, as he quotes Enderlein's description in full, followed by a description of the Ecuador specimen erroneously cited as type, pointing out certain differences between his specimen and Enderlein's, such as the longer proboscis (4.5 mm.) and somewhat different antennae. The figure accompanying Kröber's description is of the wing only, and although he does not state from which of the two specimens it was taken, it appears to agree best with Enderlein's description. Certain specimens from Ecuador before me agree quite well with Kröber's description but not with Enderlein's. These are, however, the same as *Dichelacera peruviana* Bigot, as comparison of one of them with Bigot's type in BM shows. It is to be noted that Kröber appears to have overlooked *Dasychela*, or considered it a *nomen nudum*, as it is not mentioned either in his catalogue (1934) or in his revision of *Di cladocera* (1940). Status of *Dasychela* thus seems to depend on the validity of Enderlein's 1922 proposal, where the genus is defined in a key, though its type species was a *nomen nudum*. Its use by Bequaert and Renjifo (1947) appears to be the first subsequent mention of the name.

As can be seen by the above, the nomenclatural problems are probably insoluble without recourse to a ruling by the International Commission on Zoological Nomenclature, as there does not seem to be agreement on the availability of Lutz' papers of 1909 and 1911, or on the validity of *Dasychela* End.

From a purely zoological standpoint, there appear to be a number of distinct though similar groups involved, as follows:

The *guttipennis* group. These flies have the

<sup>1</sup>Accepted for publication August 28, 1958. Partial cost of publication of this paper was met by the Gorgas Memorial Institute of Tropical and Preventive Medicine, Inc.

labella of the proboscis membranous, or at least any small sclerotized plates are pollinose, and the labella are large, over one-third the length of the proboscis. The frons is generally broad, the callus large and prominent, usually only slightly narrower than the frons. The eyes are usually pilose, though in some species practically bare. The basicosta bears some macrotrichiae except in *guttipennis*. The wings usually have a characteristic black pattern showing a round clear fenestra in the discal cell, though in some species the pattern is much reduced and faded. With the exception of the somewhat aberrant *guttipennis* and another related species from Brasil described below, the group appears to have its center of distribution in northwestern South America, from Peru to Venezuela. I would include here, of the species I have personally examined, *macula* Macq., *basi-rufa* Walk., *submacula* Walk., *minos* Schin., *acheronitens* Kröb., and the new species described below.

The *unicolor* group. The species placed here differ from the *guttipennis* group in being less hairy, the eyes entirely bare, the basicosta always without macrotrichiae, the labella small and compact, generally well sclerotized, the frons rather narrow, the callus narrow, ridge-like, or at least with a strong upper extension, and the wings either clear or smoky, often with an indistinct pattern similar to that of the previous group. Of the species personally examined, I would place *satanica* Big., *castanea* Big., and *unicolor* Lutz here. It is probable that *barbiellini* Borgm. and *ferruginea* Barr. also would belong here. All the species of this group appear to be confined to southeastern Brasil. *Satanica*, of which I have a specimen compared with the type, is more robust and hirsute than the others, the labella larger, showing a transition in some respects to the larger species of the *guttipennis* group.

The *badia* group. These species are characterized by the elongate proboscis, often exceeding the head height, with small pollinose labella, the long and slender palpi, narrow frons with club-shaped or ridge-like callus, very slender antennae with an exceedingly long and slender dorsal projection. The eyes are generally densely pilose, rarely bare, and the basicosta is without macrotrichiae. The wings are brown on basal two-thirds with clear yellowish fenestrae surrounding the cross veins and fork of third vein ( $R_1$ ), the apices being clear or smoky, or with a dilute brown discal band. I consider the following named species to belong here: *badia* Kröber, *ocellus* Walk., and *peruviana* Bigot. I believe, from the descriptions of Enderlein (1925) and Kröber (1940), that *limbativena* End. belongs here and in all probability *Stypochela bogotana* End. also. This latter species has been re-described and figured by Kröber (1931) and seems to differ from *Dicladocera* mainly in having the

suture between third and fourth flagellar segments of antennae obsolete or faint, so that the style appears three-segmented, and in having a short spur at the base of  $R_4$ . The first character probably is of little importance, while the presence of a spur vein, though unusual in this group, is not unknown, as I have several specimens of *badia* Kröb. showing a short spur in one or both wings. The other characters agree quite well, including the long proboscis, slender palpi and shape of frons. The pale color and lack of wing markings may be due to fading or a general condition of the specimen.

I consider the first two of these groups to be of at least subgeneric rank, while the third seems best treated as a full genus. Provisionally, and pending a decision on the availability of Lutz' 1909 and 1911 publications, it seems best to use *Dicladocera* for the *guttipennis* group as defined above, though if these publications are unavailable, *Dicladocera* will date from 1912 and shift its sense to the *unicolor* group. In either case the generic name will remain the same and a subgeneric designation can be proposed whenever the matter can be settled. In the case of *Dasychela*, the synonym *Stypochela* is available, and has, in fact, line precedence in the original 1922 proposal. *Stypochela* was unequivocally validated in 1925 by Enderlein when he described *bogotana*, its type species, so that it seems best to use this name for the *badia* group rather than the dubious *Dasychela*. Figures of the heads in side view of representatives of these three groups, and of *Triceratomyia* Beq. are included (figs. 11 to 14) to show differences in structure of proboscis.

#### *Triceratomyia biramula*, new species

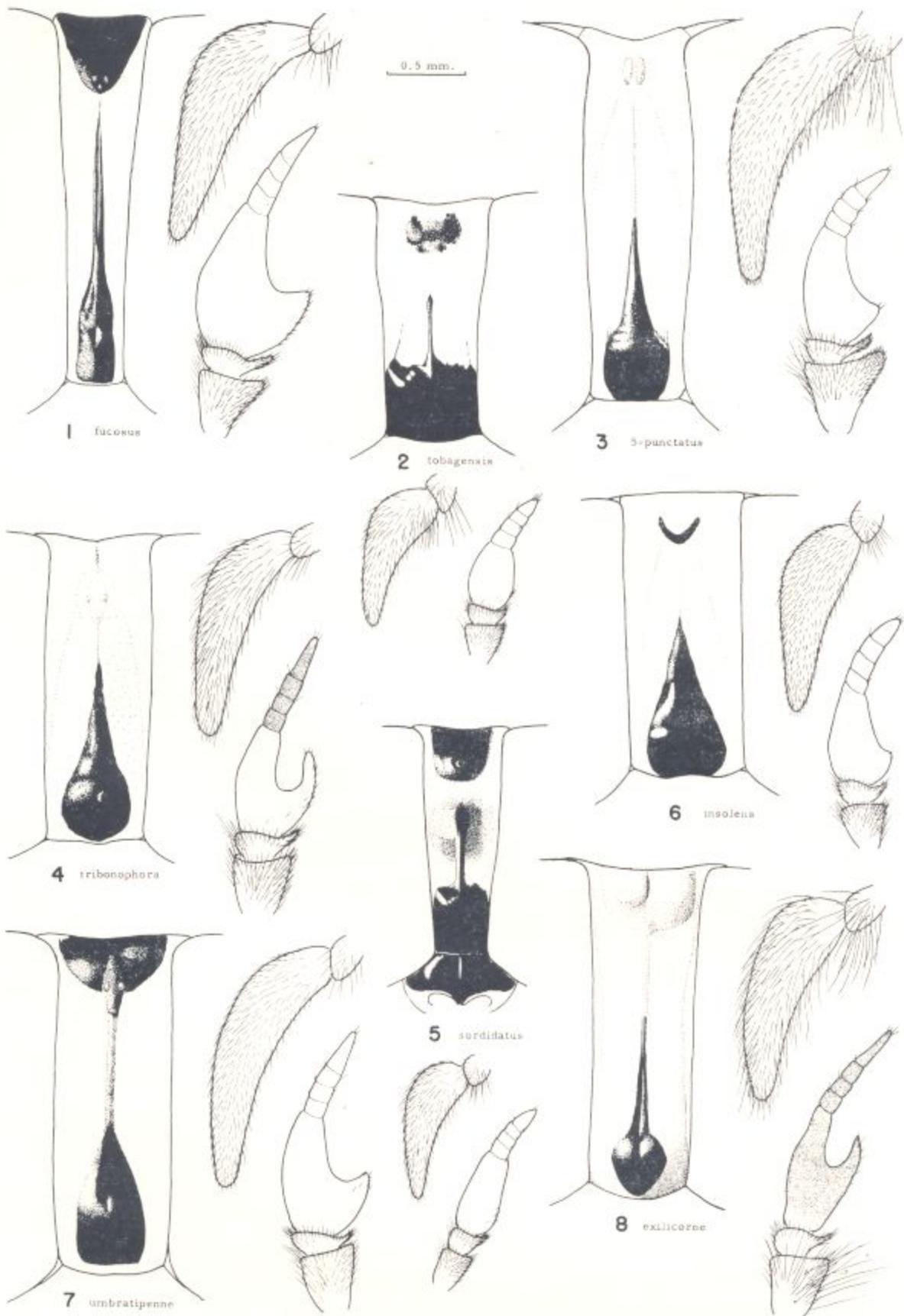
Figures 10, 11

A large brown fly with bare eyes, produced *Pangonia*-like face, proboscis over twice as long as head height, hirsute biramous third antennal segment and variegated wings.

