

REVISION OF THE AUSTRALIAN AND NEW
GUINEAN SPECIES OF *EPIPOMPILUS*
(Hymenoptera : Pompilidae)¹

By Howard E. Evans²

Ten years ago, in this journal, I published a review of the Australian species of *Epipompilus*, basing my study on 12 specimens representing 7 species.³ Since this was the first report of the occurrence in Australia of this interesting and apparently very primitive genus of spider wasps, I felt justified in basing a paper on so little material. I have since spent nine months in Australia and have collected *Epipompilus* in the field and studied the material in several museums. I now have before me 91 specimens representing 33 species. Some of these species are unusually brilliantly colored for Pompilidae, and some have unusual modifications of the wing venation and of the male terminalia. Furthermore, data on the habitat and prey of these wasps are at last available. Hence a second paper seems justified.

Epipompilus is represented by 13 known species in the Americas, collectively ranging from Argentina to extreme southern United States.⁴ One species, *insularis* Kohl, is known from New Zealand (redescribed in my 1962 paper). The genus evidently reaches its greatest development in Australia, where there are not only many more species than elsewhere but a much broader spectrum of morphological features than among the American species.⁵ New Guinea is inhabited by several brilliantly colored and apparently highly evolved species. The genus is not represented elsewhere in the world, although several Tertiary fossils from the northern hemisphere should probably be assigned here; I hope to treat these at a later date.

In the effort to better handle the morphological diversity of the Australian species, I recognized three subgenera in 1962. On the basis of presently available material, I doubt whether these subgeneric names are worth using consistently, and I have not done so in this paper. Several of the characters I used in 1962 do not hold up; the

1. This study was made possible by a Guggenheim fellowship (1969) and by a grant from the National Science Foundation (GB 8746) to study wasps of the southern hemisphere.
2. Museum of Comparative Zoology, Cambridge, Mass.
3. Evans, H. E., 1962. The genus *Epipompilus* in Australia (Hymenoptera : Pompilidae). *Pacif. Ins.* 4 : 773-782.
4. Evans, H. E., 1967. Studies on neotropical Pompilidae (Hymenoptera). III. Additional notes on *Epipompilus* Kohl. *Breviora*, Mus. Comp. Zool. Harvard, no. 273, 15 pp.
5. The genus *Epipompilus* was erroneously called *Planiceps* and placed in the subfamily Planicipinae in *The Insects of Australia* (1970) (Hymenoptera other than ants and bees by E. F. Riek, pp. 867-943), where an unidentified species is figured (Fig. 37. 28A, p. 930). *Planiceps* is a synonym of *Aporus*; *Aporus* and *Epipompilus* are somewhat related genera of Pompilinae (Evans, 1966, *Mem. Amer. Ent. Soc.* 20 : 20-63). If placed in a separate subfamily, the name Aporinae would have priority.

relationships to the American species (including the type species) are obscure and the problems of integrating the known males into this subgeneric grouping are serious. I am not abandoning these subgeneric names entirely, and have discussed them briefly at appropriate points in the text, but there seems little point in overworking subgeneric names of somewhat doubtful value.

Ecology and behavior. The scarcity of these wasps in collections is partly a reflection of their small size and the fact that they rarely visit flowers. A single male, *E. turneri* Evans, taken on *Leptospermum* in New South Wales, represents the only flower record known to me. They are, however, often taken in Malaise traps, and many of the recent records from Australia, New Guinea, and from the Americas involve specimens from these traps.

In Australia, several of the species have been taken on the trunks of living Eucalyptus trees. The depressed form and enlarged front femora of many of the species suggest that these wasps are adapted for crawling under bark and for entering crevices and the retreats of spiders. There is only one established prey record known to me. This is a ♀ *E. exleyae* Evans, new species, from Orparinna, South Australia, pinned with the remains of an immature spider of the family Sparassidae and bearing the label: "found as external parasite on a spider." A related species, *E. rieki* Evans, new species, has been reared on three occasions, although without specific host data. E. F. Riek, in April, 1962, reared a ♀ from a silken spider case beneath bark at Canberra, A. C. T.; the silken cocoon of the wasp was within the spider case. Mr Riek also reared a ♂ of what I believe to be the same species, in November, 1946, also at Canberra. He pinned the wasp with the spider case on a piece of bark, with the note: "parasite of spider." A ♀ *E. rieki* from Edenhope, Victoria, in the collection of the National Museum of Victoria, is pinned with a cocoon and is labeled "pupa Sept. 1948, adult Nov. 1948."

Thus the evidence, such as it is, suggests that these wasps build no nests but seek out spiders beneath bark and oviposit on them *in situ*. Since members of the related genus *Aporus* attack ground-dwelling spiders and leave them in their own burrows⁶, it is not surprising that members of the genus *Epipompilus* behave similarly. Considering the many primitive structural features of members of this genus, I would regard this as representing the ancestral type of behavior in the family, although certain other genera probably have become non-nesting spider parasites secondarily (e. g. *Notocyphus*).

