Pacific Insects 10 (3-4): 521-528 20 December 1968

THE GENUS *INOPUS* (=*METOPONIA*, *ALTERMETOPONIA*) (Diptera: Stratiomyidae)[1]

By **Akira Nagatomi** and **Junichi Yukawa**[2]

Abstract: The genus *Inopus* (=*Metoponia*, *Altermetoponia*) is revised. It contains 6 species, 2 of which are described as new, and is distributed in Australia and New Guinea (1 species is introduced into North America).

When Hardy (1920, 1924) revised the genus *Inopus* (=*Metoponia*, *Altermetoponia*), only *rubriceps* and *geminus* were known. This paper describes 2 new species from New Guinea and Australia, and 1 unnamed species of uncertain status from Australia, and redescribes 2 species, namely, *rubriceps* and *hitchcocki*, new combination.

This revision may be incomplete for the materials available are small in number and some type-specimens were not examined. The validity of each synonym is not directly confirmed but simply follows that of Hardy (1920, 1924).

The specimens discussed in this paper are deposited in the Canada Department of Agriculture, Ottawa (=CNC), Bishop Museum, Honolulu (=BISHOP), Commonwealth Scientific and Industrial Research Organization, Canberra (=CSIRO), and the U. S. National Museum, Washington, D. C. (=USNM).

Acknowledgments are made to Dr B. V. Peterson (Canada Department of Agriculture) and Dr Willis W. Wirth (U. S. National Museum) for their generous loan of material and to Drs J. Linsley Gressitt (Bishop Museum), Masatake Shibuya (Kagoshima University) and Keizo Yasumatsu (Kyushu University) for their encouragement and support.

Genus **Inopus** Walker

Metoponia Macquart, 1847, Dipt. Exot., Suppl. **2**: 28. (preoccupied by *Metoponia* Duponchel 1845).
Inopus Walker, 1850, Ins. Saund. Dipt., 1850: 2.
Cryptoberis White, 1916, Proc. Linn. Soc. N. S. W. **41**: 73.
Altermetoponia Miller, 1945, Proc. R. Ent. Soc. Lond. (B) 14: 72. **New Synonymy.**

Antennal flagellum widest at or near middle or almost parallel sided and without distinct annuli; front (in ♀) and eye near line from ocellar- to frontal triangle (in ♂) flat or nearly so; in ♂ eyes broadly contiguous; in ♀ eye very small, i. e., front and face very large in area (space between palpus and eye much wider than that between holes on lower face), and occiput

1. Partial results of a grant to Bishop Museum from the U. S. Public Health Service, National Institutes of Health (AI-01723-08).
2. Bishop Museum, Honolulu, Hawaii (Permanent address: Faculty of Agriculture, Kagoshima University, Kagoshima).

just behind upper margin of each eye flat (vein R_4 present in most species; m crossvein present or absent within species; vein M_3 absent; in specimens on hand, a median furrow on front of ♀ is indistinct or does not reach to median ocellus).

Type-species: *Metoponia rubriceps* Macquart, 1847.

Hardy (1924) wrote as follows: "*Inopus despectus* Walker may have to be removed from the synonymy of *Metoponia*. Bezzi [1922] gives this species (originally described without a locality) as from South America, but I do not know his reasons for so doing." It seems to us that *despectus* is taken from Australia and is a synonym of *rubriceps*.