*Female*.—Length 20.9 mm., of wing 18.9 mm. Eyes bare, no pattern revivable, probably unicolorous bronzy or green in life. Frons about 4.5 times as high as basal width, a little narrower in the middle, pale brown pollinose. Frontal callus brown, ridge-like, slightly enlarged and wrinkled below. No tubercle at vertex, but three dark spots in the integument which may represent vestiges of ocelli. Antennae reddish brown, the

#### EXPLANATION OF PLATE I

All figures are of frons, antenna and palpus and are all to the scale indicated above fig. 2. FIG. 1.—*Philipota-bonus fucosus* n. sp. holotype; FIG. 2.—*Stenotabanus tobagenis* n. sp. holotype; FIG. 3.—*Tabanus 5-punctatus* Hine, homotype; FIG. 4.—*Dicladocera tribonophora* n. sp. holotype; FIG. 5.—*Stenotabanus sordidatus* n. sp. holotype; FIG. 6.—*Stenotabanus insolens* n. sp. holotype; FIG. 7.—*Dicladocera umbratipenne* n. sp. holotype; FIG. 8.—*Dicladocera exilicorne* n. sp. holotype.



first two segments unremarkable, clothed with dark hairs, the third segment with basal plate very deeply biramous, the lower branch bearing the 4-segmented style, which is hardly one-third the length of the basal plate, the upper branch clubbed, a little longer than the lower branch to its junction with the style, both branches with several rows of erect, fine setae on their opposing edges. Palpi very elongate, flattened, sabre-shaped, about equalling head height, brown, black-haired. Subcallus, fronto-clypeus and genae brown pollinose, the first somewhat denuded, though probably not so in fresh material, the beard brown, extending along the lower eye margin to the subcallus. Proboscis brown pollinose, slender, about twice as long as palpi, the labella small, pollinose, yellowish.

Mesonotum and scutellum reddish brown, thinly grey pollinose with a rather faint median and two pairs of sublateral pale stripes, clothed with rather long and sparse coppery hairs and with small tufts of whitish hairs just above the wing bases. Pleura and sternum pale reddish brown, yellowish grey pollinose and with pale brown hairs. Legs uniformly reddish, clothed with coppery hairs. Wings lightly fumose with the costal cell yellowish, the basal cells brown with paler centers and a broad discal brown band covering the basal halves of the marginal and submarginal cells, base of second submarginal, most of first posterior and bases of the remainder of the posterior cells, and apical half of discal cell. The extreme bases of marginal and first submarginal cells and basal half of discal cell are hyaline. There are also small yellowish fenestrae about the fork of third vein and at apex of discal cell, and fainter pale areas in the centers of cells. Venation normal, no appendix on fork of third vein. Abdomen reddish brown, subshiny, coppery haired, the first and perhaps second tergite with vestiges of greyish pruinosity. Sternites similar but paler. Halteres brown with yellow knob.

Holotype female, Cristal Mayu, Dept. Cochabamba, Bolivia, 23 November 1949, Luis E. Peña coll. In Coll. L. L. Pechuman.

This peculiar species seems quite closely related *Triceratomyia macintyreii* Beq., from which it differs most noticeably in the biramous instead of triramous third antennal segment. A figure (fig. 15) of antenna and palpus of *T. macintyreii*, from a specimen from Boayaco, Napo Pastaza, Ecuador, L. Leon coll. has been added for comparison. The other head characters and style of coloration are very similar. It is also clearly related to *Stypochela badia* Kröber, differing in bare eyes, more highly modified antennae and longer proboscis and palpi. *Stypochela ocellus* Wlk. is also close to the present species, differing structurally chiefly in lacking the rows of fine setae on the antennae and in having pilose eyes.

## *Stypochela peruviana* (Bigot)

Figure 17

*Dichelacera peruviana* Bigot, 1892, Mém. Soc. Zool. France 5: 635 (♀, Pérou).

*Tabanus peruvianus*, Ricardo, 1904, Ann. Mag. Nat. Hist. (7) 14: 368 (notes on type); Kröber, 1934, Rev. Ent. 4(3): 313 (not recognized).

The type in the British Museum bears a red-circled type label with "*Dichelacera peruviana* Bigot", a Bigot hand label with "*Dichelacera peruviana* ♀ n. sp. inédit Alger Mars 1890 J. Bigot Peru", a handwritten label with "*Tabanus* 17/7/04 G.R." and a B.M.-Bigot coll. accession label. The specimen is intact though quite dirty. A specimen from Ecuador, lacking both antennae and palpi, agreed in other respects with the type, and subsequent material agrees with this specimen and with drawings made of the type. A specimen in the Hine coll. compared by Hine with Bigot's type is *Stypochela badia* Kröber.

The species is closely related to *St. ocellus* (Wlk.) and *badia* Kröber., but can be distinguished from the former by the shorter proboscis, which does not exceed the head height, and from the latter by the more reddish tone of the integument, largely rufous-haired thorax, more contrasting wing markings, and more slender antennae. Aside from the type, the following material has been examined: 3♀, Ecuador, L. Leon coll. All lack palpi and most of antennae. 1♀, Peñaherrera, Prov. Imbabura, Ecuador, L. Leon coll. 1♀, Nanegalito, Ecuador, 27 Oct. 1956, R. W. Portman coll. 1♀, Limon, E. Ecuador, 900 M. Feb. 1948, Z. Mueller Coll. 1♀, Baños, Tungurahua, Ecuador, 1600 to 1900 M., Wm. C. MacIntyre coll. This last specimen was recorded by Bequaert and Renjifo (1947) as *Dasychela limbiventra* End.

## *Stypochela ocellus* (Walker)

Figure 16

*Pangonia ocellus* Walker, 1848, List Dipt. Brit. Mus. 1: 143 (♀; Quito). Kertész, 1900, Cat. Tab. p. 22.

Ricardo, 1900, Ann. Mag. Nat. Hist. (7) 5: 179 (says not *Pangonia*, belongs to the Tabaninae).

*Tabanus ocellus*, Kröber, 1930, Zool. Anz. 90(3-4): 86 (saw type; says *Tabanus* with head of an unknown *Fidena* species).

*Dasychela ocellus*, Fairchild, 1956, Smithsonian Misc. Coll. 131(3): 24.

The unique type in the British Museum bears the following labels: a green-circled label with "*Pangonia ocellus* Wlk.", a hand written label with "*Pangonia ocellus* ♀ Wlk. (Type)", a handwritten label with "S. America, Quito, presented by W. Hewitson", a white circular label with "Quito" on one side and "46/62" on the other. The head of the specimen is glued onto a card pinned separately and bearing a hand written label reading: "Head of type of *Pangonia ocellus* Wlk as described by Walker, but really that of *Pangoniine*, and not belonging to speci-

men. E. E. Austen 10-IV-1929". The antennae are now missing, tips of wings broken and the specimen somewhat dirty.

In spite of the remarks of Kröber and Austen, I am convinced that the head belongs to the body and that the species is a valid one. The eyes are pilose, beard cinnamon brown, as are frons, subcallus, face and palpi. Thorax reddish brown, obscurely striped, mainly with coppery red hairs; scutellum more reddish. Legs reddish brown, mainly reddish-brown-haired. Wings with basicosta bare, brownish black except for a clear band covering the apices of the basal cells and a small area about the fork of the third vein. The darkest areas are the basal cells and a band below the stigma which includes most of the discal cell. The apex of the wing and the posterior border are more greyish hyaline, though since the wings are very dirty, the markings may have been more contrasting. The abdomen is nearly black in ground color with a whitish or bluish bloom on the anterior borders of most of the tergites. There is some indication of light coppery haired hind borders to the tergites, at least on third to last tergites, but the abdomen appears to be mainly black haired.

The above description was taken from the type. Subsequent specimens from Ecuador and Peru confirm the association of head and body and permit a drawing of the antenna and palpus to be added (fig. 16). They differ very little from the type, the wing pattern being, as surmised, a little more contrasting. The Peruvian specimen is a little larger and more reddish than the two from Ecuador, its antennae slightly stouter and the wing pattern browner. Aside from the type, I have examined the following specimens: 1 ♀, Chone, Prov. Manabi, Ecuador, L. Leon coll. 1 ♀, Santo Domingo, Ecuador, 11 Nov. 1956, R. W. Portman coll. 1 ♀, Upper Rio Huallaga, Peru, 9 May 1929, H. Bassler Collection. The last two specimens were received on loan from Dr. C. B. Philip.

