

# INSECTS OF MICRONESIA

## Hymenoptera: Ichneumonidae, Stephanidae, and Evaniidae<sup>1</sup>

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### INTRODUCTION

I am indebted to the many collectors who have assembled the fine lot of Micronesian ichneumonids reported here, to Dr. J. L. Gressitt for making the material available, to Miss Mary Oliver Ellington for most of the drawings, and to Mr. J. F. Perkins for notes on the pertinent types in London and Oxford. I myself have studied the types in Washington, Honolulu, and Sapporo.

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The following symbols indicate the institutions in which specimens are stored: US (United States National Museum), BISHOP (Bernice P. Bishop Museum), CM (Chicago Natural History Museum), MCZ (Museum of Comparative Zoölogy), CAS (California Academy of Sciences), KU (Kyushu University, Fukuoka), HSPA (Hawaiian Sugar Planters' Association Experiment Station), TT (Trust Territory of the Pacific Islands), BM (British Museum, Natural History), and TOWNES (Townes collection).

### FAMILY ICHNEUMONIDAE

The family Ichneumonidae is a member of the Terebrantia, or the parasitic series of the Hymenoptera. It may be distinguished from all other Hymenop-

<sup>1</sup>This represents, in part, Results of Professor T. Esaki's Micronesian Expeditions (1936-1940), No. 90.

and in the Marshalls. Each of these four occurs also on high islands and their presence on atolls can be considered a secondary, or less stable, part of their distribution. Three species (*Exeristes roborator*, *Trathala flavo-orbitalis*, and "*Eulimneria* sp.") were introduced into Guam for biological control of *Pyrausta nubilalis* (Vandenberg, 1934, Guam Agric. Exper. Sta., Rept. for 1931-1932, 20-22). Of these, only *Trathala flavo-orbitalis* occurs now on Guam, and that was probably there previous to the introduction.

The endemic Micronesian ichneumonids are: *Echthromorpha agrestoria semperi* in the Palaus and Yap; *E. a. conopleura* in the Marianas; and *E. a. trukensis* in Truk. The subspecies *semperi* is closely related to *E. a. insidiator* of the Australian Region and to *E. a. notulatoria* of the Oriental Region. The subspecies *conopleura* is close to the Oriental *E. a. notulatoria*, while the subspecies *trukensis* is close to *E. a. insidiator* of the Australian Region. The three endemic subspecies are evidently ancient natural introductions that have become differentiated during long isolation.

The 12 species known to occur also outside of Micronesia all seem to be introductions into Micronesia, largely by human agency. None of them show local races which suggest long residence in the islands, and many are commonly parasitic on agricultural pests and thus susceptible to human transport with plant materials. One species, *Diplazon laetatorius*, is probably a modern introduction into Guam from the Hawaiian Islands spreading thence to Saipan, or there may have been a separate introduction into Saipan from Japanese territory. The apparent sources of the other introductions include the Ryukyus or Formosa, the Philippines, and Melanesia, with no indication that any factors other than commerce, proximity, and chance have governed the sources.

A remaining 17 species are known only from Micronesia, but probably most of them actually occur elsewhere also. Four of the species are believed to be endemics because of one circumstance or another. These four are as follows:

*Lissopimpla nigricans*. This occurs on Guam. Its nearest known relative is a form of *Lissopimpla* on Fiji and Tonga which seems only subspecifically distinct. Whether actually endemic or not, *L. nigricans* on Guam is very far from the range of known relatives and its presence there presents a puzzle.

*Paraphylax hiatus* and *P. badius*. These are small species that could easily be transported by air currents. The former occurs on Guam and the latter on Ponape. Both are an inconspicuous, dark brown color and lack the bright mimetic color patterns characteristic of species of *Paraphylax* in neighboring faunas. Their small size, lack of mimetic colors, and isolation on high islands suggests endemism.

*Pristomerus incompletus*. This is another small, dull-colored species. It occurs on Truk and what appears to be a subspecies is known from a single specimen from Nomwin. The somewhat different form on a neighboring island suggests long residence and endemism.

## SYSTEMATICS

The classification of the Ichneumonidae is difficult. There are relatively few reliable characters for the separation of major groups. These are distinguished largely by a combination of characters, some of them subtle and any one or several of them subject to exceptions. The keys and descriptions for the subfamilies and tribes in this paper are designed to state some of the more constant characters and to serve for the limited Micronesian fauna. They will not necessarily be adequate for other parts of the world.

## KEY TO MICRONESIAN SUBFAMILIES OF ICHNEUMONIDAE

1. Areolet rather large, rhombic (fig. 12); ovipositor sheath rigid, polished, rather flat, about 0.4 to 0.8 as long as the first abdominal segment; male clasper elongated into a slender style (fig. 12); face broad, weakly convex, not distinctly separated from the clypeus.....**Mesochorinae**
- Arolet smaller, or absent; ovipositor sheath not as above, either shorter or flexible; male clasper not elongated..... 2
- 2 (1). Abdomen strongly compressed (third and fourth segments at least twice as deep as wide) and spiracle of first abdominal segment near the apex.....**Ophioninae**
- Abdomen depressed (third and fourth segments wider than deep) or if compressed, then spiracle of first abdominal segment at or in front of the midlength ..... 3
- 3 (2). First abdominal segment with its spiracle beyond the middle, without a glymma (a basolateral groove in front of the spiracle); sternaulus extending more than half the length of the mesopleurum (figs. 5, 6).....**Gelinae**
- First abdominal segment with its spiracle at or in front of the middle, with or without a glymma; sternaulus short or indistinct..... 4
- 4 (3). Clypeus not separated from face by a groove; face strongly convex; front leg with a single distinguishable trochanter.....**Metopiinae**
- Clypeus separated from face by a groove; face not strongly convex; front leg with two trochanters..... 5
- 5 (4). Upper tooth of mandible broad and subdivided, so that mandible appears to have three teeth .....**Diplazoninae**
- Upper tooth of mandible not subdivided, mandible with two teeth..... 6
- 6 (5). Tarsal claws with long dense pectination.....**Tryphoninae**
- Tarsal claws not visibly pectinate..... 7
- 7 (6). Ovipositor without a subapical dorsal notch; species of Micronesia with fore wing 4 to 13.5 mm. long and the areolet present.....**Ephialtinae**
- Ovipositor usually with a subapical dorsal notch; species of Micronesia with fore wing about 2.5 mm. long and areolet absent.....**Plectiscinae**

## SUBFAMILY EPHIALTINAE

The clypeus is separated from the face by a groove. The mandible has two teeth, and the areolet is triangular, pointed above. The front leg has two trochanters, and the tarsal claws are not visibly pectinate. The abdomen is depressed, with the first abdominal segment rather short and broad, its spiracle at or in front of its middle, laterally with a groove or pit (glymma) in front of

is to give out a strong pungent odor when captured or otherwise disturbed. I have noticed this with nearly every specimen I have caught of the subspecies *insidiator*, *trukensis*, *conopleura*, *semperi*, and in the subspecies *notulatoria* in the Philippines. Williams (1931, Insects and Other Invertebrates of Hawaiian Sugar Cane Fields, 266) notes it also for the Hawaiian subspecies *fuscator*. The subspecies as known to me are listed below. Some additional forms in literature should also be referred here as subspecies, but except in a few cases I have hesitated to do this without specimens for examination. Specimens have been seen of all those listed except the subspecies *agrestoria*, *macula*, *vittata*, and *uapou*.

*Echthromorpha agrestoria agrestoria* (Swederus).

*Ichneumon agrestorius* Swederus, 1787 (= *striata* Krieger, 1908). Tahiti.

*Echthromorpha agrestoria conopleura* Krieger, new status.

*Echthromorpha conopleura* Krieger, 1908, Mariana Is.

*Echthromorpha agrestoria fuscator* (Fabricius), new status.

*Ichneumon fuscator* Fabricius, 1793 (= *maculipennis* Holmgren, 1868; = *flavo-orbitalis* Cameron, 1886). Hawaiian Islands.

*Echthromorpha agrestoria hyalina* (Saussure), new status.

*Stagmopimpla hyalina* Saussure, 1890. Madagascar.

*Echthromorpha agrestoria immaculata* Krieger, new status.

*Echthromorpha immaculata* Krieger, 1908 (= *diversor* Morley, 1913). Fiji.

*Echthromorpha agrestoria insidiator* (Smith), new status.

*Pimpla insidiator* Smith, 1863. Queensland, New Guinea, Bismarck Archipelago, Moluccas, Celebes, Mysol, Gilberts, Marshalls, Carolines.

*Echthromorpha agrestoria macula* (Brullé), new status.

*Pimpla macula* Brullé, 1846. Reunion.

*Echthromorpha agrestoria marquisensis* Cheesman, new status.

*Echthromorpha atrata marquisensis* Cheesman, 1928 (= *opaca* Cushman, 1939). Marquesas.

*Echthromorpha agrestoria notulatoria* (Fabricius), new status.

*Cryptus notulatorius* Fabricius, 1804 (= *continua* Brullé, 1846; = *punctum* Brullé, 1846; = *pulchrimaculata* Cameron, 1897; = *persimilis* Cameron, 1899; = *ornatipes* Cameron, 1899; = *laeva* Cameron, 1903; = *maculipes* Cameron, 1905; = *notulatoria* var. *insulana* Krieger, 1908; = *notulatoria* var. *immaculata* Morley, 1913, preoccupied). Southeast Asia, Sumatra, Java, Borneo, Formosa, Philippines. Philippine specimens are somewhat different and could be considered a separate subspecies (*punctum* Brullé).

*Echthromorpha agrestoria occidentalis* Krieger, new status.

*Echthromorpha variegata* var. *occidentalis* Krieger, 1908. Western Africa.

- Echthromorpha agrestoria pallidilineata* Cameron, new status.  
*Echthromorpha pallidilineata* Cameron, 1911. Solomon Islands.
- Echthromorpha agrestoria platymischa* (Vachal), new status.  
*Notiopimpla platymischa* Vachal, 1907 (= *inermis* Morley, 1913, new synonymy). New Caledonia.
- Echthromorpha agrestoria samoana* Cushman, new status.  
*Echthromorpha samoana* Cushman, 1938. Samoa.
- Echthromorpha agrestoria semperi* Krieger, new status.  
*Echthromorpha semperi* Krieger, 1908. Western Caroline Islands.
- Echthromorpha agrestoria uapou* Perkins, new status.  
*Echthromorpha marquisensis uapou* Perkins, 1952. Marquesas.
- Echthromorpha agrestoria variegata* (Brullé), new status.  
*Pimpla variegata* Brullé, 1846 (= *continuum* Kriechbaumer, 1894, pre-occupied). Eastern Africa.
- Echthromorpha agrestoria vittata* (Brullé), new status.  
*Pimpla vittata* Brullé, 1846. Mauritius.

KEY TO MICRONESIAN SUBSPECIES OF *ECHTHROMORPHA AGRESTORIA*

1. Mesoscutum not marked with black, entirely ferruginous except often for a yellow mark on the notaulus (Palau and Yap).....*agrestoria semperi*  
 Mesoscutum partly black, at least medially..... 2
2. Propodeum with a median longitudinal black or infuscate stripe; mesopleurum strongly protuberant just above middle (Marianas).....*agrestoria conopleura*  
 Propodeum without a median longitudinal dark stripe; mesopleurum weakly protuberant just above the middle..... 3
3. Second tergite of female with sparse punctures separated by about 1.5 their diameter; sixth tergite of male without a fuscous mark (Truk).....*agrestoria trukensis*  
 Second tergite of female with dense punctures separated by about 0.5 their diameter; sixth tergite of male with a transverse fuscous band (Gilberts, Marshalls, eastern Carolines, and southward to Australia)....*agrestoria insidiator*

Yasumatsu (1941, *Ins. Matsumurana* 15:144) records *Echthromorpha notulatoria* from Guam on the strength of Fullaway's record of *E. "continua?"* from that island (1913, *Hawaiian Ent. Soc., Proc.* 2:289), *continua* being a synonym of *notulatoria*. Fullaway, himself, however, has corrected his record of *continua* as a misidentification of *conopleura* (1946, *B. P. Bishop Mus., Bull.* 189:221), so *notulatoria* may be eliminated from the list of Micronesian forms.

1. *Echthromorpha agrestoria insidiator* (Smith).  
*Pimpla insidiator* Smith, 1863, *Linn. Soc. London, Jour. Zool.* 7:9 (Mysol: types, both sexes, at Oxford).  
*Echthromorpha insidiator*, Morley, 1913, *Revision Ichneum. Brit. Mus.* 2:44 (key; Gilbert Is. and other localities).—Uchida, 1928, *Hokkaido Imp. Univ., Jour. Fac. Agric.* 25:41 (key; Ponape).—Yasu-

matsu, 1941, *Ins. Matsumurana* 15:143 (key and fig.; Ponape).—  
Townes, 1946, U. S. Commercial Co., Rept. 14:47 (Ponape, Kusaie,  
Jaluit).

Mesopleurum weakly protuberant just above middle; punctures on abdominal tergites rather coarse, weak in male and strong in female; punctures on raised central portion of second tergite in male rather sparse with interspaces about 1.5 their diameter, in female dense with interspaces about 0.5 their diameter; punctures on raised portion of fifth tergite in male with interspaces about 0.7 their diameter, in female dense and adjacent.

Ferruginous. Black as follows: Frons, top of head and upper half of back of head except bordering eyes, hind part of pronotum, mesoscutum except for elongate marks on position of notaulus (which are widened anteriorly), usually the mesosternum, usually more or less of the area in front of prepectus and often extending backward below the subtegular swelling, side of scutellum and often of postscutellum, median raised areas on abdominal tergites 2 to 6, and in male often a transverse mark on base of sixth tergite. Sometimes the mesoscutum is black only medially, the second tergite is not marked with black, and frequently in males and occasionally in females the black markings on several of the other tergites may be reduced or wanting. Yellow markings as follows: Head except where marked with black, front of scape, front half of thorax except where marked with black (the yellow grading into ferruginous posteriorly), scutellum, postscutellum, tegula, front coxa and trochanters, middle coxa, tinges on fore and middle femora (especially in male), tinges on front and middle tibiae in male, dorsobasal area on hind coxa, postero-lateral marks on first and sixth tergites of female and on first tergite of male, and posterior border of second to fifth tergites of female and second to sixth tergites of male (narrowed medially and in female often interrupted medially). Flagellum reddish brown, paler basally; ovipositor sheath brown; hind tarsus ferruginous to brown; wings hyaline with an orange tinge, the fore wing with a strong fuscous spot in apex of radial cell and extended into the cell below.

DISTRIBUTION: Queensland, New Guinea, Bismarck Archipelago, Mysol, Moluccas, Celebes, eastern Micronesia.

PONAPE: Airfield No. 2, male, June-Sept. 1950, Adams (MCZ); Colonia, male, July 1949, Owen (BISHOP), five males, Jan. 1953, Clarke (US); Sokehs (Jokaj) I., male, July 1949, Owen (TT); Lehdau, three males, Mar. 1936, Kondo (BISHOP); Lenger I., 23 males, June-Sept. 1950, Adams (MCZ); Mt. Kupwuriso, three males, one female, 529 m., June-Sept. 1950, Adams; South Nanpohnmal, two males, Jan. 1953, Clarke; Mt. Temwewensekir, six males, 180 m. and on north slope, Jan. 1953, Clarke (US, BISHOP, TOWNES); Wene, male, Feb. 1936, Kondo (BISHOP).

KUSAIE: Funaupes, two males, Jan., Mar. 1953, Clarke (US, BISHOP); Innem R., male, 60 m., Jan. 1953, Clarke (TOWNES); Mt. Buache, male, 460 to 590 m., Aug. 1946, Townes (US); Songkosra, five males, 60 m., Apr. 1953, Clarke.

MARSHALL IS. ENIWETOK: Bogombogo, male, female, Dec. 1950, Oshiro (BISHOP); Elugelab, female, Jan. 1951, Oshiro (TOWNES). WOTHŌ: Male, female, Mar. 1952, Fosberg, no. 861 (US). JALUIT: Townes collected this form on Jaluit in 1946, but the specimens are lost.

GILBERT IS. ONOTOA: Tanyah, six males, July 1951, Moul (BISHOP, US).