Structural features. Since I have discussed the structural features of *Epipompilus* in papers cited earlier, I shall present only a few general remarks here. Association of the sexes is a difficult problem in this genus because of the marked sexual dimorphism and the scarcity of series from any one locality. As a result I have treated the ♀♀ and ♂♂ in separate sections of this paper. I have been able to associate the 2 sexes of 1 species in only three cases, and even these 3 associations must be considered tentative. I am left with 20 species known only from ♀♀, 10 known only from ♂♂. There is a good chance that some of the "male species" go with "female species," but I have tried in vain to find reasonably probable associations. There are doubtless a good many undiscovered ♀♀ and ♂♂, so it would serve no useful purpose to indulge in rash guesses as what ♂♂ may go with what ♀♀. On the other hand, the structural diversity in this

6. See, for example, Williams, F. X., 1928, Hawaii Sugar Planters' Assoc., Ent. Ser., Bull. 19: 135-140.

genus is sufficiently interesting to justify description of the available material. For example, the genitalia of *elongatus* Evans, new species, are of remarkable form (fig. 17), the parapenial lobes being greatly reduced. It is also interesting to find that certain species have only two submarginal cells, some by loss of the first transverse cubital vein (fig. 3, 4) and some by loss of the 3rd transverse cubital vein (fig. 5). The color patterns, particularly in the New Guinea species, are also most unusual for pompilid wasps. All of these unusual features will need to be taken into consideration when the classification of the Pompilidae is eventually reconsidered from a world point-of-view.

The characters used in the keys and descriptions which follow are the ones in standard use in this group, but a few points should be clarified here. The term "pronotal disc" refers to the pronotum minus the anterior, depressed collar. Height of the head is measured exclusive of the labrum, which is concealed in most Pompilidae but not in *Epipompilus*. Width of the femora (like the head and the middle interocular distance) is measured at its maximum point. Width and height of the submarginal cells are also measured at their maxima. Use of a scale micrometer is essential for following the keys and descriptions.

Sources of material. The following is a list of abbreviations used for institutions that have supplied material for this study. It is also intended as an acknowledgment of the co-operation of the curators of these institutions.

- AMS: The Australian Museum, Sydney
 ANIC: Australian National Insect Collection, Canberra
 BMNH: British Museum (Natural History), London
 BPBM: Bernice P. Bishop Museum, Honolulu
 NMVM: National Museum of Victoria, Melbourne
 QMB: Queensland Museum, Brisbane
 UQB: University of Queensland, Brisbane

KEY TO SPECIES OF EPIPOMPILUS OCCURRING
 IN AUSTRALIA AND NEW GUINEA

♀♀

1. Eyes hairy (i. e., the hairs are dense and conspicuous, longer than width of a facet)..... 2
 Eyes not hairy (i. e., the hairs minute, not longer than width of a facet) (subgenus *Epipompiloides* Evans) 15
2. Claws bifid, the inner ray close to and subparallel to outer ray; wings not or weakly banded (subgenus *Epipompilus* Evans) 3
 Claws dentate, the tooth short, erect, and well separated from outer ray; wings strongly banded (except unbanded in one species) (subgenus *Epipompilus* Kohl)..... 7
3. Head entirely black; front coxae orange anteriorly, contrasting with the femora, which are black on their outer surfaces; fore wing weakly clouded in and below marginal cell 1. *cardaleae**
- Head marked with white at malar space and lower inner eye margins; front coxae and femora not colored as above; wings subhyaline, yellowish or somewhat milky on bas-

* Described as new.