#### *Di cladocera mutata*, new species

This species is best described by comparison with *D. guttipennis* Wied., of which it may be only a well marked variety. The eyes, frons, callus, palpi and proboscis are as in *gutipennis*, while the antennae differ in having a shorter dorsal tooth on the base of the third segment, hardly more than a strongly produced angle. The wings, thorax, and legs are as in *gutipennis*, while the abdomen is bright orange with a black middorsal stripe instead of wholly black as in *gutipennis*. The last two visible tergites are largely blackish, somewhat orange brown only on the extreme sides.

Holotype female, Pyrenopolis, Goyaz, Brasil, 28 Aug. 1936, and 1 ♀, paratype, Pyrenopolis, Oct. 1936. To be deposited in M. C. Z.

The name was found on specimens in the Lutz

collection at the Instituto Oswaldo Cruz in 1936, with which the present material was compared.

#### *Di cladocera tribonophora*, new species

Figures 4, 23

A small black species with orange antennae, a blackish band on wing with an oval hyaline spot in the discal cell and wholly black legs.

*Female*.—Length 11.6 mm., of wing 11.0 mm. Eyes densely pubescent, showing no evidence of pattern on revival, greenish black. Frons 3 times as high as basal width, very slightly narrowed below, dark silvery grey pollinose and with sparse erect long dark hairs. Frontal callus dark brown, portuberant, somewhat rugose, narrower than frons, extended upwards in a raised ridge nearly to vertex. No raised tubercle at vertex but vestiges of ocelli apparent in the form of three yellowish integumental spots visible through the thin pollinosity. Subcallus yellowish grey pollinose with a small cluster of erect brown hairs on each side. Fronto-clypeus and genae very thinly dark grey pollinose, clothed with long erect dark hairs. Antennae with first two segments brown, dark grey pollinose, dark-haired. Basal plate of third antennal segment bright orange, the style dark brown. Dorsal tooth short, curved, not reaching end of basal plate. Palpi moderately inflated, blunt, blackish, dark grey pollinose and black haired. Proboscis blackish, but little longer than palpi, the labella large and membranous.

Mesonotum and scutellum black in ground color except for the reddish hind margins of the former between wing bases and scutellum, all dark grey pollinose beset with erect dark hairs. Pleura and sternum slightly brownish, thinly dark grey pollinose, dark-haired. Legs very dark reddish brown, nearly black, the apices of femora a little paler, all black-haired, the hairs on hind tibiae longer, forming an indistinct fringe. Wings with basicosta with a few black setae, venation normal, no appendix on fork of third vein. Basal cells, except apices, costal cell, cubital cell and anal area, and an outwardly irregular discal band which reaches neither the fork of the third vein nor the hind margin, brown, most intense below the brown stigma, but with an oval hyaline fenestra in the distal half of the discal cell. Abdomen above subshiny, very dark blackish brown, with rather long dark hairs. The posterior margins of tergites 5 to 7 bear small median patches of yellowish hairs, while the extreme postero-lateral corners of tergites 2 to 4 bear similar hairs. The first two tergites are obscurely grey pruinose on the sides. Venter dark brown, thinly grey pruinose, dark-haired except for sparse yellow haired posterior margins of all sternites.

Holotype female, Rio Blanco, 1800 M., Oriente, Ecuador, Wm. C. MacIntyre coll. In M. C. Z. Paratype female, Nangulvi, Prov. Imbabura,

Ecuador, Luis A. Leon coll. The paratype has a shorter dorsal spine on antenna and slightly narrower and less prominent frontal callus.

This species bears a strong superficial resemblance to *D. guttipennis* Wied. but differs in details of wing pattern and in more densely pubescent eyes. From *D. caloptera* Schin. it differs in lacking yellow hairs on the scutellum and before the wing bases, in lacking the silver white hair patch on the fourth tergite, and in having yellow instead of black antennae, as well as in smaller size. The wing pattern is very similar to such species as *riveti* Surc., *acheronitens* Kröb., and *minos* Schin., but the species is considerably smaller than any of these.

#### *Dicladocera umbratipenne*, new species

Figures 7, 22

A stout blackish species with short antennal tooth, orange antennae, faintly marked wings, and abdomen with a bright silvery transverse band on the fourth tergite.

*Female*.—Length 13.5 mm., of wing 12.8 mm. Eyes densely short pilose, unicolorous greenish black on revival. Frons 3.1 times as high as basal width, practically parallel sided, light grey pollinose, becoming brownish below, rather thickly beset with erect hairs. There is also a median blackish patch only visible under light of certain incidence, and not shown in the accompanying figure. Frontal callus dark brown, shiny, smooth, drop-shaped, narrower than frons, extended above in a low ridge. Vertex black and shiny with a well marked elongate tubercle bearing three well marked vestiges of ocelli. Subcallus orange brown pollinose, with a patch of short erect hairs on each side. Antennae with first two segments brownish pollinose and with dark hairs, the third segment bright orange, the style black. Basal plate dorsally excised, the dorsal tooth short, hardly more than an acute angulate process. Fronto-clypeus and genae dark brown pollinose, clothed with rather dense and long dark hairs, the genae markedly inflated. Palpi moderately stout, blunt, blackish pollinose and with short appressed black hairs. Proboscis black, a little longer than palpi, the labella membranous.

Mesonotum and scutellum dark brown, nearly black, subshiny, clothed entirely with rather dense black hairs. Pleura and sternum dark brown, wholly dense black-haired. Legs wholly black and black-haired. Wings with costal cell strongly yellowish, stigma yellow, discal area below stigma, fork of third vein and tip of discal cell with faint yellowish brown clouds, the pattern being very similar to the wing picture of *D. submacula* Wlk., though so faint as to be hardly discernible. The main veins are also distinctly yellowish and the whole wing faintly yellowish tinged. Subepaulet with a small patch of black macrotrichiae. No appendix on fork of third vein. Halteres yellow, the stem slightly darker.

Abdomen black in ground color, the sides of first two tergites obscurely dull reddish, wholly densely black-haired except for a complete transverse band, widened in the middle, of faintly yellowish silvery hairs on the hind margin of the fourth tergite, and tufts of similar hairs on the postero-lateral margins of the second and third tergites. Beneath the abdomen is black with a broad median band of greyish pruinosity, black-haired except for sparse pale-haired hind marginal fringes on sternites 2-4.

Holotype female, Roque, Ost. And., No. 25, 8/7, Melin coll., Swedish Amaz. Exped., 1923-1925. To be deposited in the University of Lund Zoological Museum. Paratype female, Huacapistana, Rio Tarma, Peru, 1-2 June 1920. To be deposited in M. C. Z.

This species keys out with *D. steinheili* End. in Kröber's (1940) key to the species of *Dicladocera*, differing from the description of that species in shorter antennal tooth and almost wholly black body, legs and vestiture. The antennal tooth is unusually short for a member of this group, but the other structures and type of coloring and wing pattern seem to place it here.