Key to species of Inopus

1. Antennal flagellum with sides nearly parallel or gently curved; vein R_4 present 2
   Antennal flagellum abruptly widened at or near middle (Fig. H); vein R_4 absent (♀ unknown) ..... **grossus***
2 (1). In ♀, from a dorsal view, anterior margin of head nearly flat or gently curved 3
   In ♀, from a dorsal view, head conspicuously produced forward [see Textfig. 3 (in Plate 29) of Hardy, 1920]; in ♀, head "red"; antennal segment 1 shorter than in *rubriceps* (after Hardy, 1920)..... **geminus**
3 (2). When measured along inner surface antennal segment 2 about ½ (0.4-0.6×) as long as segment 1; apical portion of antennal flagellum with a longitudinal hollow in inner surface; in ♀ head yellowish to reddish brown and front with sides parallel or nearly so.....4
   Antennal segment 2 much over ½ (0.75 or more) as long as segment 1; apical portion of antennal flagellum without a hollow in inner surface; in ♀, head dark brownish rather than yellowish brown to reddish brown and front conspicuously widened anteriorly 5
4 (3). At least in ♀, thorax and abdomen blackish and apparently darker than in *rubriceps*, and antennal flagellum about as long as antennal segments 1+2 (♂ unknown)..... **sp.**
   In both sexes, thorax and abdomen dark brownish with a brownish to reddish-brown tinge and apparently paler than in preceding species, and antennal flagellum distinctly longer than antennal segments 1+2 (1.3-1.5×) ..... **rubriceps**
5 (3). In ♀, mesonotum with 3 broad distinct blackish stripes (♂ unknown) ..... **brevicornis***
   In ♀, mesonotum at most with 3 narrow indistinct blackish stripes.....**hitchcocki**

Inopus brevicornis Nagatomi and Yukawa, new species Fig. C & D.

This species is distinguished from *hitchcocki* as shown in the key.

♀. *Head*: Dark brownish with a yellowish-brown to reddish-brown tinge; antenna largely yellowish brown; face except side, eye margin except on front, and a small region just above antenna pale gray pollinose; head and its appendages clothed with blackish pile which is very short and sparse on eye (it appears that pile on face and cheeks is pale yellowish and lower front and side of face are bare); structural characters fit descriptions of *rubriceps* with following differences: width of front at median ocellus about 4× width of ocellar triangle (3.9×); distance between palpus and eye over 1.5× that between holes on face (1.8×); when measured along inner surface antenna equal in length to distance from antenna to median ocellus and its segment 2 as long as segment 1; apical portion of flagellum without a longitudinal hollow in inner surface; in specimen on hand distance from palpus to antenna 0.8× that from antenna to

* Described as new

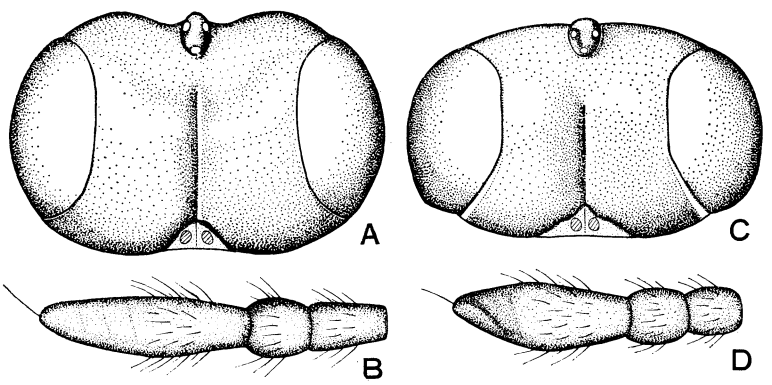

Fig. A & B *Inopus hitchcocki* (James), ♀ : A, head, direct frontal view; B, antenna, inner view. Fig. C & D. *Inopus brevicornis* n. sp., ♀ : C, head, direct frontal view; D, antenna, inner view.

median ocellus, and width of face just below antenna about 3× distance between holes on face (3.3×).

Thorax: Brownish but meso- and sternopleura and postscutellum with a dark blackish tinge and mesonotum with 3 broad blackish stripes of which middle one does not reach to posterior margin of mesonotum and the lateral are well separated from humeral calli and extend to postero-inner parts of posterior calli; thorax clothed with blackish pile but ptero-, hypo-, and upper part of metapleura, and postscutellum bare; haltere brownish with a dark brownish tinge.