The preponderance of males in these collections indicates that the usual hosts in Micronesia are smaller than optimum size. In this and related species there is a strong tendency for small hosts to produce mostly male parasites.

2. *Echthromorpha agrestoria trukensis* Townes, n. subsp.

*Echthromorpha insidiator*, Townes, 1946, U. S. Commercial Co. Rept. 14: 47 (Truk record only).

Mesopleurum weakly protuberant just above the middle; punctures on abdominal tergites rather coarse, weak in male and strong in female; punctures on raised central portion of second tergite in male very few and very weak, in female about 40 in number, strong, and with interspaces about 1.5 their diameter; punctures on raised central portion of fifth tergite in male weak with interspaces about 0.7 the diameter, in female strong and dense, with interspaces about 0.5 the diameter.

Colored as in the subspecies *insidiator* except that the dark markings on the median raised areas of the abdominal tergites are weaker and more restricted. In the female these may be detectable as an infuscation on the second to fifth tergites, or only on the second and third. The infuscation is always stronger on the more basal tergites and on each tergite tends to be invaded by ferruginous medially and posteriorly. In the male the abdominal infuscation follows the same pattern as in the female, but averages weaker and more restricted. In many males it is absent altogether. In males of this subspecies the second and third tergites, but not the subapical ones, are likely to be marked with fuscous. In the subspecies *insidiator* the basal tergites are frequently without fuscous markings while the subapical tergites, at least the sixth, have fuscous markings.

Holotype, female (US 63489), Nantaku (Civil Administration Area), Wena (Moen), Truk, Apr. 18, 1949, R. W. L. Potts. Paratypes (all Truk): Three males, three females (US, TOWNES), Fefan I., May 1946, Townes; male (US), Tonoas I., May 1946, Townes; male (BISHOP), Tonoas I., Oct. 1952, Beardsley; male (TOWNES), Udot I., May 1946, Townes; one male, 13 females (CAS, BISHOP, TOWNES), Wena (Moen), Civil Administration Area, Feb., Mar., Apr. 1949, Potts.

DISTRIBUTION: Central Caroline Is. (Truk).

3. *Echthromorpha agrestoria semperi* Krieger, new status.

*Echthromorpha semperi* Krieger, 1909, Zool. Mus. Berlin, Mitt. 4: 329 (Palau Is.; types, both sexes, in Berlin).—Morley, 1913, Revision Ichneum. Brit. Mus. 2: 48 (*pallidilineata* Cameron erroneously synonymized).—Uchida, 1928, Hokkaido Imp. Univ., Jour. Fac. Agric. 25: 41 (Palau; key).—Yasumatsu, 1941, Ins. Matsumurana 15: 141 (Palau, Yap; key, synonymy, in part, fig.).—Townes, 1946, U. S. Commercial Co., Rept. 14: 47 (Yap, Palau).

Mesopleurum weakly protuberant just above the middle; punctures on abdominal tergites rather coarse, weak in male and strong in female; punctures on raised central portion of second tergite about 20 in number, faint in male, strong in female, their interspaces about three times their diameter; punctures on raised central portion of fifth tergite in the male with interspaces weak and about equal their diameter, in the female strong and with interspaces about 2.5 times their diameter.

Ferruginous, marked with yellow or yellowish as follows: Head except central part of frons and upper part of occiput, mouthparts, scape, propleurum, front coxa and trochanters,

front part of pronotum, a long stripe along position of notaulus (widened anteriorly), swelling beneath tegula, large area on upper central part of mesopleurum, small area on mesopleurum next middle coxa, apicolateral corners of first and fifth tergites, and apical margin of second to fourth tergites (narrowed and interrupted medially). Wings yellowish hyaline, the fore wing with a faint apical infuscation and a distinct fuscous spot in apex of radial cell, extending into the cell below. The flagellum is paler basally and shades to reddish brown beyond the middle.

DISTRIBUTION: Western Caroline Is.

PALAU. NGAIANGL: Ngaiangl I. female, Dec. 1952, Gressitt (BISHOP). BABELTHUAP: Three males, July 1946, Townes (US); Ulimang, nine males, Dec. 1947, Dybas (CM, TOWNES). KOROR: Northeast corner, two males, one female, July 1946, Townes (US, TOWNES); two males, Mar. 1948, Maehler (CM, US); male, July 1946, Oakley (US); two males, three females, Feb., June, Aug. 1953, Beardsley (BISHOP). NGERKABESANG: Five males one female, July 1946, Townes (US). PELELIU: Eastern shore, seven males, Aug. 1945, Baker (BISHOP); north central, female, July 1945, Dybas (CM); west coast, female, Feb. 1948, Dybas (CM); male, female, 1931, 1934, Yoshino (KU). ANGAUR: Male, female, Feb. 1948, Dybas (TOWNES); male, female, Aug. 1945, Ducoff (US, CM).

YAP. YAP: Five males, Oct., Aug. 1952, Krauss (BISHOP); three males Mar. 1954, Beardsley; male, 1936, Ono (BISHOP); Yaptown, 22 males, three females, July 1946, Townes (US, TOWNES); two males, one female, July-Aug. 1950, Goss (MCZ); Mt. Madaade, male, July 1946, Townes (US); Ruul Distr., male, July-Aug. 1950, Goss (MCZ).

4. *Echthromorpha agrestoria conopleura* Krieger, new status.

*Echthromorpha conopleura* Krieger, 1909 Zool. Mus. Berlin, Mitt. 4: 321 ("Brazil"; types, both sexes, in Berlin. The published type locality is believed to be incorrect and the true locality to be the Marianas).—Morley, 1913, Revision Ichneum. Brit. Mus. 2: 42 (key).—Yasumatsu, 1941, Ins. Matsumurana 15: 155, fig. (Pagan, Saipan, Rota; key, description).—Fullaway, 1946, B. P. Bishop Mus., Bull. 189: 221 (Guam; synonymy; hosts: *Sylepta derogata*, *Cosmophila flava flava*, *Nacoleia diemenalis*, *Spodoptera mauritia*).—Townes, 1946, U. S. Commercial Co., Rept. 14: 46 (S. Marianas; host: *Hypolimnas anomala*).

*Echthromorpha continua*? Fullaway, 1913, Hawaiian Ent. Soc., Proc. 2: 289 (Guam; misdetermination of *continua* Brullé).

Mesopleurum strongly protuberant just above middle, the protuberance strongest in larger specimens; punctures on abdominal tergites rather coarse, weak in male and strong in female; punctures on raised central portion of second tergite in male rather sparse, with interspaces about 1.5 their diameter, in female dense, with interspaces about 0.5 their diameter; punctures on raised portion of fifth tergite in male with interspaces about 0.7 their diameter, in female dense and adjacent.



Ferruginous. Black as follows: Frons except near eyes, ocellar area, back of head except near eyes and usually below, pronotum except broadly anteriorly and anteroventrally and narrowly above, mesoscutum except for elongate mark on position of notaulus (widened anteriorly), mesopleurum and mesosternum except for swelling below front wing, a large submedian spot on mesopleural swelling, a small spot next to middle coxa, sometimes more or less of area in front of prepectus, sides and rear of scutellum, and median raised area of second, third, and more or less of the fourth and fifth tergites. Infusate or blackish on the groove to each side of postscutellum, a median longitudinal band on propodeum, usually a postmedian area on first tergite, and often in males the metasternum and lower part of metapleurum. Yellow markings as follows: Head and mouthparts except where described as black, scape except behind, pro- and mesothorax except where described as black, tegula, postnotum, front and middle coxae, more or less of front trochanters, tinges on front of front femur and sometimes also on front tibia and tarsus and middle femur, a dorsal basal spot on hind coxa, apicolateral areas on propodeum, apicolateral spot on first and fifth abdominal tergites, and apical band on second to fourth tergites (narrowed and interrupted medially). Antenna red brown; ovipositor sheath brown; wings hyaline with an orange tinge, the fuscous spot at apex of radial cell, so common in the genus *Echthromorpha*, entirely absent or faintly indicated.

DISTRIBUTION: Mariana Is.

N. MARIANA IS. AGRIHAN: Three females, June 1945, Borrer and Holder (US); three females, Aug. 1945, Borrer (US, TOWNES); male, female, July 1949, Mead (BISHOP).

S. MARIANA IS. SAIPAN: Mt. Tagpochau, female, resting in coffee plantation, May 1952, Peterson (BISHOP); Tanapag, female, Nov., 1944, Dybas (TOWNES). TINIAN: Hagoi Lake, two males, June 1946, Townes and Oakley (US, TOWNES). ROTA: Sabana, 13 females, ex pupae of *Hypolimnas* sp. collected in forest at 370 m., June 1946, Townes (US, BISHOP, TOWNES); 14 males, one female, June 1946, Townes (US, BISHOP, TOWNES); Southern Rota, female, Oct. 1945, R. Bohart (BISHOP). GUAM: 46 males, Sept. 1938, Oakley (US); female, ex *Sylepta derogata*, Sept. 1938, Oakley; female, Thompson (US); female, Mar.-Apr. 1945, Baker; male, Dec. 1945, Bohart; male, two females, Fullaway; northern Guam, two males, one female, Apr. 1946, Krauss (BISHOP); Agana, male, Dec. 1947, Maehler; female, July 1945, Wallace; male, Apr. 1946, Krauss; two males, May 1936, Swezey (BISHOP); Experiment Station, two males, one female, ex *Pyrausta nubilalis* (US); Mt. Alifan, two males, Apr. 1946, Bryan; Mt. Chachao, male, May 1936, Swezey (BISHOP); Inarajan, male ex *Nacoleia diemanalis*, Sept. 1937, Oakley; two males, Oct. 1938, Oakley (US); male, May 1936, Usinger (BISHOP). Pati Pt., male, in forest, June 1945, Dybas (CM); Pilgo R., female, May 1945, Bohart and Gressitt (BISHOP). Piti, male, ex *Adoxophyes angustilineata*, Oct. 1938, Oakley (US); female, Jan. 1939, Oakley (TOWNES); male, ex leaf roller, Apr. 1936, Swezey (HSPA); two males, Sept. 1936, Swezey (HSPA); Pt. Oca, two males, July 1945, Gressitt and Bohart (US); three males, one female, in light trap, May, June 1945, Gressitt (BISHOP); Pt. Ritidian, male, female, June 1945, Gressitt (US); three males, Apr. 1936, Swezey (HSPA); near

## SUBFAMILY TRYPHONINAE

The clypeus is separated from the face by a groove. The mandible has two teeth, and the areolet is triangular, pointed above. The front leg has two trochanters, and the tarsal claws are pectinate. The abdomen is compressed in the Micronesian representatives (in others usually depressed), with the first abdominal segment with its spiracle at or in front of the middle, laterally with a groove or pit (glymma) in front of the spiracle. The male clasper is rounded apically, and the ovipositor sheath is flexible in the Micronesian representatives. The egg is large, with a stalk by which it is attached to the ovipositor.

There is a single tribe in Micronesia.

## TRIBE PHYTODIETINI

Propodeum without carinae except frequently for a single transverse carina that is usually interrupted medially to leave two lateral crests; when a propodeal carina or crests are present the propodeum is transversely striate basad of the crests; spur of front tibia with its distal portion straight or slightly outcurved, its antennal brush ending considerably before apex of spur; hind tibia with two spurs; first abdominal tergite with a lateral groove or pit (glymma) in front of the spiracle.

There is a single genus of this tribe in Micronesia.

Genus *Netelia* Gray

Lower tooth of mandible much shorter than upper tooth; clypeus broad; eye very large and usually strongly emarginate at antenna; ocelli large, the lateral ocellus touching or close to the eye; nervellus broken above middle; body slender; ground color buff to ferruginous.

The species are large, compressed, pale brownish, crepuscular or nocturnal, and are frequently attracted to light. They are superficially similar to the tribe Ophionini. Noctuid larvae are the usual hosts. One subgenus is represented in Micronesia.

Subgenus *Netelia* Gray

*Paniscus* of authors, not of Schrank.

*Netelia* Gray, 1860, Ann. Mag. Nat. Hist. III, 5: 341 (type: *Paniscus inquinatus* Gravenhorst; original designation).

*Buheckerius* Schulz, 1906, Spolia Hymenopt., 280 (type: *Buheckerius perforatus* Schulz; monobasic).

Occipital carina present; scutellum with lateral carina strong, extending to apex; areolet present; pecten of hind tarsal claws not extending beyond apical point of claw; ovipositor 1.5 to 2.0 as long as apical depth of abdomen.

This subgenus is worldwide, and well represented in the tropics. There are two species in Micronesia, one known also from the Philippines, the other known only from one Palau specimen.

## KEY TO MICRONESIAN SPECIES OF NETELIA

1. Thorax with rather coarse punctures; metapleurum without striae; propodeum with punctures below the cristae; nervulus vertical; male genitalia as in figure 4, *a*.....*latro*
- Thorax with very fine punctures; metapleurum with fine oblique striae; propodeum without punctures below the cristae; nervulus slanted, its posterior end farther from the wing base than its anterior end; male genitalia as in figure 4, *b*.....*solus*

FIGURE 3.—*Netelia latro*, female.

7. *Netelia (Netelia) latro* (Holmgren), n. comb. (figs. 3; 4, *a*).  
*Paniscus latro* Holmgren, 1868, Kongl. Sven. Freg. Eugenies Resa, Zool., 412 (Guam; type, male, in Stockholm).—Morley, 1913, Revision Ichneum. Brit. Mus. 2:124 (key, description, synonymy).—Fullaway, 1913, Hawaiian Ent. Soc., Proc. 2:289 (Guam); 1946, B. P. Bishop Mus., Bull. 189:222 (Guam).

Fore wing 10 to 14 mm. long; lateral ocellus touching eye; clypeus about 2.2 as wide as long; last segment of labial palpus about 5 times as long as wide; fourth segment of flagellum about 3.5 as long as wide; thorax mat, closely and rather coarsely punctate;

front end of notaulus with faint transverse striae; scrobe of pronotum distinctly striate; metapleurum not striate; propodeum in profile weakly convex, closely and rather coarsely punctate, across middle also weakly striate, below cristae distinctly punctate, its cristae small and rather weak; submedian cell and underside of third discoidal cell anterior to the fold, bare; nervulus postfurcal by about 1.4 its length, vertical; nervellus broken at about its upper 0.27; hind femur about 7.0 as long as wide; last segment of fore tarsus about 3.0 as long as wide, the hair on its upper surface about 0.7 as long as its depth; bristles on tibiae moderate; tarsal claws with two unguis bristles, of normal size, curvature, and denseness of pectination, the pectination in the male sparse enough medially on all claws to permit light to show through. Male genitalia as in figure 4,a.

Color tawny, the ocellar area blackish.

In sculpture this species agrees with the *ocellata* group of the New World, but it is uncertain whether or not it should be referred to this group.

DISTRIBUTION: Philippines, Bonins, southern Marianas, western Carolines.

BONIN IS. CHICHI JIMA: Two males, July 1951, R. Bohart (BISHOP, TOWNES); male, July 1940, Ikeda, and a male, Kigose, Oct. 1934, Okabe (KU).

S. MARIANA IS. SAIPAN: Male, Oct. 1947, Ducoff (TOWNES); As Gonno, two males, Sept. 1941, Matusita (BISHOP); Tanapag, male, July 1945, Dybas (CM); male, Nov. 1944, Edgar (CM). TINIAN: Two males, at light, Mar. 1946, Hadden (HSPA); male, Nov. 1952, Beardsley (BISHOP); male, central Tinian, Mar. 1948, Maehler (US). ROTA: Sabana, four males, June 1946, Townes (US, TOWNES). GUAM: Two females, 1911, Fullaway; female at light, Jan. 1948, Langford (BISHOP); Agana, male, May 1948, Maehler; female, Aug. 1945, Dybas (CM); two males, one female, Jan. 1948 (US, TOWNES); female, Mar. 1948, Maehler; Mt. Alutom, two females, June 1946, Townes (US, TOWNES); Piti, male, in house, Nov. 1936, Swezey (HSPA); two males at light, Sept. 1936, Swezey (BISHOP); female, at light, Jan. 1948, Langford; Pt. Oca, three males, May, July, 1945, Gressitt and G. Bohart (US, BISHOP); Talofof, male, Jan. 1948, Maehler (US); male, Apr. 1946, Krauss (BISHOP).

