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FURTHER NOTES ON FAR EASTERN TABANIDAE (DIPTERA)

VI. New and little-known species from the Orient and additional records, particularly from Malaysia[1]

By **Cornelius B. Philip**[2]

Abstract. *Olsufievotabanus,* new genus is proposed for *Tabanus rarus* from Malaysia. New species and subspecies are described from females as follows: from Vietnam, *Chrysops vietnamensis*; from Sabah (Borneo), *C. incisuralis* and *Tabanus auricircus*; from Cambodia, *C. bifurcatus*; from Upper Burma, *Hybomitra tatarica* (ssp.) *tridentata* and *H. bouvieri* (plus male from Sikkim); and from South India, *C. dubiens.* Males of *T. biannularis* and *H. lamades* are described for the first time. New records or comments are provided for some regional species of *Chrysops, Hybomitra,* and particularly for the *biannularis* group of *Tabanus. Tabanus dives* Rondani (not Walker) from Sarawak is preoccupied, but its validity, with only the unique type available, is too questionable to propose a new name. *Tabanus pictiventris* from Borneo is newly synonymized with *T. immanis. Tabanus atripes* Krober (not v. d. Wulp) from S Kansu, China, is preoccupied and the new name *Hybomitra kansui* is proposed.

Since my previous reports on Oriental and Malaysian Tabanidae (Philip 1960a, 1960b, 1961a, 1961b, 1962, 1963, 1969), material which augments our knowledge of the tabanid fauna of the region has been received for study from the 3 following sources: as a gift to me (CBP) from the late Dr G. Bouvier, Director, Institut Galli-Vallerio, Lausanne, Switzerland, collected by F. Schmid chiefly in India, Assam and the Himalayas; the Bishop Museum (BISHOP), Honolulu, chiefly the results of expeditions in Vietnam and other Malaysian countries; and Dr Rupert Wenzel, Field Museum of Natural History, Chicago (FMNH), mainly from the Himalayas and "Upper" Burma. As indicated in the text below, types of new species are in respective institutions, except that types from the first source are deposited in the Entomology Collection of the California Academy of Sciences (CAS); transferred to that collection also are tabanid types previously recorded as being in my collection (CBP).

The present report concerns Oriental species of *Chrysops, Hybomitra,* and *Tabanus,* particularly the *T. biannularis* group. A few new regional nomenclatural changes are also provided. Some of the Vietnam localities have been under severe combat conditions since collections were made. The unusual burst of speciation in the *T. biannularis* group in this area, discussed previously (Philip 1962, 1969), is reaffirmed.

Additional abbreviations of museums are Naturhistorischen Museum Zoologischen, Wein = Vienna NM and Muséum National d'Histoire Naturelle = Paris NHM.

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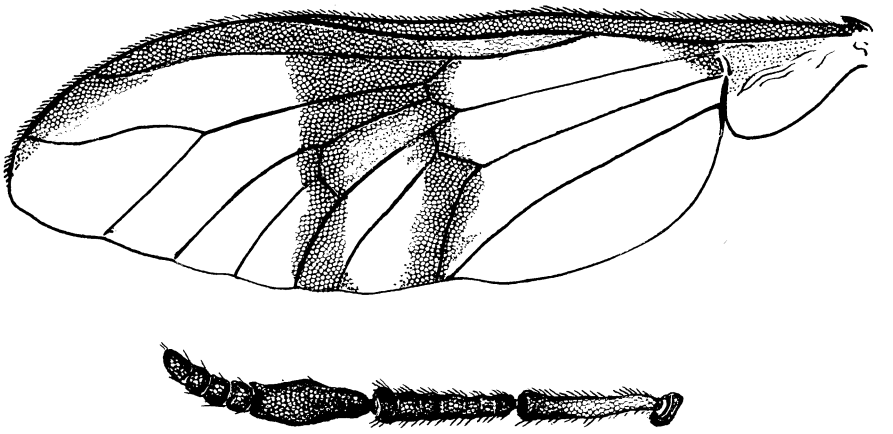

FIG. 1. *Chrysops bifurcatus*, ♀, wing and antenna.

Chrysops bifurcatus Philip, **new species** FIG. 1

A small, slender blackish species with basally yellow abdomen, shining black face, slender reddish tibiae, and reduced wing pattern with narrow apical spot and crossband with 2 prongs to the hind margin beginning at each end of the discal cell (hence the name).

Holotype ♀. Length 8 mm. Eyes (relaxed) with heavy purple pattern, occipital band contiguous, upper and lower frontal spots narrowly separated from ocular margins, frontal spot heavy, nearly touching the upper spot; "arrowhead" triangular without connections. Front narrower than tall, upper and lower callosities nearly filling it with a very narrow gray pollinose separation. Frontoclypeus shining black, convex, narrowly separated by abbreviated gray pollinose spurs. Antennae long and slender, predominantly blackish, scapes reddish on basal ⅔. Palpi slender, reddish. Thorax subshiny black, a prescutellar narrow crossband, prealar tubercles, and subalar, pleural patches silvery pilose. Femora brown, reddish apically and on the tibiae and tarsi; legs entirely slender. Halteres brown. Wing pattern unique (FIG. 1) in the Oriental fauna, much reduced, the costal margin narrowly infuscated to the apex the width of the costal and R_1 cells, crossband narrowed to width of the stigma, reaching the hind margin in cell M_3 and along vein Cu_2 as 2 prongs around a hyaline sinus commencing at the fore margin of the discal cell and prolonged through the base of cell M_3 and the fore part of the cubital cell. Abdomen black, sides of tergites 1 and 2 yellow enclosing median black triangles, apex of each reaching the respective anterior margins but not quite the outer hind corners. Venter black, sides of first 2 sternites yellow divided by a median black band to base.

Holotype ♀, CAMBODIA: 40 km WSW of Khong, 626.6 m, 10.VI.1952, C. Wharton (BISHOP 7514).

The more extensive frontal callosities and marginal sinus in the reduced wing band, slender red tibiae and distinctive basal abdominal pattern distinguish this from other Oriental species of *Chrysops*.

Chrysops flavocinctus Ricardo

Chrysops flavocinctus Ricardo, 1902, Ann. Mag. Nat. Hist. ser. 7, **9:** 380. Holotype ♀ from Khasi Hills, Assam; studied in BMNH in 1958.

The apparent variation observed in this species, plus published distribution from

Travancore (Schuurmans Stekhoven 1926) to Sarawak and Sabah (Borneo), encourages one to suspect that the present concept is composite. In the series from Professor Bouvier are 22 ♀ and 1 ♂ from Assam localities, the type country, plus 3 ♀ from Sikkim. In the Bishop Museum are 133 ♀ from Thailand, chiefly from the vicinity of Chiang Mai, 55 ♀ from Sarawak, and 3 ♀ that add Vietnam to the recorded distribution.

The species is keyed by the describer as lacking costal infuscation beyond the stigma or crossband (i.e., "apical spot" missing). It is also characterized by the crossband not invading the cubital cell (Cu_1) and with some variation in the blackness of the legs.

The present material presents some puzzling variations and may or may not represent this species.

In regard to the lack of an apical spot, several specimens have infuscation along the outer costal border that would be considered a narrow apical spot in species in most other parts of the world. But this varies, and intergrades in present specimens collected together repeat the variation reported by me from Malaysia (1960b). This can be illustrated by 2 ♀ with identical data from Assam, one of which has a very faint costal shadow apically while the other has apical infuscation which fills cell R_1 and reaches the apex of the wing. All females in a different series of 10 from Assam have similar distinct narrow apical spots, as does a specimen from Dak Song, Vietnam. Two from Fang, NW Chiang Mai, plus another from Thailand, are intermediate with infuscation filling about ½ the width of cell R_1; the last was compared by me with the type in BMNH in 1958 and found to agree, except the type lacked any evidence of such apicocostal infuscation and the crossband terminated short of the hind margin in cell M_3; the 2 Chiang Mai specimens were the only ones in this material with crossbands abbreviated as in the type. Other characters, including size, in these variants cannot be distinguished from the typical form. Another variation is exemplified by 3 ♀ from Sikkim in which the crossband invades the cubital cell along its entire foremargin.

The previously unknown male from Assam is herewith described.

Length 9 mm. Upper ⅔ of eyes with sharply demarcated enlarged facets, with wide occipital margins of small facets to vertex. In addition to sexual differences, the ♂ has more brownish shades comprising a narrow midfacial stripe, an obscure but distinct midabdominal stripe on tergites 3–6, and sublateral reddish spots on 3–4; the black crossband on tergite 2 is rounded closer to the anterior margin than in ♀, and the wing picture is a little more extensive in the bases of the 2 basal cells and along the anterior margin of the cubital cell; the apical spot widens faintly across vein R_{2+3}. Palpi unusually small and slender.