Leg: Dark brownish with a brownish tinge; pile on coxa and femur blackish; relative length of segments (excluding coxa and trochanter) of fore leg 180-220-100-57-47-30-47, of mid leg 187-197-93-50-40-27-40, of hind leg 250-220-127-70-50-30-47 (in hind tarsus from a lateral view, segment 1, 1/6, segment 2, 1/4, segment 3, 1/3 as wide as long).

Wing: Membrane faintly tinged with dark brown.

Abdomen: Dark brownish with a brownish tinge; above and below clothed with blackish pile.

Length: Body including ovipositor 8 mm; wing 6; fore basitarsus 0.7.

♂. Unknown.

DISTRIBUTION: SE New Guinea.

Holotype 1♀ (BISHOP 7798), nr. Port Moresby, SE New Guinea, 17.III.1956, J. L. Gressitt.

Inopus geminus (Hardy)

Metoponia gemina Hardy, 1920, Proc. Linn. Soc. N. S. W. **45**: 535.

See the couplet 2 in the key. We have not seen any specimen of this species.

DISTRIBUTION: Australia (New South Wales, South Australia).

Type-locality: Leura, Blue Mountains, N. S. Wales. Type in Australian Museum.

Inopus grossus Nagatomi and Yukawa, new species Fig. E-H.

This species is characterized by having the antenna peculiar in shape and the mesono-

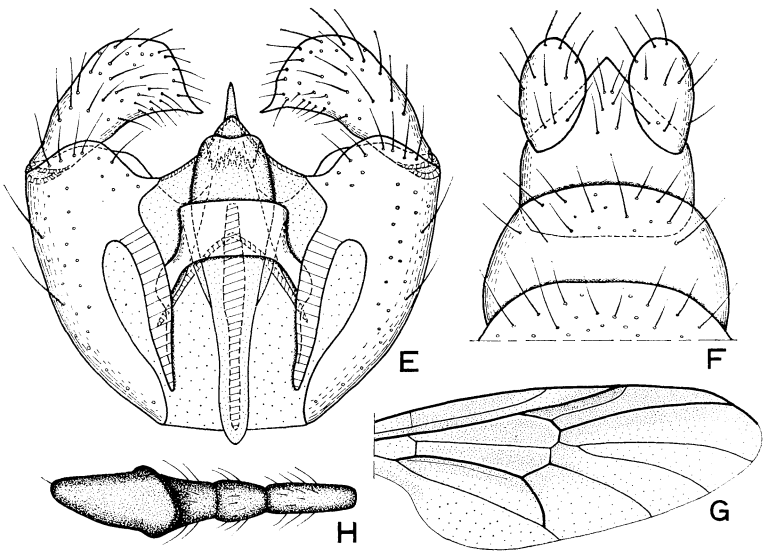

Fig. E-H. *Inopus grossus* n. sp., ♂ : E, genitalia (in which cerci, proctiger, and tergum 9 are excluded), dorsal view; F, cerci, proctiger, and tergum 9, dorsal view; G, wing; H, antenna, inner view.

tum, scutellum, posterior surface of fore femur, and side of abdominal dorsum with very long, erect pile.

♂. *Head*: Head and its appendages blackish but proboscis with a brownish tinge; head and antennal segment 1 shining; central part of face more or less pale gray pollinose; head and its appendages (except apical more than 1/2 of antennal flagellum) covered with black hairs which are longer on face and cheeks and become short and sparse and may be pale in color on eye; antennal flagellum covered with minute pale pile; eyes contiguous for a distance which is about 3× length of ocellar triangle (2.9-3.4 ×); width of 1 eye on a mid line from a direct frontal view somewhat less than distance from antenna to median ocellus (0.8 ×), distinctly more than width of face at lowest portion from a direct frontal view (1.3-1.8 ×), and 2× or less width of front just above antenna (1.6-2.0 ×), which is over 2× width of ocellar triangle (2.2-2.8 ×); distance from palpus to antenna about 1/2 that from antenna to median ocellus (0.5-0.6 ×); width of face just below antenna 1.5 × or more space between holes on lower face (1.5-1.8 ×), and space between palpus and eye somewhat wider than that between holes (1.2-1.3 ×); when measured along inner surface antenna somewhat shorter than distance from antenna to median ocellus (0.8-0.9 ×), its segment 2, 1/2 or somewhat more as long as segment 1 (0.5-0.7 ×), and flagellum about as long as segments 1+2 (0.9-1.2 ×); antennal segment 2 wider than segment 1 (1.3-1.4 ×) and narrower than flagellum (0.6-0.8 ×), which is abruptly widened at or near middle; apical portion of flagellum without a longitudinal hollow in inner surface.