#### *Dicladocera exilicorne*, new species

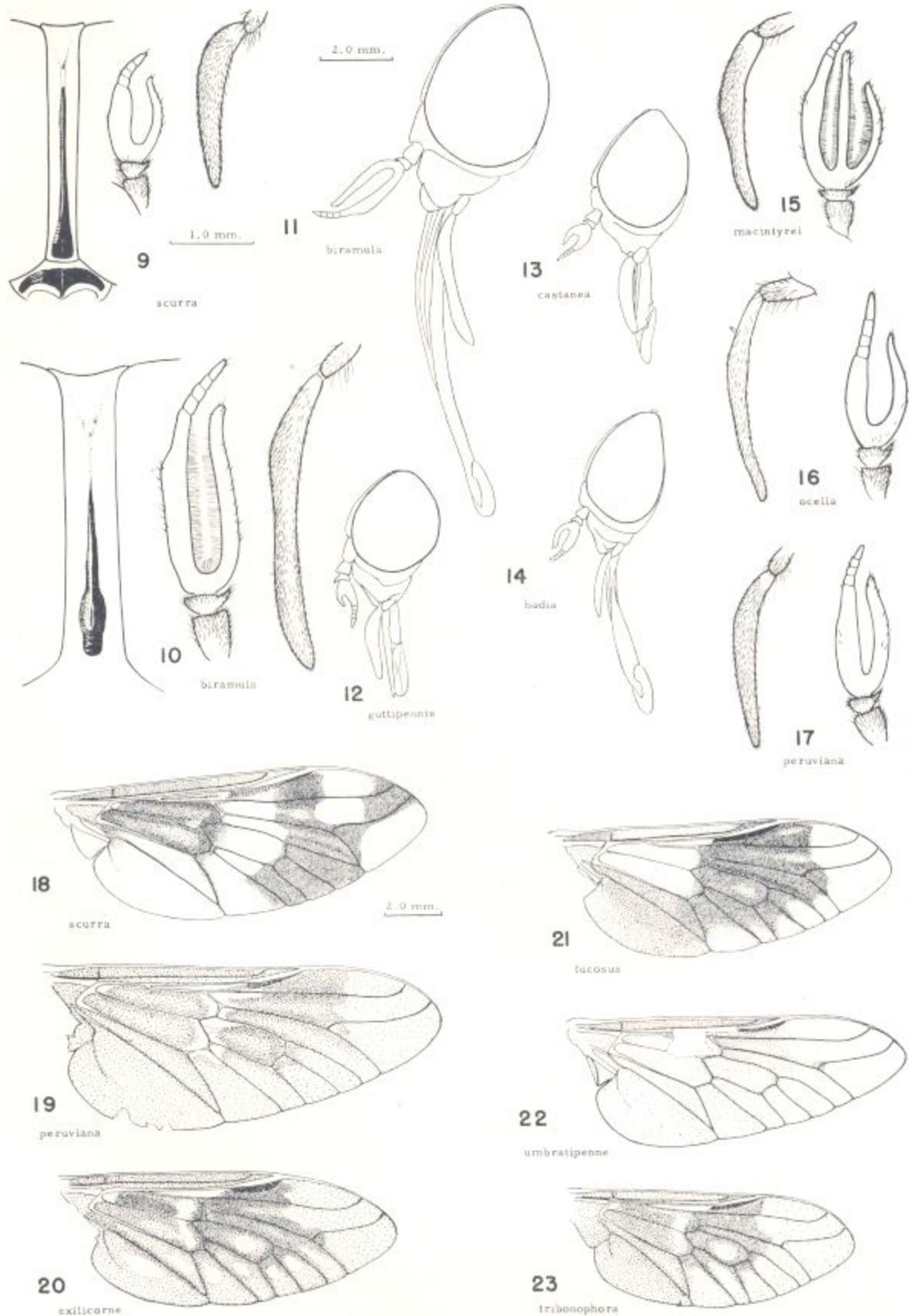
Figures 8, 20

A small, hairy, blackish species with slender dark antennae, wing pattern similar to *guttipennis* Wied., and at least the third to fifth abdominal tergites broadly margined with yellow hairs behind.

*Female*.—Length 13.1 mm., of wing, 13.4 mm. Eyes densely and long pale pubescent, no pattern visible on revival. Frons 3.2 times as high as basal width, practically parallel-sided and quite protuberant below, dark silvery grey pollinose and with numerous long erect black hairs. Frontal callus blackish brown, heart-shaped and with a median groove, extended above in a slender hardly raised black line nearly to vertex. Vertex with a large rounded pollinose prominence or mount, without a distinct tubercle and with three faint yellowish spots representing vestiges of ocelli. Subcallus yellowish grey pollinose with

#### EXPLANATION OF PLATE II

Figs. 9, 10, 15 to 17 are to the scale indicated at fig. 9; figures 11 to 14 are to the scale indicated above fig. 11; figures 18 to 23 are to the scale indicated at fig. 18. FIG. 9.—*Dichelacera (Psalidia) scurra* n. sp. holotype; FIG. 10, 11.—*Triceratomyia biramula* n. sp. holotype; FIG. 12.—*Dicladocera guttipennis* (Wied.); FIG. 13.—*Dicladocera castanea* (Bigot); FIG. 14.—*Stylochela badia* (Krob.); FIG. 15.—*Triceratomyia macintyreii* (Beq.); FIG. 16.—*Stylochela ocellus* (Walk.); FIG. 17.—*Stylochela peruviana* (Bigot); FIG. 18.—*Dichelacera (Psalidia) scurra* n. sp. holotype; FIG. 19.—*Stylochela peruviana* (Big.); FIG. 20.—*Dicladocera exilicorne* n. sp. holotype; FIG. 21.—*Philopotanus fuscus* n. sp. holotype; FIG. 22.—*Dicladocera umbratipenne* n. sp. holotype; FIG. 23.—*Dicladocera tribonophora* n. sp. holotype.



a patch of short, erect, brownish hairs on each side. Antennae blackish brown, the first two segments grey pollinose and with long outstanding black hairs, the third segment yellowish at extreme base, remainder blackish brown, slender, the dorsal tooth curved, acute, failing to reach end of basal plate. Style long, nearly equalling basal plate, slender, acute. Palpi moderately inflated, curved, dark grey pollinose, the first segment with long outstanding black hairs above, yellowish hairs below, the second segment with long decumbent black hairs. Proboscis short, hardly exceeding palpi, the labella membranous. Fronto-clypeus and genae faintly yellowish grey pollinose, with long outstanding mixed yellowish and dark hairs.

Mesonotum and scutellum abraded and damaged, black in ground color with the sutures and lateral margins reddish, apparently grey pollinose with indications of one or two pairs of longitudinal pale stripes and mixed reddish and black hairs. Pleura and sternum grey pollinose, rather densely clothed with mainly pale hairs intermixed with fewer black hairs. Legs dark brown, the basal halves of fore tibiae, mid tibiae and tarsi, and hind tibiae dull orange, mainly black-haired but with rufous hairs intermixed and predominating on the paler tibiae. Halteres with reddish stem and yellowish white knob. Wings with costal cell brown, first basal cell blackish except at extreme base and just before apex, second basal cell blackish except for interior of apical two-thirds. A broad blackish band covers discal area from end of stigma to hind margin, its distal border irregular with a spur including fork of third vein and its intensity lessening towards hind margin. Base of marginal cell and apex of wing greyish hyaline, and greyish hyaline fenestrae in discal cell, all posterior cells, cubital cell and anal area. By incident light the whole wing appears brown with milky whitish spots in the apices of the basal cells, middle of first submarginal cell, base of second submarginal cell, discal cell and in all posterior cells, cubital cell and anal area. Subepaulet sparsely setose, no appendix on fork of third vein.

Abdomen denuded, black in ground color with hind margins of all tergites pale, subshiny, somewhat greyish pruinose anteriorly. Vestiture apparently mostly of appressed black hairs with tufts of yellowish hairs at sides of tergites 2 to 4 and transverse yellow-haired bands, widened in the middle, on tergites 3 to 5. Venter with rather long upstanding dark hairs and indistinct pale-haired hind marginal bands on all sternites.

Holotype female, Machetes, Prov. Imbabura, Ecuador, Luis A. Leon coll. One wing mounted on a slide.

This species keys out with *D. gutipennis* Wied. and *D. nova* Kröb. in Kröber's key (1940). From the first it differs in the smaller frontal callus and more slender antennae as well as in details of

color and wing pattern. From *D. nova* it differs in broader frons, shorter antennal tooth and in details of the wing pattern, as far as these can be made out from Kröber's short verbal description.

**Stenotabanus (Aegialomyia) tobagensis,**  
new species

Figure 2

A small brownish fly with unmarked wings and abdomen with median and sublateral rows of greyish spots.

*Female*.—Length 9.7 mm., of wing 7.8 mm. Eyes bare, in life green, with lower margin, a broad median stripe and a narrower upper stripe purple. Frons a little over 2.5 times as high as basal width, wider at vertex than at base, yellowish grey pollinose. Basal callus black, shiny, protuberant, almost as high as wide, as wide as frons, with a slender, denuded, slightly raised line reaching half way to vertex. Vertex with an irregular shiny patch but no raised tubercle nor vestiges of ocelli. Antennae short, about two-thirds length of frons, orange yellow, whitish pollinose, the first segments with black hairs dorsally, white hairs below, second segment black-haired. Style four-segmented, about equal in length to basal plate, the latter obscurely angulate dorsally. Palpi pale yellowish, white pollinose, white-haired basally and below, dark-haired elsewhere, inflated basally but with slender acute apex. Proboscis fleshy, hardly longer than palpi. Subcallus pale grey with a slightly yellowish tinge, fronto-clypeus and genae silvery grey with white hairs.

Mesonotum and scutellum cinnamon brown, brown pollinose with the anterior fourth and notopleura grey pollinose and with faint median and sublateral paler dorsal stripes, the whole thinly beset with erect black and recumbent silvery hairs. Pleura and sternum pale grey, white-haired. Legs pale yellowish brown, the tarsi darker; femora and bases of fore tibiae white-haired, rest of legs dark-haired. Wings, including costal cell, glass clear, stigma yellow, a short appendix on fork of third vein.