- al 2/3 and slightly dusky apically, but without a cloud in and below marginal cell 4
4. Body thinly pubescent, shining; front broad, strongly polished; vertex forming a strong arc above eye tops; length 4.5-5.0 mm 5. **neboissi***
Body densely clothed with pale pubescence; front of moderate breadth, rather dull, vertex only slightly elevated above eye tops; length 6.0-6.5 mm 5
5. Body largely pale ferrugino-testaceous, with black on front and vertex; third submarginal cell $1.7 \times$ as wide as second 4. **pallidus** Evans
Body in major part black; third submarginal cell only slightly wider than second..... 6
6. Front femora strongly incrassate, $2 \times$ as long as their maximum width; front and thoracic dorsum with fine, whitish setae.....3. **depressus** Evans
Front femora moderately incrassate, $2.3 \times$ as long as their maximum width; front and thoracic dorsum with stiff, brownish setae 2. **montivagus***
7. Wings unbanded; propodeum with a shallow longitudinal groove behind each spiracle; upper interocular distance considerably exceeding lower interocular distance
..... 6. **pauper***
Fore wings strongly banded; propodeum without a groove behind each spiracle; upper interocular distance subequal to or less than lower interocular distance 8
8. Front femora strongly incrassate, less than $2 \times$ as long as their maximum width; median length of pronotal disc considerably exceeding that of mesoscutum; antennal insertions strongly overhanging the very narrow clypeus (clypeus $3.5-4.0 \times$ as wide as high).....14. **rieki***
Front femora weakly to moderately incrassate, at least $2.1 \times$ as long as wide; median length of pronotal disc not exceeding that of mesoscutum; antennal insertions not so strongly overhanging the clypeus, which is less than $3 \times$ as wide as high 9
9. Central part of fore wing with two rather narrow brown bands separated by a yellow band of about the same width, also yellow basad of and beyond the brown bands; stigma yellow (fig. 2) 8. **multifasciatus***
Central part of fore wing with a single broad, brown band, sometimes weakly divided by a lighter streak (as in fig. 1), wing also sometimes infuscated at extreme base and apex; stigma fuscous 10
10. Wings bright yellowish, fore wing with a brown band which starts well beyond the basal vein (near the middle of the first discoidal cell); clypeus about $2.7 \times$ as wide as high 7. **pictipennis** Evans
Wings hyaline, subhyaline, or lightly tinged with yellow, fore wing with a brown band which starts at the basal vein and extends approximately to the 3rd transverse cubital vein; clypeus $2.2-2.5 \times$ as wide as high..... 11
11. Median length of pronotal disc subequal to that of mesoscutum; front very broad, middle interocular distance about $.67 \times$ head width; 3rd antennal segment not more than $.40 \times$ upper interocular distance..... 12
Median length of pronotal disc distinctly less than that of mesoscutum; front less broad, middle interocular distance $.51-.64 \times$ head width; third antennal segment $.42-.90 \times$ upper interocular distance 13
12. Tibial spurs brown or rufous, like the tibiae; head $1.17 \times$ as wide as high; abdomen without conspicuous golden pubescence; front femora slender, $2.4 \times$ as long as wide 12. **compactus***
Tibial spurs whitish; head unusually broad, $1.26 \times$ as wide as high; last four abdominal tergites with conspicuous golden pubescence; front femora moderately incrassate, $2.2 \times$ as long as wide13. **exleyae***
13. Ocelli in a broad, obtuse triangle; maxillary palpi of moderate length, apical segment shorter than antennal segment three; wings hyaline or yellowish basad of the broad

- brown central band, milky-white to yellowish beyond it 11. **turneri** Evans
 Ocelli in about a right triangle; maxillary palpi unusually long and slender, apical segment at least as long as 3rd antennal segment, much exceeding median height of clypeus; small species with the wings milky-white both basad of and beyond the brown band..... 14
14. Entirely black, including the appendages; antennae very slender, 3rd segment $3 \times$ as long as thick; pale band near base of fore wing much broader than basal infuscation of wing 10. **albofasciatus***
 Thorax largely ferruginous; legs and antennae ferrugino-testaceous; antennae less slender, 3rd segment $2.3 \times$ as long as thick; pale band near base of fore wing narrower than basal infuscation of wing 9. **hackeri***
15. Fore wing with the usual three submarginal cells (as in fig. 1) 16
 Fore wing with only two submarginal cells, the 1st transverse cubital vein being absent (as in fig. 3).....22
16. Thorax in considerable part ferruginous; 3rd antennal segment only $.60 \times$ as long as 4th segment and only $.34 \times$ upper interocular distance 18. **variegatus***
 Thorax black or metallic blue; 3rd antennal segment at least $.70 \times$ 4th segment and at least $.40 \times$ upper interocular distance 17
17. Body black, sometimes with very weak metallic reflections; front femur not incrassate, $2.5-2.7 \times$ as long as wide; claws dentate 18
 Body and legs brilliant metallic blue or blue-green; front femur slightly incrassate, $2.2-2.3 \times$ as long as wide; claws bifid or sub-bifid 21
18. Pronotal disc longer than mesoscutum (measured along midline), its posterior margin weakly arcuate; abdomen with deep green and bronze reflections.....19. **submetallicus***
 Pronotal disc shorter than mesoscutum (measured along midline), its posterior margin angulate or subangulate; abdomen black 5
19. Fore wings infuscated basally and tinged with yellow basad of major band; scape rufous; front narrow, middle interocular distance $.59 \times$ head with 17. **tasmanicus** Evans
 Fore wings not or barely infuscated basally, clear hyaline basad of major band; scape black; front broader, middle interocular distance $.64-.66 \times$ head width 20
20. Abdomen with dense golden pubescence beyond basal segment; legs black; 3rd antennal segment $.54 \times$ upper interocular distance 16. **matthewsi***
 Abdomen without dense golden pubescence; legs, including coxae, mainly rufous; 3rd antennal segment only $.40 \times$ upper interocular distance 15. **gilesi** (Turner)
21. Tibial spurs black; body strongly shining; front with strong punctures which are separated by more than their own diameters; fore wing 7.2 mm 20. **caeruleus***
 Tibial spurs white or stamineous; body dull to moderately shining; front not distinctly punctate or the punctures minute and crowded; fore wing 5-6 mm..... 22
22. Lateral ocelli removed from eye margins by about their own diameters; legs and basal parts of antennae ferruginous (1st transverse cubital vein usually but not always present) 21. **papuensis***
 Lateral ocelli removed from eye margins by much more than their own diameters; legs and antennae black (except tibial spurs pale, tarsi and basal flagellar segments sometimes dull ferruginous), legs with strong metallic reflections (1st transverse cubital vein absent)..... 23
23. Front broad, middle interocular distance $.66-.69 \times$ head width; front strongly alutaceous; front femur $2.5 \times$ as long as wide.....22. **incompletus***
 Front narrow, middle interocular distance $.60-.61 \times$ head width; front moderately shining; front femur about $2.3 \times$ as long as wide..... 23. **formosus***