Thorax: Blackish and shining; humeral callus and upper part of pteropleura may have a brownish tinge; mesonotum and scutellum with long, erect black hairs and short, recumbent pale yellowish pile; pro-, upper and posterior parts of meso-, sterno-, and lower part of metapleura with black hairs which become pale yellowish on sternopleura; haltere brownish.

Leg: Blackish, but apex of femur and base and tip of tibia yellowish brown to brownish; coxa and femur with pale yellowish pile which becomes very long and black on posterior

surface of fore femur; relative length of segments (excluding coxa and trochanter) of fore leg 190 (174-211) : 230 (213-247) : 100 : 55 (48-62) : 43 (38-48) : 27 (23-32) : 48 (43-53), of mid leg 192 (174-211) : 196 (182-211) : 84 (77-90) : 47 (43-53) : 35 (32-38) : 23 (19-26) : 44 (39-48), of hind leg 279 (261-305) : 263 (248-289) : 116 (109-126) : 65 (59-72) : 48 (43-53) : 30 (23-35) : 46 (41-53), these were calculated from 9 specimens (in hind tarsus from a lateral view, segment 1, 1/3-1/4, segment 2, 1/2-1/3, segment 3, 1/2 or more as wide as long).

Wing: Membrane tinged with dark brown; vein dark brown; vein R_4 absent.

Abdomen: Blackish and shining; dorsum with short black hairs which become very long on side and venter with pale yellowish hairs which are shorter than that on side of dorsum.

Genitalia: As in Fig. E & F.

Length: Body 4.5-5.0 mm; wing 4.0; fore basitarsus 0.45-0.55.

♀. Unknown

DISTRIBUTION: Australia (Victoria).

Holotype 1♂, Belgrave, Victoria, 11.XI.1964, J. Lanko [CSIRO].

Paratypes: 8♂♂, same data as holotype [2♂♂, CSIRO; 6♂♂, CNC]

Inopus hitchcocki (James), new combination Fig. A & B.

Chiromyza hitchcocki James, 1961, Ann. Mag. Nat. Hist. ser. 13, **4**: 365.

This species is distinguished from *brevicornis* as shown in the key.

♀. *Head*: Head and its appendages dark brownish to blackish with a reddish-brown tinge; central part of face, triangular part just above antennae, eye margin on cheeks and occiput (except upper part), and in certain lights occiput, antenna, palpus, and proboscis pale gray pollinose; head (except appendages) shining; head and its appendages clothed with black hairs (which are short and sparse on eye), but lower part of front, side of face, and apical part of antennal flagellum (which may have a few pile) bare; structural characters fit descriptions of *rubriceps* with following differences: width of front at median ocellus about 4× width of ocellar triangle (4.3 ×); width of face just below antenna about 3.5 distance between holes on face; distance between palpus and eye nearly 2× that between holes (1.9 ×); when measured along inner surface antenna about equal in length to distance from antenna to median ocellus (1.1 ×) and its segment 2 distinctly over 1/2 as long as segment 1 (0.8 ×); apical portion of antennal flagellum without a longitudinal hollow in inner surface; in specimen on hand width of one eye on a mid line from a direct frontal view 0.3 × width of front just above antenna which is 1.2 × that at median ocellus, antennal segment 2, 1.2 × as wide as segment 1 and 1.0 × as wide as flagellum.