Specimens examined. INDIA: Assam: 1♂, Nyuk Madong, Kameng, 2000–2500 m, 1–8.VIII.1961, Schmid; 2♀, Nafra, Kameng, 1060–1200 m, 24.VI.1961, Schmid; 10♀, Salari, Kameng, 1310 m, 9–10.VII.1961, Schmid; 10 other ♀ from Assam, 1200–1300 m, 25.VI–29.VII.1961, Schmid. SIKKIM: Mangalgabarey, 900 m, 30.IV.1959, Schmid. THAILAND: Chiang Mai Prov.: 2♀, Fang, 500 m, 12–19.IV.1958, T.C. Maa; 131 additional ♀ from Chiang Mai vicinity. MALAYSIA: Malaya: 1♀, 26 km W of Ipoh, 46 m, 17.IX.1948, R. Traub; Borneo: Sarawak: 55♀,

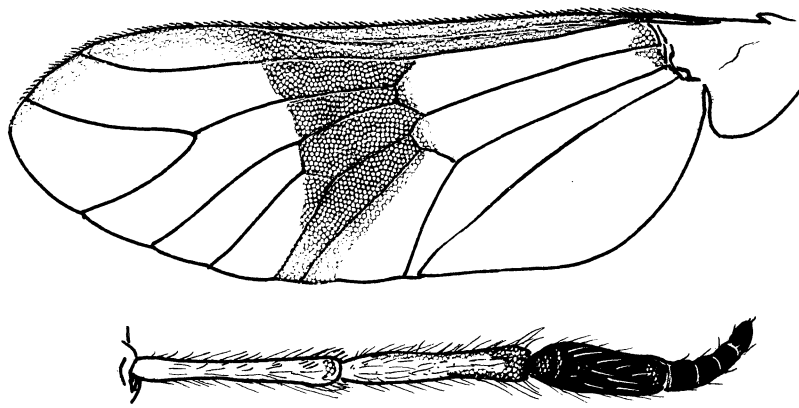

FIG. 2. *Chrysops dubiens*, ♀, wing and antenna.

vicinity of Tenompok, 50 km E of Jesselton, 1460 m, 17–21.X.1958, L.W. Quate. SOUTH VIETNAM: 2♀, Dalat, 1500 m, 29.IV–4.V.1960, Quate; 1♀, Dak Song, 870 m, 19–21.V.1960, Quate.

The male differs from females from Kameng (and others from Malaysia and Thailand) by dull median and shorter sublateral yellow lines on the abdomen, and a narrower midfacial yellow stripe, as well as a faint apical margin a little wider than cell R_1. The wing pattern thus approaches that of *C. translucens* Macq. which, however, has swollen tibiae and wings with a sharper apical spot and the crossband crossing the base of the cubital cell.

Chrysops albicinctus v.d. Wulp from New Guinea has some similarities but has a brown face, wider apical spot, and hind margin of the cubital cell infuscated.

Chrysops alter Rond., from Sarawak (Borneo) has remained a questionably recognized Oriental species in spite of brief notes on the poorly preserved type seen by Ricardo (1911) in the Museo Civico di Storia in Genoa. Since Ricardo also recorded a specimen of *C. flavocinctus* from Sarawak, it is strange she only compared *C. alter* with *C. pellucidus* Fabr. and *C. translucens* Macq. The last is quickly differentiated by the yellow face. The question of presence of a hyaline sinus in the hind margin of the crossband (in the cubital cell) can apparently only be resolved by reexamination of the type of *C. alter* to decide if this might be a senior synonym of *C. flavocinctus.*

Previous records of *C. flavocinctus* from southern India, including those later (1911) discussed by Ricardo from Travancore with concave-margined crossbands, may relate in part at least, to a series of similar-appearing but smaller females with consistent differences, which are described below as a new species.

Chrysops dubiens Philip, **new species** FIG. 2

A dark, *flavocinctus*-like but smaller, delicate species in which the dark band on tergite 2 is taller, more angular mesally, the crossband of wing is narrower with concave outer margin and little or no evidence of an apical spot, and appendages are somewhat more reddish compared to more northern *C. flavocinctus.*

Holotype ♀. Length 6 mm. Frons taller than broad with restricted pale yellow pollen separating the 2 large, black calli, one surrounding the ocelli at vertex, the other large, ovoid, basal, narrowly separated from eyes. Face entirely shining black, somewhat swollen in profile, separated sublaterally from bare cheeks by narrow pollinose stripes to the oral margins. Antenna long and slender, predominantly reddish, darkened on style, the segments subequal in length. Palpus reddish, normal. Thorax and coxae subshiny black with sparse black hairs, prealar lobes and pleura with patches of bright yellow hairs. First 2 pairs of legs predominantly reddish, more brownish on hind pair. Wing predominantly hyaline, including 2 basal cells, crossband narrowed to about length of discal cell with concave outer margin, reaching hind margin in cell M_3 but invading cubital cell only narrowly along anterior margin; apicocostal margin beyond stigma only faintly tinged. Haltere dark. Abdomen mostly black, 2nd segment yellow, entirely so ventrally but with a flattened black triangle dorsally, the angular apex of which nearly reaches anterior margin; the extreme edges also narrowly black-lined. Tergite 3 with 3 vague reddish spots, and another in middle of tergite 4. Entire venter black except for yellow sternite 2.

Specimens examined. Holotype ♀, INDIA (S): Kerala, Ponmudi, 3500′ [1070 m], 1.XII.1962, Schmid (CAS 13111). Paratypes: 3♀, Kerala, Termala, 144 m, 22.IX.1958, Schmid; 1♀, Kerala, Sangalipalam, 145 m, 21.XII.1961, Schmid; 3♀, Madras, Aindalai Aruvi, 205 m, 24.XII.1961, Schmid. Not included because damaged is a small ♀ with characteristic abdominal pattern from S Malabar, IX–X.1947, P.S. Nathan.

Paratypes vary in length from 5.5–7.5 mm and agree with the holotype except that spots on tergites 3–4 may be more restricted, and legs and basal antennae may be more reddish. All have faces entirely bare and shining black.

Certain of the above features agree with the description by Pechuman (1955) of a ♂ of *C. flavocinctus* from the same altitude as the holotype but in Nilgiri Hills, Guadalur in southern India, and differs from the typical ♂ described above from Assam. Whether the ♀ mentioned by Ricardo (1911) from Trincomalee, Ceylon, or her small ♀ from Sarawak, Borneo, are related, can only be decided by study of the specimens, perhaps in BMNH.

Chrysops incisuralis Philip, **new species** FIG. 3

A small, subshiny yellow-brown species with narrow dark incisural bands on all abdominal segments, venter orange, coxae and femora brown, tibiae swollen, and crossband and apical spot of wing broad.

Holotype ♀. Length 8.5 mm. Eyes (relaxed) with no apparent pattern revived. Frons brown pollinose, taller than broad and distinctly convergent above; vertex crossed by a shining black band which includes the ocellar tubercle; callosity black, flat, transverse-ovoid and touching eye margins. Periantennal area dark yellow pollinose, not extended downward mesially onto the midface which is entirely bare and brown, separated by dark yellow pollinose stripes from the cheeks which are shining black with yellow hair. Antenna brown, slender, unusually short, not reaching tip of proboscis in downward position, pedicel a little shorter than scape. Palpus bright yellow. Notum subshiny brown with inconspicuous yellow pile and a narrow interalar, prescutellar band of coarse golden-yellow hairs in front of the darker brown, shiny scutellum. Similar golden-yellow hairs in front of and below wing bases, below which is a pair of shining brown bullae on pleura and sternum. Hairs on femora yellow, on tibiae brown; fore tarsi brown, the 2 hind pairs yellow. Wing pattern somewhat as in *C. fixissimus* Walk. but apical spot more drop-shaped to include the anterior ½ of cell R_4, crossband broad, encompassing the discal, 3rd median and cubital cells to the wing margin, with a marginal hyaline sinus in the cubital cell; basal cells hyaline except in extreme bases. Halteres brown. Abdomen reddish yellow, evenly tapered caudally to about ½ its basal width, truncated terminally, segment 6 dark brown, unusually extruded to equal length of preceding segment 5; crossed by narrow blackish-brown incisural bands which extend forward on sides of tergites 3–5, band on 1st not reaching lateral margins; vestiture sparse and mostly concolorous with underlying pattern.

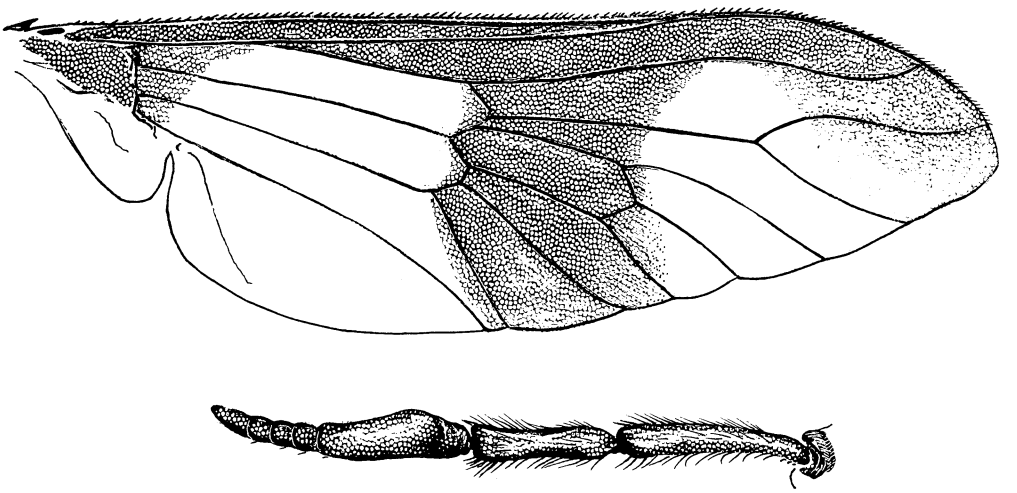

FIG. 3. *Chrysops incisuralis*, ♀, wing and antenna.