Abdomen light brown in ground color with the following vestiture pattern. First tergite pale brownish grey with a transverse patch of darker brown on each side; second to fifth segments with pale grey hind and lateral margins and a median pale grey patch or stripe which merges with the hind marginal band but fails to attain the anterior margin of the tergite except on the second segment. The large, roughly quadrilateral dorso-lateral areas defined by the pale median patch and the posterior and lateral pale borders are cinnamon-brown-pollinose but with roughly oval paler pollinose areas in the center of each, these areas connected by a narrow neck of paler pollinosity to the pale lateral borders, and, on the fourth and succeeding tergites, to the median pale areas. The posterior and lateral margins

and the median pale patches are white-haired, the remainder dark-haired. Beneath the abdomen is pale grey pollinose, wholly pale-haired.

Holotype female, Pigeon Point Beach, Tobago Island, Trinidad, B. W. I., 1-17 July 1955, at human bait on beach, T. H. G. Aitken coll. Paratypes, 2♀, same data as holotype; 1♀, Maracas Bay, Trinidad, B. W. I., 9 March 1957, attacking man on beach, T. H. G. Aitken coll. Holotype and one paratype in coll. T. H. G. Aitken. Two paratypes to be deposited in M. C. Z.

This species is closely related to *St. littoreus* Hine, *St. blantoni* Fchld. and *St. geijskesi* Fchld. From *littoreus* it differs in narrower frons, smaller size, and in lacking a clearly defined and unbroken median abdominal pale stripe. From *blantoni* it differs in considerably narrower frons, in lacking a completely bare and shiny vertex and in narrower antennal plate, though the color and pattern of abdomen are nearly the same. From *geijskesi* it differs in more nearly parallel frons, black rather than yellowish callus, in lacking a pronounced tubercle at vertex, in less inflated palpi and more slender third antennal segment. Color and abdominal pattern are very similar, though in *geijskesi* the pale pollinose areas of the abdomen are more extensive. *St. patillensis* Fchld. is also close, but is considerably smaller, with a more convergent frons, and with the abdominal pattern less complex and clear cut.

#### *Stenotabanus insolens*, new species

Figure 6

A small, wholly orange brown species with clear wings, the frontal callus drop-shaped and the abdomen with a broad though inconspicuous yellow median stripe.

Length 11.0 mm., of wing 9.6 mm. Eyes bare, greenish bronze, without pattern (revived). Frons about 2.5 times as high as basal width, parallel sided, rich orange pollinose with sparse recumbent orange hairs. Frontal callus orange yellow, protuberant, shiny, drop-shaped, narrower than frons, its ridge-like upper extension reaching half way to vertex. Vertex with a small V-shaped denuded spot but no tubercle nor vestiges of ocelli. Antennae shorter than frons, orange, the first two segments with orange hairs, as figured. Palpi orange, inflated, with reddish brown hairs. Proboscis brown, little longer than palpi, the labella large and membranous. Subcallus, fronto-clypeus, and genae orange pollinose, a little paler below. Beard sparse, orange.

Mesonotum, scutellum, pleura, and sternum orange brown, the last two a little paler, all orange grey pollinose with orange and brown hairs intermixed on mesonotum and scutellum. Legs orange, wholly orange-haired. Wings hyaline, the costal cell yellowish, stigma yellow, basicosta bare, no appendix on fork of third vein. Abdomen orange, brown-haired except for a broad

median stripe of pale yellowish hairs on first to sixth tergites. Venter with orange hairs.

Holotype female and one female paratype, Nova Teutonia, 27°-11' S., 52°-23' W., Sta. Catarina Brazil, F. Plaumann coll. To be deposited in M. C. Z.

This species resembles in coloration some members of the Genus *Chlorotabanus*, but the well developed frontal callus and membranous labella exclude it from that group. It is clearly separated from other species of *Stenotabanus* known to me by the drop-shaped callus, broad frons, and wholly pale coloration. Lacking knowledge of any comparable species, I have refrained from attempting to place it in any restricted subgenus.

#### *Stenotabanus sordidatus*, new species

Figure 5

A small, wholly black-bodied species with blackish wings, white tibiae, and orange antennae.

*Female*.—Length 8.0 mm., of wing 8.1 mm. Eyes bare, in life purplish black with two transverse blue stripes narrowly bordered with green, the stripes narrower than the interval between them, the lower one curved upward to nearly meet the clubbed end of the upper stripe, both failing to reach the eye margin posteriorly. Frons dark brownish grey pollinose, 4.3 times as high as basal width, nearly twice as wide at vertex as at base. Callus black, shiny, protuberant, as wide as frons, markedly higher than wide, with a narrow median raised ridge extending upward and flattening out into a somewhat rugose and ill-defined median callus. Vertex largely bare and shiny, though with a narrow pollinose strip next the eye margins, and with a small discrete tubercle showing vestiges of ocelli set in a yellowish area. Subcallus slightly inflated, in the three specimens at hand largely black and shiny but with irregular vestiges of brown pollinosity suggesting that in unworn specimens this area may have been thinly pollinose. Antennae not quite as long as frons, bright orange, the first two segments black-haired. Third segment slender, the basal plate markedly longer than style. Palpi black, black pollinose and black-haired, markedly inflated. Fronto-clypeus and genae dark grey pollinose with a brownish shade along the eye margin next the subcallus, wholly black-haired.

Mesonotum and scutellum black, subshiny, with sparse erect black hairs and semirecumbent, shining, brassy, somewhat ligulate hairs. Pleura and sternum black, dark grey pollinose, sparsely black-haired. Legs black and black-haired, except basal halves of fore tibiae and mid and hind tibiae and basitarsi, which are white and white-haired. The tips of the posterior two pairs of tibiae and the tips of the basitarsi are blackish and black-haired, as are the remaining tarsal segments. Wings with costal cell dark yellowish, stigma black, subcostal and base of marginal cell (1st R)

proximal to stigma hyaline, rest of wing smoky, the marginal cell beyond stigma and first (3rd R) and second (4th R) submarginal cells almost black, the intensity of the infuscation lessening gradually towards the hind margin. Halteres dark brown, the knobs a little paler. Abdomen black, subshiny, wholly black-haired, the first two tergites slightly greenish opalescent in certain lights. Sternites wholly black and black-haired.

Holotype female, Rio Tangandi, Camp 2, Intendencia de San Blas, Panama, 25 January 1957, P. Galindo coll. This river is an eastern tributary of the Rio Mandinga, and appears on maps as Rio Sangandi. Paratypes, 1♀, Rio Tangandi, Camp 1, Int. de San Blas, Panama 23 January 1957, P. Galindo coll.; 1♀, Rio Mandinga, San Blas, Panama, 14 May 1957, P. Galindo coll. Types to be deposited in M. C. Z.

This interesting little species appears to be most nearly related to *St. constabulorum* Fchld., *St. calviti* Fchld. and *St. vitripennis* Lutz, from all of which it can be separated by the markedly infuscated wings. All three species are similar structurally, and all have contrasting white tibiae and eyes with green or blue stripes on a purple ground. *Constabulorum* has pale pleura and narrow abdominal bands, *calviti* a golden-haired scutellum and broad golden abdominal bands, and *vitripennis* has wholly bare and shiny fronto-clypeus and genae and golden-haired scutellum. This last species was described as a *Diachlorus*, and is perhaps annectant to that genus, but the eye pattern, though rather unique, and the lack of a pearly patch on the pleura, as well as other structural characters, seem to necessitate its placement in *Stenotabanus*. I saw the type of *vitripennis* in 1936 and noted that it was entirely distinct from *Diachlorus paradoxus* Lutz, under which Bequaert (1926), relying on the description, placed it as a synonym.

#### *Philopotabanus fucusus*, new species

Figures 1, 21

A black species with large black discal patch on wing, thorax striped with orange-red hairs, and fourth abdominal tergite with a large silvery white patch.

*Female*.—Length 13.5 mm., of wing 12.5 mm. Eyes bare, unicolorous greenish black on revival. Frons 6 times as high as basal width, 1.5 times as wide at vertex as at base, light grey pollinose and with rather dense erect dark hairs on upper third. Frontal callus black, rugose, narrower than frons, about 2.5 times as high as wide, extended above in a bare ridge nearly to vertex. Whole vertex subshiny, swollen, produced onto frons in a narrow raised triangle whose apex bears vestiges of three ocelli. Subcallus pale yellowish grey pollinose with a small patch of short fine erect hairs on each side. Antennae dark brown, the first two segments with dense short appressed black

hairs, the third segment with the wide basal plate reddish at base, dusky at apex and with a strong dorsal angle. Style shorter than basal plate, dark brown. Fronto-clypeus and genae dark grey pollinose, the hairs next the eye margins and subcallus dark, the beard nearly white. Palpi moderately inflated, blackish pollinose and black haired. Proboscis black, but little longer than palpi, the labella large and membranous.