Thorax: Dark brownish to blackish with a brownish tinge (pleura brownish rather than dark brownish); humeral- and posterior callus yellowish brown; mesonotum with 3 narrow, somewhat obscure black stripes; mesonotum, scutellum, pro-, upper and posterior margins of meso-, sterno-, and lower part of metapleura with black hairs; ptero- and hypopleura bare; haltere dark brownish but base brownish.

Leg: Dark brownish to blackish with a brownish to reddish-brown tinge; pile on coxa and femur black; coxa more or less gray pollinose; relative length of segments (excluding coxa and trochanter) of fore leg 169-209-100-54-43-29-37, of mid leg 169-183-86-46-34-26-34, of hind leg 231-217-129-71-46-29-34 (in hind tarsus from a lateral view, segment 1, 1/9, segment 2, 1/5, segment 3, 1/3 as wide as long).

Wing: Membrane tinged with dark brown.

Abdomen: Dark brownish to blackish with a brownish to reddish-brown tinge; more or less

gray pollinose; above and below black pilose.

Length: Body (including ovipositor) 9 mm; wing 6.5; fore basitarsus 0.85.

♂. See the original description.

DISTRIBUTION: Australia (Queensland).

Type-locality: Gordonvale, Queensland. Type in Queensland Museum, Brisbane.

SPECIMEN EXAMINED: QUEENSLAND: 1♀ (paratype), Gordonvale, 20.III.1959, B. E. Hitchcock [USNM].

Inopus rubriceps (Macquart) Fig. I-M.

Metoponia rubriceps Macquart, 1847, Dipt. Exot., suppl. **2**: 28.
Inopus despectus Walker, 1850, Ins. Saund. Dipt. 1850: 2.
Chiromyza flavicaput Walker, 1852, Ins. Saund. Dipt., 1852: 163.
Cryptoberis herbescens White, 1916, Proc. Linn. Soc. N. S. W. **41**: 97.

There may be one species which is very similar to *rubriceps* (see couplet 4 in the key).

♂. *Head*: Dark brownish, with a brown to reddish-brown tinge; more or less pale gray pollinose; head, palpus, proboscis, antennal segments 1-2, and basal portion of antennal flagellum covered with pale yellowish pile which is shorter on eye; eyes contiguous for a distance which is about 2× length of ocellar triangle (2.0-2.3×); width of one eye on a mid line from a direct frontal view equal to distance from antenna to median ocellus, distinctly more than width of