Holotype ♀, MALAYSIA: BORNEO: Sabah: Forest Camp, 19 km N of Kalabakan, 6.XI.1962, K.J. Kuncheria (BISHOP 7515).

The narrow and evenly banded yellow abdominal pattern is distinct from other related Oriental species; the combination of yellow face, short slender antennae and bicolored legs with swollen brown tibiae differs also from other *Chrysops* taken in Borneo. *Chrysops stekhoveni* Phil., also from Borneo, has similarities in swollen tibiae and wing pattern, but it has the pedicels markedly shorter than the scapes, a midfacial yellow pollinose stripe, more reddish-yellow scutellum, no incisural bands on tergites 1, 5, and 6 but broader ones on 3 and 4, while tergite 7 is yellow not black nor protruding; lateral margins of tergites are yellow not black.

Chrysops pettigrewi Ricardo FIG. 4

Chrysops pettigrewi Ricardo, 1913, Ann. Mag. Nat. Hist. ser. 8, **9:** 542. Holotype ♀, Manipur, Assam; in BMNH.

When describing *C. silvifacies* from Vietnam, I (1963) was under the impression that it and *C. silviaris* Phil. & Mack. from Burma (which has the apex of the wing infuscated apically to enclose a hyaline spot in place of the usual hyaline triangle open to the hind margin) were the only species in the region having faces predominantly pollinose with reduced, rounded bare spots under each antenna. I overlooked *C. pettigrewi* Ricardo, which also has this character, but the apical spot is much wider than in *C. silvifacies*; tergite 2, including the hind margin, is entirely yellow and the vestiture of the thorax more golden yellow. However, the hyaline sinus described by Ricardo in the cubital cell is represented by only a marginal fading of the crossband in a paratype supplied by H. Oldroyd.

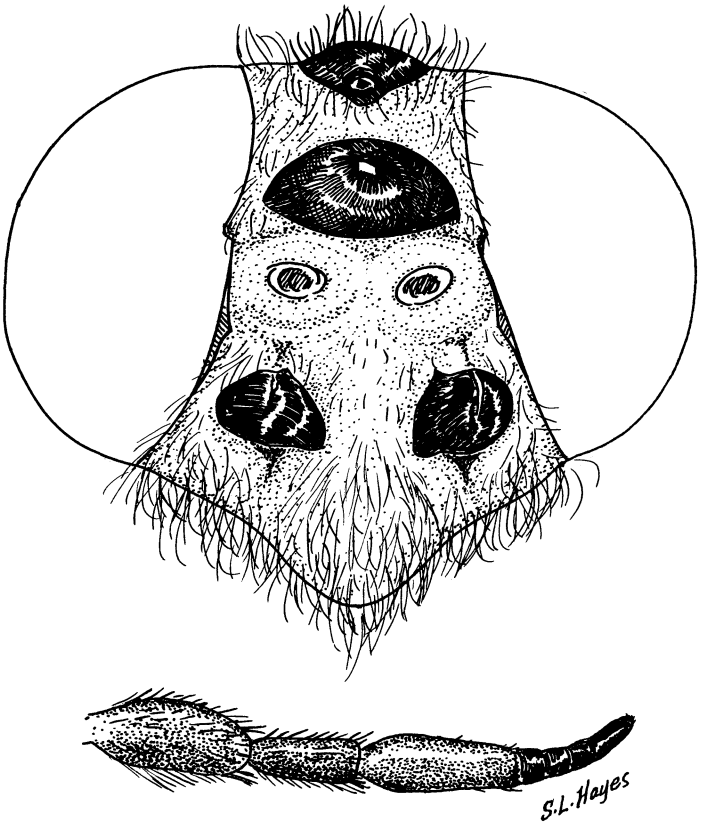

FIG. 4. *Chrysops pettigrewi* ♀, head and antenna.

Chrysops designatus Ricardo from Nepal has a somewhat similar abdominal pattern, but tergite 1 has a wider black band connected to a median black macule on tergite 2, and the bare submedian facial spots are extended downward as narrowing prongs to the oral margins. Two specimens of *C. designatus* are available for comparison with material below, both also collected by Schmid, one from W Uttar Pradesh, North Central India and the other from Garwhal, Sankoba, S India, 1292 m, 22.VIII.1958.

A series of females collected by Schmid in Sikkim shows insufficient divergence from *C. pettigrewi* to be described as a subspecies. The black bulla under each antenna is smaller, the facial and pleural vestiture more golden to orange-yellow than in the typical form, the median black spot behind the scutellum on tergite 1 larger, and in several, the terminal 3 tergites are dusty orange rather than black, while the 3 orange spots on tergite 3 are usually more heavily outlined in black and isolated.

Specimens examined. SIKKIM: 9♀, Lathone, 980 m, 15.V.1959, Schmid; 7♀, Cathong and Yugong, [1700 m], 14–15.1959, Schmid. INDIA: Assam: 1♀, Moshing, 2378 m, 7.VI.1961, Schmid.

Chrysops silvifacies Philip

Chrysops silvifacies Philip, 1963, Pac. Insects **5:** 533.

A specimen of this interesting species from Vietnam in the present collection agrees with the holotype, also from Vietnam, except that the paired, black parafacial spots are extended narrowly below to connect with a narrow black, bare band across the top of the oral margin. The midfacial pollinosity thus consists of a heavy isolated band expanded below and nearly but not reaching the oral margin. I have also seen a specimen from Laos in the Bishop Museum collection: this is a new distribution record.

The predominantly yellow tergite 2 shows remarkable superficial resemblance to *C. dissectus* ssp. *apunctus* Phil. described from Manchuria which, however, has larger frontal callosities, more yellow on face, sides of thorax and appendages. Among Oriental species, *C. fasciatus* Wied. also has an almost entirely yellow tergite 2, but it differs in having the more usual swollen tibiae of Oriental species, larger callosities and more expansive bare areas on the face, among other differences.

Specimens examined. VIETNAM: 1♀, Fyan, 1200 m, 11.VII–12.VIII.1961, N.R. Spencer. LAOS: 1♀, Muong Sing NW of Luang Prabam, 650 m, 6.VI.1960, L.W. Quate.

Chrysops vietnamensis Philip, **new species** FIG. 5

A small, yellow, quadristriate species with most appendages yellow, midfacial pollinosity, tibiae normal, discal cells fenestrate, apical spots narrow, and crossbands reaching hind wing margins in the 3rd median cells, cubital cells clear. In the Old World fauna, the species would be placed in the questionably useful subgenus of *Heterochrysops*.

Holotype ♀. Length 7.5 mm. Eye pattern revivable only sufficiently to reveal shafts of arrowheads reaching vertexes, and lower marginal spots large and touching eye margins. Frons a little taller than wide, sides subparallel, yellow pollinose, vertex darkened only around the ocelli; callosity black, flat-ovoid and barely separated from inner corners of eyes. Periantennal area yellow pollinose extending downward to a point in middle of the yellow face, lateral sutures margined with brown. Cheeks yellow pollinose surrounding a small triangular black bare spot with base resting on eye margin of each cheek. Scape slender, yellow; both flagella missing (see paratype below). Palpus yellow. Thorax bright yellow with 3 contrasting full length black stripes, another in front of wing bases and in middle of the pleura; scutellum yellow with a brown shadow on the disc. Legs yellow, most of fore tibiae and tarsi, and hind tibiae darker brown. The brown wing pattern reduced to a narrow costal brown margin, apical spot narrower than cell R_1 to the apex, crossband a little wider than the discal cell and rapidly narrowed to the margin in cell M_3, outer margin even and gently concave, stigma and base of cell R_3 yellow, and center of discal cell subhyaline; vein Cu_2 narrowly margined with brown. Halteres dark yellow. Abdomen bright orange-yellow, with 4 longitudinal black stripes even and separated for its full length, the submedian pair starting on fore margin and sublateral ones from middle of tergite 2; 2 small isolated brown spots in front of submedian ones on tergite 1. Venter orange-yellow.

Paratype ♀. Agrees except in poorer condition. One complete antenna slender, yellow but darkened on flagellum, rather short, not extending beyond tip of proboscis, the 2 basal segments subequal in length. In both specimens, the abdominal stripes continue across tergite 6.

Specimens examined. Holotype ♀, VIETNAM: 6 km S of Dalat, 1400–1500 m, 9.VI–7.VII.1961, N.R. Spencer (BISHOP 7513); 1 paratype ♀, same data as holotype except in CAS.