1. Fore wing with 3 submarginal cells.....2
Fore wing with only 2 submarginal cells, as a result of the loss of one transverse cubital vein (fig. 4, 5)..... 12
2. Subgenital plate tapering to an acute or very narrowly rounded apex (fig. 9-12).....3
Subgenital plate relatively broad, its apex truncate, broadly rounded or subangulate, or weakly emarginate (fig. 6-8) 7
3. Subgenital plate very slender and acuminate (fig. 9); parameres slender, much exceeding parapenial lobes (fig. 21, 22) 4
Subgenital plate more gradually tapered or narrowly rounded apically (fig. 10-12); parameres relatively broad, not or barely exceeding parapenial lobes (fig. 18, 23, 24) ... 5
4. Antennae and coxae black; parameres moderately slender, strongly setose (fig. 21); tibial spurs stramineous, paler than the legs 27. **collessi***
Antennae and middle and hind coxae ferruginous; parameres very slender, sparsely setose (fig. 22); tibial spurs ferruginous like the legs..... 28. **ferrugineipes***
5. Subgenital plate slender apically, tip narrowly rounded (fig. 12); parapenial lobes unusually broad (fig. 18); wing veins nearly colorless, but stigma dark brown 30. **eyreanus***
Subgenital plate tapering gradually to a subacute apex (fig. 10, 11); parapenial lobes slender, wing veins brown 6
6. Third submarginal cell as wide as or slightly wider than second; digiti elongate, parapenial lobes simple (fig. 23) 29. **bushi***
Third submarginal cell only 2/3 as wide as second; digiti shorter and broader, parapenial lobes with a roughened area on their inner margin (fig. 24) 31. **semitinctus***
7. Surface of propodeum smooth, with only weak surface sculpturing; subgenital plate broad and flat, truncate or very broadly rounded apically (fig. 6, 7) 8
Surface of propodeum rough, coarsely rugose, foveolate, or irregularly carinate; subgenital plate either somewhat slender, slightly emarginate apically (fig. 8) or broad, tapered, margined with strongly bent setae (fig. 20) 9
8. Subgenital plate simple (fig. 6); digiti simple, much exceeded by the parapenial lobes (fig. 15); length of fore wing 2.8-4.5 mm 11. **turneri** Evans
Subgenital plate with lateral angulations (fig. 7); digiti large, hook-like, parapenial lobes reduced to very small flaps (fig. 17); fore wing 5.5 mm 24. **elongatus***
9. Subgenital plate somewhat narrow, weakly emarginate apically (fig. 8); propodeum with a strong median longitudinal ridge..... 14. **rieki***
Subgenital plate broad, tapering to a broadly rounded or subangulate apex, margined with strongly bent setae (fig. 20).....10
10. Legs entirely black; subgenital plate very broad, tapering to a broadly subangulate apex (fig. 20) 26. **carbonarius***
11. Legs in considerable part ferruginous or castaneous; subgenital plate tapering to a somewhat more narrow apex 11
11. Wings tinged with yellow and with a broad, dark band subapically; aedeagus unusually short, very much shorter than other genitalic appendages 7. **pictipennis** Evans
Wings clear hyaline; aedeagus elongate, exceeding the digiti and approximately as long as the parameres 25. **hyalinipennis** Evans
12. First transverse cubital vein absent (fig. 4); wing veins colorless, but the stigma dark brown; terminalia as in fig. 13 and 26 32. **stigmaticus***
Third transverse cubital vein absent (fig. 5); wing veins brown; terminalia as in fig. 14 and 25; a minute species, fore wing 1.8-2.4 mm 33. **reductus***

Subgenus **Epipilpomus** Evans

Epipompilus (*Epipilpomus*) Evans, 1962, *Pacif. Ins.* 4: 774 (type-species: *E. pallidus* Evans, 1962).

Five species (numbers 1-5) can now be placed in this group, to which no ♂♂ can yet be assigned. The group is reasonably distinct by virtue of the hairy eyes, very long palpi, the sharp vertex and somewhat concave posterior surface of the head, and the bifid claws. The other features mentioned in my original description no longer appear useful in separating this subgenus from the other two. Also, the discovery of a species in several ways intermediate between this subgenus and *Epipompilus* s. str. (*pauper*, here placed in the latter group) leads me to question whether the subgeneric name *Epipilpomus* is worth retaining. However, I shall retain it pending fuller knowledge of the genus.