Mesonotum and scutellum dark reddish brown in ground color, the sutures paler, reddish, thinly brownish grey pollinose. Scutellum except base, lateral margins of mesonotum and a pair of broad sublateral stripes orange-red-haired, the remainder black-haired. Pleura and sternum dark grey pollinose, pale grey-haired. Legs dark brown, nearly black, wholly black-haired. Wings with basicosta less densely setose than costa, no appendix on fork of third vein. Costal cell dilute brownish, darker proximal to humeral vein. Basal cells and base of marginal cell hyaline, the veins bordering this area reddish, dark elsewhere. A large black patch covers the discal area, including discal cell, from ends of basal cells to beyond fork of third vein, its outer and posterior margins being irregular and failing to reach hind margin of wing. Cubital cell and anal area heavily infuscated.

Abdomen dark brown in ground color, the first and sides of second tergites grey pruinose, as is the middle of fourth tergite. Sides of first and second tergites and a large trapezoidal patch on middle of fourth tergite white-haired, otherwise tergites all black-haired. Sternum paler, grey pruinose, dark-haired except for white-haired hind margins of sternites 2 to 4.

Holotype female, El Retiro, Villavicencio, Intendencia de Meta, Colombia, 12 Jan. 1942, M. Bates coll. Paratype female, Villavicencio, Meta, Colombia, 12 Jan. 1942, M. Bates coll. Types to be deposited in M. C. Z.

This species approaches in a number of respects the descriptions of such species as *caloptera* Schin, *nigripalpis* Macq. and *rufescens* F., differing chiefly in lacking a long dorsal tooth on antennae. These species have generally been placed in *Catacholorops* or *Di cladocera*, but until authentic specimens can be studied to determine the condition of the basicosta, proboscis, etc. their status will remain uncertain. *Fucusus* appears to be closely related to *Philopotabanus inauratus* Fchld. differing from that species in lacking the brilliantly golden-haired scutellum, in broader frons and in having the black discal patch of the wing less extensive.

#### *Dichelacera (Psalidia) scurra*, new species

Figures 9, 18

A large, orange brown species with bare subcallus, bare patches on face, and boldly black marked wings.

*Female*.—Length 16.4 mm., of wing 14.0 mm.

Eyes bare, greenish purple, without bands (revived), possibly bright green in life. Frons 6.4 times as high as basal width, nearly parallel-sided, orange pollinose and with sparse, short, orange yellow hairs. Frontal callus orange brown, below rugose and with a median vertical groove, not as wide as frons, extending above to tubercle at vertex in the form of a strongly raised bare ridge, only the last sixth of which is covered with pollen. Tubercle at vertex inconspicuous, pollinose, with faint vestiges of ocelli. Antennae bright orange, the first two segments clothed with orange hairs, the dorsal tooth long, reaching well beyond end of basal plate, as figured. Subcallus somewhat inflated, largely bare, wrinkled, thinly pollinose at margins. Fronto-clypeus and genae thinly orange pollinose, sparsely orange-haired, and with a bare shiny patch above the insertion of the palpi on each side. Palpi orange, orange-brown-haired, moderately slender, about equalling antennae in length. Proboscis reddish brown, longer than palpi, the theca and labella wholly shiny sclerotized.

Mesonotum, scutellum, pleura and sternum dark orange brown, the last two with slightly greyish pollinosity and orange hairs, the dorsum with sparse erect brown hairs and semirecumbent orange yellow hairs. Legs wholly reddish orange with orange yellow hairs. Wings with costal cell orange brown, both basal cells dark brown and with a dark brown fascia extending from apex of stigma to anterior border of fifth posterior cell (1st Cu), thence filling wing to posterior margin up to apex of closed first posterior cell (5th R), and extending along upper fork of third vein ( $R_{3+4}$ ) to fill apical fourth of first submarginal cell (3rd R) and apex of marginal cell (1st R), leaving a large patch in middles of marginal and first submarginal cells, and most of second submarginal cell (4th R) hyaline. The hyaline areas are not tinged with yellow except slightly just below the yellow stigma and in apex of costal cell. First posterior cell closed and petiolate in holotype and one paratype, closed at margin in remaining paratypes. Abdomen wholly orange brown, orange-haired, the venter slightly paler. Two paratypes have the apical hyaline areas smaller than in the other specimens.

Holotype female and two female paratypes, Pacora, Panama Province, Panama, 14 January 1953, Station B, ground level, attacking man, F. S. Blanton coll. Two female paratypes Rio Tuira Yellow Fever Sta., Darien Prov., Panama, 25 Feb., 1 March 1958, in Shannon trap, Galindo coll. To be deposited in M. C. Z.

This species differs from *D. fulminea* Hine in stouter palpi as well as in wing pattern, notably the entirely dark basal cells. From *D. victoria* Fchld. it can be separated by the bare subcallus, longer antennal tooth and wholly dark basal cells. *D. bahiana* Fchld. has the second basal cell hyaline, the wing intensely yellow and the

antennae and palpi very much more slender. *D. fairchildi* Barr. lacks the clear areas in the marginal and submarginal cells and the whole wing pattern is more diffuse. *D. beameri* Philip differs in having the basal cells wholly yellow.

#### *Tabanus (Lophotabanus) polyphemus*, new species

*Tabanus (Lophotabanus) fumomarginatus*, Fairchild, 1951, Ann. Ent. Soc. America 44(3): 455-456, figs. 7, 7a, 7b. Not *Tabanus fumomarginatus* Hine 1920.

Dr. C. B. Philip was kind enough to compare the specimen figured as *fumomarginatus* Hine by me in the reference cited above with Hine's types and found it was not in agreement. My previous determination was based on Hine's description together with sketchy notes on the types made some years before. To avoid further confusion, this same specimen is taken as the holotype of *polyphemus* n. sp.

A fairly large dark brown species with large and prominent scutellar black spot, fumose wings with the veins more or less clearly brown margined, orange antennae and small orange-haired middorsal abdominal triangles.

*Female*.—Length 20 mm., of wing 17.5 mm. Eyes bare, in life bicolored, the lower two-thirds green, the upper third bronzy, the line of demarcation between the colors sharp. Revived, the eye shows no pattern. Frons about six times as high as basal width, slightly wider at vertex, orange-brown pollinose and with short recumbent orange hairs and, especially at vertex, short, erect, black hairs. Frontal callus small, orange-brown, long oval, narrower than frons, rather flat and rugose and with a median groove, the upper prolongation a brown ridge reaching two-thirds the distance to the vertex. Vertex without vestiges of ocelli, but with a slightly raised paler subshiny area. Subcallus orange grey pollinose, paler than frons, without hairs. Antennae reddish orange, the first segment strongly produced above, clothed with mixed yellow and dark coppery red hairs. Third segment with a strong dorsal angle, reddish orange, pale pollinose, the style dusky. Palpi moderately inflated with slender apex, yellowish, pale pollinose and with dense appressed golden coppery hairs. Fronto-clypeus and genae orange grey pollinose, beard pale reddish yellow. Proboscis brown, exceeding palpi, labella membranous.

Mesonotum dark brown in ground color, greyish brown pollinose with a faint slender median and a pair of slender sublateral darker stripes, clothed with mixed black and coppery red recumbent hairs. Scutellum and prescutellum black, densely black-haired, the former with pale pollinose and white-haired lateral and posterior margins, the former with a pair of diagonal white and white-haired stripes before it which just fail to meet in the midline, so that the black scutellar spot is almost completely ringed with white.

Legs orange red, the tarsi darker, femora and tibiae coppery red-haired, the tarsi black-haired and some black hairs on anterior aspect of fore femora and tibiae, especially distally. Wings with basicosta setose, no appendix on fork of third vein, first posterior cell a little narrowed, whole wing smoky, more intense in costal cell and along veins. Stigma brown.

Abdomen reddish brown in ground color, thinly yellowish brown pruinose, clothed mainly with dark coppery red hairs, but with considerable admixture of black hairs dorsally. Tergites 1 to 4 bear small median triangles of dark yellow hairs, and there are small remnants consisting of a few paler hairs on tergites 5 and 6. Beneath the abdomen is wholly red-haired, except for a median patch of long erect black hairs on the last sternite.

Holotype female, La Victoria, Cerro Jefe, Panama Prov., Panama, 16 May 1950, Yellow Fever Sta. B. Paratypes: 1 ♀, same locality as holotype, 6 May 1950; 1 ♀, Cerro Azul near Pacora, Panama, 2100 ft., no date. 10 ♀, Lancetilla, Tela, Honduras, 21 May 1954 and 1, 3, 10 and 20 July, 1953, all taken attacking man in the forest canopy, from 41 to 89 feet above ground level; 2 ♀, Rio Polochic, Alta Vera Paz, Guatemala, 14 May 1956, J. Boshell and J. Bevier colls.; 5 ♀, Teapa, Tabasco, Mexico, July-Aug. 1953; 1 ♀, Coatzacoalcos, Vera Cruz, Mexico, 2 Aug. 1953; 3 ♀, Rio Tuira, Darien Prov., Panama, 26, 27 April 1958; 1 ♀, Rio Paya, Darien Prov., Panama, 24 April 1958; 1 ♀, Colombia, S. A., 1926, in coll. L. L. Pechuman.