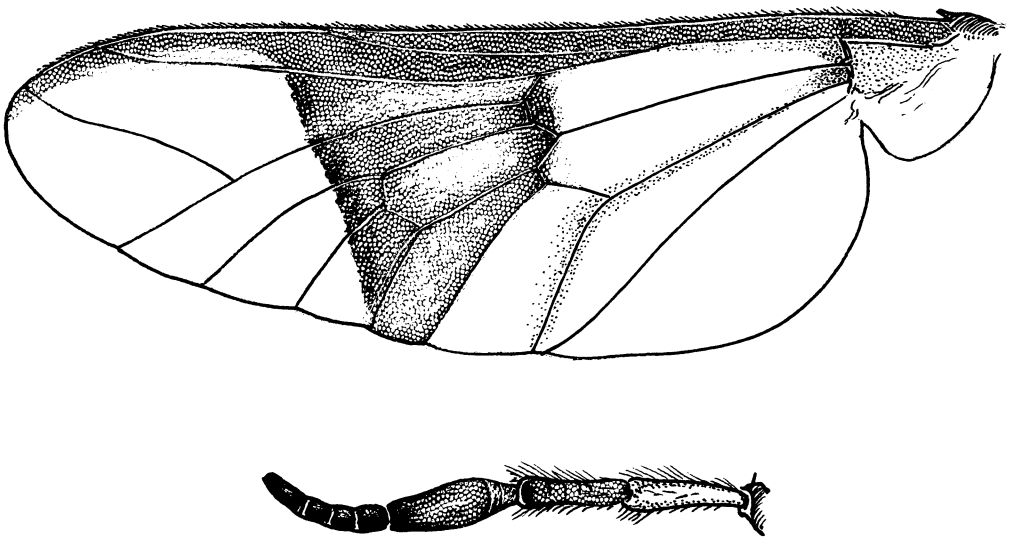

FIG. 5. *Chrysops vietnamensis*, ♀, wing and antenna.

The fenestrate discal cell might relate *C. vietnamensis* in the minds of students of the Palaearctic tabanid fauna to the subgenus *Heterochrysops*. The related *C. mlokosiewiczi* Bigot was not put in that subgenus in Stone's (1975) catalog of Oriental Tabanidae, though it and related *C. oxianus* Pleske and *C. vanderwulpi* Krober were assigned to *Heterochrysops* in Palaearctic catalogs, including Krober (1939) and the latest list by Leclercq & Olsufjev (1975). *Chrysops vietnamensis* differs from all 3 by the crossband reaching the hind margin of the wing in cell M_3 but not crossing the base of the cubital cell. It is unfortunate that the eye pattern could not be satisfactorily revived in either of the above types of *C. vietnamensis,* but, if confirmed, the suggested presence of a "shaft" and contiguous lower frontal spot would differ from the reduced, isolated spots of the others.

This represents a surprising incursion into the Vietnam fauna from the North.

Additional records of Oriental Chrysopsini

C. dispar Fabr.

A widespread Oriental species recorded from E India, Ceylon (Sri Lanka), China, Taiwan, Philippines, E Indies (Philip 1960b).

Specimens examined. MALAYSIA: BORNEO: Sarawak: 3♀. THAILAND: 6♀. VIETNAM: 6♀, DeLinh (Djiring), 22–28.IV.1960; others from vicinities of Pleiku, NW of Phan Rang, Dalat, and Nha Drang. INDIA: Assam: 2♀, Manipur State, 29.VI.1960, 126 m; 1♀, Salari, Kameng, 10.VII.1961, 135 m.

C. fasciatus Wied.

Known from Borneo including Sarawak, Malaya, Thailand, Andaman Is, Assam, Burma, and E Indies.

Specimens examined. VIETNAM: 2♀, Blao (Balao), 14–21.X.1960, 500 m, Yoshimoto.

C. fixissimus Walk.

Recorded from Ceylon (Sri Lanka), India, E Indies, Borneo.

Specimens examined. 9♀ from various BORNEO localities, including "Taiwan Residency," 48 km W of Kalabakan, 9–18.XI.1958, in primary forest.

C. flaviventris Macq.

Known from India, Sri Lanka, E Indies.

Specimens examined. VIETNAM: 1♀, DeLinh (Djiring), 27.IX–14.X.1960, Yoshimoto, S INDIA: 1♀, Madras, Garwhal Chittay Ankottai, 2.XII.1958, 305 m.

C. silviaris Phil. & Mack.

Specimens examined. THAILAND: 2♀, NW Chiang Mai, Doi Suthep, 29.III–29.V.1958, 1278 m.

Silvius ornatus Phil. & Mack.

Specimens examined. INDIA: Assam: 3♀, Kameng, Drang Dzong, 1600–1800 m.

Gressittia nepalensis Phil. & Mack.

Specimens examined. SIKKIM: 1♂, Mangang, 11.VIII.1959, 1097 m. The holotype ♂ is the only other specimen known; it was from EAST NEPAL: Aru Val, 930 m.

Tabanus birmanicus (Bigot)

Atylotus birmanicus Bigot, 1892, Mem. Soc. Zool. Fr. **5:** 653.
Tabanus birmanicus (Bigot): Ricardo, 1911, Rec. Indian Mus. **4:** 200.

The ♂ of this species was very briefly mentioned by Ôuchi (1943) in reference to the ♀. Another ♂ in CAS provides a new record for China; it was taken by J. L. Gressitt and J. W. Djou during their Dawn Valley Redwood Expedition in 1948, and enables a more detailed description.

Length 17 mm (the Ôuchi ♂ was 17.5 mm). Head very large, wider than thorax. Eyes bare, enlarged facets brown, sharply demarcated in upper ⅔, lower facets green (relaxed) with 1 purple band at upper juncture, occipital margin of small facets narrow to vertex. Tubercle in occipital notch brown, at eye level, a minute, vestigial ocellar knob in center. Frontal triangle and sunken face brown pollinose. Parafacials and cheeks olive-buff with dark brown pile. Scape and pedicel orange with short black hairs; flagella missing. First palpal segment dark brown, 2nd deep yellow, ovoid; vestiture dark brown. Body dark brown with black hairs but some scattered yellow ones on dorsum, legs bicolored with contrasting whitish tibiae.

Wing yellowish brown on fore border as described for the ♀ by Ricardo (1911) and, except for the usual sexual differences, the characters agree well with her redescription. The species has been recorded from Malaysia, Burma, India and Taiwan (Philip 1960b).

Specimens examined. CHINA: 1♂, W Hupeh, Suisapa, Lichuan, 1000 m, 12.IX.1948, Gressitt & Djou. SIKKIM: 1♀, Simghik, 1130 m, 7.VIII.1958, Schmid; 1♀, Mangang, 1100 m, 11.VIII.1958, Schmid; 3♀, Dikchu, 700 m, 12–13.VIII.1958, Schmid.

Tabanus biannularis Philip

Tabanus biannularis Phil., 1960, Stud. Inst. Med. Res., Malaya **29:** 12. (n. n. for *T. bicinctus* Ric., preocc. by Fabr.). Type ♀ of *T. bicinctus* Ric. from SW India, N Kanara, in BMNH; studied by me in 1958–1960.

Heretofore, material has been inadequate to explain the disparate distribution and variation recorded for this species, which typifies the group, particularly with regard to variation in the abdominal patterns, and to decide the question raised by me (1960a, 1962) of relationship to *T. griseipalpis* Sch. Stek. from Sumatra. A series of 131 females was taken on different dates in the same year at the same locality in Sabah (Borneo), which permits further assessment of characters, though this locality is far from the respective type-localities.

Lengths, 7–11 mm. Consistent are the black prescutellums and tergites 5, though the latter frequently were found with narrow pale integumental incisures not superposed by pale-haired fringes, such as is usually observed on the 6th tergites. The last character is sometimes obscured by soiling, though its lack in the type of *T. bicinctus* appears natural. The incisural bands on tergites 3 and 4 are usually prominent, and frequently elevated mesially to about ½ the lengths of the respective tergites; the color of hairs on these parts varies from chalk white through pale yellow to rarely lemon yellow. In all, the first 2 sternites are pale pollinose, the next 2 banded and the remainder usually black.

The band across the scutellum is usually white, seldom pale straw yellow but in none did it encroach onto the prescutellum. Unsoiled specimens had the thorax with a broad black crossband between the wing bases, anterior to which, on a sharp transverse line between the lateral sutures, the notum is pale pollinose and with mixed black and white pile. In a few, an abbreviated line of black pile continues onto the pleura below the wing bases.

The bare subcalli are usually dark brown, but vary from black to dark reddish. The frontal calli vary in shape, the median usually expanded, spindle-shaped, often nearly touching the ocular margins or, conversely, nearly linear, margined with dark pollen which extends to the vertex. The basal callosities are usually widely, but sometimes only narrowly separated from the subcalli.

The antennae have narrow, elongate red plates, the styles usually red, but sometimes darkened. Apical palpal segments are unusually variable in color and vestiture; most are sooty gray, but vary between dull black through blue-gray to dull yellow,

the vestiture usually predominantly black apically and pale basally, but occasionally entirely black or entirely pale.

The specimens in the type series of *T. griseipalpis* from Sumatra in "V.S.L." (Veterinary State Labs) are not now available; they were not found in Amsterdam by me in 1958 and may be lost; the "Pendlebury" paratype female with the describer's label from Siam Peninsula (in BMNH) was studied in 1958 and 1960 and falls within the variation above. This might not have been conspecific with the Sumatra types.