1. **Epipompilus cardaleae** Evans, new species

Holotype: ♀, QUEENSLAND: Beerwah, 1.X.1967 (J. C. Cardale) [UQB].

Description: Length 8.5 mm; fore wing 6.0 mm. Black, except as follows: palpi straw-colored; antennae ferruginous beneath beyond segment 2, above beyond segment 5, apical segments annulated with fuscous; front coxae orange in front, also inner surfaces of front femora and tibiae; apices of front and middle tarsi ferruginous; middle and hind coxae ferruginous beneath; first abdominal segment suffused with brown laterally. Wings subhyaline, tinged with yellowish on basal 2/3, fore wing weakly clouded in and just below marginal cell; stigma whitish by reflected light. Front and thoracic dorsum with an abundance of strong, dark setae. Pubescence silvery, not especially dense, integument mainly somewhat shining.

Clypeus $2.6 \times$ as wide as high. Last segment of maxillary palpus $1.3 \times$ as long as median height of clypeus, $.85 \times$ as long as antennal segment three. Head $1.12 \times$ as wide as high; front narrow, middle interocular distance $.63 \times$ head width; upper interocular distance $.90 \times$ lower interocular distance; malar space slightly shorter than antennal segment two; postocellar line: ocello-ocular line = 5:2. Third antennal segment $2.6 \times$ as long as thick, $.57 \times$ upper interocular distance. Pronotal disc rather flat, slightly shorter along midline than mesoscutum. Propodeum with smooth contours. Front femur $2.2 \times$ as long as wide. Third submarginal cell about $1.3 \times$ as wide as second.

2. **Epipompilus montivagus** Evans, new species

Holotype: ♀ (BISHOP 9537), NE NEW GUINEA: W Highlands, Kubor Range, 2950 m, 22.V.1966 (J. L. Gressitt) [BPBM].

Description: Length 6 mm; fore wing 5.3 mm. Color black, except as follows: lower part of head white, including mandibles, labrum, clypeus, malar space, extreme lower inner orbits, and space between and just above antennal sockets; palpi testaceous; antennal segments 1-2 black above, ferruginous beneath, segments 3-12 ferruginous, narrowly annulated with black; legs bright ferruginous except middle and hind tarsi infuscated. Wings subhyaline, weakly tinged with yellow on basal 2/3; stigma dark brown. Front and thoracic dorsum with an abundance of stiff, brownish setae. Entire body covered with a rather coarse pubescence which varies from silvery to golden-brown.

Clypeus $2.8 \times$ as wide as high. Last segment of maxillary palpus $1.5 \times$ as long as median height of clypeus, subequal to antennal segment 3. Head $1.10 \times$ as wide as high; front mod-

erately broad, middle interocular distance $.65 \times$ head width; upper and lower interocular distances subequal; malar space slightly shorter than second antennal segment; postocellar: ocello-ocular line = 16 : 7. Third antennal segment $3.6 \times$ as long as thick, $.46 \times$ upper interocular distance. Pronotal disc rather flat, broadly subangulate behind, considerably shorter along midline than mesoscutum. Propodeum with smooth contours except with a shallow groove behind each spiracle. Front femur $2.3 \times$ as long as wide. Third submarginal cell very slightly wider than second.

3. *Epipompilus depressus* Evans

Epipompilus (Epipilpomus) depressus Evans, 1962, *Pacif. Ins.* 4: 776 (type: ♀, QUEENSLAND: SE part, Tambourine Mts, 1-9.V.1935 (R. E. Turner) [BMNH]).

I have seen no additional specimens of this species. It is very similar to the preceding in size, coloration, and most structural details, but the front femora are more strongly swollen and the setae on the front and thoracic dorsum are very fine, whitish.

4. *Epipompilus pallidus* Evans

Epipompilus (Epipilpomus) pallidus Evans, 1962, *Pacif. Ins.* 4: 775 (type: ♀, WESTERN AUSTRALIA: Yanchep, 32 km N of Perth, 29.I. - 8.II.1936 (R. E. Turner) [BMNH]).

This species is closely related to the preceding two, but differs in having the body predominantly rufo-testaceous. The pronotal disc is approximately as long as the mesoscutum, along the midline, and the 3rd submarginal cell is $1.7 \times$ as wide as the second. The body is even more densely covered with pale pubescence than in *depressus* and *montivagus*.

5. *Epipompilus nevoissi* Evans, new species

Holotype: ♀, VICTORIA: Glenelg River, 4 miles NNE of Nelson, 25.XI.1966 (A. Neboiss) [NMVM].