The paratypes vary from 16.6 mm. to 21.9 mm. in body length and from 15.0 mm. to 19.2 mm. in wing length, the smallest being from Panama, the largest from Honduras.

The species appears to differ from the descriptions of *fumomarginatus* Hine in having orange antennae and yellow-haired middorsal abdominal triangles. *T. (Lophotabanus) defilippii* Bell. is also very similar in appearance but may be separated by the wholly black-haired abdomen, more slender black-haired palpi, longer antennal tooth, ridge-like frontal callus and orange-haired posterior margin of scutellum. *T. (L.) jilamensis* Hine is smaller, the pale palpi black-haired, the legs pale except for black fore femora and bicolored fore tibiae, the scutellar spot smaller and surrounded by pale brownish hairs, and the abdomen with a pale middorsal stripe.

#### *Fidena gracilis* (Kröber)

*Melpia gracilis* Kröber, 1931, Mitt. Zool. Staatsinst. u. Zool. Mus. Hamburg 44: 181 (♂, ♀; Brasilien; Columbia, Chiriqui).

*Fidena gracilis*, Kröber, 1934, Rev. Ent. 4(2): 247. Bequaert and Renjifo, 1947, Psyche 1946, 53(3-4): 60 (Restrepo, Villavicencio, Pasto, Colombia). Fairchild, 1941, Ann. Ent. Soc. America 34(3): 655, figs. 3, 3a, 3b (Colombia); 1953, Ann. Ent. Soc. America 46(2): 262 (in key). Philip, 1954, Rev. Brasil. Ent. 2: 25 (in key).

Kröber (1931) states that his types were from Brasil and in Halle. As pointed out by Bequaert and Renjifo, Chiriqui is in western Panama, not Colombia. Specimens from Colombia determined by Bequaert and figured by me do not agree in some minor respects with Kröber's description, and it is possible that Kröber's Brazilian specimens are in reality a different species, but in the absence of figures no certainty is attainable without comparison with his types. It seems best, however, to retain the use of *gracilis* for the Colombian specimens recorded by Bequaert and Renjifo (1946) and figured by Fairchild (1941). Although included by Fairchild (1941, 1942) in the Panama fauna on the strength of Kröber's reference, no actual Panamanian specimens had been seen. We can now record four females from the Rio Mandinga, on the border between Colon Province and the Intendencia of San Blas, 16, 17, and 19 May 1957, all taken at human bait in the forest canopy by my colleague Pedro Galindo, and one female, Rio Tuira Yellow Fever Sta., Darien Prov., Panama, 20 May 1958. The Rio Mandinga specimens are smaller and blacker than Colombian material, the face slightly more produced, the palpi more slender than shown in my figure, while the Darien specimen is as large as Colombian examples. A specimen from Tingo Maria (Rio Huallaga), 700 M., Peru, 1940, Weyrauch coll. has also been seen. It is indistinguishable from Colombian examples from Villavicencio.

#### *Fidena auribarba* var. *albibarba* (Enderlein)

*Melpia auribarba* var. *albibarba* Enderlein, 1925, Mitt. Zool. Mus. Berlin 11(2): 276 (♀; Columbia). Kröber, 1931, Mitt. Zool. Staatsinst. u. Zool. Mus. Hamburg 44: 176, fig. 26.

*Fidena auribarba* var. *albibarba*, Kröber, 1934, Rev. Ent. 4(2): 255.

*Melpia columbiensis* Kröber, 1931, Mitt. Zool. Staatsinst. u. Zool. Mus. Hamburg 44: 177 (♀; Columbia).

*Fidena columbiensis*, Kröber, 1934, Rev. Ent. 4(2): 247. Bequaert and Renjifo, 1947, Psyche [1946] 53(3-4): 61. Fairchild, 1951, Ann. Ent. Soc. America 44(3): 442 (♀; Panama). Philip, 1954, Rev. Brasil. Ent. 2: 25-26. Fairchild, 1956, Smithsonian Misc. Coll. 131(3): 13.

Dr. Philip and I compared Panama specimens with Kröber's type of *columbiensis* in the British Museum in 1953 and found them to agree. Later Dr. Philip was able to compare the same specimens with Enderlein's type of *auribarba* var. *albibarba* and found equally close agreement (letter of 23 Dec. 1955). He did not see the type of *auribarba* End. There is also another *Fidena albibarba* of Enderlein (1925, Mitt. Zool. Mus. Berlin, 11(2): 293) from Southern Brazil, but the present species has page priority, and Dr. Philip informs me that this second *albibarba*, which is not listed in Kröber's Catalogue, is the same as *F. leucopogon* Wied. Aside from the specimens previously discussed (Fairchild 1951), I have now seen 1 ♀, Almirante, Bocas del Toro Province, 30 Sept. 1951, and 14 ♀ taken in the treetops at a

station along the Calderas-Chiriquicito trail, Chiriqui Prov., 26 Oct.-5 Nov. 1955. The locality was said by the collector to be in very wet montane forest. Whether the species is in reality only a variety of *auribarba* End. can only be ascertained by careful type comparison.

#### *Philipotabanus fascipennis* Macquart

*Tabanus fascipennis* Macquart, 1845, Dipt. Exot., Suppl. 1, p. 35, Pl. 4, fig. 1 (♀; New Granada).  
*Tabanus (Phaeotabanus) fascipennis*, Kröber, 1930, Zool. Anz. 86: 278, figs. 1, la (♀; Bogota, Venezuela); 1934, Rev. Ent. 4(3): 305.  
*Tabanus (Philipotabanus) fascipennis*, Fairchild, 1943, Ann. Ent. Soc. America [1942] 35(4): 462, fig. 19 (♀; Venezuela). Bequaert and Renifo 1947, Psyche [1946] 53(3-4): 82. Fairchild, 1956, Smithsonian Misc. Coll. 131(3): 16.

The type in the British Museum is in poor condition, lacking antennae and being crushed and dirty. It is labelled "Nov. Granata Macq. D. Exot.". Another specimen also from the Bigot collection is labelled "Bogota" and probably forms the basis of Kröber's (1930) record. A well preserved specimen from La Zumbadora, Cerro Azul, Panama Prov., Panama, 4 Feb. 1947, is an addition to the Panama fauna. The eyes are unbanded, bright green in life. The mesonotum and scutellum are brown, with mixed black and coppery hairs, the latter forming indistinct stripes on mesonotum and clothing the scutellum rather densely. Legs entirely black. Abdomen jet black, black-haired except for a small white-haired triangle on fourth tergite and sparse white hair tufts on sides of tergites 1-3. Beneath the sternites are thinly greyish pruinose, the second to fourth sternites with sparse white-haired hind marginal bands, otherwise black-haired. The black wing markings are very intense and with a bright blue reflection in light of suitable incidence. The head characters are as figured previously (Fairchild 1942)

#### *Tabanus quinquepunctatus* Hine

Figure 3

1925, Occ. Papers Mus. Zool. Univ. Michigan No. 162: 33. Change of name for *T. quinquepunctatus* Hine 1907.  
*Tabanus quinquepunctatus* Hine, 1907, Ohio Nat. 8(2): 224 (♀; Morales, Guatemala; type in Ohio State Univ. Museum). Not *T. quinquepunctatus* Hine 1904.

Kröber (1934) does not list *quinquepunctatus*. I have a specimen (Stann Creek, British Honduras, 19 June 1940, W. H. Komp coll.) which I compared and found to agree with Hine's type in 1940. Agreeing with this specimen are 4 ♀, El Valle, Coclé Prov., Panama, 6 Jan. 1954, taken in light trap; 3 ♀, Boquete, Chiriqui Prov., Panama, 24-25 March, 1954, light trap; 1 ♀, Concepcion, Chiriqui Prov., Panama, 9 Dec. 1952, light trap. The specimens represent a considerable extension of range for the species and an addition to the Panama fauna. The taking of the species only in light traps suggests at least crepuscular habits. Since the species has not previously been figured, figures are here given

of frons, antennae and palpi. Hine's description, though brief, covers the salient points of color and pattern.

#### *Stenotabanus maruccii* Fairchild

1947, Ann. Ent. Soc. America [1946] 39(4): 568, fig. 8 (♀; San Blas, Panama).  
*Stenotabanus frondicolus* Fairchild, 1951, Ann. Ent. Soc. America 44(3): 453-454, fig. 5 (♀; Chiriqui, Panama); 1953, Proc. Ent. Soc. Washington 55(5): 241. *New synonymy*.