Females from Malaya and Vietnam fit the above described variations, except that 1 of the latter shows a prominent patch of pale hairs on each side of tergite 1. The occasional females with reddish subcalli and yellowish-haired abdominal bands will complicate assignment in my key (1962), but the dark prescutellums should be helpful.

In the Bishop Museum series is a previously unknown ♂ from Sarawak, Borneo.

Neallotype ♂. Length 9.5 mm. Head wider than thorax, the sharply demarcated brown enlarged facets bare, occupying the upper ¾ of eye, with a narrow occipital margin of small dark facets to the vertex. Tubercle in occipital notch small and depressed. Frontal triangle shining brown, apical 3rd buff pollinose. Apical palpal segments small, bushy white pilose, obscuring dusty gray pollinosity beneath. Other characters as in typical females except antennal plates a little narrower and the 2 basal tergites more brownish. Small pleural patches of black hairs beneath the wing bases.

When Schuurmans Stekhoven (1926) described his *T. griseipalpis* based on 5 females from Sumatra and Java, he listed no specimens of *T. bicinctus* Ric. (=*biannularis* Phil.) from Indonesia, but he discussed the type female from "Kadras Jungle, N Kanara, SW India" and a few other specimens in BMNH. In view of the above variation among sporadically collected specimens from as far East as Taiwan and Malaysia, I believe it premature to consider the 2 species as synonyms or subspecies. Males and immature stages from the type-localities could have bearing on a final decision on the status of the 2 names.

Specimens examined. MALAYSIA: BORNEO: Sabah: 131♀, Forest Camp, 19 km N of Kalabakan, various dates in X–XI.1962, K.J. Kuncheria; 1♂ (neallotype, BISHOP), Tawau, Quoin Hill, Cocoa Res. Sta., 8.IX.1962, light trap, Y. Hirashima.

Tabanus sexcinctus Ricardo

Tabanus sexcinctus Ricardo, 1911, Rec. Indian Mus. **4:** 133. Holotype ♀ from Burma, in BMNH; studied by me in 1958–1960.

From *T. biannularis* above, *T. sexcinctus* differs in having wider fronts, clear wings, pale prescutellums, and tergites 5 and 6 with more distinct pale fringes. Subcalli are consistently more reddish. The question of synonymy, in part raised by Shiraki (1918), will depend on further study of types.

The type (length 11 mm) of *T. sexcinctus* has 5, rather than the described 6, abdominal bands. Two larger specimens (12.5 and 14 mm) from Assam are assigned here. Both are without spur veins as described.

Specimens examined. INDIA: Assam: 2♀, Manipur State, Chahong Khunou, 380 m, 24.VII.1960, Schmid.

Tabanus leucocnematus Bigot

Tabanus leucocnematus Bigot, 1892, Mem. Soc. Zool. Fr. **7:** 656. Holotype ♀ (headless) from India; seen in BMNH in 1958–1960.

In spite of the headless type, Ricardo (1911) was able to recognize the species and augment the description from specimens from Burma and Assam. Further comments were provided by me (1962) on a specimen from Assam.

Sabah (Borneo) is now represented by a series of females taken in the same "Forest Camp" as *T. biannularis* above. This handsome golden-haired species had previously been recorded from India, Assam, and possibly Malaya (Philip 1960b).

Specimens examined. MALAYSIA: BORNEO: Sabah: 6♀, 10.X–21.XI.1963, 60 m, K.J. Kuncheria.

Tabanus bicoloratus Philip

Tabanus bicoloratus Phil., 1963, Pac. Insects **4:** 299. Type-locality: Dalat, Vietnam.

The present record, additional to the type series, suggests that the species may be precinctive in the Dalat region of Vietnam.

Specimens examined. VIETNAM: 2♀, 6 km S of Dalat, 9.VI–7.VII.1961, 940 m, R.E. Leech.

Tabanus auricircus Philip, **new species** FIG. 6

A small, blackish-brown species with broad, brassy yellow-haired bands across the scutellum-prescutellum as well as hind margins of the 3rd and 4th abdominal segments, and entirely pale reddish venter; antennae and shining subcallus both red; femora dark brown to blackish and wings tinted, with short spur veins.

Holotype ♀. Length 8.5 mm. No eye pattern revivable. Frons sooty brown pollinose, slightly convergent below, index 1:5.0; callosity dark brown, subquadrate, filling lower frons and narrowly connected above to a spindle-shaped median callus. Face and cheeks yellow pollinose and pilose. Antenna shaped as figured, short black-haired basally, style darker red than plate. Palpus II thickened basally, covered with black and a few scattered yellow hairs, basal segment with bushy yellow hairs. Notum blackish with scattered brassy-yellow hairs anteriorly and on the red prealar tubercles; a wide buff-yellow band with brassy-yellow hairs crossing the prescutellum and scutellum between the wing bases. Pleura and coxae buff-yellow pollinose and pilose. Wings including costal cells uniformly smoky, hardly intensified apicocostally. Halteres brown. Femora dark brown, fore pair black-haired, 2 hind pairs mostly yellow-haired. Tibiae pale yellow with concolorous hairs, darkened at tips and on apical 3rd of the fore pair. Abdomen dorsally dark brown with 2 prominent brassy-yellow-haired bands across incisures of tergites 3 and 4; similar but inconspicuous hairs on incisure of 5, and more evident but narrowly on 6. Entire venter pale reddish with brassy hairs, last 2 sternites darkened.

Holotype ♀, MALAYSIA: BORNEO: Sabah: Forest Camp, 19 km N of Kalabakan, 13.XI.1962, K.J. Kuncheria (BISHOP 7512).

Many *T. biannularis* Phil. were taken at the same time and/or place as the holotype. *T. auricircus* is quickly distinguished by the yellow bands on thorax, including the prescutellum and abdomen, more reddish subcallus and entire venter, and lack of intensified apicocostal wing shadows.

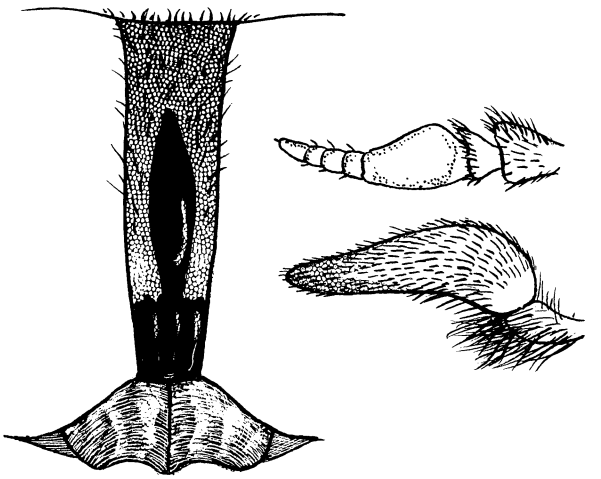

FIG. 6. *Tabanus auricircus*, ♀, frons, antenna and palpus.

Tabanus auricircus runs to couplet 12 in my key (1962) to the *biannularis* group where it relates to *T. gertrudae* Phil. (syn. *flavicinctus* Ric., preocc.) from Assam. Though Ricardo originally described the palpi as yellow-haired and wings clear without spur veins, Schuurmans Stekhoven (1926) more adequately redescribes the type and other material in BMNH as having black-haired palpi and spur veins in wings of some. However, the fronts of *T. gertrudae* are wider, yellow bands occur on all tergites, and venters are darker and banded. *T. flavivittatus* Sch. Stek. from Java has some similarity, but has black subcallus and palpi, a black spot in middle of tergite 2, more prominent triangular yellow bands, and darker, banded venter.

Tabanus bombayensis Schuurmans Stekhoven

Tabanus bombayensis Sch. Stek., 1926, Treubia **6** (Suppl.): 320. Holotype ♀ from Bombay, S India, in BMNH, seen in 1958.

A female from Assam agrees fairly well with the description and figures and keys to couplet 7 (Philip 1962). It is separated from *T. imparicallosus* (see below), which also has a narrow median callus, by its black spots in the middle of tergites 2 and 3, and by the eye pattern which is purple above, green below, with a median stripe of each color. The flagella are missing and other Assamese specimens are needed to confirm this extension of the distribution.

The female of *T. insidiator* Aust. from Thailand has larger black median callus, a heavier black spot on tergite 2, and darker subcallus and femora. The inadequately described *T. tonglai* Surc. from Laos is related but appears to differ on basis of darker tinted wings and subcalli, and black femora.

Specimen examined. INDIA: Assam: 1♀, Gairabkunda, Kameng, approx. 215–300 m, 18–22.V.1961, Schmid.

Tabanus cestus Philip

Tabanus cestus Phil., 1969, J. Med. Entomol. **6:** 198. Holotype ♀ from Pleiku, Vietnam; in BISHOP.

No additional specimens of this most recent addition to the *T. biannularis* group have been received. Revised keys to the group were provided.

Tabanus rhinargus Philip

Tabanus rhinargus Phil., 1962, Pac. Insects **4:** 299. Holotype ♀ from Vietnam; in BISHOP.