PALAU. KOROR: Male, Mar. 1948, Maehler (US); male, light trap, southwest Koror, Dec. 1952, Gressitt; male, at light, Mar. 1953, Beardsley; female, July 1953, Beardsley (BISHOP, US).

YAP. YAP: Male, light trap, hill behind Yaptown, Dec. 1952, Gressitt (BISHOP).

CAROLINE ATOLLS. ULITHI: Mogmog I., 47 males, flying on cloudy afternoon over low vines, July 1946, Townes (US, TOWNES); male, July 1946, Oakley (US).

#### 8. *Netelia (Netelia) solus* Townes, n. sp. (fig. 4, b).

*Male*: Fore wing 14 mm. long; lateral ocellus touching eye; clypeus 1.25 as wide as long; last segment of labial palpus 4.0 as long as wide; fourth segment of flagellum 3.0 as long as wide; thorax weakly mat, with fine weak punctures; front end of notaulus with

fine weak transverse striae; scrobe of pronotum weakly striate; metapleurum with fine oblique striae and obsolescent punctures; propodeum in profile rather weakly convex, above the cristae with strong transverse striae, laterally also with obsolescent fine punctures, below the cristae impunctate, the cristae rather small; submedian cell and underside of third discoidal cell anterior to the fold, bare; nervulus postfurcal by 0.4 its length, strongly oblique; nervellus broken at its upper 0.35; hind femur 7.8 as long as wide; last segment of fore tarsus 3.5 as long as wide, the hair on its upper side 0.7 as long as its depth; bristles on tibiae moderate; tarsal claws with two unguis bristles, moderately long, the pectination on all claws evenly dense, hardly permitting light to pass through. Male genitalia as in figure 4, *b*.

Color tawny, the ocellar area blackish.

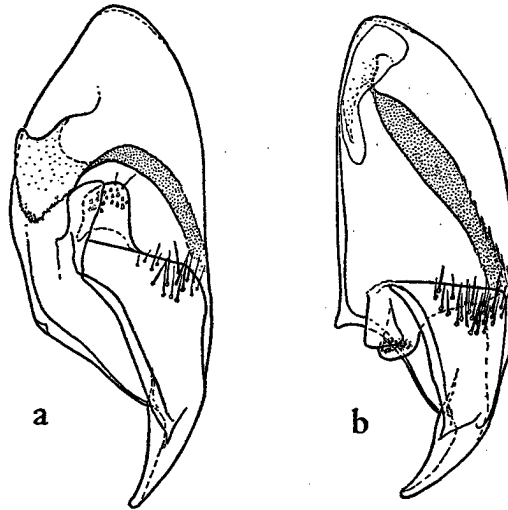


FIGURE 4.—Male genitalia: a, *Netelia latro*; b, *N. solus*.

This species belongs to the *leo* species group.

Holotype, male (US 63490), northeast corner of Koror, Palau, July 22, 1946, H. Townes.

DISTRIBUTION: Western Caroline Is. (Palau).

#### SUBFAMILY GELINAE

The clypeus is separated from the face by a groove. The mandible has two teeth, and the areolet is pentagonal or absent. The front leg has two trochanters, and the tarsal claws are simple. The abdomen is depressed, with the first abdominal segment slender basally, expanded apically, its spiracle beyond the middle, laterally without a pit or groove in front of the spiracle. The male clasper is rounded apically, and the ovipositor sheath is rather long and flexible.

There is a single tribe in Micronesia.

## TRIBE GELINI

Fore wing normally 2 to 9 mm. long (wings sometimes vestigial or absent); apex of clypeus various; head of male usually entirely black or more or less ferruginous; areolet present or absent; second recurrent vein nearly always sloping outward posteriorly so that outer hind corner of second discoidal cell is somewhat longer and more pointed than is outer front corner; second recurrent vein usually with two bullae but sometimes with one; dorsal rim of metanotum usually with a small sublateral projection opposite anterior end of sublateral longitudinal carina of propodeum; propodeum nearly always areolated except in some wingless species.

This is a large tribe of worldwide distribution. The species are nearly all small sized. A large portion of the species parasitize small cocoons, including those of Braconidae and Ichneumonidae.

## KEY TO MICRONESIAN GENERA OF GELINI

1. Second recurrent vein with one bulla; face with a large median tubercle; meso-scutum densely hairy..... **Thalops**  
 Second recurrent vein with two bullae; face without a median tubercle; meso-scutum almost hairless..... 2
2. Second and third tergites separated from their epipleura by a sharp crease..... **Paraphylax**  
 Second and third tergites not separated from their epipleura by a crease, their lateral margins rounded..... **Diatora**

Genus *Paraphylax* Foerster

*Paraphylax* Foerster, 1868, Naturhist. Ver. Preuss. Rheinlande, Verhandl. 25: 176 (type: *Paraphylax fasciatipennis* Ashmead; included by Ashmead, 1904).

*Photoptera* Viereck, 1913, U. S. Nat. Mus., Proc. 46: 380 (type: *Photoptera erythronota* Viereck; original designation).

Fore wing 2.2 to 6.5 mm. long; face weakly convex medially; margin of clypeus broadly convex, often somewhat impressed and centrally sometimes with a pair of weak teeth; temple short, above very short and flat; flagellum slender, slightly thickened beyond the basal third; maxillary palpus usually longer than height of head; posterior transverse mesosternal carina complete (except in the female of *P. hiatus*); sternaulus moderately deep, extending about 0.65 the length of mesopleurum; mesoscutum often polished, its notaulus rather sharp and long, being discernable for more than half the length of mesoscutum; areolet absent; second recurrent vein with two widely separated bullae; areola pentagonal, sometimes confluent with second lateral areas; first tergite much broadened apically, its spiracle at about the apical 0.4; epipleura very narrow to moderately wide, separated from their tergites by creases on the second, third, and usually the fourth tergites; ovipositor about 1.2 as long as first tergite; ovipositor a little compressed, its apex somewhat lanceolate.

This is a large genus of the Oriental Region. Two species occur in Micronesia. These two are somewhat atypical in having the epipleura rather broad, the epipleurum of the fourth segment not separated from its tergite by a crease, and the maxillary palpus relatively short.

## KEY TO MICRONESIAN SPECIES OF PARAPHYLAX

1. Propodeum and second abdominal tergite mat; subtegular ridge black; posterior transverse mesosternal carina incomplete in female.....**hiatus**  
 Propodeum and second abdominal tergite polished; subtegular ridge yellow; posterior transverse mesosternal carina complete in female.....**badius**

9. *Paraphylax hiatus* Townes, n. sp.

*Pezomachus* sp. Fullaway, 1946, B. P. Bishop Mus., Bull. 189:224 (Guam).

Fore wing 2.2 to 3.7 mm. long; mesoscutum polished, impunctate except for a central mat area behind the middle; mesopleurum polished or subpolished, anteriorly with fine setiferous punctures; metapleurum subpolished, with close fine punctures; propodeum mat, in the female posteriorly subpolished and with indistinct fine punctures and wrinkles; areola rather regularly pentagonal, weakly separated from second lateral areas or sometimes confluent with them; first, second, and third tergites weakly mat, the first polished on its apical 0.13, the second polished on its apical 0.25, and the third polished on its apical 0.3; fourth and following tergites polished; all tergites practically hairless.

Blackish. Mouthparts (except mandible in male), scape, pedicel, extreme hind corner of pronotum, tegula of female, and legs fulvous, the tibia basally and apically, and the hind tarsus tinged with brown; tegula of male yellow; flagellum light brown basally; wings subhyaline, their stigma and veins brown.

Holotype, female (BISHOP 2568), Machanao, Guam, June 4, 1936, Swezey. This is one of the specimens reported as *Pezomachus* sp. by Fullaway, 1946. Paratypes (all Guam): Female (US), Mt. Santa Rosa, June 1945, Bohart and Gressitt; female (TOWNES), Orote Pt., June 1936, Swezey; male (BISHOP), Pilgo R., May 1945, Bohart and Gressitt; female (TOWNES), Pt. Ritidian, light trap, Aug. 1945, Gressitt; female (BISHOP) Aug. 1945, Bohart and Gressitt; female (TOWNES), Sinajana, June 1936, Swezey; male (US), Tumon Bay, Apr. 1948, Maehler.

DISTRIBUTION: S. Mariana Is. (Guam).

10. *Paraphylax badius* Townes, n. sp.

Fore wing 3.1 to 3.2 mm. long; mesoscutum polished, with a few setiferous punctures which are very sparse on the lateral lobes and rather dense anteriorly on the middle lobe; mesopleurum polished, hairless except on and near the subtegular ridge and for a few hairs near the edge; metapleurum subpolished, with moderately dense, fine setiferous punctures; propodeum polished, with sparse scattered setae; areola completely fused with second lateral areas; abdominal tergites polished, smooth, and hairless except for a few hairs laterally and apically.

Blackish, abdomen dark brown. Mouthparts, scape, pedicel, and legs light fulvous, the fore and middle coxae and trochanters whitish and the hind tarsus and apical part of hind tibia brownish; propleurum and adjacent part of pronotum brownish yellow; tegula, subtegular ridge, and hind corner of pronotum yellow; wings hyaline, their veins and stigma dark brown.

Holotype, female (US 63491), collected in lowland secondary forest, Awakpah, Ponape, July 12, 1946, Townes. Paratype, female (MCZ), Airfield No. 2, Ponape, June-Sept. 1950, Adams.

DISTRIBUTION: Eastern Caroline Is. (Ponape).

Genus *Diatora* Foerster

*Diatora* Foerster, 1868, Naturhist. Ver. Preuss. Rheinlande, Verhandl. 25: 180  
(type: *Diatora prodeniae* Ashmead; included by Ashmead, 1904).

*Microtoridea* Viereck, 1912, U. S. Nat. Mus., Proc. 42: 150 (type: *Microtoridea lissonota* Viereck; original designation).

*Zaparaphylax* Viereck, 1913, U. S. Nat. Mus., Proc. 44: 647 (type: *Zaparaphylax perinae* Viereck = *lissonota* Viereck; original designation).

Fore wing 2.0 to 4.5 mm. long. Habitus and characters as illustrated in figure 5. Mesoscutum polished, almost hairless except near the edges; notaulus extending as a sharp groove to hind 0.2 of mesoscutum; lateral edge of second and third tergites rolled under, without a sharp lateral crease or carina to separate their epipleura.

This genus contains two species in the Oriental Region, one of which reaches Micronesia.

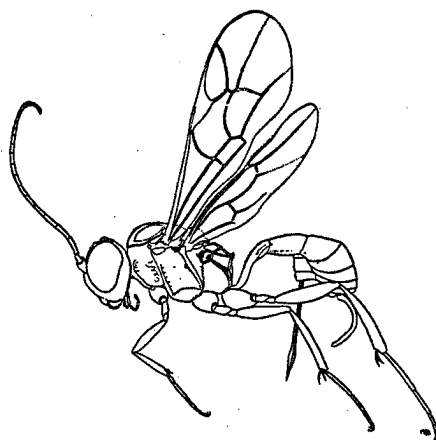


FIGURE 5.—*Diatora lissonota*, female.

11. *Diatora lissonota* (Viereck). (Figure 5.)

*Microtoridea lissonota* Viereck, 1912, U. S. Nat. Mus., Proc. 42: 150 (Mysore, India, reared from *Ophiusa melicerta*; type, female, US).

*Zaparaphylax perinae* Viereck, 1913, U. S. Nat. Mus., Proc. 44: 647, male, female (Taihoku, Formosa, reared from *Perina munda*; type, female, US); new syn.

*Microtoridea secunda* Cushman, 1934, Indian Forest Rec. 20: 1, both sexes (Dehra Dun, India, reared from *Apanteles machaeralis*; type, female, US); new syn.

*Hemiteles guamensis* Fullaway, 1946, B. P. Bishop Mus., Bull. 189: 223 (Piti, Guam, reared from *Marasmia venilalis*; type, female, HSPA); new syn.



Fore wing 2.0 to 4.5 mm. long; postmedian part of sternaulus smooth, not foveolate, the adjacent part of mesopleurum not striate; areola variable, from 0.7 to 2.0 as wide as long; surface of area dentipara smooth; metapleurum rather smooth and shiny, with fine, very faint punctures, next the juxtacoxal carina a little rugulose.

Black. Scape, pedicel, mouthparts, front and middle coxae and trochanters, hind corner of pronotum, tegula, subtegular ridge, and underside of abdomen except often for the sternal sclerites yellow; tinges on first and second flagellar segments, front and middle legs beyond trochanters, and usually the hind legs fulvous. The hind tibia is paler fulvous, the base and apex faintly to distinctly infusate. The hind coxa may be brownish or blackish, and the hind femur sometimes brownish. The hind tarsus is infusate. The coloration of the second and following abdominal tergites is variable, grading from entirely black, or having yellow basolateral triangles on the second tergite and sometimes on the third, or having the second tergite ferruginous basally and blackish apically, to having all of the second and following tergites more or less fulvous.

DISTRIBUTION: India, Philippines, Formosa, S. Marianas, Carolines.

S. MARIANA IS. GUAM: Piti, female (type of *guamensis*), reared from *Marasmia venilialis*, May 1956, Swezey (HSPA) (The cocoon from which this specimen emerged looks like that of a microgasterine braconid and seems too large for the ichneumonid parasite to have made it, thus indicating that the ichneumonid was a secondary rather than a primary parasite on *Marasmia venilialis*); Upi Trail, male, among ferns, May 1936, Swezey (BISHOP).

PALAU. BABELTHUAP: Ulimang, male, Dec. 1947, Dybas (CM). ULEB-SEHEL (Ngarmalk): Northwest part, female, Dec. 1952, Gressitt (BISHOP).

KUSAIE. Mt. Buache, male, in primary forest at 460 to 590 m., Aug. 1946, Townes (US).

#### Genus *Thalops* Townes, new genus

Fore wing 3.0 mm. long. Habitus as illustrated in figure 6. Face with median large, subconical elevation; clypeal margin broadly rounded, slightly reflexed; temple moderately long and moderately convex; flagellum slender, slightly thickened beyond the basal third; posterior transverse mesosternal carina complete, strong; sternaulus strong, extending to middle coxa; mesoscutum mat, hairy, its notauli very strong, ending in a rugose median area near posterior 0.3 of mesoscutum; venation as in figure 6,a; propodeum as in figure 6,c; first tergite triangularly widened apically, its spiracle at its apical 0.42; epipleura of second and third abdominal segments broad, that of the second segment separated from its tergite by a carinate crease, that of the third segment not separated from its tergite.

Type: *Thalops fessus*, n. sp.

Only a single species is known; it is described below.

#### 12. *Thalops fessus* Townes, n. sp. (fig. 6).

Fore wing 3.0 mm. long; habitus as in figure 6,a; head in front view as in figure 6,b; face mat, densely hairy but the punctures indistinct; lateral ocellus separated from eye by about 1.2 its long diameter; mesoscutum mat, hairy, without evident punctures, its notaulus sharp and foveolate, ending posteriorly in a median rugose area; scutellum laterally carinate to near its apex; mesopleurum longitudinally rugulose-punctate, weakly so above, strongly so near sternaulus; metapleurum coriaceous, its juxtacoxal carina strong; propodeum as in figure 6,c; first tergite mat, with irregular longitudinal striae, on its basal half with lateral and dorsal pairs of longitudinal carinae; second tergite subpolished, with close longitudinal striae except on the apical 0.12, which is polished; third tergite weakly mat,

its basal 0.6 weakly and irregularly wrinkled; fourth and following tergites smooth; all exposed tergites with moderately dense hair.

Blackish. Mouthparts fulvous; antenna fulvous basally, shading to brown near basal third, the rest dark brown; legs dull fulvous, the outer lower side of hind coxa tinged with brown, fore and middle tarsi brown apically, narrow apex of hind femur and broader base and apex of hind tibia brownish, and hind tarsal segments brownish apically; tegula pale fulvous; wings hyaline, their stigma and veins light brown.

Holotype, female (US 63492), Angaur I., Palau, Feb. 4, 1948, Dybas.

DISTRIBUTION: Western Caroline Is. (Palau).