Description: Length 4.7 mm; fore wing 4.3 mm. Head and thorax black except as follows: mandibles and labrum testaceous, malar space and lower inner orbits white, palpi light brown, legs ferruginous except front femora and all coxae partially infuscated; abdomen dull ferruginous, darker at base and apex; first two antennal segments black (scape pale beneath), remainder of antenna ferruginous, narrowly annulated with black. Wings subhyaline, tinged with yellow on basal $2/3$; stigma amber. Front and thoracic dorsum with numerous thin, brownish setae. Pubescence pale but very sparse, entire body rather strongly shining.

Clypeus $2.9 \times$ as wide as high. Last segment of maxillary palpus $1.3 \times$ as long as median height of clypeus, subequal to antennal segment three. Head $1.08 \times$ as wide as high; vertex forming a strong arc above tops of eyes; front broad, middle interocular distance $1.10 \times$ lower interocular distance; malar space subequal to second antennal segment; postocellar line: ocello-ocular line = 7 : 4. Third antennal segment $2.6 \times$ as long as thick, $.34 \times$ upper interocular distance. Pronotal disc shorter along midline than mesoscutum, broadly subangulate behind. Propodeum smooth and shining, weakly grooved behind each spiracle. Front femur $2.15 \times$ as long as wide. Second and 3rd submarginal cells subequal in width.

Paratype: ♀, VICTORIA: Cape Otway, 29.XI.1966 (A. Neboiss) [NMVM].

Variation: The paratype resembles the type closely, but the front femora are wholly ferruginous and the thoracic dorsum is suffused with rufous medially; in this specimen the third antennal segment measures $.43 \times$ as long as the upper interocular distance.

Subgenus *Epipompilus* Kohl

Epipompilus Kohl, 1884, *Verh. K. K. Zool.-Bot. Gesell. Wien*, 34: 57 (type-species: *E. aztecus* Cresson, 1869).

In this group the ♀♀ have densely hairy eyes but dentate claws; the wings are banded in most species, and the fore wing has three submarginal cells in all known species. Otherwise there is much diversity in the group, and there is some uncertainty as to how closely the Australian species are related to the type species and the other American species. In my 1962 paper I was unable to assign any ♂♂ to the group. I now feel that I can associate the ♂♂ of 3 Australian species (although none of these associations can be proved). Curiously, all 3 species have the subgenital plate broad and flat, in contrast to the American species, in which it is extremely slender apically (but Australian species which I tentatively assign to the subgenus *Epipompiloides* have a subgenital plate much more like the American species!).

Nine species known from the ♀♀ sex are here assigned to this subgenus (numbers 6-14). As mentioned above, 3 of these are tentatively known also from the ♂ sex. In addition, I feel it probable that other ♂♂ with broad, flat subgenital plates will be found to belong here (numbers 24-26). Several of the ♂♂ assigned here have the propodeum coarsely rugose or foveolate; in my 1962 paper I had assigned these to *Epipompiloides*, I believe erroneously.

As mentioned in the introduction, the ♂ descriptions are included in a subsequent section, so that they can be compared more directly.

6. *Epipompilus pauper* Evans, new species

Holotype: ♀, VICTORIA: Melbourne [specimen labeled simply "Bot. Gar. Melb." [BMNH]].

Description: Length 4.0 mm; fore wing 3.6 mm. Black, except as follows: palpi and labrum testaceous; antennal flagellum dusky ferruginous; front legs wholly bright ferruginous; middle and hind legs black except middle coxae and tips of femora suffused with rufous; middle and hind tibial spurs whitish. Wings subhyaline, suffused with yellow on basal 2/3; stigma dark brown. Front and thoracic dorsum with short, stiff, brown setae. Pubescence coarse, sparse, silvery to light brown.

Clypeus $2.4 \times$ as wide as high. Last segment of maxillary palpus subequal to median height of clypeus, $.85 \times$ as long as antennal segment three. Head $1.10 \times$ as wide as high, vertex weakly arched above eye tops; front broad, middle interocular distance $.68 \times$ head width; eyes diverging above, upper interocular distance $1.17 \times$ lower interocular distance; malar space subequal to antennal segment 2; postocellar line: ocello-ocular line=2:1. Third antennal segment $2.6 \times$ as long as thick, $.37 \times$ upper interocular distance. Front and thoracic dorsum somewhat shining, micropunctate. Pronotal disc much shorter along midline than mesoscutum, broadly arcuate behind. Propodeum smooth, sharply elevated in front of each spiracle and grooved behind each

spiracle. Front femur $2.15 \times$ as long as wide. Fore wing with 3rd submarginal cell barely wider than second.

Remarks: Although this species falls in *Epipompilus* s. str. with respect to the characters stressed here, it is actually very similar to *E. (Epipilpomus) nevoissi* in size and color; the propodeum is also shaped very similarly, and the integument similarly shining and sparsely pubescent. The vertex is also more sharply margined than is usual in this subgenus, and the wings are unbanded. However, the claws are clearly dentate and the maxillary palpi shorter than in *Epipilpomus*.