A small (8.5 mm) male from Assam probably represents this species also. The allotype from W Borneo is not now available, but the Assam male agrees in general with the paratype female from Vietnam in CAS, except that the male's notum is covered with longer yellow pile, which obscures the interalar transverse band, and the abdomen is more yellow basally.

Tabanus gertrudae Phil. (syn. *flavicinctus* Ric.) also has similarities, but the median calli are expanded and all abdominal tergites but the 1st have incisural bands.

Specimens examined. VIETNAM: 1♀, Chute de Bourg, 37 km SE of Dalat, 780 m, 25.IV.1960, R.E. Leech. INDIA: Assam: 1?♂, Khopum, Manipur State, approx. 750 m, 27.V.1960, Schmid.

Tabanus ceylonicus Schiner

Tabanus ceylonicus Schiner, 1868, Reise Novara, Diptera, p. 93.

Variation and synonymy in this widespread Malaysian species with very narrow frons was discussed by me (1960b). A female of the brown variant was taken with *T. biannularis* above, at the same Sabah locality.

Specimen examined. MALAYSIA: BORNEO: Sabah: 1♀, Forest Camp, 19 km N of Kalabakan, 17.XI.1962, K.J. Kuncheria.

Tabanus imparicallosus Schuurmans Stekhoven

Tabanus imparicallosus Schuurmans Stekhoven, 1926, Treubia **6** (Suppl.): 325. Holotype ♀ from Bombay, in BMNH; this and an also poorly preserved paratype seen in 1958–1960.

A series collected by Schmid in Sikkim is presumed to belong to this species with general brownish color, red antenna and bare subcallus, yellow tibiae and abdominal bands, median callus small, linear and separated from dark basal callosity, and wing nearly clear and usually with spur vein. None has the callosity as separated from the eye margins as illustrated by the describer. The eyes (relaxed) are green with 2 purple bands.

A male, also from Nanga, agrees, but the yellow hairs on the scutellum, on ovoid palpi, and on other areas are longer, the lower frontal triangle is brown and bare,

and the proportion of upper enlarged bare facets is distributed as in the male of *T. biannularis* described above.

Two females from Tung (Sikkim) have similar bare, red subcalli and pale tibiae but probably belong to a different species because of plain brown-red abdomens, black femora and wings with distinct apicocostal wing infuscation. Their wider fronts prevent assignment of these to *T. simplissimus* Walk.

Specimens examined. SIKKIM: 12♀, Dikchu, 670 m, Mangalbakey, 740 m, and Nanga, 1525 m, IV–V.1959, and 1♂, Nanga, VIII.1959, Schmid; 2♀, Tung, 1400 m, VIII.1959, Schmid.

Tabanus sphinx Philip

Tabanus sphinx Philip, 1960, Stud. Inst. Med. Res. Malaya **29:** 21.

It has only recently been noticed that the type data for this species (from Thailand) were typographically omitted when it was originally published (Philip 1960a: 21); a paratype with "same data" was included. The type data for both from Thailand are NW Chiang Mai, Fang, 500 m, 12–19.IV.1958, T.C. Maa; holotype in BISHOP; paratype in CAS. Variations of the latter from the holotype were discussed.

Nomenclatural comments on some other oriental Tabanus species

Tabanus dives Rond. (1875, Ann. Mus. Civ. Stor. Nat., Genova **7:** 457; Sarawak, Borneo) is preoccupied. Because no specimens of *T. dives* Rond. have been recognized since the original description, and there is doubt about synonymy with other Malaysian species as discussed by me (1960b), it is unwise to propose a new name pending resolution of this taxonomic question.

Tabanus "pictipennis Szil." was a lapsus by me (1960b) for *T. pictiventris* Szil. from Borneo. Though inadequately described, I saw the type in Vienna NM in 1960 and consider it to be a synonym of *T. immanis* Wied. of Java (syn. *T. stantoni* Ric. from Malaya).

The male type of *T. petiolatus* Szil. from central China was also seen in Vienna NM and is obviously a member of the difficult *T. amaenus* complex with closed cell R_5 and reddish sides like the maritime "variety *lateralis*" Shir. (1918). It is in poor condition, probably because of prior preservation in spirits. It might be the male of *T. signatipennis* Portsch., which has been revived (Leclercq & Olsufjev 1975) from previous synonymy with *T. amaenus* Walk. In any event, Szilady's name is preoccupied by Nearctic *T. petiolatus* Hine, but in view of its uncertain status, the subsequently proposed new name, *T. petiolateinus* Leclercq, will remain of doubtful validity.

Tabanus albilateralis Macq. (1838, Dipt. Exot. **1:** 129; "Java"). The species was surprisingly not treated by Schuurmans Stekhoven (1926) in his East Indies monograph. The type female in Paris NHM was found, on a visit by Mackerras and myself, to be obviously composite, with the head of a Neotropical *Dasybasis* glued to the body of an Australian *Scaptia*; this is substantiated by the original description and redescription by Ricardo (1911), but the substitution was not recognized by either author. The

anomaly has since been disposed of by synonymy (Mackerras 1959) under the Australian *Scaptia jacksonii* (Macq.) in reference to the body. The species should be eliminated from lists of Oriental tabanids, though Stone (1975) included it in his Oriental catalog.

Tabanus microcerus Walk. (1848, List Dipt. Br. Mus. **1:** 150). Holotype ♀ from unknown locality; in BMNH.

On the possibility that this enigmatic species with small antennae might relate to the Nearctic genus *Merycomyia,* Mr H. Oldroyd compared for me a specimen of *M. whitneyi* (Jhns.) and declared (in litt.) the type to be more "probably correctly assigned to Asiatic *Thaumastomyia.*" The ferruginous body and appendages, including wings, were inadequately described by Walker. Oldroyd referred to the fly as a "plain, rust-brown *Thaumastomyia*" which would probably place its source as a Far Eastern country, since the only other known species, *T. hatiensis* (Stone), is from northern China and Korea.

Olsufievotabanus Philip, **new genus**

Type-species: *Tabanus rarus* Ricardo, tribe Tabanini.

Eyes distinctly, though short hairy; green with 2 narrow purple bands (relaxed). Postocular rim to vertex, wide with fringe of pale hairs. Flagellum with low dorsobasal angle on plate and style triannulate. Body pale gray without pattern; legs with unusually bushy pale hairs. Wing clear with normal venation; basicosta pale setulose. Female with moderately wide frons with suggestion of a tubercle at vertex but no vestiges of ocelli, and a bare, yellow subcallus. Hairs should be more prominent on the eyes of the still unknown male when it is discovered.

In 1960b I reluctantly assigned the peculiar pale Malayan species, *Tabanus rarus* Ricardo, 1911, to the genus *Hybomitra* because of its evident though short hairy eyes and indication of an ocellar tubercle; it was so catalogued by Stone (1975). However, other characters, such as the wide and fringed postocular rims, bushy-haired legs, and 2 narrow purple eye-bands on green ground, do not permit such restrictive assignment and substantiate doubts raised by its geographic isolation from boreal species of *Hybomitra* of northern derivation. Ricardo overlooked the triannulate antennal styles.

Because the hairs on the basicosta are pallid like the surrounding body hairs, which often obscure these structures, the basicostal setae are easily overlooked and the species thus wrongly associated with diachlorine elements that are dominant in the Antipodes. Mackerras (1959: 162) points out the *Hybomitra*-like characters of the hairy-eyed *T. umbripennis* Ric. in western Australia. This species is another probable derivative from the north.

Systematically, these considerations neither justify retention of this obviously recently evolved, isolated species in *Hybomitra* nor its return to heterogeneous *Tabanus* sensu lat. Its distinctive features merit more than subgeneric recognition, and the new genus is proposed for its accommodation. It is dedicated to Professor N. G.

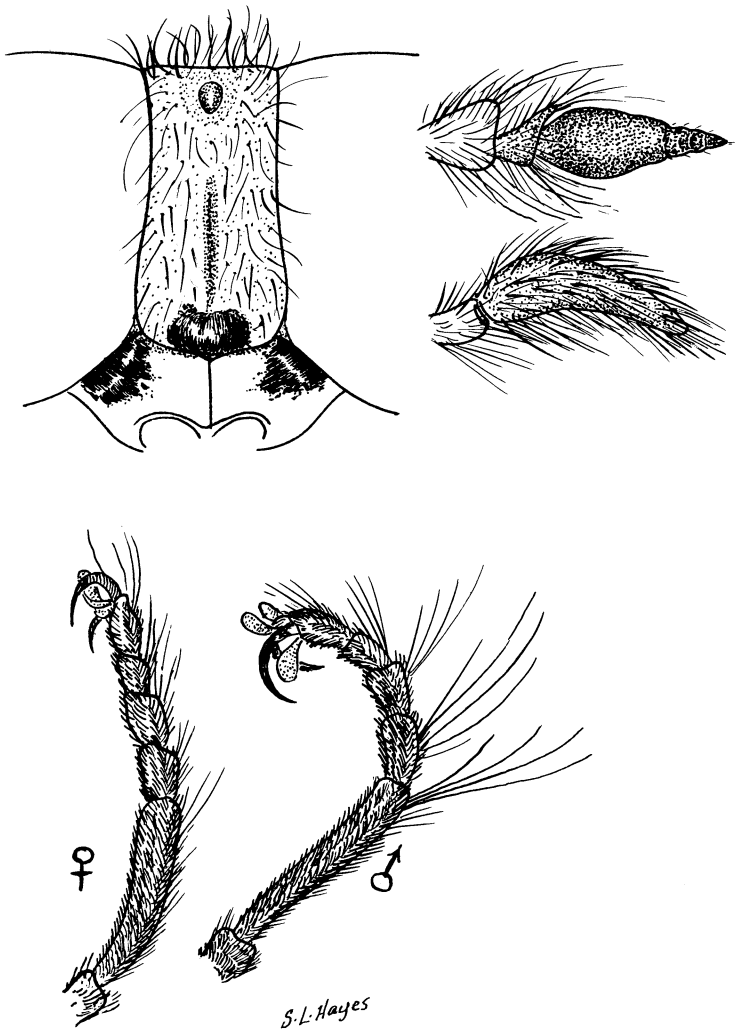

FIG. 7. *Hybomitra lamades*, ♀, frons, antenna and palpus; fore tarsi, ♀, ♂.