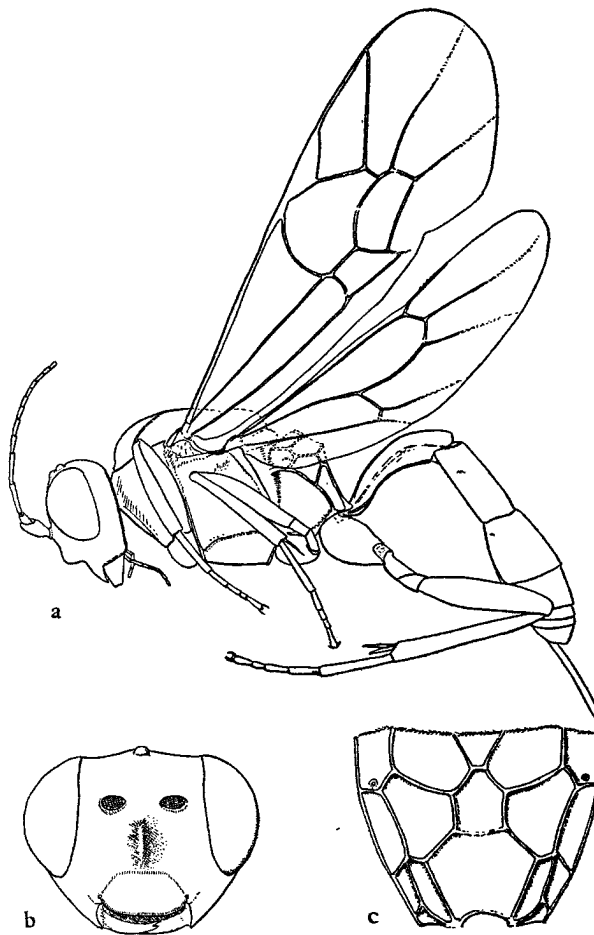


FIGURE 6.—*Thalops fessus*, female: a, side view; b, head in facial view; c, propodeum.

## SUBFAMILY PLECTISCINAE

This subfamily is of such variable morphology that it defies definition. The species are mostly small, delicate, and slender, with the clypeus narrow and convex, slender mandibles, usually carinated propodeum, two bullae in the second recurrent vein, spiracle of the first tergite near the middle, and ovipositor with a subapical dorsal notch.

A single genus is known from Micronesia, distinguishable from all other Micronesian ichneumonids by the characters in the key to subfamilies.

Genus *Proclitus* Foerster

*Proclitus* Foerster, 1868, Naturhist. Ver. Preuss. Rheinlande, Verhandl. 25: 172 (type: *Proclitus grandis* Foerster; designated by Viereck, 1914).

Synonyms: *Clepticus* (preoccupied) and *Mischoxorides*.

The species of *Proclitus* are small, slender, blackish with pale legs, and with the thorax polished and with very sparse setae. The areolet is absent.

13. *Proclitus*, n. sp.

A specimen of the genus (male, Koror, Palau, May 1953, Beardsley, in BISHOP), has been taken in Micronesia. It represents a new species but is in bad condition, so a new name is not proposed for it.

## SUBFAMILY DIPLAZONINAE

The clypeus is separated from the face by a groove, apically somewhat bilobed. The upper tooth of the mandible is broad and divided into two blunt teeth so that the mandible appears tridentate. The front leg has two trochanters, and the tarsal claws are apparently simple. The abdomen is depressed, with the first abdominal segment broad basally, its spiracle somewhat in front of the middle, with a groove or pit (glymma) in front of the spiracle. The male clasper is rounded apically, and the ovipositor sheath is short, not surpassing the apex of the abdomen.

Genus *Diplazon* Nees

*Diplazon* Nees, 1818, Acad. Caes. Leop. Nova Acta 9: 292 (type: *Ichneumon laetatorius* Fabricius; designated by Viereck, 1914).

Face mat; clypeus with a narrow basal area that is convex, the rest weakly concave; notaulus short but sharp; areolet absent; propodeum carinated; second and third tergites with postmedian transverse groove; spiracle of third tergite above the lateral carina.

This is a Holarctic genus, but one species (*laetatorius*) has spread over most of the world and has reached Micronesia.

14. *Diplazon laetatorius* (Fabricius). (Figure 7.)

*Ichneumon laetatorius* Fabricius, 1781, Species Insectorum 1:424 (Germany; type, female, location unknown).

*Diplazon laetatorius*, Kelley, 1914, Jour. Economic Ent. 7: 294-297 (United States; biology, hosts).—Fullaway, 1946, B. P. Bishop Mus., Bull. 189: 222 (Guam).—Townes, 1946, U. S. Commercial Co., Rept. 14: 47 (Guam).

Fore wing about 5 mm. long; habitus and color pattern as in figure 7. This is a small, stocky species with a pretty pattern in black, white, and red. It is the only ichneumonid in the world whose hind tibia is banded with black, white, and red.

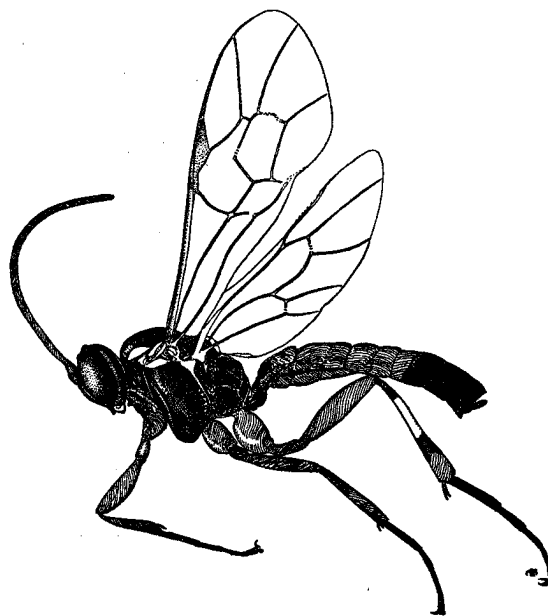


FIGURE 7.—*Diplazon laetatorius*, female.

The distribution is almost worldwide but was possibly Nearctic originally. Males are known only from portions of the Nearctic Region. Elsewhere only females have been captured. The usual habitat is rank weeds. Various species of Syrphidae preying on aphids serve as hosts.

DISTRIBUTION: S. Mariana Is., and most of the rest of the world.

S. MARIANA IS. SAIPAN: Female, northwest coast, Jan. 1945 (CM).  
GUAM: Female, Jan. 1945, R. Bohart (BISHOP); Piti, female, reared from larva attacking aphids on Chinese cabbage, Sept. 1937, Oakley (US).

## SUBFAMILY METOPIINAE

The clypeus is not at all separated from the face; the combined face and clypeus are usually strongly convex. The scape is less than twice as long as wide, and the areolet is triangular or absent. The front leg has one trochanter, and the tarsal claws are visibly pectinate or not. The abdomen is depressed, with the first abdominal segment usually broad and short, with its spiracle at or in front of the middle, laterally with a groove or pit (glymma) in front of the spiracle. The male clasper is rounded apically, and the ovipositor sheath does not surpass the tip of the abdomen.

Genus *Triclistus* Foerster

*Triclistus* Foerster, 1868, Naturhist. Ver. Preuss. Rheinlande, Verhandl. 25: 161 (type: *Exochus podagricus* Gravenhorst; designated by Morley, 1913).

Fore wing 3.0 to 8.5 mm. long; frons with a high lamella between the bases of the antennae, the lamella with a deep dorsal groove; head somewhat cubical, the temple long; areolet present; legs very stout; propodeum with its dorsal and hind faces differentiated and meeting at an angle; first abdominal segment broad, its sternite extending about a fourth of its length and its spiracle at its basal third; epipleurum of second segment narrow, inconspicuous; epipleurum of third and fourth segments moderately wide.

This is a moderately large genus of worldwide distribution. Pupae of small Lepidoptera serve as hosts. One species occurs in the Bonin Islands.

15. *Triclistus aitkini* (Cameron).

*Exochus Aitkini* Cameron, 1897, Manchester Lit. Phil. Soc., Mem. and Proc. 41: 31 (Bengal; type, male, at Oxford).

*Triclistus aitkeni* (*sic*), Morley, 1913, Fauna of India, Hymenopt. 3: 302 (redescription).

*Male*: Similar to female, except for the usual sexual differences.

*Female*: Fore wing about 5.2 mm. long; mesopleurum polished, with moderate punctures that are separated by about 2.0 their diameter, posterodorsally impunctate; metapleurum polished, impunctate, without a juxtacoxal carina; areola confluent with basal area but elsewhere surrounded by strong carinae, the basal area about 0.4 as wide as areola; internal side of second lateral area about 0.55 as long as external side, bounded by strong carinae, but costula sometimes weaker than the other carinae; areolet small, its petiole subequal to height of its open space; hind femur about 2.1 as long as wide; last segment of hind tarsus with a small postmedian projection and hair tuft on inner side; tarsi of moderate stoutness, second segment of hind tarsus about 2.4 as long as wide; first abdominal tergite about 1.2 as long as wide, with moderately coarse punctures that are separated by about 2.0 their diameter, the punctures absent medially; dorsal carinae of first tergite extending to about its midlength; second tergite with moderately coarse punctures separated by about 2.0 their diameter, the punctures absent centrally and medio-apically; third tergite with rather evenly distributed weak punctures that are separated by about 2.5 their diameter; fourth, fifth, and sixth tergites with evenly distributed setae arising from very weak punctures; subgenital plate with moderately coarse punctures separated by about 1.5 their diameter, the apex moderately narrow, broadly notched, the notch about 0.35 as deep as wide.

Black. Underside of scape and pedicel, maxilla, labium, tegula, front and middle legs

except for fulvous tinges as described later, apex of hind coxa, apical part of hind femur prolonged basally along dorsal edge, and hind tibia except apically, yellow; flagellum brown, paler below, especially toward the base; mandible apically tinged with ferruginous; fore coxa basally blackish; fore and middle femora tinged with fulvous except apically; hind leg fulvous except where stated to be yellow, the hind tarsus brown.

DISTRIBUTION: Philippines, Bengal, Bonin Is.

BONIN IS. CHICHI JIMA: Male, July 1951, R. Bohart (BISHOP).

#### SUBFAMILY OPHIONINAE

The clypeus is usually separated from the face by a groove (not separated in *Idechthis*). The areolet is triangular or absent (absent in Micronesian representatives). The front leg has two trochanters, and the tarsal claws are visibly pectinate or not. The abdomen is compressed, at the third segment deeper than wide, with the first abdominal segment narrow and elongate, its spiracle beyond the middle, laterally with or without a groove or pit (glymma) in front of spiracle. The male clasper is various, and the ovipositor sheath is variable, being flexible when long.

#### KEY TO MICRONESIAN TRIBES OF OPHIONINAE

1. First intercubital vein (or the only intercubital vein that is present) joining cubitus beyond the second recurrent by a distance greater than half its length; epomia absent; medium- or large-sized species, usually tawny in color and with the ovipositor not longer than apical depth of abdomen. **Ophionini**  
First intercubital vein joining cubitus basad of, or at the second recurrent..... 2
2. Clypeus not separated from face; tibial spurs inserted in a common area with the tarsus, the apex of tibia thus having a single membranous insertion area ..... **Porizonini**  
Clypeus separated from face by a groove; tibial spurs inserted in a separate area from that of the tarsus, the apex of tibia thus having two insertion areas separated by a sclerotized bridge..... **Cremastini**

#### TRIBE PORIZONINI

Fore wing 2.3 to 14 mm. long; apical margin of clypeus without a fringe of setae, rounded, truncate, slightly concave, or sometimes pointed medially; clypeus not separated from face except sometimes by a faint groove, or in *Nonnus* and *Chriodes* set off by a distinct groove; antennal sockets separated usually by less than diameter of scape; occipital carina dorsally far below level of posterior ocelli; areolet present or absent, if absent the single intercubitus joining cubitus before second recurrent (except in *Hellwigia*); discoidella present or absent; epomia usually distinct; posterior transverse carina of mesosternum complete (except in *Nepiera*); propodeum usually more or less completely areolated but sometimes without carinae, its sculpture usually fine and never coarsely reticulate; middle tibia with two spurs; tibial spurs and tarsus set in same membranous area in end of tibia; tarsal claws often distinctly pectinate; epipleurum of second tergite narrow, separated by a crease, and turned under; ovipositor sheath varying in length from shorter than apical depth of abdomen to longer than abdomen.

This tribe is worldwide and represented by a large number of genera and species. In Micronesia, however, only one species is known.

Genus *Idechthis* Foerster

*Nemeritis* of authors, not of the genotype?

*Idechthis* Foerster, 1868, Naturhist. Ver. Preuss. Rheinlande, Verhandl. 25: 154 (type: *Idechthis oahuensis* Ashmead = *canescens* Gravenhorst; included by Ashmead, 1901). Preoccupied.

Eye not distinctly emarginate opposite antennal socket; propodeum extending beyond middle of hind coxa, its area dentipara defined; first abdominal segment without a glymma, its basal 0.65 or more cylindrical, with the suture separating the tergite from the sternite lateral in position; male clasper with an apical dorsal notch; ovipositor about three times as long as first abdominal segment.

This is a medium-sized genus of almost worldwide distribution, parasitizing medium-sized moths. One species occurs in the Palaus.

16. *Idechthis niger* Townes, n. sp.

Fore wing about 4.3 mm. long; areolet absent, the second intercubitus entirely lacking; areola and petiolar area rather wide, confluent, the areola about 1.9 as long as wide; apical point on male clasper attenuate; ovipositor sheath about 0.7 as long as fore wing.

Black. Mandible yellow, brown apically; palpi pale yellow; scape of male yellow below; scape and pedicel of female yellow, blackish above; tegula and humeral plate yellow; wings hyaline with black veins; legs blackish, the fore coxa except basally, apex of middle coxa, front and middle trochanters, inner side of first trochanter of hind leg of male, all trochanters of female, apices of fore and middle femora, and tibial spurs, yellow; front and middle femora fulvous, the middle femur fuscous below; front tibia fulvous; front and middle tarsi and middle tibia infuscate brownish.

This species differs from most others of the genus *Idechthis* in lacking the areolet. The only others I know with this character are *Campoplex transfuga* Gravenhorst (1829), *Diectes gelachiae* Sonan (1939), and *Hymenobosmina oditesi* Sonan (1939). These are hereby referred to *Idechthis* for the first time. The species *niger* differs from all of the above three in having the hind femur black rather than pale.

Holotype, male (US 64169), at light, Koror, Palau, Mar. 1953, Beardsley. Paratypes (all Koror, Palau): Two males, two females (TOWNES), at light, Mar. 1953, Beardsley; two males, three females (BISHOP, CM), Jan., Apr. 1953, Beardsley; two males, one female (US, TOWNES), Mar. 1948, Maehler; male (BISHOP), light trap, southwestern Koror, Dec. 1952, Gressitt. Paratype, male (BISHOP), Ulebsehel (Auluptagel), Palau, Sept. 1952, Krauss.

DISTRIBUTION: Western Caroline Is. (Palau).

## TRIBE CREMASTINI

Fore wing 2.5 to 13 mm. long; apical margin of clypeus convex, without an apical fringe of setae; clypeus set off from face by a broad groove; antennal sockets separated by about the diameter of scape; occipital carina dorsally, when present dorsally, far below level of hind ocelli; areolet present or absent, when absent the intercubitus meeting cubitus basad of, or sometimes at second recurrent; discoidella present or absent; epomia present,

Genus *Trathala* Cameron

*Trathala* Cameron, 1899, Manchester Lit. Phil. Soc., Mem. and Proc. 43: 122  
(type: *Trathala striata* Cameron; monobasic).

Occipital carina complete above or sometimes narrowly incomplete; hind femur without a tooth beneath; areolet absent; costa extending beyond radial cell by about 1.2 the length of intercubitus; first tergite not fused with the sternite, its ventral margins parallel and distant from each other; gastrocoelus absent; male clasper simple, not lobed; ovipositor not sinuate apically in the Micronesian species.

