

University of Hawaii
College of Tropical Agriculture
Department of Entomology
Honolulu, Hawaii

D. ELMO HARDY

**Studies of fruitflies associated with mistletoe
in Australia and Pakistan with notes and descriptions
on genera related to *Perilampus* BEZZI¹**

Diptera: Tephritidae

With 8 textfigures

An extremely interesting complex of flies is associated with mistletoe and breed in the fruits of *Loranthus* and other genera of Loranthaceae. This is an African element of Ceratitini previously known only from 14 species from Africa and Madagascar which belong in the genus *Perilampus* BEZZI and one species from Southern Australia which MALLOCH designated as the type of his genus *Ceratitella*. Three additional species are now on hand from North Pakistan and Australia which are being placed in *Ceratitella*. Two of these have been reared from mistletoe, no host information is available on the other but it probably is a mistletoe breeder. Two species, representing an apparently undescribed genus, from Queensland are also present which contain no host data but from their general facies it is suspected that they too may breed in mistletoe. It is probable that a number of other species may be associated with this host throughout Australia, Asia, and possibly other areas of the world. Except for the work of Dr. H.K. MUNRO in Africa this specialized and distinctive environment has received little attention.

In the course of this study it has been necessary to make comparisons of all of the available species which might show relationships and to review the concepts of *Perilampus*, *Ceratitella*, and related genera. I have had close cooperation with Dr. H. K. MUNRO and we are in agreement that the generic concepts are not clearly defined in many of the Ceratitini and it is obvious that the entire tribe needs to be thoroughly restudied; this should ideally be based upon biosystematics and cytogenetics. Such a study should include not only the African genera related to *Ceratitis* MACLEAY but the genera *Acroceratitis* HENDEL, *Paratrithrum*

¹ Published with the approval of the Director of the Hawaii Agricultural Experiment Station as Technical Paper No. 768.

SHIRAKI, *Proanoplomus* SHIRAKI and *Paranoplomus* SHIRAKI from Japan and Formosa, the genus *Neoceratitis* HENDEL from Central Asia and Northeast Tibet, *Ceratitella* MALLOCH from Australia and Pakistan and *Paraceratitella* n. gen. from Australia. Considerable information on host plants and breeding habits is available for many of the African species thanks to the thorough studies of Dr. MUNRO but we have no knowledge concerning the hosts of the other mentioned genera except *Ceratitella*. Dr. MUNRO is planning to do a monograph of the African Ceratitinae and will no doubt clear up the confusion which now exists regarding generic limitations.

I am presenting descriptive details concerning the two genera whose known species are restricted to breeding in mistletoe; I am describing one new genus, and two new species, obviously closely related to the mistletoe breeders; and am discussing some of the relationships between Australian-Asian and African genera and species.

This study has been made possible by the kind and generous cooperation of many colleagues. I am most appreciative of the help given me by Dr. H. K. MUNRO, Pretoria, South Africa and for the loan of specimens from Dr. GUY BUSH, University of Texas; Dr. T. WOODWARD, University of Queensland, Brisbane, Australia; Dr. D. H. COLLESS, C. S. I. R. O., Canberra, Australia; DAVID MCALPINE, Australian Museum, Sydney; Dr. R. H. FOOTE, U. S. National Museum; Roger CROSSKEY, Commonwealth Institute, British Museum (Natural History); and Dr. M. A. GHANI, Commonwealth Institute of Biological Control, Rawalpindi, Pakistan. The drawings were done by Misses Noreen NAUGHTON and Geraldine ODA and Mr. Vernon TAM. These greatly increase the value of this paper.

Ceratitella MALLOCH

Ceratitella MALLOCH, 1939, Proc. Linn. Soc. N.S. Wales, 64 (3-4): 452.

Typespecies: *Ceratitis loranthi* FROGGATT. Four species are presently included in this genus.

MALLOCH gave no characters in his original description which would differentiate this from *Perilampus* BEZZI, *Trirhithrum* BEZZI, or other related genera other than *Ceratitis* MACLEAY (based upon *capitata* WIEDEMANN) except possibly the slightly pointed third antennal segment (fig. 3a). In this case, however, I feel that this is a specific character. MUNRO (1953: 545) treated *Ceratitella* as a synonym of *Perilampus*. I have had an opportunity to compare only with *P. tetradactyla* MUNRO but would consider these to be distinct genera. It should be noted, however, that I have not been able to find clear cut characters which will differentiate *Perilampus* from closely related African genera. BEZZI (1918: 237) said that *Ceratitis loranthi* FROGGATT is evidently congeneric with *Trirhithrum lycii* COQUILLET (= *Trirhithromyia* HENDEL). I consider *Ceratitella* more closely related to *Trirhithromyia* than to *Perilampus*. It differs from the latter by having the scutellum swollen, rounded and sloping on the sides (fig. 3d), not flattened as seen in lateral view (fig. 7d); by the eyes being nearly round, just slightly higher than wide (fig. 3a), rather than distinctly higher than wide (fig. 7c); and by having the genae comparatively broad, equal in width to approximately one-third the eye height, rather than one-sixth to one-eighth the height of the eye. The third antennal segment seems shorter and broader in the species of

Ceratitella, being $\frac{1}{2}$ to nearly two times longer than wide rather than nearly three times longer than wide in the *Perilampus* I have seen (Dr. MUNRO has pointed out in correspondence that the length of the third antennal segment may be deceptive). The front may be slightly broader in *Ceratitella* but this is probably not of importance. The streaking at the wing base (fig. 3g) may possibly be of some importance as a diagnostic character. These streaks are lacking in typical *Perilampus* but the present concept of this genus probably includes some species which have dark streaks near the wing base. Dr. MUNRO says this character is apparently not of generic importance. It should be noted that HENDEL (1914: 75) also SHIRAKI (1933: 122) and BEZZI (1924: 75) considered the dark streaking near the wing base useful for separating genera. HERING (1947: 15) includes this character in his diagnosis of the Tribe Ceratitini.

As here defined the genus *Ceratitella* fits the main diagnostic features of *Trirhithromyia* (HENDEL 1931: 2). Differing by having the face slightly concave, as seen in direct lateral view (fig. 3a); by having no distinct antennal grooves and only a slight median carina developed just below the antennae; by having the face broad and flat and about as wide as high. Rather than having the face rather narrow, higher than wide, vertical as seen in lateral view and with the median portion raised almost the full length and with distinct antennal furrows on the sides (figs. 1c and 8b). The markings on the scutellum and mesonotum differ strikingly from those of *Trirhithromyia* but I would not consider these of generic importance. In the known *Ceratitella* the scutellum has a yellow basal spot on each side (1 species) or is entirely black (3 species). The mesonotal pattern has an isolated, oblong, median, polished black mark (fig. 3h) or a shining black transverse area just behind the suture (fig. 1e).

As pointed out under the description of *Paraceratitella* gen. n. this is differentiated from *Ceratitella* by wing markings and venation and by color and marking of the thorax. The presence of an oblong spot, formed by gray microtrichia, situated above and distad to the *r-m* crossvein, and the comparatively wide cell R_3 (fig. 1d) also seem to be distinctive for *Ceratitella*.

Two characters which may be of importance but cannot be properly evaluated until more species are known are the slightly pointed third antennal segment in *loranthi* (fig. 3a) and the rather densely setose scutellum in *asiatica* sp. n., *bifasciata* sp. n. and *unifasciata* sp. n. (fig. 1b), at present these are treated only as specific differences.

In SHIRAKI's key to the species of Tephritidae ("Trypetidae") from Japan, including Formosa (1933: 122) the species which breed in mistletoe from Australia and Pakistan would run to *Paratrirhithrum* SHIRAKI and would superficially appear to fit very close to this; the wing markings are almost identical. *Paratrirhithrum* has only one pair of inferior fronto-orbital bristles, however, and the head is wider than high. The species differ readily from *P. nitobei* SHIRAKI by lacking the four grayish yellow longitudinal vittae on the mesonotum, as well as by having two pairs of inferior fronto-orbital bristles, the head higher than wide (fig. 2a), and the third antennal segment differently shaped.