Olsufjev of Moscow, USSR, for his many contributions to the systematics of Tabanidae of the Old World.

Some uncommon northern oriental species of Hybomitra

Hybomitra lamades Philip FIG. 7

Hybomitra lamades Philip, 1961a, Indian J. Entomol. **21:** 86. Holotype ♀ and paratype from Nepal; in CAS.

A series of 13 females from Sikkim enables expansion of the description. The male is described for the first time.

Partial to almost complete denudation of the subcalli is more evident in these females than in the types (FIG. 8); length 10–13 mm. The body proportions with unusually small heads, the reduced black frontal calli, the generally black coloration, and the prominent pale yellow-haired incisural bands on the tergites without reddish lateral spots, agree with the types. Overlooked characters, emphasized in the male below, are unusually long hairs on the dorsums of the fore tarsi. For comparison, the male is herewith described as a neallotype.

Neallotype ♂ (FIG. 7). Length 11 mm. In close agreement with the ♀, except for usual sexual differences; vestiture including eye hairs darker, antenna more slender, the plate brown on basal ½, apical palpal segment ovoid with bushy black hairs, and sternal abdominal incisures with more pale hairs. Frontal triangle shining black. Fore tarsi with long dorsal bristles as figured, claws longer than in ♀. Eye facets not differentiated in size, a median and 2 narrower lower purple bands, upper and lower borders purple (relaxed).

Neallotype ♂, UPPER BURMA: Adung Val, 28°15′–97°40′, 9.VIII.1931, Lord Cranbrook (FMNH).

Other specimens examined. SIKKIM: 13♀, Gay, approx. 2875–3850 m, 18–21.V.1959, Schmid.

While 2–3-annulate antennal styles are characteristic in the tribe Haematopotini of Tabaninae in the Orient, their occasional occurrence in dissimilar species, e.g., *Tabanus ochros* Sch. Stek. from "Siam," appears to be of polyphyletic derivation. *Hybomitra lamades* otherwise has *Hybomitra*-like features, including the genitalia, in common with other species discussed below, and is retained in *Hybomitra.* In *Tabanus* in the Northern Hemisphere, reduction in antennal styles was considered the chief feature for separating the uncommon species of the subgenus *Glaucops.*

Hybomitra bouvieri Philip, **new species** FIG. 8

A dark species related to the above but the abdomen with dull reddish sides, incisural bands not accentuated; fore-tarsal hairs not elongated, 2 hind pairs of tibiae widely pale-haired basally, styles with 4 compact or altered annuli, and, in the ♀, callosity also reduced and subcallus largely bare; no spur veins.

Holotype ♀. Length 12.5 mm. Eyes densely covered with short brown hairs and with 4 green and 3 subequal purple bands, upper and lower borders also purple (relaxed). Frons dark buff-gray pollinose, sides parallel, index 1:2.3; callosity wrinkled black, widely separated from eye margins, narrowly connected above to a small median black tubercle; vertex with low, pollinose tubercle and, in certain lights, a pair of vestigial ocelli. Subcallus mostly shining black, a median line and the surrounding borders narrowly sooty pollinose. Face and cheeks yellow pilose and sparsely pollinose. Antenna black, shaped as figured, 2 basal segments with shorter black hairs than in *H. lamades,* the indistinctly quadriannulate style rather compacted. Palpus II dark brown, mostly black-haired, rather long, slender, blunt. Thorax, including scutellum and prealar tubercles black, with fine black and yellow hair dorsally, pleura and coxae with dense yellow pile. Femora black, mostly golden-yellow-haired; tibiae dark red, basal ⅔ of 2 hind pairs, including hind-tibial fringes, with shaggy yellow hairs. Wing with margins of veins fumose, intensified mesially below stigma and on crossveins and fork; costal cell yellow. Halteres brown. Abdomen dull blackish, grading imperceptibly into dull reddish on sides of tergites 2 and 3, predominantly orange-haired on the basal 3 segments, accentuated along lateral margins, and grading to black caudally above and below.

Allotype ♂. Length 13 mm. Agrees with the holotype except for the usual sexual differences. Eyes likewise pilose, upper facets hardly differentiated. Tubercle at vertex low, black-haired and with suggestion

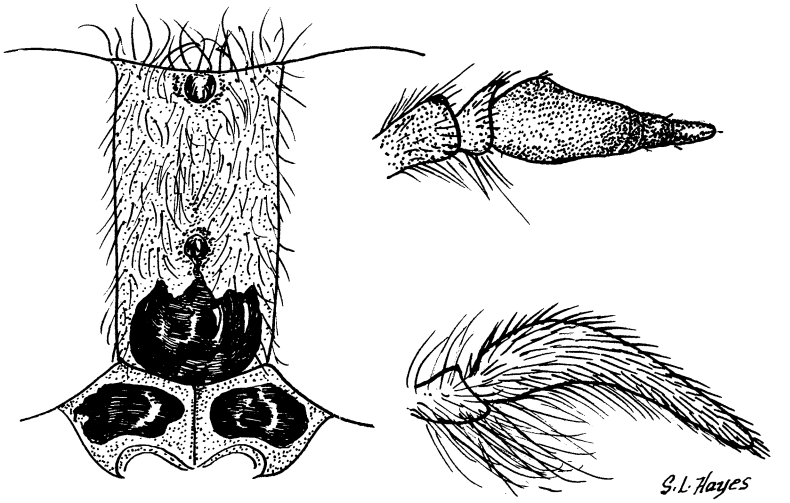

FIG. 8. *Hybomitra bouvieri*, ♀, frons, antenna and palpus.

of an anterior vestigial ocellus. Frontal triangle dull sooty pollinose. Beard predominantly black, grading to yellow behind. Palpus II ovoid, dark reddish, black-haired. Antenna more slender than in ♀, plate dark reddish basally, annulations of the pointed style indistinct. Body and leg vestiture like the ♀, but longer, especially on dorsum of abdomen where it is predominantly yellow, the lateral red confined to sides of tergite 2. Fore tarsi without accentuated hairs. Wing as in ♀, including intensified infuscation behind stigma, crossing apices of basal cells and base of discal cell.

Specimens examined. Holotype ♀, UPPER BURMA: Adung Val, 28°15′–97°40′, 3550 m, 23.VI.1931, Lord Cranbrook (FMNH). Allotype ♂, SIKKIM: Yag Tang, 3550 m, 17.VI.1959, Schmid (CAS 13116). Paratypes: 1♀, same data as holotype except 4.VII.1931 (CAS); 1♂, NEPAL (E): ridge S of Barun Riv, 2435 m, 11.VI.1950, L. Swan (CAS).

In addition to the lack of long fore-tarsal hairs and incisural bands, the proportionately larger head, the reddish areas laterally on the abdomen and the substigmal wing infuscation differentiate this species from *H. lamades* above, which it otherwise resembles.

A 3rd male in CAS may belong here also, but it is from a lower altitude in Assam (Ming Thouk Hong, Manipur State, 750 m, 1.VI.1960, Schmid) and the golden hairs are sharply confined to the basal 2 abdominal segments with obscure median patches on the remaining, predominantly black-haired tergites. It has the same wing pattern, morphology and pale hairs on the 2 hind pairs of tibiae as the above males.

Hybomitra himalayanus (End.) has antennae and femora more reddish, wing clouds less distinct and abdomen without lateral red spots. *Hybomitra tatarica* (Portsch.) from central Asia (discussed below), is undoubtedly related, but differs in entire subcallus and contiguous upper cheeks, shining black antennal plates not basally reddish, femora black-haired, and spur veins present at bases of R_4.