The species of this genus have previously been included mostly in *Cremastus* or *Zaleptopygus*. A recent inquiry into the genotype of *Cremastus*, with the help of Mr. J. F. Perkins, has indicated that this is congeneric with the genotype of *Zaleptopygus*. *Zaleptopygus* must therefore be synonymized with *Cremastus* (new synonymy), and *Cremastus* as understood by American authors (Cushman, 1917, U. S. Nat. Mus., Proc. 53: 511.—Townes and Townes, 1952, U. S. Dept. Agric., Monogr. 2: 388-393) should have the name *Temelucha*. These three genera (*Trathala*, *Cremastus*, and *Temelucha*) contain most of the species usually referred to *Cremastus* and *Zaleptopygus*, but a few of the species belong to additional genera.

*Trathala* may be distinguished from *Temelucha* as indicated by the key above. It is almost worldwide in distribution but contains only one Micronesian species. Other species referable to *Trathala*, in addition to the genotype, are the Nearctic *aciculatus*, *cleridivorus*, *delicatus*, *granulatus*, *hartii*, *nemoralis*, *latithorax*, *obesus*, *plesius*, *retiniae*, *rosae*, *rostratus*, *similis*, and *tetralophae*, and *Diaparsis coreanus* Uchida (1928) of the Orient. All of the above are new combinations in *Trathala*. References to the original descriptions of the Nearctic species may be found in Townes and Townes (1952, U. S. Dept. Agric., Monogr. 2: 388-390). The species listed on those pages under the genus "*Zaleptopygus*" are referred mostly to the present genus, as listed above, or to *Cremastus* as listed under that genus. Of the remaining species, *mellipes* and *stigmaterus* should be referred to *Neocremastus*, where *mellipes* makes a new combination, while *brunneipennis*, *californicus*, *quintilis*, and *snowi* are of uncertain generic assignment until authentic specimens can be studied.

18. *Trathala flavo-orbitalis* (Cameron), n. comb. (fig. 8).

*Tarytia flavo-orbitalis* Cameron, 1907, Bombay Nat. Hist. Soc., Jour. 17: 589 (Deesa, India; type, female, in London?).

*Cremastus hymeniae*, Vandenberg, 1934, Guam Agric. Exper. Sta., Rept. for 1931-1932, 22 (introduced into Guam; *hymeniae* is a synonym of *flavo-orbitalis*).

*Cremastus flavo-orbitalis*, Fullaway, 1946, B. P. Bishop Mus., Bull. 189: 222 (Guam, Hawaii; hosts: *Eurrhyarodes tricoloralis*, *Margaronia multilinealis*, a leaf roller on *Gymnosporia thompsonii*, and a tortricid



in pod of *Pithecolobium dulce*).—Townes, 1946, U. S. Commercial Co., Rept. 14: 47 (Guam).

Fore wing about 4 mm. long. This is a pale testaceous species with some fuscous areas of variable extent on the head and body. Like other Cremastini, it is elongate, slender, and with a compressed abdomen. The ovipositor sheath is about 0.45 as long as the abdomen.

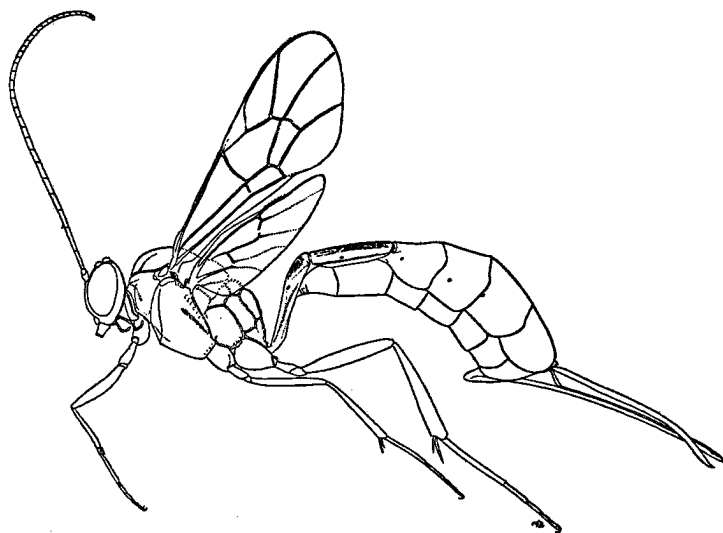


FIGURE 8.—*Trathala flavo-orbitalis*, female.

This species is widely distributed in the Orient. It was introduced into Guam from Japan (Vandenberg, 1934) and its presence in some other Micronesian islands may be the result of purposeful introduction. It seems more likely, however, that it invaded Micronesia by native accidental introductions along with plant material transported in prehistoric times, and that it was present in Guam before being brought from Japan. The species has found its way into so many islands where it was not purposely introduced that it seems logical to ascribe its presence in Micronesia to the same factors. Its hosts include a large number of pyraloid Lepidoptera, many of them economic species. It has not, however, been recorded as achieving economic control of any of them.

DISTRIBUTION: Japan, Southeast Asia, Formosa, Philippines, Hawaiian Is., Mariana Is., Caroline Is., Marshall Is., and United States (an introduction).

N. MARIANA IS. PAGAN: Laguna, male, Apr. 1940, Yasumatsu (KU).

S. MARIANA IS. SAIPAN: Tanapag, eight females, Nov.-Dec., 1944, Apr. 1945, Dybas (CM, US, TOWNES). TINIAN: Female, June 1946,

Townes (US); Hagoi Lake, female, June 1946, Townes (US). GUAM: Agana, male, at light, May 1945, G. Bohart and Gressitt (BISHOP); Fadang, female, June 1945, Dybas (CM); Machanao, two females, ex leaf roller on tree, June 1936, Swezey (HSPA); Pt. Oca, male, at light, May, two males, seven females, May-July 1945, G. Bohart and Gressitt (US, CAS, BISHOP); female, Nov. 1945, Gressitt (US); Talofoto, female, Nov. 1936, Swezey; female, Apr. 1946, Krauss (BISHOP).

YAP. GAGIL-TOMIL: Gagil Distr., female, July 1950, Goss (MCZ).

CAROLINE ATOLLS. ULITHI: Mogmog I., female, July 1946, Townes (US); Potangeras I., two females, Aug. 1945, Dybas (CM).

PONAPE. Colonia, female, Jan. 1953, Clarke (US); female, Dec. 1953, Beardsley.

MARSHALL IS. LIB: Female, Oct. 1953, Beardsley (BISHOP).

#### Genus *Temelucha* Foerster

*Temelucha* Foerster, 1868, Naturhist. Ver. Preuss. Rheinlande, Verhandl. 25: 148 (type: *Temelucha philippinensis* Ashmead; included by Ashmead, 1904).

*Tarytia* Cameron, 1907, Bombay Nat. Hist. Soc., Jour. 17: 588 (type: *Tarytia basimacula* Cameron; designated by Morley, 1913).

*Cremastidea* Viereck, 1912, U. S. Nat. Mus., Proc. 13: 587 (type: *Cremastidea chinensis* Viereck = *biguttulus* Munakata; original designation).

Occipital carina incomplete above, its dorsal ends often more or less downcurved; hind femur without a tooth beneath; areolet absent; costa extending beyond radial cell by about 0.5 to 1.2 the length of intercubitus; first tergite fused with sternite, its ventral margins bowed inward to touch or nearly touch at one point and thus enclose or almost enclose the sternite, rarely the sutures distinguishing tergite from sternite obsolete; gastrocoelus absent; male clasper simple, not lobed; ovipositor not sinuate apically in the Micronesian species.

This is a large genus of almost worldwide distribution. Five species occur in Micronesia. Besides the genotypes listed above and the Micronesian species treated below, the following species with which I am acquainted should be referred to *Temelucha*: The Formosan *Cremastus shirakii* Sonan (1930), the Ethiopian *Cremastus pictus* Holmgren (1868), and all the species listed under *Cremastus* by Townes and Townes (1952, U. S. Dept. Agric. Monogr. 2: 390-392), except for *attenuatus*. These are all new combinations with *Temelucha*. *Cremastus attenuatus* Cushman (1920), should be referred to *Neleoethymus* (new combination). A specimen of *attenuatus* has been compared with the type of the genotype of *Neleoethymus (rufo-ornatus)* Cameron for me by Mr. J. F. Perkins of the British Museum and was found to be very closely related to it.

The Micronesian species treated below all have the first abdominal tergite about 1.1 as long as the propodeum, its slender part apically with a weak

dorsolateral angle but otherwise terete; eyes and ocelli of the sexes of equal size except in *palauensis*; areola of propodeum approximately as long as the petiolar area (though not always separated from petiolar area), and ovipositor not sinuate apically.

KEY TO MICRONESIAN SPECIES OF *TEMELUCHA*

1. Scutellum not at all carinate basally; sides of areola convergent below the costulae ..... 2  
 Scutellum weakly carinate basally; sides of areola subparallel below the costulae ..... 3
- 2(1). Basolateral sides of areola forming an acute angle of about 85°; areola and petiolar area separated by a carina.....*kusaiensis*  
 Basolateral sides of areola forming an obtuse angle of about 95°; areola and petiolar area usually not separated by a distinct carina.....*carolinesis*
- 3(1). Mesopleurum entirely black; hind coxa blackish; meso- and metapleurum with coarse punctures separated by about 0.7 their diameter.....*clarkei*  
 Mesopleurum partly or entirely pale; hind coxa pale or partly brown; meso- and metapleurum with moderate or fine punctures separated by 1.0 to 3.0 their diameter..... 4
- 4(3). Hind coxa brown, its apex pale.....n. sp.  
 Hind coxa entirely pale..... 5
- 5(4). Punctures on meso- and metapleurum moderate, separated by about their diameter; space between eye and ocellus equal to about 0.42 the greatest width of eye.....*yapensis*  
 Punctures on meso- and metapleurum fine, separated by about 2.5 their diameter; space between eye and occipital carina equal to about 0.34 the greatest width of eye in male, equal to about 0.30 the greatest width of eye in female.....*palauensis*

19. *Temelucha kusaiensis* Townes, n. sp.

*Male*: Fore wing about 3.4 mm. long; space between eye and occipital carina equal to about 0.48 the greatest width of eye; cheek about 0.70 as long as basal width of mandible; lateral ocellus separated from eye by about 0.85 its long diameter; meso- and metapleurum mat and with fine punctures that are separated by about 2.0 their diameter; scutellum not at all carinate at the sides basally; areola separated from petiolar area by a carina, apically about 0.6 as wide as at the costula, its basolateral sides forming an acute angle of about 85°.

*Fulvous*. Flagellum dark brown; area enclosing middle of frons, ocellar area, and much of back of head blackish brown; mesoscutum more or less tinged broadly with brown on the three vittae, these usually somewhat confluent; metasternum and lower part of metapleurum often brown; hind trochanters and femur pale brown; hind tibia somewhat infuscate basally and apically; hind tarsus brown; tegula pale; wings hyaline, the veins and stigma blackish brown; propodeum except laterally and area around scutellum blackish brown; first tergite blackish except below; second tergite blackish; third and following tergites dark brown, usually paler near the incisures.

Holotype, male (US 63494), Lele I., Kusaie, Mar. 2, 1953, Clarke. Paratypes: Two males (BISHOP, TOWNES), same data as the type; male, Mutunlik, 22 m., Kusaie, Mar. 18, 1953, Clarke.

DISTRIBUTION: Eastern Caroline Is. (Kusaie).

**20. *Temelucha carolinensis* Townes, n. sp.**

Fore wing about 3.4 mm. long; space between eye and occipital carina equal to about 0.37 the greatest width of eye in male, equal to about 0.42 the greatest width of eye in female; cheek about 0.68 as long as basal width of mandible; lateral ocellus separated from eye by about its long diameter; meso- and metapleurum weakly mat or subpolished, with moderately fine punctures that are separated by about 1.5 their diameter; scutellum not at all carinate on the sides basally; areola usually not separated from petiolar area by a distinct carina but with a series of transverse wrinkles at the juncture of the two areas; areola apically about 0.6 as wide as at costula; basolateral sides of areola forming an obtuse angle of about 95°; ovipositor sheath about 2.5 as long as first tergite.

Yellowish with blackish markings of variable extent, coloration of the type as follows: Scape and pedicel except for fulvous tinges, flagellum, top of head, frons except ventrolaterally, occipital area except near eye, mesoscutum, area around scutellum, metanotum, propodeum except lower edge, first tergite and sternite, second and third tergites, and third and following tergites except ventrally, blackish; metasternum and lower part of metapleurum dark brown; triangular mark along sternaulus and an irregular area in upper part of mesopleurum brown; legs shading from the trochanters to the tips of the tarsi as yellowish to dark brown, the hind legs darker and the tibial spurs pale; tegula yellow; wings hyaline, the veins and stigma dark brown. The type illustrates the maximum of dark markings. In specimens with the minimum of dark markings, the head and thorax lack infuscation except for a blackish ocellar area and the dark markings elsewhere are somewhat paler and reduced in extent.

Holotype, male (US), Colonia, Ponape, Aug. 9, 1946, H. Townes. The following specimens are paratypes: Male (BISHOP), between Temen and Lehda, Ponape, Mar. 1936, Ono; female (TOWNES), Colonia, Ponape, Aug. 1946, Townes; male (US), Fefan, Truk, May 1946, Townes; male (US), Pis, Truk, June 1946, Townes; female (KU), between Sabote and Epin, Pata, Ton (Tol), Truk, Apr. 1940, Yasumatsu and Yoshimura; female (CAS), Epinup, Wena (Moen), Truk, Mar. 1949, Potts; two males, one female (BISHOP, TOWNES), Mt. Tonaachau, Truk, Apr. 1949, Potts.

DISTRIBUTION: Eastern Caroline Is (Truk, Ponape).

**21. *Temelucha clarkei* Townes, n. sp.**

Fore wing about 3.4 mm. long; space between eye and occipital carina equal to about 0.35 greatest width of eye in male, equal to about 0.32 greatest width of eye in female; cheek about 0.70 as long as basal width of mandible; lateral ocellus separated from eye by about its long diameter; meso- and metapleurum subpolished, with coarse punctures separated by about 0.7 their diameter; scutellum basally with weak lateral carinae; areola confluent with petiolar area, its basolateral sides meeting at about a 75° angle, below the costulae approximately parallel-sided; ovipositor sheath about 2.5 as long as first tergite.

Black. Male with face, frons laterally, clypeus, cheek, lower third of temple, and mouthparts, yellow; female with a poorly defined stripe between antennal socket and eye, clypeus, mouthparts, and some of cheek, ochraceous; front and middle legs light brown basally, shading to dark brown apically; tegula brown; wings weakly infuscate, their veins and stigma blackish.

This species is closely related to an undescribed species occurring in Luzon, Philippines. It is named in honor of Dr. J. F. G. Clarke, in recognition of his important collections of insects on Kusaie.

Holotype, male (US 63495), light trap, "Hill 1010" at 300 m., Kusaie, Apr. 13, 1953, Clarke. Paratypes: Six males (US, TOWNES), same data as

the type; three males, five females (US, BISHOP, TOWNES), Lele I., 60 m., Kusaie, Mar. 2, 1953, Clarke.

DISTRIBUTION: Eastern Caroline Is. (Kusaie).

**22. *Temelucha yapensis* Townes, n. sp.**

Fore wing about 3.0 mm. long; space between eye and occipital carina equal to about 0.42 of greatest width of eye; cheek about 0.88 as long as basal width of mandible; lateral ocellus separated from eye by about its long diameter; meso- and metapleurum mat, with moderate-sized punctures separated by about their diameter; scutellum basally with weak lateral carinae; areola confluent with petiolar area or sometimes separated by a carina, its basolateral sides forming an angle of about 75°, below the costula nearly parallel-sided; ovipositor sheath about 2.2 as long as first tergite.

*Coloration of male:* Black. Orbits broadly, back of head below neck, face, clypeus, mouthparts, scape and pedicel except above, pronotum, propleurum, anterolateral margin of mesoscutum, scutellum, tegula, line below tegula, mesosternum except for ferruginous tinges, lower half of mesopleurum except for ferruginous triangle over sternaulus, coxae except for brownish hind side of hind coxa, and trochanters, yellow; scape and pedicel tinged with brown above; flagellum dark brown; mesopleurum, metapleurum, and mesoscutum, ferruginous except where stated to be yellow, the mesoscutum with median lobe and sometimes the lateral lobes brownish; wings hyaline, their veins and stigma dark brown; legs beyond trochanters fulvous, the hind legs shading to brown apically; abdomen below and some of abdominal incisures light brown.