Key to known species of *Ceratitella*

- 1 Apical half of wing with only one transverse brown band reaching the margin (figs. 1d and 3g) 2
 - Two transverse brown bands present in the apical half of the wing (fig. 2f). Front with a brown to black streak down each side in the area occupied by the superior fronto-orbital bristles (fig. 2b). Queensland *bifasciata* sp. n.
- 2 Wings with no remnant of a secondary band present in apical half (figs. 1a and 4a). Scutellum all black. Mesonotum with a black band extending across middle behind suture (fig. 1e). Third antennal segment rounded at apex (fig. 1d) 3
 - Wings with a remnant of a secondary transverse band extending from marginal band almost across the median portion of cell R_5 (fig. 3g). Scutellum with a large basal yellow spot on each side. Mesonotal pollinose markings as in figure 3h, lacking a transverse black band near the suture. Third antennal segment slightly pointed at upper apex (fig. 3a). Southern third of Australia *loranthi* (FROGGATT)
- 3 Mesonotum predominantly gray pollinose with a narrow shining black band just behind the suture (fig. 1e). Humeri yellow. The brown band which extends across the bases of cells $1st M_2$ and M_4 does not reach the wing margin (fig. 1d). Pakistan *asiatica* sp. n.
 - Entire median portion of mesonotum polished black. Humeri brown. The brown band across the bases of cells $1st M_2$ and M_4 reaches the wing margin (fig. 4a). Queensland *unifasciata* sp. n.

Ceratitella asiatica sp. n. (figs. 1a—e)

This species shows relationship to *C. unifasciata* n. sp. and is differentiated by having the mesonotum predominantly gray pollinose with just a narrow shining black band behind the suture (fig. 1e), rather than having the median portion of the mesonotum broadly polished black; by having the humeri yellow, rather than brown to black; and by the brown band across the bases of cells $1st M_2$ and M_4 not extending to the wing margin. Other distinctive features are brought out in the description below. From the literature this would appear to fit very close to *Trirhithromyia efflatouni* (HENDEL) from Egypt and based upon the original description would seem to differ only by the markings on the scutellum and on the mesonotum as shown in figures 1e and 8d. After having an opportunity to examine specimens of *efflatouni* it was evident that the facial differences seem significant as discussed above and these species are apparently not congeneric.

Male.

Head: about one-third higher than long, as seen in direct lateral view. The eyes are almost round, just slightly higher than long. The face is slightly concave from lateral view and is broad and flat from frontal view, the width, measured just above the oral margin from the groove extending dorsad on each side of the face continuous with the oral margin, is 0.72 mm.; the height measured up the mid line from oral margin to edge of frontal suture is 0.7 mm. (fig. 1c). The occiput is just slightly puffed on the lower portion. The genae are rather broad, almost one-third the eye height. Sparse, short black setae are present on the lower margin of each gena (fig. 1a). The compound eyes are dark reddish brown. The ocellar triangle is dark brown to black in ground color covered with gray pollen, and the upper median portion of the occiput is brown, tinged with yellow. The lower half of the front is white, the upper half is yellow, tinged with brown. A rather distinct yellow-brown band extends across the median portion of the front at a level with the lower superior fronto-orbital bristles. The vertex is yellow, faintly tinged with brown in the ground color. The lower three-fifths of the face is white,

the upper two-fifths is yellow-brown and this coloration extends to the eye margin opposite the bases of the antennae. Genae white in ground color on the anterior half, pale yellow on the posterior portion, with a faint indication of a yellow-brown spot present below the eye margin. Two pairs of inferior fronto-orbital and two pairs of superior fronto-orbital bristles are present as in figure 1a. The antennae are rufous, the third segment is less than two times longer than wide, broadly rounded. The second segment is covered with black setae on the dorsal surface. The arista is pubescent. The palpi are yellow, rather thickly covered with short black setae around the outside surfaces, the inner margins are bare or nearly so. The mentum is dark brown, the remainder of the mouthparts is rufous, tinged with brown.

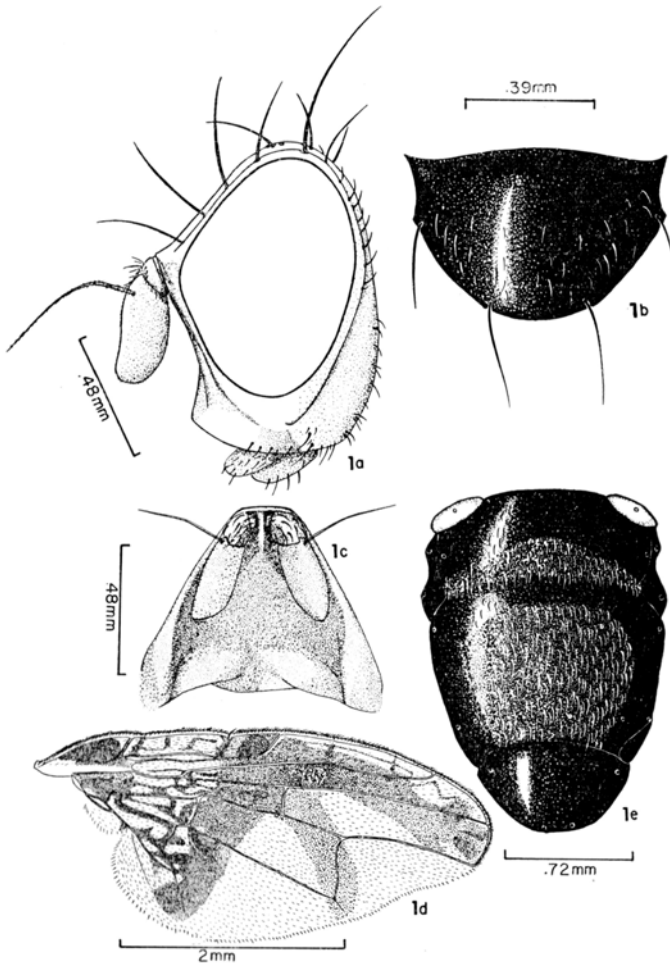


Fig. 1. *Ceratitella asiatica* sp. n.: a. head; b. scutellum; c. face; d. wing; e. thorax, dorsal view

9*

Thorax: Polished black on the dorsum except for a large white pollinose spot covering the postero-median portion of the mesonotum and a transverse white pollinose band extending across the thorax at or slightly in front of the suture (fig. 1e). The humeri are white and a white band is continuous on each side from the humerus over the mesopleuron, occupying most of that sclerite. The remainder of the pleura are brown, tinged faintly with yellow, with the metapleura being principally yellow in ground color, tinged lightly with brown. The metanotum is polished black on the swollen portion and on the hind median margin and is otherwise densely white pollinose. The bristles of the thorax are black, the arrangement is typical of most species of Ceratitini. The white marks, including the white pollinose areas, are covered with white pile; the shining black areas are covered with dark brown to black pile; and the metapleura and upper portions of the hypopleura are covered with yellow-white pile. The scutellum is rather thickly covered with pale brown setae over the dorsal portion (fig. 1b) as in *bifasciata* sp. n. and *unifasciata* sp. n. The halteres are yellow, tinged with brown on their knobs.

Legs: Predominantly yellow, tinged with brown on the coxae and femora. I see nothing distinctive about the development of the legs.

Wings: The markings and venation are as in figure 1d. With the typical dark brown streaks over the basal cells and with a single transverse band extending to the wing margin across the *r-m* and *m* crossveins. Vein R_{2+3} is rather distinctly undulated. The *m-cu* crossvein is slightly over one-half as long as the basal section of vein M_{3+4} and the apex of the cubital cell is about opposite a point in line with the base of M_{3+4} .

Abdomen: The first two terga are predominantly yellow-brown in ground color, the second is densely white pollinose and covered with white setae. The remainder of the abdomen is dark brown to black in ground color, the third segment and the basal two-fifths of the fourth are brown pollinose covered with yellow-brown setae. The apical three-fifths of the fourth tergum is white pollinose covered with white setae. The fifth tergum is polished brown to black with a light dusting of gray pollen on the base, covered with yellow-brown setae and with a row of rather prominent brown bristles along the hind margin. The venter of the abdomen is yellow, tinged with brown. The genitalia have not been dissected for study, the visible portions are yellow.

Length: Body 3.7 mm.; Wings 4.0 mm.

Female:

Fitting the description of the male except for sexual characters. As seen from direct dorsal view the visible portion of the ovipositor base is equal in length to abdominal segments 4+5. The piercer has not been extruded for study.

Length: Body and wings 4.0 mm.

Holotype male reared from grubs feeding in *Loranthus longiflorus* fruits, Kahuta, Pakistan, S. V. 62, Commonwealth Institute of Biological Control. GW. 5/62-XIII 181.

Allotype female same data as type except "SW. 5/62-X-181." Both were received from Mr. Roger CROSSKEY, Commonwealth Institute, London. Three paratypes, two females and one male, same data as type.

Type and allotype returned to the British Museum (Natural History). Two paratypes returned to the Commonwealth Institute of Biological Control Rawalpindi, Pakistan. One paratype in the collection of the University of Hawaii.