Comparison of specimens of *frondicolus* with the type of *maruccii* in M. C. Z. in 1953 leaves no doubt of the above somewhat embarrassing synonymy. The differences pointed out in the description of *frondicolus* are of minor degree only and have proven to be well within the range of individual variation. The species is fairly abundant in the forest canopy at Almirante, Bocas del Toro Prov., on the upper Rio Mandinga, Intendencia de San Blas, and a few specimens have been taken at La Zumbadora, Cerro Azul, Panama Prov. Dates of capture indicate it is on the wing practically throughout the year, almost entirely in the forest canopy.

#### *Stenotabanus calvitus* Fairchild

1942, Ann. Ent. Soc. America 35(3): 306-307, fig. 10 (♀; Panama City, Panama).

A specimen from Rio Tanganti, Rio Mandinga, Int. San Blas, Panama, 24 Jan. 1957, P. Galindo coll., represents the second known specimen of this little species. It agrees closely with the original description, though the type is not now before me.

#### *Philipotabanus stigmatalis* Kröber

1931, Stettin. Ent. Zeit. 92: 299 (♂; Santarem, Brazil).  
 Fairchild, 1956, Smithsonian Misc. Coll. 131(3): 29.  
*Tabanus (Philipotabanus) grassator* Fairchild, 1953, Ann. Ent. Soc. America 46(2): 278-279, Pl. 2, fig. 9 (♀; Almirante, Panama).

Kröber's type in London was headless on examination in 1953, labelled "Brasil, Santarem, W. H. Bates, 52-69". Another specimen exactly agreeing with type of *grassator* was taken along the Calderas-Chiriquicito trail, Chiriqui Prov., Panama, in treetops somewhere between 600-1400 ft., 26 Oct.-5 Nov. 1955. A female labelled "British Guiana, Cattle trail survey, Takaruni R. (sec. 2), June 1919, A. A. Abraham coll." is smaller and darker than Panama specimens, but does not seem to differ structurally. It is to be noted that two of the four known specimens of this species were taken in the treetops.

#### *Tabanus praeteritus* Fairchild

1947, Ann. Ent. Soc. America [1946] 39(4): 570-572, figs. 6, 6a (♀, ♂; Panama).

This species has proven to be quite abundant on the Atlantic side of the Canal Zone, long series having been taken in horse-baited mosquito stable traps at France Air Force Base, Coco Solo, the Navy Tank Farm, Ft. Gulick, and Gatum.

mainly during the dry season months from January to May.

#### *Tabanus praepilatus* Fairchild

1943, Ann. Ent. Soc. America [1942] 35(1): 445, fig. 11 (♀; Panama); 1947, Ann. Ent. Soc. America [1946] 39(4): 569.

The male is easily associated with the female on color and pattern and by the structure of the antennae. Eyes bare, holoptic, the large facets sharply differentiated in size from the small, but no sharp line of demarcation between the two types, the large facets occupying over two-thirds of the eye area. Vertex with a small tubercle. Frontal triangle orange-grey pollinose. Antennae dark brown, more slender than in female, the style longer than basal plate. Palpi porrect, pale yellowish, oval, pointed, white-haired. Thorax, legs and wings as in female. Abdomen long and pointed, with a median row of pale-haired triangles and a dorsolateral row of oblique pale spots, as in female but the ground color paler brown and the light markings more extensive and diffuse.

Allotype male, Garachine, Darien Prov., Panama, 22 Feb. 1953, light trap. The head has been glued on and one antenna is missing.

Additional locality records are: 5 ♀, Tonosi, Los Santos Prov., Panama, 5 May 1949, in mangrove swamp, P. Galindo coll.; 1 ♀, Panama City, Panama, 25 April 1951; 1 ♀, Garachine, Darien Prov., Panama, 16 Feb. 1953, light trap. The species appears to be confined to coastal mangrove swamps along the Pacific coast of Panama.

#### *Tabanus nereus* Fairchild

1943, Ann. Ent. Soc. America [1942] 35(4): 446, fig. 9 (♀; Panama).

Further material indicates this to be a coastal species flying mainly during the rainy season. 1 ♀, Old Panama, 26 Sept. 1952, in light trap; 5 ♀, Puerto Chitre, Herrera Prov., Panama, 24 Oct. 1952, in light trap; 5 ♀, Jaque, Darien Prov., Panama, 24-25 July, 1952, in light trap.

#### *Tabanus rixator* Fairchild

1943, Ann. Ent. Soc. America [1942] 35(4): 448, fig. 10 (♀; Panama).

This species is showing a confusing amount of variation, with additional material, and may eventually prove to be composite. The type and another specimen from Paitilla Point, near Panama city show a more or less drop-shaped frontal callus, as figured previously, and a rather well marked yellowish median abdominal stripe. Specimens from Old Panama, (April and June, 1949) less than a mile away and also on the coast, have the callus oblong and often with the median upper prolongation unattached, forming a small median callus. The abdomen bears a median row of narrow contiguous triangles and a dorsolateral

pair of rather broad yellow-haired stripes. Material from Patiño Point, Darien, July and August 1952, taken in light trap, and a single old but well preserved specimen labelled "Panama, R. Paessler leg. 31. VII-10. VIII 1907" in M. C. Z. are like those from Old Panama, except that the dorsolateral stripes are narrower and less distinct. Specimens from Ft. Kobbe, C. Z., February and April, 1953 are somewhat rubbed, but seem to be like those from Old Panama. Three specimens from San José Island, in Panama bay; and one from Chame, 3 April, 1951 are apparently also the same. Sizes range from 10.9 mm. to 13.8 mm. Proportions of frons, shape and color of palpi and antennae in all these are closely similar. It is possible that two species with similar ranges exist, one flying in the dry season, the other in the rainy season, but much more material is necessary to prove this.

#### REFERENCES CITED

- Barretto, M. Pereira. 1950. Estudo sobre Tabânidas brasileiros. XI. Sobre a validade nomenclatural dos nomes genéricos publicadas em "Collecção de Tabânidas, Instituto Oswaldo Cruz em Manguinhos, Rio de Janeiro 1909" (Diptera, Tabanidae). Papeis Avulsos Dept. Zool. [São Paulo] 9(5): 61-68.
1951. Estudo sobre Tabânidas brasileiros. XII [actually XIV]. Sobre a sistemática da tribo Dichelacerini End. da subfamília Tabaninae Loew (Diptera, Tabanidae). Arq. Mus. Nac. Rio de Janeiro 42: 63-76.
- Bequaert, J. 1926. Medical and economic entomology, in: R. P. Strong, et al., Medical report of the Hamilton Rice seventh expedition to the Amazon, etc. Contrib. Harvard Inst. Trop. Biol. and Med. No. 4: 155-257. (Insecta, Chapter XV, pp. 179-249; Tabanidae, pp. 214-235.)
- Bequaert, J., and Santiago Renjifo S. 1947. The Tabanidae of Colombia. Psyche [1946] 53(3-4): 52-88.
- Enderlein, G. 1922. Ein neues Tabanidensystem. Mitt. Zool. Mus. Berlin 10(2): 333-351.
1925. Studien an blutsaugenden Insekten. 1. Grundlagen eines neuen Systems der Tabaniden. Mitt. Zool. Mus. Berlin 11(2): 253-409, 5 figs.
- Fairchild, G. B. 1941. Notes on Tabanidae from Panama. VI. The genus *Fidena* Walker. Ann. Ent. Soc. America 34(3): 639-646, 6 figs.
1943. Notes on Tabanidae from Panama. X. The genus *Tabanus* and resumé of the Tabanidae of Panama. Ann. Ent. Soc. America [1942] 35(4): 441-474, 2 pls.
1951. The generic names for Tabanidae (Diptera) proposed by Adolfo Lutz. Psyche [Dec. 1950] 57(4): 117-127.
- Kröber, O. 1930. Die Tabanidenuntergattung *Phaeotabanus* Lutz. Zool. Anz. 86(11-12): 273-300, 38 figs.
1931. Die Pelecorhynchinae und Melpinae Südamerikas. Mitt. Zool. Staatsinst. und Zool. Mus. Hamburg 44: 149-196, 33 figs.
- 1931a. Die kleinen Gattungen der Dichelacerinae End. aus der südamerikanischen Region (Tabanidae). Rev. Ent. 1(3): 282-298, 11 figs.
1934. Catálogo dos Tabanidae da America do Sul e Central, incluindo o Mexico e as Antilhas. Rev. Ent. 4(2-3): 222-276, 291-333.
1940. Das Tabaniden-genus *Diadocera* Lutz. Veröffentlich. Deutsches Kolon.-u.-Übersee-Museum, Bremen, 3(1): 58-92, 3 pls.