*Coloration of female:* Black. Orbits broadly, back of head below neck, face except for fulvous central area, clypeus, mouthparts, scape and pedicel below, pronotum anteriorly and at hind corner, propleurum, tegula, coxae, and trochanters, yellow; pronotum piceous except where yellow; mesoscutum anterolaterally and along notaulus reddish brown; scutellum reddish brown; mesosternum and lower half of mesopleurum brownish ferruginous except in front of prepectal carina; front and middle legs beyond trochanters fulvous; hind leg beyond trochanters light brown; wings hyaline, their veins and stigma dark brown; ventral membranes of first two abdominal segments and lower half of abdomen on third and following segments, fulvous.

Holotype, female (US 64170), Yap I., Yap, Mar. 28, 1954, Beardsley. Paratypes (all Yap): Male (TOWNES), Kolonia, July-Aug. 1950, Goss; male (MCZ), Ruul Distr., July-Aug. 1950, Goss; male, female (MCZ, TOWNES), Yap I., July-Aug. 1950, Goss; two females (MCZ, TOWNES), western Map I., July-Aug. 1950, Goss; female (BISHOP), Yap I., Oct. 1952, Krauss.

DISTRIBUTION: Western Caroline Is. (Yap).

**23. *Temelucha*, n. sp.**

A specimen from an islet near Koror, Palau (Sept. 1952, Krauss, in BISHOP) represents a new species related to *T. yapensis*. It is not named because the one male specimen seems inadequate for a satisfactory characterization of the species.

**24. *Temelucha palauensis* Townes, n. sp.**

Fore wing about 2.5 mm. long; space between eye and occipital carina equal to about 0.34 the greatest width of eye in male, equal to about 0.30 the greatest width of eye in female; cheek about 0.67 as long as basal width of mandible in male, about 0.36 as long

as basal width of mandible in female; lateral ocellus separated from eye by about 0.62 its long diameter; meso- and metapleurum mat, with fine punctures that are separated by about 2.5 their diameter; scutellum basally with weak lateral carinae; areola confluent with petiolar area, its basolateral sides forming an angle of about 75°, below the costula parallel-sided or slightly narrowed; ovipositor sheath about 2.0 as long as first tergite.

*Coloration of male:* Blackish. Orbits, face, lower half of head behind, clypeus, mouthparts, scape and pedicel below, pronotum, mesoscutum at front end of notaulus, scutellum, tegula, coxae, and trochanters, yellowish; scape and pedicel light brown above; first two flagellar segments light brown below; mesoscutum ferruginous except where stated to be yellow, its median lobe usually brownish anteriorly; mesosternum, metapleurum, and mesopleurum except for an oblique yellowish area, ferruginous; front and middle legs fulvous; hind leg beyond trochanters light brown, shading apically to dark brown, the tibia somewhat infuscate basally and apically; wings hyaline, their veins and stigma brown; abdomen brown below and at the incisures.

*Coloration of female:* Blackish. Scape, pedicel, and first two flagellar segments beneath, hind corner of pronotum, mesopleurum beneath tegula, mesosternum, lower part of mesopleurum except for brown triangle over sternaulus, scutellum, and lower half of abdomen beyond second segment, medium brown; clypeus, cheek, lower third of temple, mouthparts, propleurum, front of pronotum, tegula, coxae, trochanters, and membrane of first two abdominal segments, pale buff or yellowish; orbit tinged with brown, especially opposite antennal socket and on upper part of temple; front and middle legs beyond trochanters fulvous; hind leg beyond trochanters light brown, shading apically to dark brown.

Holotype, male (US 64171), Ulebsehel (Auluptagel) I., Palau, Sept. 1952, Krauss. Paratypes: Two males, one female (BISHOP, CM, TOWNES), same data as type; male, female (BISHOP), northwestern Ulebeshel (Ngar-malk), 25 m., Palau, Dec. 12, 1952, Gressitt; female (US), Koror, Palau, Mar. 1954, Beardsley.

DISTRIBUTION: Western Caroline Is. (Palau).

#### TRIBE OPHIONINI

Fore wing 9 to 29 mm. long; apical margin of clypeus without a fringe of setae, rounded, truncate, concave, or sometimes pointed medially; clypeus usually set off from face by a rounded groove, but sometimes the groove absent, especially medially; antennal sockets separated from each other by about the diameter of scape; occipital carina usually present, dorsally far below level of hind ocelli, ventrally fading out or joining hypostomal carina before base of mandible; areolet absent; intercubitus joining cubital distad of second recurrent by more than half its length; discoidella present; epomia entirely absent; posterior transverse carina of mesosternum complete or incomplete; propodeum commonly with a transverse subbasal carina, but varying from completely areolated to lacking carinae entirely; propodeal sculpture various, mat or polished, smooth, punctate, or variously wrinkled, striate, or reticulate; middle tibia with two spurs; tibial spurs set in same membranous area in end of tibia as the tarsus; tarsal claws strongly pectinate; epipleurum of second tergite narrow, usually separated from its tergite by a definite crease or ridge and turned under; ovipositor usually not longer than apical depth of abdomen, its sheaths not flexible.

This tribe contains medium- or large-sized species, mostly night-flying, tawny in color, and with enlarged eyes and ocelli. Superficially they resemble *Netelia* in the Tryphoninae. Both they and *Netelia* frequently come to lights at night. They fly a little on dull days or at twilight, and may be flushed from

resting places in thick vegetation or on the underside of leaves in the forest. The usual hosts are larvae of medium-sized or larger moths. Two genera occur in Micronesia.

KEY TO MICRONESIAN GENERA OF OPHIONINI

1. Mandible not strongly narrowed nor apically twisted, medially about 0.65 as wide as it is basally; origin of radius usually distant from base of stigma by 2.0 the width of stigma.....**Dicamptus**  
 Mandible strongly narrowed and apically twisted, medially about 0.35 as wide as it is basally; origin of radius usually distant from base of stigma by about 1.5 the width of stigma.....**Enicospilus**

Genus **Dicamptus** Szépligeti

*Dicamptus* Szépligeti, 1905, *Genera Insectorum* 34:28 (type: *Dicamptus giganteus* Szépligeti; monobasic).

*Dicamptus* is close to *Enicospilus* and sometimes synonymized with it. The key states the differences. This is a moderate-sized genus of the Old World tropics. One widely distributed species occurs in western Micronesia.

25. **Dicamptus triangularis** (Morley), n. comb. (fig. 10, a).

*Allocamptus triangularis* Morley, 1912, *Revision Ichneum. Brit. Mus.* 1: 26 (Sumatra; type, female, in BM).

*Allocamptus giganteus*, Fullaway, 1946, *B. P. Bishop Mus., Bull.* 189:222 (Guam; misdetermination of *giganteus* Szépligeti).

Fore wing 11.5 to 14 mm. long. Meso- and metapleura subpolished with close small punctures, in some areas with weak fine striae; propodeum irregularly, rather finely, reticulate apicad of its transverse carina; fore wings as in figure 10, a.

Ferruginous. Ocellar area blackish; wing veins dark brown, costa paler.

DISTRIBUTION: Queensland, New Guinea, Sumatra, Marianas, western Caroline Is.

S. MARIANA IS. TINIAN: Male, June 1946, Townes (US). GUAM: Agana, female (determined as *Allocamptus giganteus* by Fullaway), May 1936, Usinger (BISHOP).

PALAU. KOROR: Female, Dec. 1953, Beardsley (TOWNES); male, female, northeast corner, July 1946, Townes (TOWNES); male, Mar. 1948, Maehler (US); male, female, July 1952, July 1953, Beardsley (BISHOP, CM).

Genus **Enicospilus** Stephens

*Enicospilus* Stephens, 1835, *Illustr. Brit. Ent.* 7:126, pl. 10, fig. e (type: *Ophion merdarius* Gravenhorst; monobasic).

Synonyms: *Henicospilus*, *Allocamptus*, *Dispilus*, *Pleuroneurophion*, *Banchogastra*, *Cymatoneura*, *Ptersopilus*, *Trispilus*, *Leptophion*, *Abanchogastra*,

*Metophion*, *Ceratospilus*, *Atoponeura*, *Ophiomorpha*, *Cryptocamptus*, *Eremotyloides*, *Amesospilus*, *Schizospilus*.

This genus differs from *Dicamptus* as noted in the key. There are many hundreds of species of *Enicospilus*, most of them tropical. Six species occur in western Micronesia.

#### KEY TO MICRONESIAN SPECIES OF ENICOSPILUS

1. Discocubital cell with a single sclerome (fig. 10, *b*).....**pankumensis**  
Discocubital cell with two scleromes..... 2
- 2(1). Basal sclerome centered below origin of radius, the two scleromes widely separated (figs. 9; 10, *c*).....**salomonis**  
Basal sclerome centered distad of origin of radius, the two scleromes closer together ..... 3
- 3(2). Lower half of mesopleurum with strong longitudinal wrinkles and without distinct punctures; fore wing as in figure 10, *d*.....**taiwanus**  
Lower half of mesopleurum without or with only weak longitudinal wrinkles, with distinct punctures..... 4
- 4(3). Metapleurum coarsely rugose, not distinctly punctate; fore wing as in figure 10, *e* .....**pilatus**  
Metapleurum not or weakly and finely rugose, distinctly punctate..... 5
- 5(4). Distal sclerome not elongate (fig. 10, *f*); mandible rather short, its lower edge weakly sinuate.....**receptor**  
Distal sclerome somewhat elongate (fig. 10, *g*); mandible rather long, its lower edge strongly sinuate.....**nocturnus**

#### 26. *Enicospilus pankumensis* Cheesman (fig. 10, *b*).

*Henicospilus pankumensis* Cheesman, 1936, Roy. Ent. Soc. London, Trans. 85: 185 (Arachi, Santa Is., New Hebrides, Aug. 1929; type, female, BM).

*Female*: Fore wing 19 mm. long; clypeus 1.9 as wide as long, almost flat in profile; mandible rather small and short, moderately twisted; temple in profile about 0.31 as long as eye in profile; second flagellar segment 3.0 as long as wide; meso- and metapleura polished, with rather coarse subadjacent punctures, which in some areas tend to row into striae; propodeum with transverse carina moderately strong, apicad of carina with rather fine oblique reticulations and a weak median longitudinal carina; fore wing as in figure 10, *b*; abdomen without long hairs beneath; hind tarsal claw moderate in shape, with about 12 long, blackish pecten teeth and its apical point about 1.3 as long as the apical pecten teeth.

Ferruginous. Wing veins brown, the costa, stigma, and brachius pale brown; orbits largely yellowish.

DISTRIBUTION: New Hebrides, western Caroline Is.

PALAU. KOROR: Female, July 1951, Gressitt (BISHOP).

#### 27. *Enicospilus salomonis* Cameron (figs. 9; 10, *c*).

*Ophion (Henicospilus) expeditus* Kohl, 1908, Akad. Wiss. Wien, Denkschr. 81: 315 (name preoccupied; Upolu, Samoa; type, male, in Vienna).



*Enicospilus salomonis* Cameron, 1911, Linn. Soc. New South Wales, Proc. 36: 361 (Solomon Is., W. W. Froggatt; type, female, BM).

*Henicospilus salomonis*, Cheesman, 1936, Roy. Ent. Soc. London, Trans. 85: 183 [key, synonymy, fig. 5 (erroneously labelled *H. bakeri*), New Hebrides].

*Henicospilus merdarius*, Fullaway, 1946, B. P. Bishop Mus., Bull. 189: 222 (Guam; misdetermination of *merdarius* Gravenhorst).

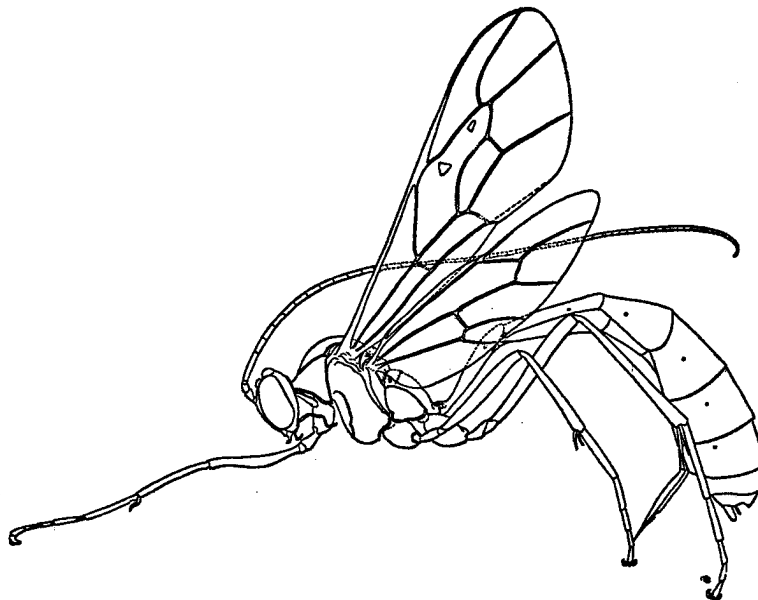


FIGURE 9.—*Enicospilus salomonis*, female.

Fore wing 10 to 14 mm. long; clypeus about 2.0 as wide as long, in profile flat basally, the apical 0.4 convex; mandible rather small and short, weakly twisted; temple in profile about 0.33 as long as eye in profile; second flagellar segment about 2.6 as long as wide; meso- and metapleura with small, sharp, close punctures, in most areas lying between fine oblique wrinkles, the punctures on metapleurum a little coarser than on mesopleurum; propodeum with its basal carina moderately strong, apical of the carina with fine irregular wrinkling which tends to be longitudinal centrally and oblique elsewhere; fore wing as in figure 10, *c*; hind tarsal claw rather short, rather evenly curved, with about eight pale-colored pecten teeth, its apical point about twice as long as the apical pecten teeth; hairs on lower edge of abdomen only a little longer than elsewhere.

Ferruginous, including the head (except for some paler areas), the flagellum, and the wing veins.

DISTRIBUTION: New Guinea, Solomon Is., New Hebrides, Samoa, S. Mariana Is., western Caroline Is.

S. MARIANA IS. GUAM: Pt. Ritidian, male (determined as *H. merdarius* by Fullaway), Apr. 1936, Bryan (BISHOP).

PALAU. BABELTHUAP: Airai, male, female, Apr. 1936, Ono (BISHOP); Airai, female, Apr.-May 1949, Langford (HSPA); female, July 1946, Townes (US); Ngaremeskang, male, Dec. 1952, Gressitt (BISHOP). KOROR: Male, six females, Nov., Dec. 1947 and Jan., Feb. 1948, Dybas (CM, US, TOWNES); female, Apr.-May 1949, Langford (BISHOP). NGERKABESANG: Male, July 1946, Townes (US).

YAP. MAP: Central Map I., female, July-Aug. 1950, Goss (MCZ); western Rumung I., female, July-Aug. 1950, Goss (MCZ). YAP: Ruul Distr., female, July-Aug. 1950, Goss (TOWNES); Mt. Tabiwol, two males, two females, 150 m., Nov. 1952, Gressitt (BISHOP); central Yap I., two females, July-Aug. 1950, Goss (MCZ).

28. *Enicospilus taiwanus* Uchida (fig. 10, *d*).

*Hemicospilus taiwanus* Uchida, 1928, Hokkaido Imp. Univ., Jour. Fac. Agric. 21: 226 (Tarowan, Kiuhabon, and Baibara in Formosa; types, females, in Sapporo).

*Enicospilus taiwanus*, Chiu, 1954, Agric. Res. Inst. Taiwan, Bull. 13: 66 (Formosa; description, figures).

Fore wing 12.5 to 16.5 mm. long; clypeus about 2.0 as wide as long, in profile weakly convex; mandible rather small and short, weakly twisted; temple in profile about 0.34 as long as eye in profile; second flagellar segment about 3.2 as long as wide; mesopleurum subpolished, with very fine punctures and except above with rather coarse longitudinal wrinkles; metapleurum with rather weak, irregular, moderately coarse, oblique wrinkles; propodeum with its basal carina strong, somewhat apicad of which there are a pair of strong oblique ridges, between the basal carinae and these ridges are somewhat longitudinal irregular rugae, and apicad of the oblique ridges are somewhat concentric irregular rugae; fore wing as in figure 10, *d*; hind tarsal claw rather short, rather strongly curved near the apex, with about nine moderately long, pale pecten teeth, the apical point of claw about 1.75 as long as the apical pecten teeth; lower edge of male abdomen apically with moderately long, dense hairs.