Ceratitella bifasciata sp. n. (figs. 2a-f)

This species is differentiated from other known *Ceratitella* by having two transverse bands present in the apical half of the wing (fig. 2f) and by having a brown to black streak on each side of the front in the area occupied by the superior fronto-orbital bristles (fig. 2b). *C. bifasciata* shows close relationship to *asiatica* sp. n. and to *unifasciata* sp. n. because of the pattern of pollinose markings on the mesonotum and the all black, rather thickly setose scutellum.

Female.

Head: The head and the compound eyes are distinctly higher than wide, the head measures .9 mm. in width by a 1.28 mm. high and the eyes measure .83 mm. wide by 1.04 mm. high (fig. 2a). As seen in lateral view the face is slightly concave in the median portion. The front measures .67 mm. wide by .6 mm. long, from the median ocellus to the oral margin. As seen from direct frontal view the face is broad, flattened, rather distinctly concave in the median portion and just slightly higher than wide. The face measures approximately .7 mm. wide by .75 mm. high. The face is white, discolored with brown on the upper one-third to one-fourth. The front is yellow, tinged with brown on the upper half and with a brown to black longitudinal streak on each side extending through the area occupied by the superior fronto-orbital bristles (fig. 2b). The genae are yellow-white except for a brown mark in the middle just below the eye, and are rather broad, almost one-third the eye height. The antennae and palpi are yellow, the third antennal segment is rounded at the apex, about two times longer than wide (fig. 2a). The arista are short pubescent. Each palpus has numerous short black setae around the outside margin.

Thorax: Polished black on the dorsum with a gray pollinose band extending transversely across the mesonotum at a level with the suture, and with the postero-median portion of the mesonotum gray pollinose (fig. 2c). The shining black areas are covered with black setae and the gray pollinose areas are covered with yellow-white setae. The scutellum has numerous short erect setae scattered over the disc. The humeri and mesopleura are yellow-white, the lower edge of each is brown. The remainder of the pleura are brown to black covered with gray pubescence except for the smooth posterior portion of the sternopleuron. The metapleura are tinged with rufous in the ground color near the upper edges. The metanotum is densely gray pollinose. The stems of the halteres are yellow, the knobs are brown.

Legs: The coxae and femora are brown to black except for the yellow apices of the latter. The trochanters are yellow-brown. The tibiae and tarsi are yellow. The femora are black setose, the posterior surface of the front femur is rather thickly covered with erect hairs and bristles.

Wings: Similar in most respects to other members of this genus, except for having two transverse brown bands in the apical half. The markings and venation are as in figure 2f. Vein R_{4+5} has about a dozen setae before the $r-m$ crossvein and five or six setae beyond.

Abdomen: Entirely polished black in ground color, including the basal segment of the ovipositor. The second and fourth terga each have a broad silver-gray pollinose band along the posterior margin. The median portion of the third tergum, the anteromedian portion of the fourth, and the narrow anterior border of the fifth are covered with gray-brown pollen, the remainder of the terga are polished

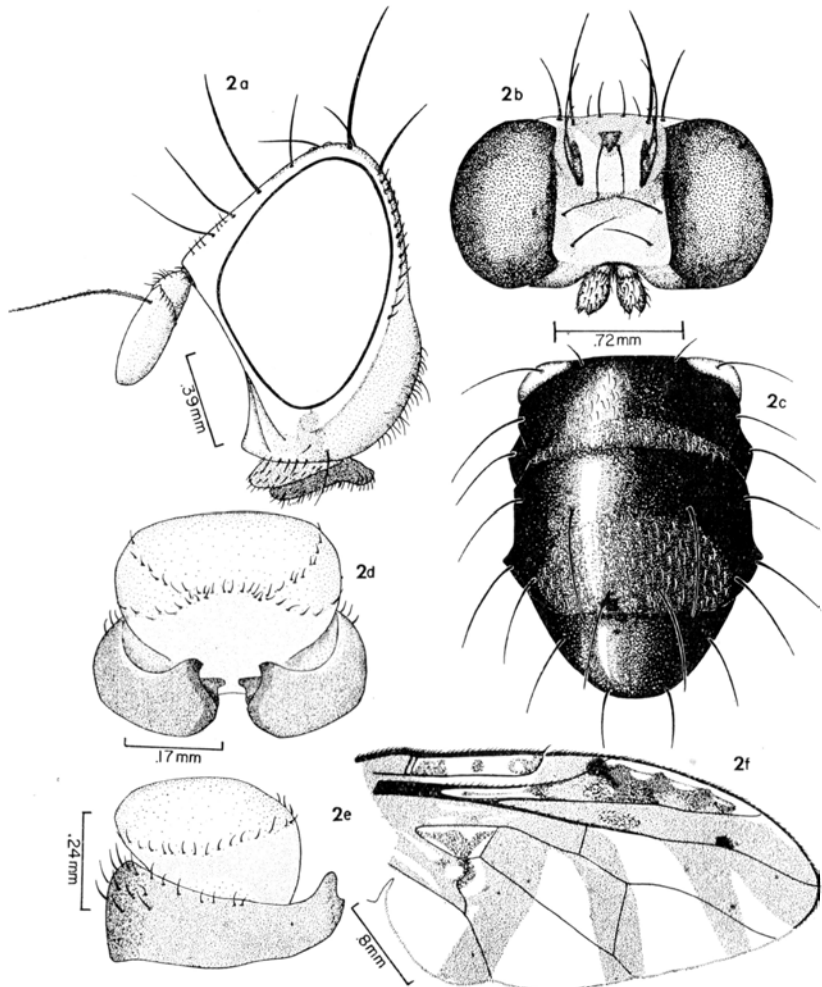


Fig. 2. *Ceratitella bifasciata* sp. n.: a. head, lateral; b. head, front view; c. thorax; d. male genitalia, ventral; e. male genitalia, lateral; f. wing

black. The sixth tergum is not visible from a direct dorsal view. The exposed portion of the base of the ovipositor is about equal in length to abdominal segments 4+5. The piercer is slender, sharp pointed at the apex, about equal in length to the basal segment of the ovipositor.

Length: Body, 4.0 mm.; wings, 5.0 mm. Specimens on hand vary in size from 2.7 mm.—4.0 mm. for the body and 3.3 mm.—4.5 mm. for the wing.

Male.

Fitting the description of the female except for genital characters. I see no distinctive features in the male genitalia (figs. 2d—e) but these have not been compared in detail with the other species of this genus.

Length: Body and wings, 4.0 mm.

Holotype female, Ravensbourne Nat. Park, South Queensland, Australia, December 17, 1952 ex *Amylotheca dictyophlebus* seed. Allotype male, Ravensbourne dist., South Queensland, Australia, bred from mistletoe, emerged December 30, 1952, killed January 15, 1953. The specimen also bears a label *S53*. 32 paratypes, 21 females, 11 males from the following localities, (all except three are from Queensland); same data as type and same data as allotype; Ravensbourne, December 30, 1952, ex seed of *Amylotheca dictyophlebus* (A.W.S. MAY); Yangan, S.E. Queensland, (C. HEMBROW); Stanthorpe, Queensland, October to November, 1924 and March—April, 1950, ex trap (F. A. PERKINS and A. MAY); 11 miles S. of Ravenshoe, Queensland, 2700' March 20, 1964 (I. F. B. COMMON and M. S. UPTON); Brisbane, Queensland, September 7, 1957 (R. METCALFE); Upper Allyn R., New South Wales, 1500', February 9, 1961 (I. F. B. COMMON and M. S. UPTON) and North Arm, New South Wales, February 12, 1965 from larvae in mistletoe berries (B. M. BRAITHWAITE).

Type, allotype and a series of paratypes in the collection at the University of Queensland, Brisbane; paratypes are in the C.S.I.R.O. collection, Canberra; the Australian Museum, Sydney; the British Museum (Nat. Hist.); U.S. National Museum; the collection of Dr. H. K. MUNRO, Pretoria, South Africa; and the University of Hawaii.

***Ceratitella loranthi* (FROGGATT) (figs. 3a—h)**

Ceratitella loranthi FROGGATT, 1911, Proc. Linn. Soc. N.S. Wales, **35**: 863.

Ceratitella loranthi (FROGGATT), MALLOCH, 1939, Proc. Linn. Soc. N.S. Wales, **64** (3—4): 452.

This is the type of *Ceratitella* MALLOCH.