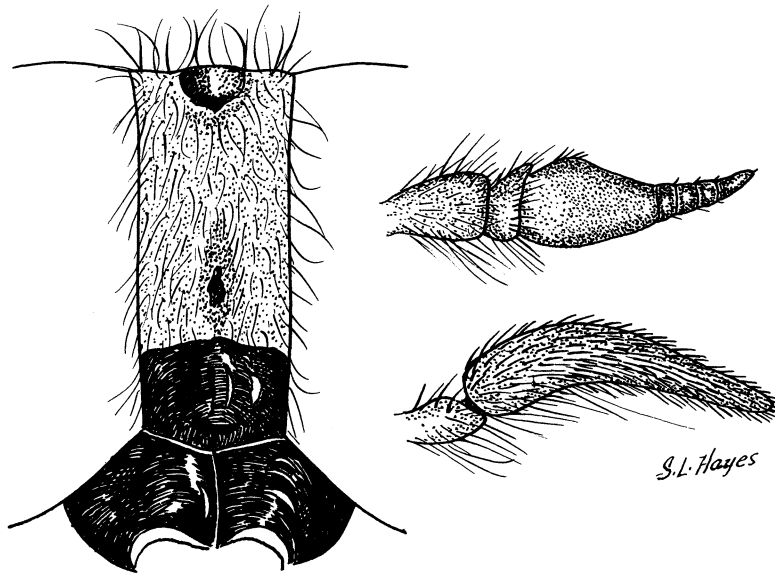

FIG. 9. *Hybomitra tatarica*, ♀, frons, antenna and palpus.

Hybomitra tatarica (Portschinsky) FIG. 9

Tabanus tataricus Portsch., 1887, Horse Soc. Entomol. Ross. **21:** 178. Holotype ♀ from Kashmir, Rawat.

Hybomitra tatarica (Portsch.): Leclercq, 1966, Inst. R. Sci. Nat. Belge., Mem. Fasc. **80** (deuxième ser.)**:** 121.

Known from Turkestan, Siberia and China. The *H. tatarica* complex from the Asia and Oriental regions, to which the preceding species are related, represents a group with unusual plasticity of characters: the isolation or expansion of the calli in wide fronts, extent and frequency of denudation of the subcalli and adjacent upper cheeks, the variable membranous "crescents" between the subcalli and bases of antennae, and color patterns and coarse vestiture on abdomens and legs. In consequence, Szilady (1923) and others have proposed several "varieties." The utility of these variants will depend on study of variation and intergradation in larger series of specimens. For example, in the series of 22 paratype females of *H. nola* Phil. from Szechwan, China, I observed (1961b) complete intergradation from wholly pollinose to completely, naturally denuded subcalli. Should some future reviewer consider this group of Far Eastern *Hybomitra* to merit subgeneric status, *Tylostypina* End. could be revived from synonymy [*H. tatarica* (Portsch.) is the type-species]. In differentiating his *H. mouchai* from Nepal, Chvala (1969) also discussed this group of flies, in which the unusually wide frons (index 1:1.5) and extensive bare areas on midface and the entire parafacials, as well as subcallus, are distinctive.

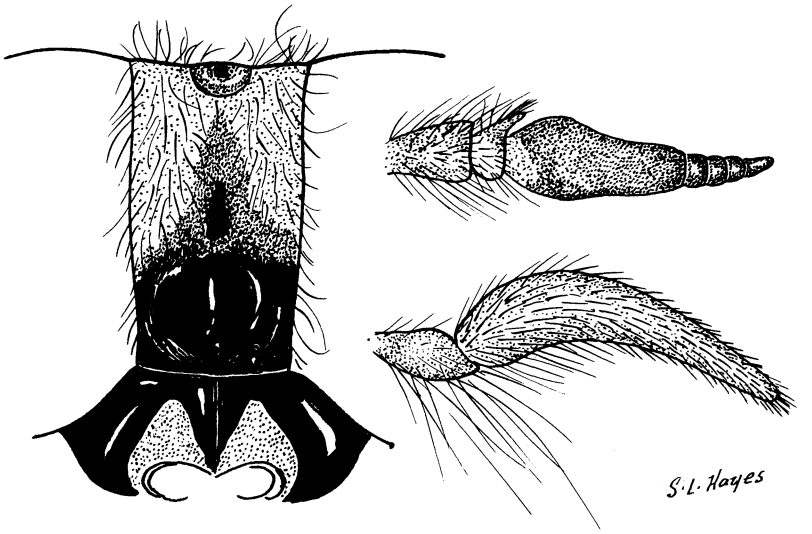

FIG. 10. *Hybomitra tatarica tridentata*, ♀, frons, antenna and palpus.

Because the variation in the supraantennal, membranous "crescents" has not been adequately assessed, the following is described as a subspecies, but it may eventually prove to be specifically distinct.

Hybomitra tatarica tridentata Philip, **new subspecies** FIG. 10

A dark, medium-sized variant with membranous "crescents" unusually expanded into the subcallus above the antennal bases, the vestiture behind the 2nd abdominal segment above and below, sharply black.

Holotype ♀. Length 14.5 mm. Eyes short brown pilose, 4 green bands on a purple ground, the median purple line narrower than the other 2. Frons dark brown pollinose, sides slightly convergent below, index 1:2.3, tubercle at vertex brown, prominent; callosity black, extending narrowly upward into a small, rugose median callus. Subcallus and upper cheeks shining black, lower margin of subcallus peculiarly tridentate around the antennal bases (FIG. 10) (hence the name). Face and lower cheeks dark gray pollinose, and pale yellow pilose. Antenna slender dark brown to black, scape subshiny with sparse black hairs, style quadriannulate. Palpus II rather slender, dull blackish with black hairs, yellow on the basal segment. Notum, scutellum and prealar tubercles subshiny black, unlined, with fine yellow hairs. Pleura and coxae with bushy gray and pale yellow hairs. Femora brownish black with mixed yellow and black hairs. Fore tibiae black, narrowly red basally, others red with mostly pale yellow hairs. Wing strongly tinted along vein margins, accentuated below stigma and on crossveins and fork and with a short spur vein. Haltere reddish brown. Abdomen black, narrowly orange-red on sides of first 3 tergites; first 2 segments above and below yellow-haired, sharply black thereafter with scattering inconspicuous yellow hairs.

Holotype ♀, UPPER BURMA: Adung Val, 28°15′–97°40′ (3660 m), 24.VI.1931, Lord Cranbrook (FMNH).

The tridentate lower margin of subcallus plus shining black upper cheeks are distinctive in this group. A female labelled with the same locality data as the holotype but dated 10.VIII.1931 is obviously also related, but the frons is a little wider (1:2.0), the subcallus is not tridentate, the upper cheeks are only partially shining black, the sparse yellow hairs entirely cover the dorsum of the abdomen, and the wings lack

spur veins. This could be a minor variant of typical *H. tatarica* as redescribed by Ricardo (1911), lacking short spur veins, femora black-haired and apices of halteres brown not white.

Hybomitra nura Phil. from Szechwan, China, also has accentuated membranous "crescents" above the antennal bases, but the frons is wider, the upper cheeks are not denuded and the wings are not as fumose; bright orange vestiture occurs over most abdominal segments and on the concolorous orange tibiae. *Hybomitra subcallosa* (Ric.) from N India also has a bare subcallus which, however, is yellow brown; the frons is narrower, the antennae are red, and the wings are without clouds in comparison to above ssp. *tridentata.*

Olsufjev (1937) records variations in *H. tatarica* of the frontal index as 1:2–2.5 and length 14.5–16 mm; he also elevates *H. tatarica* "var." *zonata* (Szil.) to a full species, which Moucha and Chvala (1963) have followed, based chiefly on tergites 3 and 4 being black-haired, a character shared by the present new subspecies. I prefer to relegate *tridentata* as a subspecies of *H. tatarica* until the pertinent tabanid fauna is better known.

Szilady (1923) appears to have assigned his "var." *bicolor* to a male of the typical form of *H. tatarica.* He also described *H. tatarica* "var." *aurantiacus,* presumably with yellow-haired venter, from Samarkand. The validity of this variety remains questionable and a new name is not proposed, although the name is preoccupied.

Further comments on related Far Eastern Hybomitra species

The 3 species of *Hybomitra* discussed above (*lamades, bouvieri,* and *tatarica,* plus ssp. *tridentata*) from Nepal and North Burma, which have partial to full denudation of the subcalli, are readily distinguished from 3 blackish species of "*Tabanus* subgenus *Sziladynus*" (=*Hybomitra*) described by Krober (1934) from South Kansu, China, with completely pollinose subcalli and normal, quadriannulate styles; 2 species, *H. brevifrons* (Krob.) and *H. svenhedini* (Krob.), have the frontal calli reduced, like *H. lamades* above, to not over ½ the lower widths of the frons, while the 3rd, *H. atripes* (Krob.), has a narrower frons and long spur veins without isolated clouds on the wings. The last appears to be a distinct species [as listed by Leclercq & Olsufjev (1975)] related by the describer to *H. aterrima lugubris* (Zett.) of Europe. Unfortunately, Krober's name is preoccupied and the new name *H. kansui* is herewith proposed for "*T.*" *atripes* Krob. (not v. d. Wulp).

ADDENDUM

After this report was in press, I received, courtesy of the author, a reprint of a paper, "The genera of Malay Peninsula Tabanidae (Diptera), with comparative biological notes" (J. J. S. Burton, Malaysian Veterin. J. **6**(4)**:** 171–82, 1978) in which Dr Burton discusses "*Hybomitra*" *rara* (Ric.) and removes that genus from "the Southeast Asia list" of Tabanidae, and returns the species to the genus *Tabanus.* This will not

affect my treatment above of this species except to complement its unusual features in the fauna.

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