7. *Epipompilus pictipennis* Evans

Epipompilus (Epipompilus) pictipennis Evans, 1962, *Pacif. Ins.* 4: 778 (type: ♀, TASMANIA: Mt Wellington, 400-700 m, I.1913 (R. E. Turner) [BMNH]).

Epipompilus (Epipompiloides) tasmanicus Evans, 1962, *ibid.*, p. 779 and figs. 1, 2 (Part: ♂ only, Mt Wellington and Eaglehawk Neck, Tasmania; misassociated with the type female).

I have seen 3 additional ♀♀ of this species, all from TASMANIA: Hobart, 4.I.1951 (E. F. Riek) [ANIC]; Lake Dobson, 20.II.1967 (E. F. Riek) [ANIC]; Huon-Picton R. Junction, 18 Feb. 1967 (A. Neboiss) [NMVM]. The 2 ♂♂ I assigned to *tasmanicus* in 1962 are here reassigned to *pictipennis*, as indicated above. This is a distinctive species and both sexes should be identifiable on the basis of the keys provided.

8. *Epipompilus multifasciatus* Evans, new species Fig. 2.

Holotype: ♀, TASMANIA: Mt Wellington, 12.II.1963 (D. H. Colless) [ANIC].

Description: Length 7.5 mm; fore wing 6.0 mm. Body entirely black; palpi dark brown; tips of mandibles rufous; antennae wholly fuscous; front legs ferruginous from apices of femora and beyond, middle and hind legs ferruginous beyond bases of femora (except all apical tarsal segments fuscous). Wings strongly tinged with yellow; fore wing crossed by 2 rather narrow brown bands, one just basad of the stigma and one just beyond it, the space between the bands subequal to width of a band, the stigma itself yellowish; fore wing without basal infuscation but the extreme apical margin with a very narrow dark border; hind wing lightly infuscated on the apical 5th (fig. 2). Front and thoracic dorsum with short, stiff, dark setae. Pubescence silvery on much of sides and venter, golden-brown on much of dorsum.

Clypeus $2.3 \times$ as wide as high; labrum weakly emarginate apically. Last segment of maxillary palpus $.70 \times$ median height of clypeus, $.60 \times$ as long as antennal segment three. Head $1.14 \times$ as wide as high, vertex weakly elevated above eye tops; front of moderate breadth, middle interocular distance $.64 \times$ head width; malar space slightly shorter than second antennal segment; upper interocular distance $.82 \times$ lower interocular distance; postocellar line: ocellular line=3:2. Third antennal segment $2.5 \times$ as long as thick, $.52 \times$ upper interocular distance. Front and thoracic dorsum alutaceous and micropunctate, weakly shining. Pronotal disc shorter along midline than mesoscutum, subangulate behind. Propodeum smoothly rounded. Front femur slender, $2.9 \times$ as long as wide. Fore wing with the 3rd submarginal cell $1.3 \times$ as wide as 2nd.

Paratypes: TASMANIA: 1 ♀, Mt Wellington, 1300-2300 feet, I.1913 (R. E. Turner) [BMNH]; 1 ♀, Swansea, 30.II.1962 (N. Dobrotworsky) [NMVM].

Variation: The topotypic paratype is similar to the type in all respects; it is lacking