This species is readily differentiated from other species which I am placing in *Ceratitella* by having a remnant of a secondary transverse band extending from the marginal brown band almost across the median portion of cell R_{4+5} (fig. 3g); by having the third antennal segment slightly pointed at the upper apex (fig. 3a); by the markings of the mesonotum and scutellum as shown in figure 3h; and by having the scutellum sparsely setose compared with other known species (fig. 3d). As seen from lateral view the head is shaped as in figure 3a. The head measures 1.15 mm. high by 0.9 mm. wide. The eye is 0.95 high by 0.75 mm. wide. The face is broad and flat, concave in the middle (fig. 3c). Measured just above the oral margin from the groove extending dorsad on each side continuous with the oral margins the face is approximately 0.7 mm. wide by 0.7 mm. high, measured from the oral margin to frontal suture. The ovipositor base is slightly longer than the combined lengths of abdominal segments 3—5 (fig. 3b). I see no distinctive features in the male genitalia; they are as in figures 3e and 3f. The description given by MALLOCH is adequate for this species.

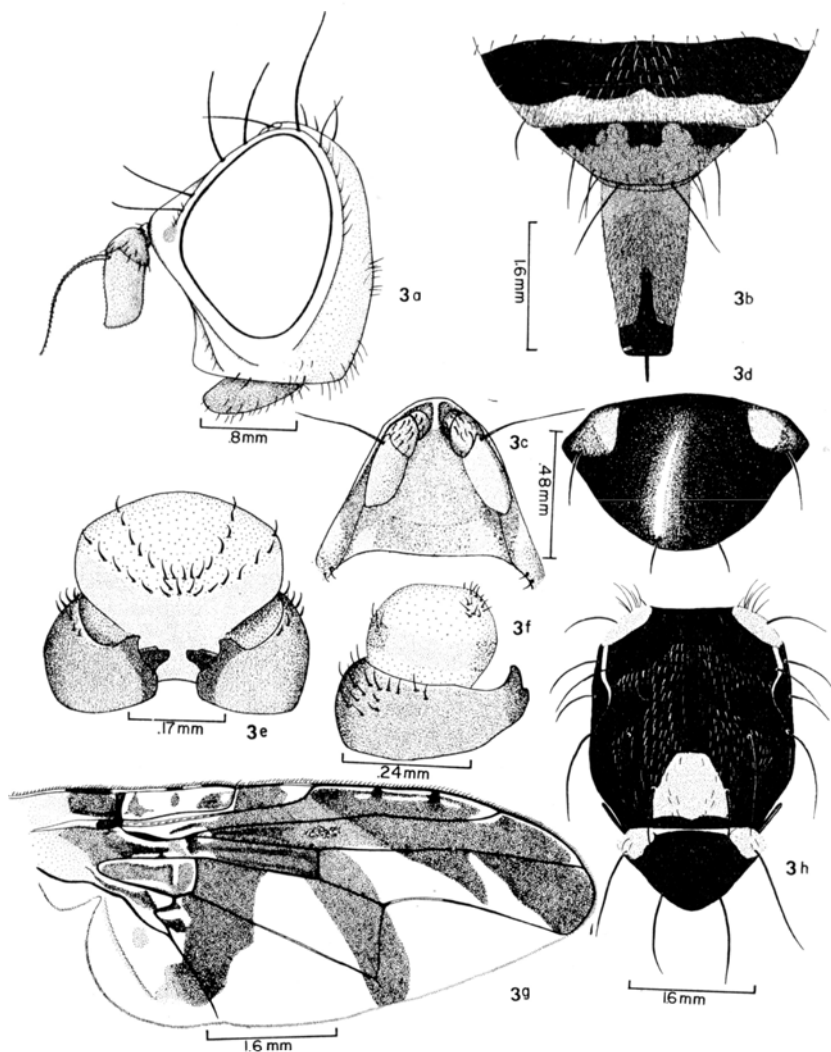


Fig. 3. *Ceratitella loranthi* (FROGGATT): a. head, lateral; b. apex of female abdomen; c. face; d. scutellum; e. male genitalia, ventral; f. male genitalia, lateral; g. wing; h. thorax

Type locality: Perth, W. Australia.

Four cotypes are in the C.S.I.R.O. collection at Canberra.

This species is apparently restricted to the Southern 1/3 of Australia. I have examined about two dozen specimens all bred from *Loranthus* from the following localities in New South Wales, West Australia and South Australia: Sydney, April 21, 1939 (L. R. CLARK); 19 miles east Balladonia, West Australia, October 13, 1964 (G. L. BUSH); 9 miles east of Balladonia, West Australia, October 13, 1964 (G. L. BUSH); Madura, West Australia, October 14, 1964 (G. L. BUSH); 24 miles east Ivy Tanks, South Australia, October 15, 1964 (G. L. BUSH); 8½ miles Westport Augusta, South Australia, October 16, 1964 (G. L. BUSH); and 23 miles west Ironknob, South Australia, October 16, 1964 (G. L. BUSH).

It should be noted that in correspondence Dr. BUSH referred to his specimens as "reared from *Amyema miquelii* (LEHM) VAN TIEGH (Syn.) *Loranthus miquelii* (LEHM)."

***Ceratitella unifasciata* sp. n.** (figs. 4a—b)

This species appears to fit closest to *C. asiatica* sp. n. from Pakistan. It is differentiated by having the humeri brown, the entire median portion of the mesonotum polished black, similar to figure 2c of *bifasciata* and by having the brown band across the bases of cells 1st M_2 and M_4 extending to the wing margin (fig. 4a).

Male.

Head: Similar in most respects to that of *bifasciata*. The occiput is expanded on the lower portion, at its widest point it is about one-third the width of the eye. The genae are broad, almost one-third the eye height. The head measures about 0.9 mm. wide by 1.27 mm. high. The compound eye is 0.85 mm. wide by 1.04 mm. high. The face is distinctly concave as seen from lateral view (fig. 4b). The genae are yellow with just a faint indication of brown in the ground color below the eyes. The face measures 0.77 mm. wide at the oral margin by 0.73 mm. high. A slight carina is located at the upper part of the face between the antennae, the remainder is flat and is broadly concave through the median portion, no antennal furrows are present.

Thorax: The gray markings on the mesonotum are very similar to those of *bifasciata* (fig. 2c). The humeri are entirely dark brown to black except for a small yellow spot at each posterior margin continuous with the yellow-white mark extended over the upper two-thirds to three-fourths of the mesopleuron. The pleura are otherwise shining black, rather lightly gray pollinose. The metapleura and metanotum, except for the extreme lower margin of the latter, are densely gray pollinose (microscopically pubescent). The scutellum is polished black, with numerous erect black setae scattered over the disc. The knobs of the halteres are brown, tinged with red.

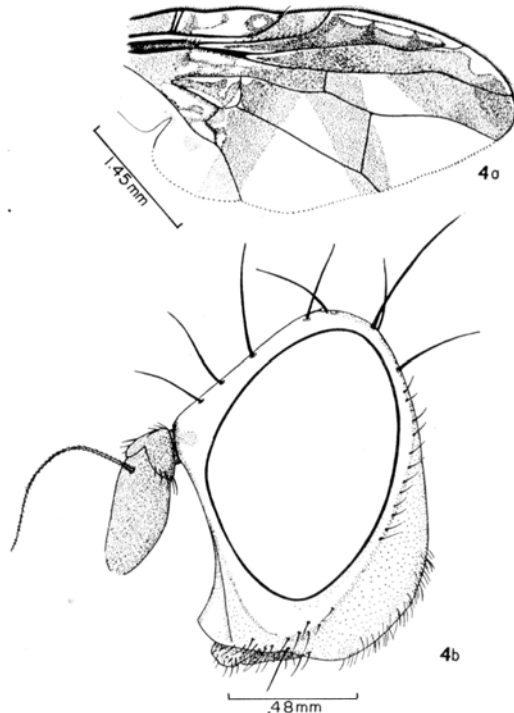


Fig. 4. *Ceratitella unifasciata* sp. n.:
a. wing; b. head, lateral

Legs: The coxae and femora are black except for the yellow apices of the latter. The trochanters are brown, tinged with yellow. The tibiae and tarsi are yellow. I see nothing distinctive about the legs. The posterior surface of the front femur is thickly black setose as in other species of this genus.

Wings: The markings and venation are as in figure 4a. Vein R_1 ends distinctly before the level with the $r-m$ crossvein and the crossvein is situated near the apical two-thirds of cell $Ist M_2$. The oval spot formed by the gray microtrichia in cell R_3 is very distinct and vein R_{2+3} is slightly wavy beyond this mark (fig. 4a). Cell R_3 measures about .25 mm. wide directly above the $r-m$ crossvein, the crossvein is approximately 0.3 mm. long. The last section of vein R_{4+5} is convex in the middle. The basal portion of vein R_{4+5} , before the $r-m$ crossvein, bears ten to fourteen setae; the portion beyond the crossvein has four to six setae. The $m-cu$ crossvein is short, scarcely one-third to one-fourth as long as base of vein M_{3+4} . The lobe of the cubital cell is about one-half as long as vein $Cu_1 + Ist A$.