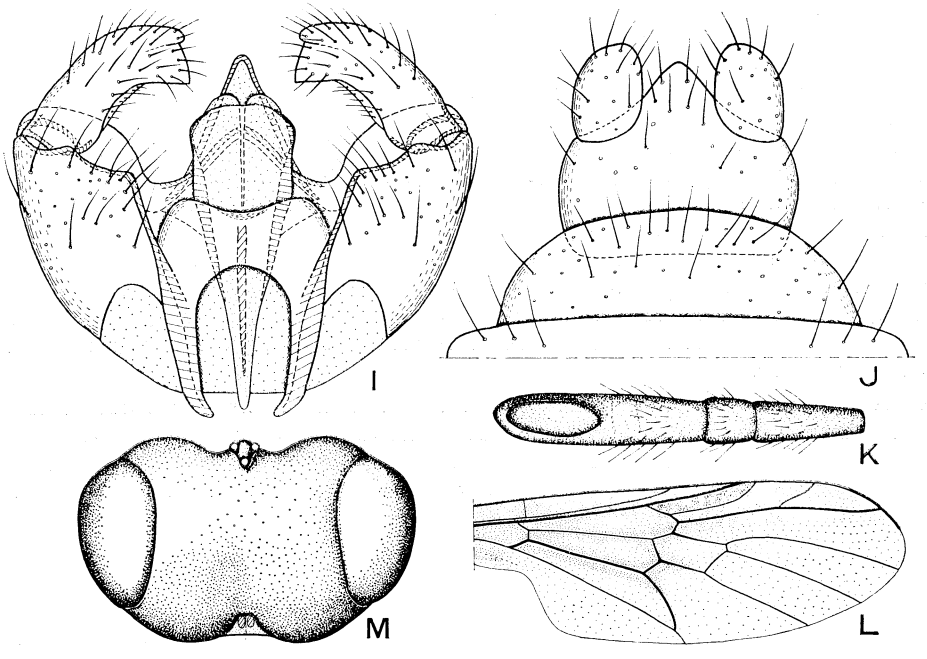

Fig. I-M. *Inopus rubriceps* (Macquart), I-L, ♂; M, ♀: I, genitalia (in which cerci, proctiger, and tergum 9 are excluded), dorsal view; J, cerci, proctiger, and tergum 9, dorsal view; K, antenna, inner view; L, wing; M. head, direct frontal view.

face at lowest portion from a direct frontal view (1.3-1.4 ×), and over 2× width of front just above antenna (2.4-2.6 ×), which is less than 2× width of ocellar triangle (1.4-1.7 ×); distance from palpus to antenna shorter than that from antenna to median ocellus (0.7 ×); width of face just below antenna equal to or somewhat more than space between holes on lower face (1.0-1.3 ×), and space between palpus and eye about equal to that between holes (0.9-1.1 ×); when measured along inner surface antenna somewhat longer than distance from antenna to median ocellus (1.2-1.3 ×), its segment 2, about 1/2, as long as 1 (0.4-0.5×), and flagellum distinctly longer than segments 1+2 (1.3-1.5 ×); antennal segment 2 as wide as or wider than 1 (1.0-1.3 ×) and as wide as or narrower than flagellum (0.8-1.0×); apical portion of antennal flagellum with a longitudinal hollow in inner surface.

Thorax: Dark brownish with a brown to reddish-brown tinge especially on pleura; pleura shining; mesonotum, scutellum, pro-, upper and posterior parts of meso-, sterno-, and lower part of metapleura with pale yellowish pile; haltere yellowish brown.

Leg: Yellowish brown to brownish, but coxa, apical 3 (or 4) segments of tarsus, and hind tibia except base with a dark brownish tinge; coxa and femur with pale yellowish pile; relative length of segments (excluding coxa and trochanter) of fore leg 165 (154-176): 208 (200-216): 100: 55 (50-60): 41 (38-44): 27 (24-29): 38 (34-40), of mid leg 171 (162-180): 198 (186-212): 92 (86-100); 49 (45-56): 37 (34-40): 26 (24-28): 36 (34-40), of hind leg 245 (231-256): 239 (231-248): 160 (152-172): 77 (71-84): 55 (52-60): 36 (31-40): 41 (38-44), these were calculated from 6 specimens (in hind tarsus from a lateral view, segment 1, 1/6-1/8, segment 2, 1/3-1/4, segment 3, 1/2-1/3 as wide as long).

Wing: Faintly tinged with brownish to dark brownish.

Abdomen: Dark brownish with a brown to reddish brown tinge; above and below clothed with pale yellowish pile.

Genitalia: As in fig. I & J.

Length: Body 5-6 mm; wing 4.5-5.0; fore basitarsus 0.6-0.7.

♀. Similar to ♂ except as follows: *Head*: Yellowish brown to reddish brown, and shining, but ocellar triangle, palpus, and antenna dark brownish and eye blackish; pile on occiput, cheeks, palpus and antenna appears to be black; width of one eye on a mid line from a direct frontal view about 1/2 distance from antenna to median ocellus (0.5-0.6 ×), less than 1/2 width of face at lowest portion from a direct frontal view (0.3-0.4 ×) and about 1/2 width of front just above antenna (0.4-0.5 ×) which is about equal to that at median ocellus (1.0-1.1 ×) which is about 5× width of ocellar triangle (4.6-5.3 ×); width of face just below antenna much over 2× space between holes on lower face (2.4-2.9 ×) and space between palpus and eye wider than that between holes (1.3-1.5 ×); in specimens on hand antenna 1.3-1.5× distance from antenna to median ocellus, and antennal segment 2, 0.8-1.3 × as wide as 1 and 0.8 × as wide as flagellum.