Fulvous. Wing veins fulvous to brown, the subcosta darker; sometimes the mesoscutal stripes, mesosternum, and lower part of mesopleurum, infusate; head mostly yellowish.

I was able to study Uchida's type in 1954 and have a Formosan specimen that was matched with the type at that time.

DISTRIBUTION: Formosa, Okinawa, Hainan I., Bonin Is.

BONIN IS. CHICHI JIMA: Female, July 1951, R. Bohart (US).

29. *Enicospilus pilatus* Townes, n. sp. (fig. 10, *e*).

*Male*: Fore wing 13.5 mm. long; clypeus 2.1 as wide as long, in profile almost flat; mandible rather small, short, and weakly twisted; temple in profile 0.38 as long as eye in profile, rather convex; second flagellar segment 2.0 as long as wide; mesopleurum with rather coarse sharp wrinkles, weaker above, below passing into irregular oblique wrinkling; mesopleurum next middle coxa with a swelling that is separated below by a distinct impression; metapleurum mat, with coarse, irregular, oblique rugae; propodeum with its basal transverse carina rather strong, apicad of the carina with very coarse reticulate rugae, without a definite pattern; fore wing as in figure 10, *e*; hind tarsal claw of moderate length, sharply curved apically, with about 16 blackish pecten teeth, the apical point of claw about 2.2 as long as apical pecten teeth; hairs on lower edge of abdomen

very little longer than elsewhere; male clasper unusually narrow and pointed apically, the apex obliquely truncate.

Ferruginous, including the flagellum and wing veins; head yellowish ferruginous.

Holotype, male (BISHOP 2569), Kolonia, Yap, May 18, 1936, Ono.

DISTRIBUTION: Western Caroline Is. (Yap).

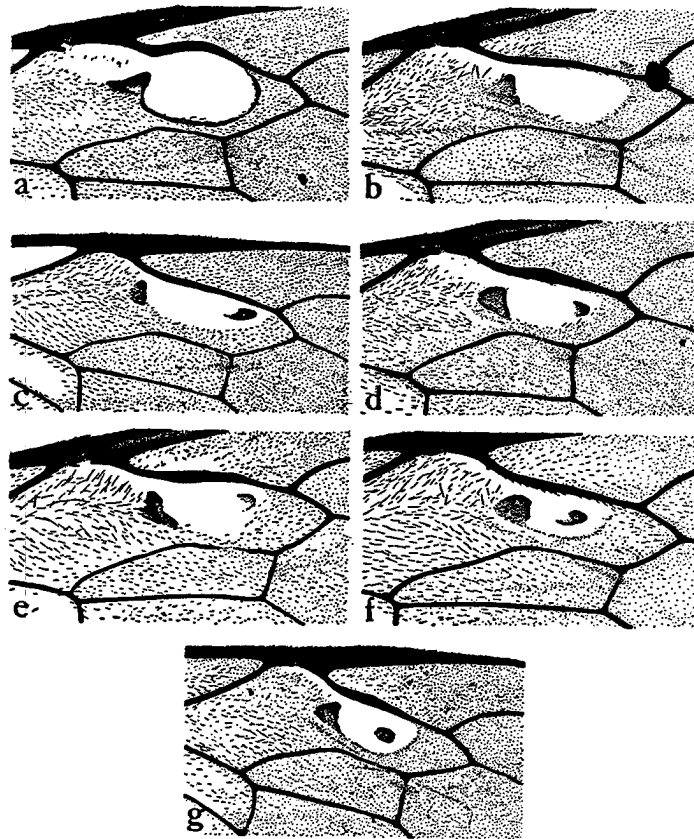


FIGURE 10.—Central part of front wing: a, *Dicamptus triangularis*; b, *Enicospilus pankumensis*; c, *E. salomonis*; d, *E. taiwanus*; e, *E. pilatus*; f, *E. receptor*; g, *E. nocturnus*.

30. *Enicospilus receptor* Chiu (fig. 10, f).

*Enicospilus receptor* Chiu, 1954, Agric. Res. Inst. Taiwan, Bull. 13: 40  
(Koshun, Formosa, Nov. 27, 1923; type, female, in Taipei).

Fore wing 15 to 20 mm. long; clypeus about 1.9 as wide as long, in profile moderately convex; mandible rather small, short, and weakly convex; temple in profile about 0.30 as long as eye in profile; second flagellar segment about 2.8 as long as wide; mesopleurum with small close punctures, in its lower third the punctures confluent into irregular transverse wrinkles; metapleurum somewhat mat, with subadjacent small punctures; apical

0.4 of scutellum with strong longitudinal striae (these absent in the other Micronesian species); propodeum with its basal carina moderately strong, apicad of the carina irregularly wrinkled, the wrinkles tending to be longitudinal medially and oblique or weakly concentric elsewhere; fore wing as in figure 10, *f*; hind tarsal claw of moderate length, sharply curved apically, with about 10 pecten teeth, its apical point about 2.2 as long as apical teeth of pecten; hairs on apical part of lower edge of abdomen somewhat elongate in male, not elongate in female.

Ferruginous. Head largely yellowish; flagellum dark brown; wing veins dark brown, the costa and brachius paler; abdomen beyond fourth segment usually a little infuscate.

DISTRIBUTION: Formosa, Borneo, Java, Moluccas, New Guinea, western Caroline Is.

PALAU. ANGAUR: Female, May 1954, Beardsley (BISHOP).

**31. *Enicospilus nocturnus* Kohl (fig. 10, *g*).**

*Ophion (Hemicospilus) nocturnus* Kohl, 1908, Akad. Wiss. Wien, Denkschr. 81: 315 (Upolu, Samoa; type, female, in Vienna).

Fore wing 10 to 14 mm. long; clypeus about 1.7 as wide as long, in profile moderately convex, most strongly convex in its apical 0.4; mandible rather large and long, strongly twisted; temple in profile about 0.40 as long as eye in profile; second flagellar segment about 3.3 as long as wide; mesopleurum with close, fine punctures, which below are confluent with small irregular wrinkles; metapleurum with fine, weak punctures and weak, small, irregularly oblique wrinkles; propodeum with its basal carina moderately strong, apicad of the carina with rather fine irregular wrinkling which tends to be longitudinal medially and oblique elsewhere; fore wing as in figure 10, *g*; hind tarsal claw of moderate length, strongly curved apically, with a pecten of about 11 pale brown teeth, its apical point about 1.8 as long as the apical pecten teeth; hairs on apical part of lower edge of abdomen somewhat elongate in male, not elongate in female.

Ferruginous. Head mostly yellowish; wing veins except costa dark brown; abdomen blackish beyond fourth segment.

DISTRIBUTION: Solomons, Samoa, Java, India, Philippines, Okinawa, Bonins.

BONIN IS. CHICHI JIMA: Female, 1931, Motoike (Tokyo). MUKO JIMA: Male, July 1951, R. Bohart (BISHOP).

SUBFAMILY MESOCHORINAE

The clypeus is not separated from the face or is separated by a weak depression; the combined face and clypeus are broad and weakly convex. The areolet is large and rhomboidal. The front leg has two trochanters, and the tarsal claws are pectinate. The abdomen is depressed to compressed with the first abdominal segment narrow, its spiracle a little beyond the middle, laterally with a groove (glymma) in front of the spiracle. The male clasper is drawn out as a slender rod, and the ovipositor sheath is 0.4 to 0.8 as long as the first abdominal segment, rigid, polished, and weakly convex.

These are small species that are usually secondary parasites. Two genera are known from Micronesia.

## KEY TO MICRONESIAN GENERA OF MESOCHORINAE

- |   |                      |
|---|----------------------|
| 1. Males .....  | 2                    |
| Females .....   | 3                    |
| 2. Spiracle of first abdominal tergite near its middle.....   | <i>Stictopisthus</i> |
| Spiracle of first abdominal tergite near its apical 0.37 (in Micronesian species)                                     |                      |
| .....   | <i>Plectochorus</i>  |
| 3. Ovipositor sheath about 12 times as long as wide; apex of propodeum basad of middle of hind coxa.....              | <i>Stictopisthus</i> |
| Ovipositor sheath about 4 times as long as wide; apex of propodeum reaching to or beyond apical 0.7 of hind coxa..... | <i>Plectochorus</i>  |

Genus *Stictopisthus* Thomson

*Stictopisthus* Thomson, 1886, Soc. Ent. France, Ann. VI, 5: 327 (type: *Mesochorus bilineatus* Thomson; designated by Viereck, 1914).

Transverse carina across upper part of face straight, not dipped medially; upper end of prepectal carina reaching swollen marginal rim of mesopleurum; nervulus distad of basal vein; nervellus not broken, the discoidella completely absent; apex of propodeum not reaching to middle of hind coxa; first tergite beyond spiracle not carinate laterally; abdomen of female not unusually elongate; ovipositor sheath about 12 times as long as wide.

This is a genus of many species and almost worldwide distribution. A single specimen has been captured in Micronesia, on Guam.

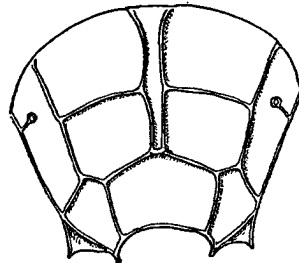


FIGURE 11.—*Stictopisthus guamensis*, propodeum.

32. *Stictopisthus guamensis* Townes, n. sp. (fig. 11).

*Bathymetis* sp. Fullaway, 1946, B. P. Bishop Mus., Bull. 189: 224 (Guam).

*Male*: Fore wing 2.2 mm. long; face 1.3 as wide as long, evenly convex, with coarse, evenly distributed punctures that are separated by about 0.7 their diameter; mesopleurum polished, its upper 0.2 with rather dense small punctures, the rest with rather sparse small punctures that are separated by about 2.0 their diameter; metapleurum with weak punctures separated by about 0.7 their diameter; propodeum as in figure 11, the areola being unusually narrow; nervulus beyond the basal vein by 0.3 its length; tarsal claws apparently simple; postpetiole polished, with a median longitudinal groove that fades out apically, and with a few scattered aciculate punctures which are denser medially; second and following tergites polished, impunctate.

Ochraceous. Flagellum dark brown; meso- and metanota light brown; propodeum pale brown; hind tibia infuscate basally and apically; hind tarsus brown; wings hyaline, the stigma and heavier veins brown, the other veins pale brown; first tergite dark brown, paler basally, below, and at the extreme apex; second tergite dark brown, its apical 0.12 ochraceous; third and following tergites dark brown, the third ochraceous basally; underside of abdomen fulvous.

Holotype, male (BISHOP 2570), (determined as *Bathymetis* sp. by Fullaway), Upi Trail, Guam, May 5, 1936, Swezey.

DISTRIBUTION: S. Mariana Is.

#### Genus *Plectochorus* Uchida

*Plectochorus* Uchida, 1933, Ins. Matsumurana 7:163 (type: *Mesochorus iwatensis* Uchida; original designation).

Similar to *Stictopisthus* except as characterized in the key. There are no generic characters for distinguishing males of this genus from those of *Stictopisthus*, though the males of the single Micronesian species of each of the two genera may be separated as indicated in the key.

There are four known species of *Plectochorus*, one in Japan, two in the Philippines, and the species below from the Palau.

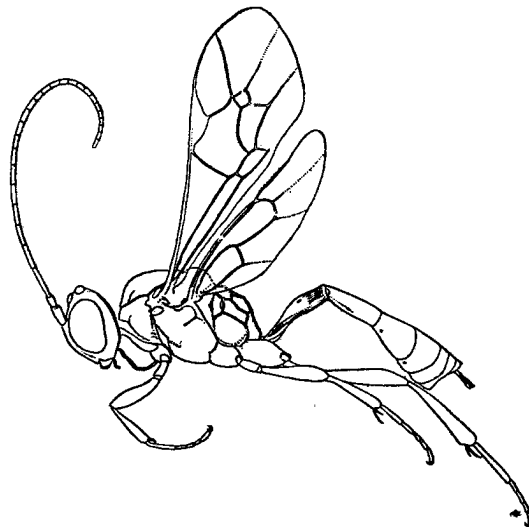


FIGURE 12.—*Plectochorus palauensis*, male.

#### 33. *Plectochorus palauensis* Townes (fig. 12).

*Plectochorus palauensis* Townes, 1956, Philippine Jour. Sci. 85 (2): 260 (Palau, June 1953, Beardsley; type, female, in BISHOP).

Fore wing about 2.4 mm. long; punctures on lower half of mesopleurum rather fine, separated by about 2.5 their diameter; propodeum of male extending to basal 0.3 of hind

coxa in male, extending to apical 0.8 of hind coxa in female; second lateral area of propodeum about 1.7 as long as wide; areola separated from petiolar area by a carina in male, not separated in female; second tergite about 2.0 as long as wide in male, 2.2 as long as wide in female.

Ferruginous. Flagellum brownish except basally; ocellar area, occiput, lateral 0.3 of mesoscutum, propodeum, upper part of dorsal division of metapleurum, first abdominal segment except for a pale area dorsally at apex, and second abdominal tergite except for a pale area apically, piceous or fuscous; second abdominal tergite somewhat paler centrally, especially in female; third tergite mostly piceous; fourth and following segments brown; ovipositor sheath piceous; wings hyaline, the veins light brown; hind tibia lightly infuscate at base, more sharply infuscate at apex.

DISTRIBUTION: Western Caroline Is.

PALAU. KOROR: Female, June 1953, Beardsley (type, BISHOP 2571); male, July 1953, Beardsley (TOWNES). ULEBSEHEL (Auluptagel): Male, Sept. 1952, Krauss (US).

#### FAMILY STEPHANIDAE

The Stephanidae is a family of relatively large, elongate parasitic Hymenoptera. The species have a spherical head, long neck, stalked abdomen, long hind coxa, swollen hind femur, and long ovipositor. They resemble some of the spathiine Braconidae, but may be distinguished from these and from all other Hymenoptera by the habitus (illustrated in figure 13), the crown of five teeth on the head surrounding the median ocellus, and the absence of apical spurs on the middle tibia. They are related to the Braconidae and Ichneumonidae.

Stephanids are often collected on dead tree trunks. They are sluggish and awkward in walking and slow in flight. They are presumably parasitic on wood-boring beetles. One species occurs in Micronesia.

#### Genus *Foenatopus* Smith

*Foenatopus* Smith, 1860, Linn. Soc. London, Jour. Zool. 4, suppl.: 58 (type: *Stephanus indicus* Westwood; included by Smith, 1861).

This is a large genus of the Old World tropics.

#### 1. *Foenatopus cervinus* Townes, n. sp. (fig. 13).

Habitus, proportions, and coarser sculpture as in figure; frons finely transversely striate, a little mat above; area around ocelli irregularly wrinkled; top of head finely transversely striate; pronotum mat, the microreticulations with a transverse direction; front 0.25 of mesopleurum densely pubescent and mat, the rest very sparsely hairy and subpolished; hind femur mat.

Blackish brown. Mouthparts except apex of mandible and maxillary palpi, lower 0.65 of temple, face, and median stripe and ventrolateral part of frons, ivory. Scape, pedicel, front and middle tibiae and tarsi, hind tarsus, apex of hind tibia, and extreme base of hind femur, pale brown. Maxillary palpus and flagellum dark brown. Wings distinctly tinged with brown, their veins blackish. Teeth on hind femur concolorous with femur.

The brownish wings of this species are an unusual feature which, together with its structural characters, should make it recognizable.

Holotype, male (US 63496), Tsurihama, Chichi Jima, Bonin Is., June 23, 1949, A. R. Mead.

DISTRIBUTION: Bonin Is.