Abdomen: Polished black in ground color lightly gray pollinose over the first two terga, gray-white pollinose along the posterior borders of terga two-four. The fifth tergum is entirely polished black except for a line of gray-brown pollen along the base of the segment. The anteromedian portions of terga three and four are gray-brown pollinose, this also extends as a narrow pollinose line along the bases of the segments. The genitalia have not been relaxed for study.

Length: Body and wings, 4.8 mm.

Female.

Fitting the description of the male except for sexual characters. On the allotype the brown marking on the gena, below the eye, is more prominent than on other specimens. The base of the ovipositor is polished black and as seen from dorsal view is about equal in length to abdominal segments three-five. The piercer is sharp pointed at the apex.

Length: Body, excluding ovipositor, and wings same as for male.

Holotype male, Eungella Nat. Park, via Mackay, Queensland, Australia, December 11, 1965 (G. MONTEITH). **Allotype** female, Millstream Ravenshoe, North Queensland, January 7, 1964 (G. MONTEITH). Two paratypes, one male and one female, Cairns, North Queensland, September 5, 1955 (A. W. S. MAY) and Kamerunga, September 3, 1952 (no collector given).

No host information is available for this species. It is probable that it breeds in the berries of mistletoe.

Type and allotype returned to the University of Queensland, Brisbane. One paratype is being presented to the Australian Museum and one is in the University of Hawaii collection.

***Paraceratitella* gen. nov.**

Two species of Ceratitini from Queensland appear to represent a new genus close to *Ceratitella* MALLOCH. No host information is available for the specimens which have been collected to date but it is possible that they may be associated with mistletoe.

This genus is differentiated from *Ceratitella* by having a subbasal hyaline band extending across the wing; lacking a spot of gray microtrichia in cell R_3 and longitudinal streaks of black through the basal cells; cell R_3 comparatively narrow, the width above the $r-m$ crossvein is equal to about one-fourth the length of $r-m$; by having the lobe of the cubital cell elongate, equal in length to vein $Cu_1 + 1st A$; and vein R_1 extending to a level about midway between the $r-m$ and m crossveins (figs. 5c and 6e); also by having the scutellum yellow-white with two brown marks on the postero-ventral border. In *Ceratitella* cell R_3 has an oblong spot of gray microtrichia (fig. 4a) and the basal cells are streaked with black; R_1 ends opposite the $r-m$ crossvein; cell R_3 opposite the $r-m$ is about three-fourths as long as the crossvein; the lobe of cell Cu is about $1/3$ as long as vein $Cu_1 + 1st A$ (figs. 5c and 6e); and the scutellum is predominantly or entirely black.

One of the species, *oblonga* sp. n., would rather closely fit the present concept of *Trirhithrum* BEZZI, it would run to this in BEZZI's key (1924: 76) except for lacking blackish bands radiating from the base of the wing and except for lacking long plumosity on the arista. I have had an opportunity to compare the specimens at hand with only four species of *Trirhithrum* (over two dozen African species have been placed in this genus) and they obviously are closely related. It is also apparent that the concept of *Trirhithrum* needs to be carefully reviewed. I question the value of the head and eye shape as a diagnostic character for this group, also the length of the pubescence on the arista seems of questionable value in this case. The type of the genus, *T. nigrum* (GRAHAM), has a comparatively broad head, the eye is only slightly higher than wide and the arista are rather short pubescent. BEZZI (1924: 76) characterized *Trirhithrum* as follows: "Head distinctly shorter in side view, the eyes being narrower; thorax and scutellum shining black, sometimes with whitish markings or even the scutellum white with black spots [these are sometimes on the hind margin of the scutellum and may not be visible from above, as in *albonigrum* (ENDERLEIN)]; arista with long plumosity; wings with blackish bands radiating from the base, which is typically destitute of streaks." It should be noted that the type species, *nigrum*, has the arista pubescent while species like *coffea* BEZZI and *albonigrum* (ENDERLEIN) have it moderately long plumose. In the two specimens of *nigrum* (1 ♂, 1 ♀) which I have studied the head is .85 mm. wide (measured from front at bases of antennae to the hind margin of the occiput) by 1.1 mm. and 1.15 mm. high. The eye is .75 mm. and .78 mm. wide by 1.02 mm. and 1.0 mm. high. Specimens of *T. albonigrum* averaged 1.0 mm. wide by 1.4 mm. high for the head, and 0.9 mm. wide by 1.25 mm. high for the eye. The genus seems to include a conglomeration of species which are placed together largely on the basis of thoracic colorations, pattern of pollinose markings on mesonotum and on the wing markings. I have not been able to find what I would consider to be reliable characters for differentiating *Trirhithrum*. Dr. MUNRO, in correspondence has concurred that he is strongly convinced that there is need for a great deal of generic reorientation in the Ceratitini.

The *Paraceratitella* which are presently known superficially resemble *T. albonigrum* because of the yellow-white scutellum with brown marks on the hind margin (two marks rather than three) and because of the presence of two brown transverse bands in the apical half of the wing (fig. 5c). The aristaе are, however, pubescent (just slightly shorter haired than in *T. nigrum*), each wing has a transverse sub-basal hyaline band and the lobe of the cubital cell is equal in length to vein $Cu_1 + 1st A$; it is distinctly shorter in all *Trirhithrum* I have studied. The position of the *r-m* crossvein and the length of vein R_1 seems to be variable in *Trirhithrum* so this may not be reliable as a character for distinguishing *Paraceratitella*. The coloration of the thorax of *Paraceratitella*, including the yellow-white scutellum but excepting the brown marks on the posterior margin, resembles some species of *Perilampus* BEZZI. The scutellum is, however, slightly concave and is rounded on the sides, rather than flat on the disc and raised on the sides into slight keels, and the wing markings and venation differ from any known *Perilampus*.

Paraceratitella also possess the following characteristics. The face is slightly concave as seen from direct lateral view (fig. 5a) and as seen from the front is rather narrow, distinctly higher than wide, with the median portion flattened and with only slight antennal furrows developed (fig. 5b). The head has two pairs of inferior and two pairs of superior fronto-orbitals. The head and eye shape is apparently not distinctive; in one species, *oblonga*, the head is distinctly higher than wide and the eye oblong in shape (head 0.94 mm. wide by 1.35 mm. high; eye 0.75 mm. wide by 1.15 mm. high) and in the other species, *eurycephala*, the eye is more nearly round, (head 0.85 mm. wide by 1.05 mm. high; eye 0.7 mm. wide by 0.92 mm. high). The third antennal segment is about two times longer than wide and apparently the shape is not diagnostic; in *eurycephala* the third segment is slightly pointed at the upper apex (fig. 5a) similar to that of *Ceratitella loranthi*, and in *oblonga* the third segment is rounded at the apex (fig. 6a). The mesonotum is polished dark brown to black with a silvery gray mark on each side along the suture and with a pair of submedian silvery gray vittae extending over the middle of the mesonotum just inside the dorsocentral rows (fig. 5d), or with a large patch of yellow setae extending over the dorsomedian portion of the mesonotum (fig. 6d). The anterior dorsocentral bristles are situated just behind the suture. A yellow-white band extends along the upper portion of each pleuron, this is continuous over the humerus. The upper part of each metapleuron and the dorsal and postero-medial portions of the scutellum are white with a faint tinge of yellow. The postero-ventral margin of the scutellum has two brown spots, which are not visible from dorsal view. The wing possesses a transverse sub-basal hyaline band, vein R_1 extends to a level midway between the *r-m* and *m* crossveins, and the lobe of the cubital cell is elongate and narrow, equal in length to vein $Cu_1 + 1st A$ (fig. 5a).

Type of the genus *Paraceratitella oblonga* sp. n.

***Paraceratitella eurycephala* sp. n.** (figs. 5a–d)

This species differs from *oblonga* by having the head less shortened, distinctly wider in relation to the height; by the eye being nearly round, about one-fifth higher than long; the ocellar bristles small; the third antennal segment slightly pointed at the upper apex

(fig. 5a); the legs all yellow; the mesonotum with prominent silvery gray markings (fig. 5d); by the striking differences in wing venation (figs. 5c and 6e); as well as by the smaller size.

Female.

Head: Shaped as noted above under the generic discussion and as shown in figure 5a. The ocellar bristles are poorly developed, hair-like. The face measured at the oral margin between the grooves which extend dorsad on each side continuous with the sides of the oral margin and up the middle portion from the edge of the oral margin to the upper portion of the frontal suture is 0.5 mm. wide by 0.65 mm. high (fig. 5b). The front is as wide as long (0.52 mm.). The length is measured from the median ocellus to the upper margin of the frontal suture. The head is yellow-white, except for the reddish brown eyes, a tinge of rufous in the ground color of the front, a tinge of rufous to brown in a spot on each gena near the lower margin of the eye, and except for a brown submedian spot on each side of the upper occiput. The antennae are yellow, shaped as in figure 5a. The bases of the arista are yellow, the apices are brown. The palpi and mouthparts are yellow. The setae on the palpi and labella are pale yellow except for a few brown to black setae on the posterior edge of each palpus. The occiput is rather swollen on the lower portion, at its widest point is about one-third the width of the eye. The width of the gena is about one sixth the eye height.