Thorax: Reddish brown with a dark brownish tinge especially on mesonotum and scutellum; pile on thorax black in color.

Leg: Whole surface of leg (except apical portion of femur and base of tibia) may have a dark brownish tinge; pile on coxa and femur appears to be black; relative length of segments of fore leg 171 (164-177): 215 (209-224): 100: 51 (45-54): 39 (36-44): 27 (24-31), of mid leg 177 (171-183): 199 (191-204): 89 (81-93): 47 (43-50): 36 (34-38): 25 (23-28): 34 (31-36), of hind leg 246 (231-255): 227 (219-232): 152 (150-153): 70 (65-75): 53 (50-56): 31 (27-34): 39 (38-41), these were calculated from 4 specimens (in hind tarsus from a lateral view, segment 1, 1/7-1/9, segment 2, 1/3-1/4, segment 3, 1/3-1/4 as wide as long).

Abdomen: Reddish brown with a dark brownish tinge; pile on abdomen black in color.

Length: Body (including ovipositor) 7-9.5 mm; wing 5.5-7.0; fore basitarsus 0.6-0.8.

DISTRIBUTION: Australia (Queensland, New South Wales, Victoria, and South Australia),

Tasmania?, and North America (California).

Nagatomi has seen the type preserved in British Museum (Nat. Hist.), London.

SPECIMENS EXAMINED: CALIFORNIA: 6♂♂, 3♀♀, San Francisco, 7.X.1948, E. L. Kessel [CNC]; 1♀, San Francisco, 21.IX.1948, Kessel [CNC]. QUEENSLAND: 1♀, Brisbane, 14.I.1963, T. Brooks [BISHOP]. N. S. WALES: 8♂♂, 2♀♀, Sydney, 11-13.III.1909, Helme Collection [BISHOP].

Inopus sp.

This species is very similar to *rubriceps* but differs in having the following characters.

♀. Thorax and abdomen blackish (apparently darker than in *rubriceps*), and antennal flagellum about as long as antennal segments 1+2 (1.1 ×; in *rubriceps* 1.3-1.5 ×) and antennal segment 2 somewhat less than 1/2 as long as segment 1 (0.4 ×; in *rubriceps* 0.5-0.6 ×). [Relative length of segments of fore leg 191 (187-194): 229 (229): 100: 56 (50-61): 42 (41-42): 28 (26-29): 40 (39-41), of mid leg 196 (194-197): 219 (216-221): 91 (85-97): 50 (47-52): 36 (32-39): 25 (24-26): 37 (35-39), of hind leg 267 (265-268): 251 (250-252): 151 (141-161): 74 (71-77): 53 (50-55): 34 (32-35): 43 (42-44), these were calculated from 2 specimens (in hind tarsus from a lateral view, segment 1, 1/7-1/8, segment 2, 1/3-1/4, segment 3, 1/3 as wide as long)].

Length: Body (including ovipositor) 10-11 mm; wing 7-8; fore basitarsus 0.75-0.8.

♂. Unknown.

DISTRIBUTION: Australia (New South Wales).

SPECIMENS EXAMINED: AUSTRALIA: 2♀♀, Sydney, 2.V.1965, E. Cheah [CNC].

REFERENCES

Bezzi, M. 1922. On the South American species of the Dipterous genus *Chiromyza* Wied. *Ann. Ent Soc. Amer.* **15**: 117-24.

Hardy, G. H. 1920. A revision of the Chiromyzini (Stratiomyiidae, Diptera). *Proc. Linn. Soc. N. S. W.* **45**: 532-42.

1924. A revision of the Australian Chiromyzini (Diptera). *Proc. Linn. Soc. N. S. W.* **49**: 360-70.

James, M. T. 1961. A new *Chiromyza* from Australia (Diptera, Stratiomyidae). *Ann. Mag. Nat. Hist.* ser. 13, **4**: 365-68.