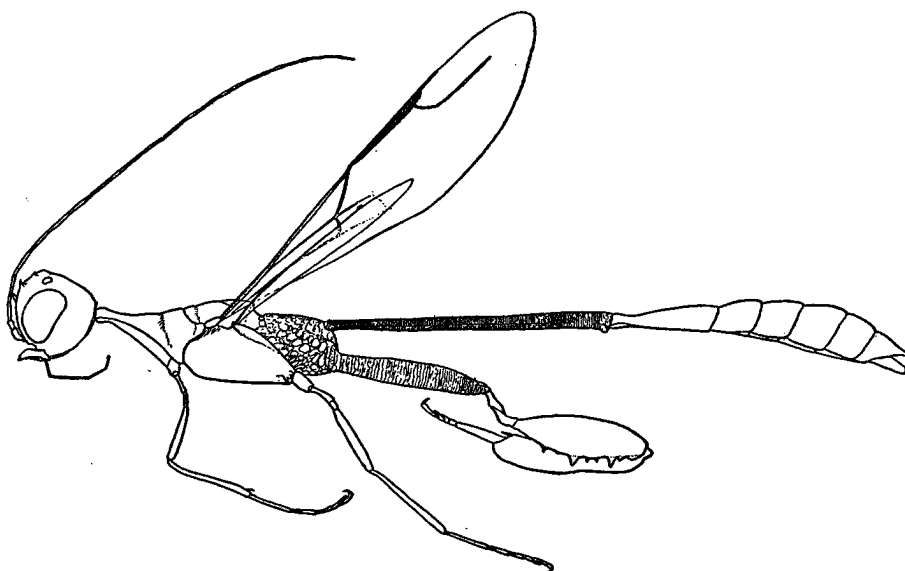


FIGURE 13.—*Foenatopus cervinus*, male.

#### FAMILY EVANIIDAE

The family Evaniidae is an isolated group of parasitic Hymenoptera most closely related to the Serphoidea. It differs from all but a few other Hymenoptera in having the abdomen attached near the top of the propodeum instead of down near the hind coxa, and from these few in abdominal structure as follows: The first abdominal segment is cylindrical, while the rest of the abdomen is flattened, subcircular or subtriangular, and attached to the first segment by a movable joint. The antenna always has 13 segments, the hind wing is without closed cells, and there is a long anal lobe on the hind wing. Figure 14 illustrates the general habitus of the family.

The species of Evaniidae are parasitic in the egg capsules of Blattidae, and are most abundant in the tropics, where their hosts are most common. A few species have been widely distributed by man along with his domestic cockroaches. Two such species occur in Micronesia. A third Micronesian species has been recently introduced into Saipan, probably from the Philippines. These three introduced species comprise the total evaniid fauna of Micronesia.



## DISTRIBUTIONAL LIST OF MICRONESIAN EVANIIDAE

1. *Evania appendigaster*: Worldwide in tropic and warm temperature climates; Bonins, Marianas, Carolines, Marshalls, Gilberts, and Wake.
2. *Prosevania variiceps*: Philippines, Saipan.
3. *Szepligetella sericea*: New Guinea, New Hebrides, Philippines, Fiji, Tonga, Swains Island, Marquesas, Tahiti, Hawaii, Carolines, Marshalls, and Gilberts.

## KEY TO MICRONESIAN GENERA OF EVANIIDAE

1. Transverse constriction on hind coxa not distinct on ventrolateral face of coxa; base of middle coxa separated from base of hind coxa by about 2.0 the length of the middle coxa; metasternum large and rather evenly convex; hind coxa beneath with a curved longitudinal carina next to metasternal fork (not visible when coxa is turned outward); shoulders of pronotum rounded, without a sharp transverse ridge; mediellan vein strong for about 0.9 the distance to the wing margin.....**Evania**
- Transverse constriction on hind coxa distinct on ventrolateral face of coxa, completely encircling the coxa; base of middle coxa separated from base of hind coxa by about 1.0 to 1.5 the length of middle coxa; metasternum smaller; hind coxa beneath without a curved longitudinal carina next to metasternal fork, but sometimes with a curved groove in that position; shoulders of pronotum with a sharp transverse ridge; mediellan vein distinct for less than 0.8 the distance to wing margin..... 2
2. Hind coxa with a curved longitudinal groove next to the metasternal fork (not visible when coxa is turned outward); frons with a carina extending upward from lateral edge of antennal socket; bristles on hind tibia not more than 0.3 as long as width of tibia; mediellan vein distinct, pigmented, and extending beyond the middle of the hind wing; ovipositor sheath projecting hardly at all beyond apex of abdomen.....**Prosevania**
- Hind coxa without a longitudinal groove next to the metasternal fork; frons without a carina extending upward from lateral edge of antennal socket; bristles on hind tibia about 0.35 as long as width of tibia; mediellan vein obsolescent, not pigmented, not distinct as far as the middle of the hind wing; ovipositor sheath projecting conspicuously beyond the apex of the abdomen.....**Szepligetella**

Since the specific characters among the three Micronesian Evaniidae are much more conspicuous than the generic characters, a separate key based on the specific differences is given below.

## KEY TO MICRONESIAN SPECIES OF EVANIIDAE

1. Size small, the fore wing about 3.0 mm. long; face with close fine longitudinal striae.....**Prosevania variiceps**
- Size larger, the fore wing 5.0 to 7.0 mm. long; face either smooth with sparse punctures or coarsely rugose-punctate..... 2
2. Face coarsely rugose-punctate; first abdominal segment with coarse longitudinal striae; hind face of propodeum concave.....**Szepligetella sericea**
- Face smooth, with scattered fine punctures; first abdominal segment smooth with fine punctures; hind face of propodeum flat or somewhat convex.....**Evania appendigaster**

Genus **Evania** Fabricius

*Evania* Fabricius, 1775, Syst. Ent., 345 (type: *Ichneumon appendigaster* Linnaeus; designated by Curtis, 1829).

This genus includes larger species which are mostly Oriental in distribution. The genus has been used as a dumping ground for miscellaneous species in the family, as a result of which the literature gives the impression of its being a much larger genus than it actually is. One species of the genus has been distributed over all the warm and temperate parts of the world, and this one is the most common member of the family in Micronesia.

1. **Evania appendigaster** (Linnaeus). (Figure 14.)

*Ichneumon appendigaster* Linnaeus, 1758, Syst. Nat., ed. 10, 566 (Hispanic America; location of type unknown).

*Evania appendigaster*, Fabricius, 1775, Syst. Ent., 345 (southern Europe and New Holland).—Fullaway, 1912, Guam Agric. Exper. Sta., Rept. for 1911, 33 (Guam; host: *Periplaneta americana*; parasite: *Tetrastichus hagenowii*).—Watanabe, 1934, Sapporo Nat. Hist. Soc., Trans. 13: 281 (Ponape).

*Evania (Evania) appendigaster*, Hedicke, 1939, Hymenopt. Cat. 9:4.—Yasumatsu, 1940, Kontyu Kenkyu 4: 19 (Pagan, Saipan, Rota, Guam, Koror, Truk, Ponape, Kusaie, Wotje, and Jaluit).

Fore wing about 6.5 mm. long. Coloration black, the wings hyaline. This species is distinguished from others in Micronesia by its smooth face and first abdominal segment, both with fine punctures.

The distribution is worldwide in tropical and subtropical areas, and in cities its range extends well into temperate latitudes. It parasitizes the egg capsules of *Blatta orientalis* and of the common species of *Periplaneta*. Frequently it is found in buildings; it is common around outdoor piles of boards, goods, or junk. In 1946 the various stores of military supplies left out in the weather to rot commonly had this insect flying about them.

**DISTRIBUTION:** Worldwide in tropic and warm temperate climates; Bonins, Marianas, Carolines, Marshalls, Gilberts, and Wake.

**BONIN IS.** Male, 1929-1935, Daito (Nishigahara). **CHICHI JIMA:** four males, July 1949, Mead (US); two males, June-July 1949, Langford (BISHOP).

**S. MARIANA IS. SAIPAN:** Nine males, three females, June, Aug. 1951, R. Bohart (BISHOP); male, Nov. 1944, Hagen (CM); Charan, female, Aug. 1944, Hall (TOWNES); northeast coast, male, Dec. 1945, Dybas (CM); near Garapan, female, Jan. 1945, Dybas (US); one to two miles east of Tanapag, three males, one female, Oct., Nov., and Dec. 1944, Dybas (CM); one mile northeast of Tapotchau, male, Jan. 1945, Dybas (US). **AGIGUAN:** Male, June 1952, Kondo (BISHOP). **ROTA:** Male, June 1951,

R. Bohart (BISHOP); male, June 1951, R. Bohart (CAS). GUAM: Two males, one female, 1911, Fullaway (BISHOP); male, Dec. 1945, Bohart (BISHOP); Agana, male, two females, June 1946, Townes (US); female, Aug. 1945, Bohart; female, Nov. 1952, Beardsley (BISHOP); Mt. Alutom, male, Dec. 1945, Gressitt (US); Pt. Amantes, male, June 1945, G. Bohart and Gressitt (BISHOP); Pt. Oca, male, at light, Dec. 1945, Gressitt (US); female, May 1945, G. Bohart and Gressitt (US); two males, light trap, June, July 1945, G. Bohart and Gressitt (BISHOP); Piti, female, July 1936, Swezey (HSPA); Tapungan, female, Aug. 1937, Oakley (US); near Yona, female, Apr. 1946, Krauss (BISHOP).

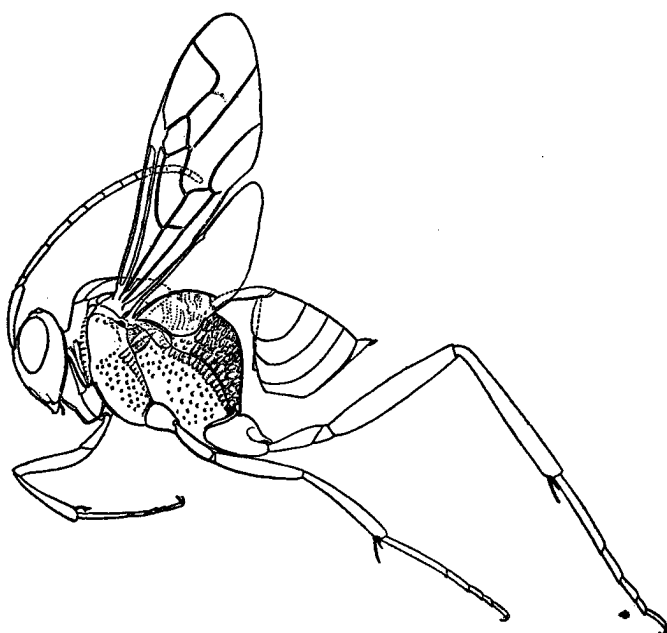


FIGURE 14.—*Evania appendigaster*, female.

PALAU. KOROR: Male, July 1951, Gressitt (BISHOP); male, female, Jan. 1948, Dybas (CM); four males, one female, July, Oct., Nov. 1952, May 1953, Beardsley (BISHOP); female, Oct. 1952, Krauss (BISHOP). ANGAUR: Male, Nov. 1949, Owen (TT).

YAP. YAP: Male, July-Aug. 1950, Goss (MCZ); female, 1952, Krauss (BISHOP); Ruul Distr., female, July-Aug. 1950, Goss (MCZ).

TRUK. TONOAS (Dublon): Male, Feb. 1948, Maehler. WENA (Moen): Two males, one female, Mar., Apr. 1949, Potts (CAS).

PONAPE. Colonia, male, June 1953, Uchiyama (BISHOP); Lenger I., four males, June-Sept. 1950, Adams; Madolenihm Plantation, male, June-Sept. 1950, Adams (MCZ).

WAKE. Three males, one female, Nov. 1953, Joyce (BISHOP).

MARSHALL IS. KWAJALEIN: Male, Mar. 1953, Clagg (BISHOP); Ebeje I., male, Oct. 1953, Beardsley; Kwajalein I., male, Aug. 1946, Townes (US); female, Aug. 1952, Fosberg, no. 1317 (US). LIKIEP: Likiep I., female, Aug. 1946, Townes (US). MAJURO: Ulika, male, Nov. 1953, Beardsley (BISHOP). ARNO: Ine I., two males, June 1950, La Rivers (CAS).

GILBERT IS. ABEMAMA (Aapamana): Male, May 1944, Enke (BISHOP).

#### Genus *Prosevania* Kieffer

*Prosevania* Kieffer, 1911, Soc. Ent. France, Ann. 80:157 [type: *Evania* (*Prosevania*) *afra* Kieffer; designated by Viereck, 1914].

This is a large genus of the Old World tropics. It is especially well represented in the Philippines, whence one species has been introduced into Micronesia.

#### 2. *Prosevania variiceps* (Kieffer), n. comb.

*Evania variiceps* Kieffer, 1916, Philippine Jour. Sci. D11: 332 (Los Banos, Laguna, Luzon, Philippines; type, male, in US).

Fore wing about 3.0 mm. long. Black. Mandible, head at base of mandible, front and middle legs, hind trochanters, hind tibial spurs, first four segments of male antenna except above, and first four segments of female entirely, brown. The mandible and basal four segments of the female antenna are paler brown than the rest. Wings hyaline, in the female with faint infuscate clouding. Face with close, longitudinal striae.

This species is common in grassy waste places in the Philippines, and I have collected it many times in a marshy vacant lot in Manila. Possibly it is parasitic on *Blattella lituricollis*, a small cockroach that swarms in short grass in damper places, both in the Philippines and in parts of Micronesia. The evaniid was probably introduced into Micronesia during or soon after the Second World War.

DISTRIBUTION: Philippines, S. Mariana Is.

S. MARIANA IS. SAIPAN: Four males, two females, June 1951, R. Bohart (US, BISHOP, CAS).

#### Genus *Szepligetella* Bradley

*Szepligetella* Bradley, 1908, Am. Ent. Soc., Trans. 34:172 (type: *Evania sericea* Cameron; original designation).

This genus is represented by at least five species in Australia and by one widely distributed in Melanesia, Polynesia, and Micronesia.

3. *Szepligetella sericea* (Cameron).

*Evania sericea* Cameron, 1883, Ent. Soc. London, Trans. 1883: 191 (Oahu and Hawaii in Hawaiian Is.; types in BM?).

*Evania impressa* Schletterer, 1889, Naturhist. Hofmus. Wien, Ann. 4: 153 (Manila, Tonga, Palau, Fiji; types, both sexes, in Berlin and Hamburg); new syn.

*Szepligetella sericea*, Bradley, 1908, Am. Ent. Soc., Trans. 34: 172 (Hawaii; generic position).—Hedicke, 1939, Hymenopt. Cat. 9: 30.—Townes, 1949, U. S. Nat. Mus., Proc. 99: 527 (New Guinea, Fiji, Philippines, Marquesas, Kapingamarangi, Bikini, Swains I., Tahiti).

*Evania (Evania) impressa*, Hedicke, 1939, Hymenopt. Cat. 9: 25.—Yasumatsu, 1940, Kontyu Kenkyu 4: 20 (Babelthuap, Peleliu, and Yap).

Fore wing about 6.0 mm. long. Coloration black, the wings hyaline. Face with close coarse punctures, in the female with a tendency to group in longitudinal rows.

This species is widespread in Melanesia, Polynesia, and Micronesia. Its congeners are Australian, and it was probably transported to the smaller and more distant islands by human migrations, starting from Australia or Melanesia. It has been reared from *Periplaneta* in Fiji and from *Periplaneta americana*, *P. australasiae*, and *Cutilia soror* in Hawaii.

DISTRIBUTION: New Guinea, Fiji, New Hebrides, Philippine Is., Marquesas, Tonga, Swains I., Hawaiian Is., Tahiti, Caroline Is., Marshall Is., and Gilbert Is.

PALAU. Yasumatsu (1940) records specimens from Babelthuap and Peleliu. Part of the type series of the synonymic *E. impressa* is from Peleliu.

YAP. Yasumatsu (1940) records specimens from Yap.

CAROLINE ATOLLS. KAPINGAMARANGI: Touhou I., female, July 1954, Niering (US).

MARSHALL IS. BIKINI: Three males, July-Aug. 1947, Cole (US). WOTHO: Wotho I., male, Oct. 1953, Beardsley (BISHOP). AILINGLAPALAP: Ailinglapalap I., two males, Oct. 1953, Beardsley (BISHOP). WOTJE: Wotje I., male, Nov. 1948, Langford (HSPA).

GILBERT IS. ONOTOA: Male, Aug. 1951, Moul (US); Aonteuma, two males, on foliage, July 1951, Moul; Tanyah I., six females, July 1951, Moul (BISHOP, CM).