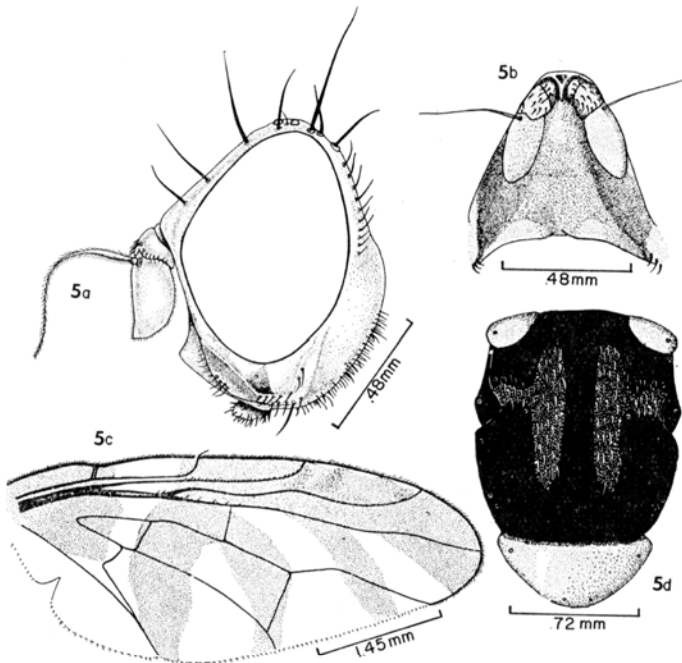


Fig. 5. *Paraceratitella eurycephala* sp. n.: a. head; b. face; c. wing; d. thorax

Thorax: Markings are as noted in the comparison with *oblonga*. The mesonotal pattern of gray pollinose marks is as in figure 5d. It should be noted, however, that this is somewhat diagrammatic since the pin does obscure the median portion of the mesonotum in both specimens at hand; the pattern shown in the drawing is probably correct. The brown markings on the posterior margin of the scutellum extend onto the ventor, occupying the posteroventral area on each side almost between the scutellar bristles. The area between the two median scutellar bristles is entirely yellow. The lower margin of each mesopleuron and the upper portion of the pteropleuron is gray pubescent. The stenopleura are predominantly polished black with scattered short yellow setae and fine gray pubescence over the anterior half of each sclerite.

Legs: Entirely yellow. The recumbent setae on the femora are yellow to brown. The posterior surface of the front femur is not so thickly bristled as in *oblonga*; the bristling is represented by the posterodorsal and posteroventral rows (these are yellow on the basal half of the segment), by a row of mixed brown and yellow posterior bristles, and by a few scattered, mostly yellow, bristles over the remaining surface. The anterodorsal bristles of the hind tibiae are yellow-brown and extend almost the full length of the segment.

Wings: The basal cells are brown, a hyaline band extends transversely across the wing at a level with the median portion of the second costal cell. Beyond this hyaline band the anterior margin is brown through cell R_3 and through the apical portion of cell R_5 . Three brown bands radiate transversely over the wing from the marginal band; one broad band across the basal third of the wing at a level with the apex of the subcostal vein, one extending obliquely across the $r-m$ and m crossveins ending in the margin at the apex of vein M_{3+4} and one extending obliquely across the middle of cell R_5 ending in the wing margin in the upper portion of cell 2nd M_2 (fig. 5c). Vein R_1 is setose from the node, just before a level with the humeral crossvein, to the apex. Vein R_{4+5} has about six scattered setae along the portion from the fork to the $r-m$ crossvein and about three setae extending for a short distance beyond the crossvein. Vein R_1 is comparatively long and reaches the costa at a level about midway between the $r-m$ and m crossveins so that the third costal section is rather elongate, almost equal in length to the fourth (that section between the apices of R_1 and R_{2+3}) (fig. 5c). Vein R_{2+3} is undulated. The $r-m$ crossvein is situated near the middle of cell 1st M_2 . The apical portion of vein M_{1+2} is rather strongly curved upward just beyond the m crossvein. Vein M_{3+4} evanesces just before reaching the margin and is about one-third as long as the m crossvein. The $m-cu$ crossvein is scarcely over half as long as the basal section of vein M_{3+4} . The cubital cell is shaped as in figure 5c. Cell R_3 measured just above $r-m$ crossvein, is .09 mm. wide; the crossvein is .39 mm. long.

Abdomen: The first two terga are yellow, tinged with brown and with a gray pollinose band along the hind margin of the second tergum. The third and fifth terga are polished black, the fourth is polished black on the anterior margin with a broad gray pollinose band over the posterior portion of the segment. The sixth

tergum is reddish brown and in situ is about one-half as long as the fifth. The ovipositor is rufous, tinged with brown. The basal portion, as seen directly from above, is about equal in length to terga three-five. The piercer is rather sharply pointed at the apex.

Length: Body, 4.0 mm., excluding ovipositor; wings, 4.5 mm.

Male.

Fitting the description of the female except for sexual characters. The sixth abdominal tergum is not visible from a dorsal view. The genitalia have not been relaxed for study.

Length: Body, 3.4 mm.; wings, 3.8 mm.

Holotype female and allotype male from Gatton, Queensland, Australia, October 13, 1936 (F. A. PERKINS).

Both of the above specimens were sent to me by Dr. H. K. MUNRO, Pretoria, South Africa. They had been borrowed from the University of Queensland Museum, Brisbane and both are being returned to that collection.

Paraceratitella oblonga sp. n. (figs. 6a—e)

This species is differentiated from *eurycephala* by having the head and eyes distinctly higher than wide (fig. 6a); the ocellar bristles well developed; the third antennal segment rounded at the apex; the femora largely brown to black; the mesonotum lacking gray pollinosity; the wing venation distinctly different (fig. 6e); as well as by other details, including the larger size.

Female.

As seen in lateral view the head is shaped as in figure 6a. The head measures .94 mm. wide by 1.35 mm. high and the eyes measure .75 mm. wide by 1.15 mm. high. The front, vertex and upper occiput are pale yellow, except for discoloration of brown on each side of the hind portion of the occiput just above the cervix. The face is white. The genae and lower portion of the occiput are white, tinged faintly with yellow and with a distinct brown spot on each gena just below the eye margin. The antennae are yellow with a faint tinge of brown to rufous. The third segment is rounded at the apex. The front is .52 mm. wide by .65 mm. long. The face is .57 mm. wide by .8 mm. long, is slightly concave in lateral view and flattened in the median portion as seen from direct frontal view, with only slight antennal grooves developed (fig. 6b). At its widest point the occiput is about equal to one-third the width of the eye. The width of the gena is approximately equal to one-fifth the eye height. The palpi and mouthparts are yellow. The former are thickly covered with black setae and the latter have yellow-brown setae around the margins.

Thorax: Polished black except for the white humeri and upper margins of the mesopleura, pteropleura, metapleura and scutellum. The brown markings on the posteroventral margin of the scutellum are more extensive than in *eurycephala*, leaving just a narrow area of white on the postero-median portion of the sclerite. The anterior dorsocentral bristles are situated just behind the suture, as in *eurycephala*. The mesonotum is rather densely covered with short

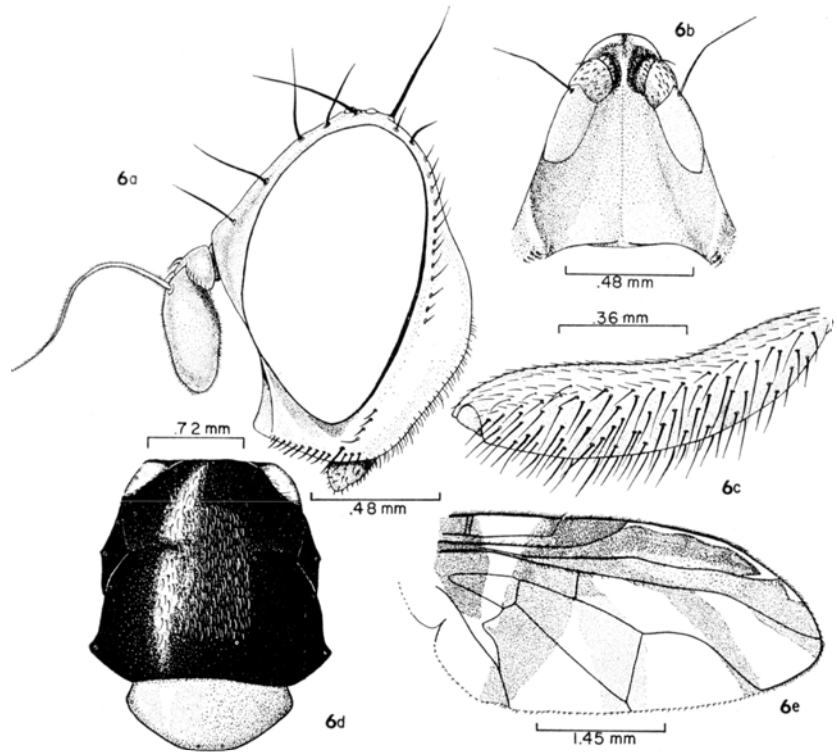


Fig. 6. *Paraceratitella oblonga* sp. n.: a. head; b. face; c. front femur, posterior; d. thorax; e. wing

black setae, except for the area down the median portion bordered by the dorso-central bristles, which is covered with yellow setae (fig. 6d). The halteres are yellow, tinged faintly with brown on the knobs.

Legs: The tibiae, tarsi, and trochanters are yellow, the mid and hind femora are brown to black except for yellow bases. The front femur is brown to black on the apical third and otherwise yellow. The short recumbent setae and the bristles of the femora are black. Each front femur is rather thickly covered with prominent erect setae (hairs and short bristles) over the posterior surface (fig. 6c). The recumbent setae on the tibiae are yellow. Each hind tibia has a prominent row of short antero-dorsal bristles extending almost the full length of the segment.

Wings: The markings are rather similar to those of *eurycephala* (fig. 6e). The venation differs, however. The third costal section is distinctly shorter than the second and is only about one-third as long as the fourth section. Vein R_{2+3} is nearly straight. The *r-m* crossvein is situated before the middle of cell *1st M*₂. Vein R_{4+5} has about twelve setae situated before the *r-m* crossvein and nine or ten setae extending on the vein beyond the crossvein. The width

of cell R_3 , measured above $r-m$ crossvein is .12 mm., the length of $r-m$ is .39 mm. For other details refer to figure 6e.

Abdomen: Similar in coloration to *eurycéphala*. The visible portion of the ovipositor is, however, dark brown to black. The basal segment is about the same shape as in *eurycéphala* but the piercer is not visible on the specimen at hand.

Length: Body, 4.5 mm.; wings, 5.0 mm.

Male. Unknown.

Holotype female, Iron Range, Queensland, Australia, April 14, 1964 (I. F. B. COMMON and I. M. S. UPTON).

The type has been returned to the Commonwealth Scientific and Industrial Research Organization, Division of Entomology, Canberra, Australia.

Perilampus BEZZI

(figs. 7a—d)

Perilampus BEZZI, 1920, Bull. Ent. Res., 10: 233. Revised by MUNRO, 1939, Journ. Ent. Soc. S. Africa, I: 34 and II: 143.

Type species: *Carpophthoromyia pulchella* AUSTEN. It should be noted that *Ceratitella* MALLOCH was considered to be a synonym of *Perilampus* by MUNRO (1953: 545).

The genus includes 14 known species and is apparently restricted to Africa and Madagascar.

According to BEZZI (1920: 233) the genus *Perilampus* is characterized by having lateral keels on the scutellum (fig. 7d). As pointed out by MUNRO (1939:e 33) this is not a reliable character, the type species has the disc of the scutellum flat, "forming at the sides an "edge" which is somewhat conspicuous as a ridge or keel in certain lights; in other species it is hardly apparent at all and the most that can be said is that the disc is flatter than is the case in *Trirhithrum*." MUNRO (loc. cit.) said that the two most important characters for distinguishing *Perilampus*, "particularly from *Trirhithrum*" are the shorter cubital cell ("anal cell") and the divergent veins R_{4+5} and M_{1+2} ("third and fourth veins"). I have studied only *P. tetradactyla* MUNRO and in this species cell M is long compared to the cubital cell, the apex of cell Cu is well before the level of the basal section of vein M_{3+4} ; the $m-cu$ crossvein is equal in length to the basal section of vein M_{3+4} (fig. 7a). In four species of *Trirhithrum* which I have studied cell M is short compared to Cu , the basal section of vein M_{1+2} is situated well before the apex of Cu and the $m-cu$ crossvein is scarcely over half as long as the basal section of vein M_{1+2} . In *T. coffeae* BEZZI the $r-m$ crossvein is almost as long as the basal section of M_{3+4} and the apex of the cubital cell is just slightly before a level with the basal section of M_{3+4} . I doubt that this character is of generic value since it obviously is variable. I also doubt the reliability of the divergent veins R_{4+5} and M_{1+2} . In *P. tetradactyla* these veins are slightly divergent beyond a level opposite the termination of the setae on the upper side of vein R_{4+5} ; the proportions are 45 to 52. In five species of *Trirhithrum* the proportions of the width of cell R_5 at the termination of the setae on vein R_{4+5} compared to the width of the cell at the apex are as follows: 37 to 41; 32 to 48; 48 to 54; 53 to 60; and 74 to 91. The degree of divergence differs slightly

from species to species but I see no differences which would appear to be of generic importance. Dr. MUNRO further characterized *Perilampus* as follows: "There is usually a double hypopleural spot but it may be absent; the scutellum yellow, rarely black margined. On the dorsum of the thorax the transverse bars of white pubescence are rather characteristic but may form a single patch as in some species of *Trirhithrum*, a pattern sometimes being apparent. In the last genus the arista tends to be plumose, while in *Perilampus* it is little more than long pubescence or bare. The wing-pattern is as a rule well-defined, but tends to be diffuse in the male of some species."

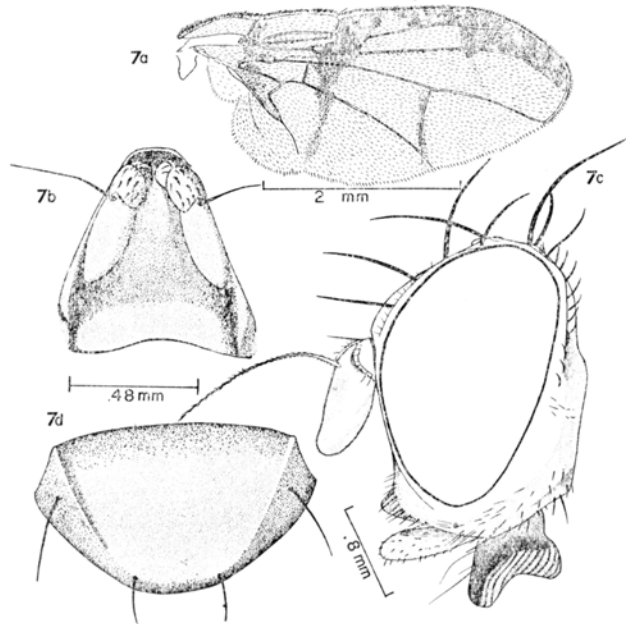


Fig. 7. *Perilampus tetradactyla* MUNRO: a. wing; b. face; c. head, lateral; d. scutellum

Based upon *P. tetradactyla* the face is concave as seen in lateral view with the epistomal margin prominent (fig. 7c). As seen from in front the face is narrow, higher than wide (fig. 7b), very similar to other related African Ceratitini. I am unable to find reliable generic characters for differentiating *Perilampus* and it will be necessary for Dr. MUNRO to clarify the concepts.

The biologies of *Perilampus* species may be distinctive. MUNRO says the "species that have been reared all infest the fruits of species of *Loranthus*, a micro-environment difficult to imagine suitable for dipterous larvae on account of the very sticky latex. The larvae pupate in the soil and often become enveloped in a pseudococoon owing to the adhering sand-grains."

***Trirhithromyia* HENDEL, comb. nov.**

(figs. 8a—f)

Ceratitis (*Trirhithromyia*) HENDEL, 1931, Bull. de la Soc. Roy. Ent. d' Egypte. p. 2.Type species: *Ceratitis* (*Trirhithromyia*) *efflatouni* HENDEL.

Two African species are presently included in this genus, one breeds in the berries of *Lycium* (Solanaceae) and the host of the other is unknown.

Trirhithromyia differs from *Trirhithrum* BEZZI by having the head broader, with the eyes nearly round and only slightly higher than wide, also by having the arista pubescent; rather than having the head distinctly shortened in side view, the eyes much longer than wide, and the arista plumose. Also the genae are comparatively more broad in the specimens of *Trirhithromyia* which I have studied; they are equal to approximately one-third the eye height, rather than one-sixth to one-eighth the eye height as in specimens of *Trirhithrum* which I have seen. The *Ceratitis*-like wing pattern with the streakings of black through the basal cells is also probably an important characteristic of *Trirhithromyia* (fig. 8a), this pattern is lacking in typical *Trirhithrum*.

As mentioned under *Ceratitella* MALLOCH these genera appear superficially alike. *Trirhithromyia* differs by having the face straight up and down as seen in direct lateral view (fig. 8c). The antennal grooves are distinctly developed and a rather prominent carina is present on the upper two-thirds to three-fourths of the face; only the lower median portion of the face is flat. Compared to *Ceratitella* the face is narrow and high (fig. 8b). The face, measured at the oral margin from the groove extending dorsad on each side continuous with the sides of the oral margin, is 0.42 mm. wide in *lycii* (COQUILLET) and 0.47 mm. in *efflatouni*. The height, measured up the mid line from the oral margin to the frontal suture is 0.55 mm. in *lycii* and 0.72 mm. in *efflatouni*.

The two included species have a distinctive pattern of markings on the mesonotum (fig. 8d) and the base of the scutellum is yellow with four incompletely delimited spots.

T. lycii is readily differentiated from *efflatouni* by having two transverse brown bands extending across the wing, one over the *r-m* and *m* crossveins, and one over the middle of the last section of vein R_{4+5} across the apical portion of cell second M_2 (fig. 8e); by having the mesopleura entirely yellow except for the ventral and anteroventral margins; also by lacking a prominent dark brown to black spot on each side of the lower front. The pattern of silvery markings on the mesonotum and the yellow markings on the base of the scutellum are similar to those of *efflatouni*. The facial characters are as in figure 8f. *T. efflatouni* lacks the secondary transverse band on the wing and the marginal band is very broad filling all of cell R_3 , the entire apical portion of cell R_5 , and the upper apex of cell 2nd M_2 (fig. 8a). A band of brown extends across the upper portion of each mesopleuron and a prominent brown to black spot is present on each side of the lower portion of the front, opposite the bases of the antennae. The face is shaped as in figure 8b. The mesonotal pattern is as in figure 8d.

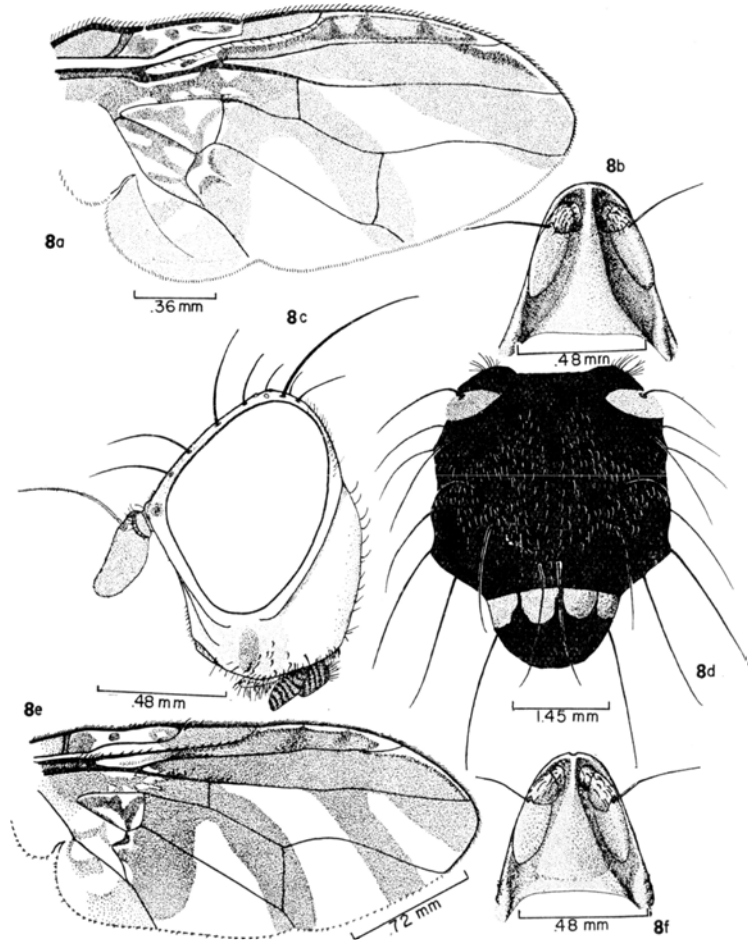


Fig. 8. *Trirhithromyia efflatouni* (HENDEL): a. wing; b. face; c. head; d. thorax. — e, f: *T. lycii* (COQUILLET): e. wing; f. face

I have studied one pair each of the two species of *Trirhithromyia*, these were determined by Dr. MUNRO and contain the following collection data: *lycii* — “Knysna, Feb. 1949, J. M. MCGOUGH. 28”; and *efflatouni* — “Hedjaz Gadda, Feb. 1937, Egypt Min. Agric. Coll. Kasim” and “Gabal Elba, W. Cansisrob, 20. 1. 1933, Egypt. Min. Agric. Coll. Prof. PRIESNER.”

Summary

This paper treats the known species of fruitflies associated with mistletoe (Loranthaceae) in Asia and the Pacific and gives descriptive notes on related African genera. The following are described as new: *Paraceratitella* gen. n., *P. eurycephala* sp. n., *P. oblonga* sp. n., *Ceratitella asiatica* sp. n., *C. bifasciata* sp. n., and *C. unifasciata* sp. n. *Trirhithromyia* HENDEL is a new combination for *Ceratitella* (*Trirhithromyia*).

Zusammenfassung

Die bekannten mit Misteln (Loranthaceae) verbundenen Fruchtfliegenarten Asiens und des Pazifik werden behandelt und Bemerkungen zu verwandten afrikanischen Gattungen gegeben. Folgende Neubeschreibungen werden vorgegeben: *Paraceratitella* gen. n., *P. eurycephala* sp. n., *P. oblonga* sp. n., *Ceratitella asiatica* sp. n., *C. bifasciata* sp. n. und *C. unifasciata* sp. n. *Trirhithromyia* HENDEL ist eine neue Kombination für *Ceratitella* (*Trirhithromyia*).

Резюме

Обрабатываются знакомые фруктовые двухкрылые Азии и Пацифика, которые связаны с омелами (Loranthaceae), и делаются замечания к африканскими родами. Даются следующие новые описания: *Paraceratitella* gen. n., *P. eurycephala* sp. n., *P. oblonga* sp. n., *Ceratitella asiatica* sp. n., *C. bifasciata* sp. n. и *C. unifasciata* sp. n. *Trirhithromyia* HENDEL новая комбинация для *Ceratitella* (*Trirhithromyia*).

References

- BEZZI, M., Notes on the Ethiopian fruit-flies of the family Trypanidae, other than *Dacus* (S. L.), with descriptions of new Genera and Species (Dipt.). I. Bull. Ent. Res., 8, 215—251; 1918.
- , Notes on the Ethiopian fruit-flies of the family Trypanidae, other than *Dacus*. III. Bull. Ent. Res., 10, 211—271; 1920.
- , Further notes on the Ethiopian fruit-flies, with keys to all the known genera and species. Bull. Ent. Res., 15, 73—155; 1924.
- HENDEL, F., Die Gattungen der Bohrfliegen. Wien. ent. Z., 33, 73—98; 1914.
- , Nachtrag zu den palaearktischen Trypetiden (Neue aegyptische Arten, von Prof. EFFLATOUN BEY gesammelt). Bull. de la Soc. Roy. Ent. d'Egypte, 1931, 1—12, 1931.
- HERING, E. M., Neue Gattungen und Arten der Fruchtfliegen. Siruna Seva, 6, 16; 1947.
- MALLOCH, J. R., The Diptera of the territory of New Guinea XI. Proc. Linn. Soc. N.S. Wales, 64 (3—4), 409—465; 1939.
- MUNRO, H. K., Some new species of South African Trypetidae (Diptera), including one from Madagascar. Journ. Ent. Soc. South Africa, 2, 139—153; 1939a.
- , Studies in African Trypetidae with descriptions of new species. Journ. Ent. Soc. South Africa, 1, 26—46; 1939b.
- , Note sur les Trypetides de Madagascar et description de Nouvelles Especies Cecidogenes (Diptera). Mem. de l'Institut Sci. de Madagascar. Ser. E., 4, 543—552; 1953.
- SHIRAKI, T., A systematic study of Trypetidae in the Japanese Empire. Mem. Fac. Sci. Agric. Taihoku Imp. Univ., 8, 1—509; 1933.