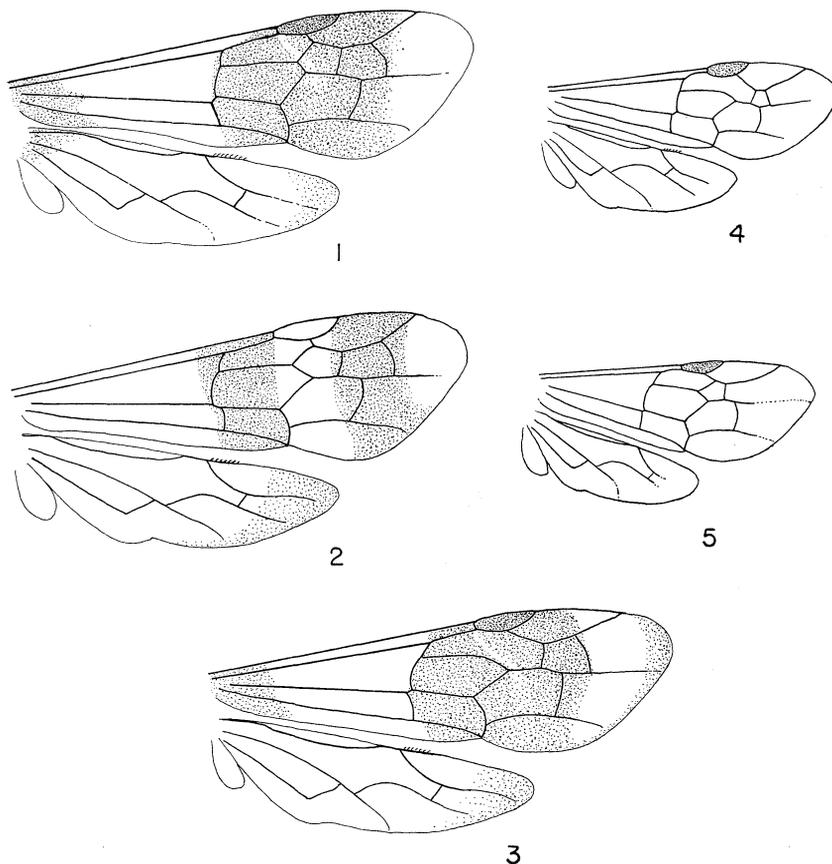


Fig. 1-5. Wings of selected species of *Epipompilus*. 1, *E. rieki* Evans, n. sp., ♀; 2, *E. multifasciatus* Evans, n. sp., ♀; 3, *E. formosus* Evans, n. sp., ♀; 4, *E. stigmaticus* Evans, n. sp., ♂; 5, *E. reductus* Evans, n. sp., ♂.

antennae. The Swansea paratype is smaller (length 7.0 mm, fore wing 5.3 mm) but shows no noteworthy differences from the type in coloration, sculpture, or standard measurements.

9. *Epipompilus hackeri* Evans, new species

Holotype: ♀, QUEENSLAND: National Park [Lamington], XII.1921 (H. Hacker) [QMB].

Description: Length 6.0 mm; fore wing 4.3 mm. Head black except clypeus, labrum, and mandibles ferruginous; thorax entirely bright ferruginous, propodeum also of this color except suffused with black across basal third; abdomen black; palpi light brown; antennae rufo-testaceous; legs ferrugino-testaceous except tibial spurs stramineous. Fore wings brown on basal .25, then with a rather narrow milky-white band followed by a broad brown band beginning at the basal vein and extending to the 3rd transverse cubital vein; outer .2 of wing milky-

white; hind wings hyaline, weakly suffused with brown on apical half. Front with short, mostly pale bristles, body otherwise without setae or bristles except for tip of abdomen. Pubescence pale, rather coarse on propodeal slope.

Clypeus $2.5 \times$ as wide as high; labrum truncate apically. Palpi very long and slender, apical segment of maxillary palpus $1.4 \times$ median height of clypeus, slightly longer than 3rd antennal segment. Head $1.17 \times$ as wide as high; vertex passing straight across between eye tops; front narrow, middle interocular distance $.54 \times$ head width; upper interocular distance $.90 \times$ lower interocular distance; malar space slightly shorter than 2nd antennal segment; postocellar line: ocello-ocular line = 7 : 5. Third antennal segment $2.3 \times$ as long as thick, equal to $.51 \times$ upper interocular distance. Front dull, with strong surface sculpturing; thoracic dorsum only weakly shining. Pronotal disc considerably shorter than mesoscutum, broadly angulate behind. Propodeum with smooth contours, with a rather flat declivity on the posterior half. Front femur slender, $2.7 \times$ as long as wide. Fore wing with the third submarginal cell $1.5 \times$ as wide as second.

10. *Epipompilus albofasciatus* Evans, new species

Holotype: ♀ (BISHOP 9538), NE, NEW GUINEA: Kassam Pass, 1550 m, 14-20.XI.1967 (P. Colman, Malaise trap) [BPBM].

Description: Length 5.0 mm; fore wing 4.5 mm. Black; palpi, antennae and legs dark brown to black. Fore wings fuscous on basal .1, also with a broad brown band extending from the basal vein to the third transverse cubital vein, the pale areas basad of and beyond this band milky-white; hind wings also milky-white, weakly infuscated on basal .1 and apical .3. Front covered with strong, dark bristles; thoracic dorsum more weakly setose. Pubescence silvery on sides, more brownish dorsally, generally rather sparse, although dense and long on propodeum.

Clypeus $2.3 \times$ as wide as high; labrum rounded apically. Palpi unusually long, apical segment of maxillary palpus considerably longer than median height of clypeus, subequal in length to 3rd antennal segment. Head $1.17 \times$ as wide as high; vertex passing nearly straight across between tops of eyes; front narrow, middle interocular distance $.56 \times$ head width; upper interocular distance $.83 \times$ lower interocular distance; malar space slightly shorter than 2nd antennal segment; postocellar line: ocello-ocular line = 3 : 2. Antennae elongate, 3rd segment $3 \times$ as long as long as thick, $.60 \times$ upper interocular distance. Front and thoracic dorsum alutaceous, weakly shining. Pronotal disc much shorter along midline than mesoscutum, angulate behind. Propodeal slope low and even. Front femur slender, $2.9 \times$ as long as wide. Fore wing with 3rd submarginal cell $1.4 \times$ as wide as 2nd.

11. *Epipompilus turneri* Evans Fig. 6.

Epipompilus (Epipompilus) turneri Evans, 1962, *Pacif. Ins.* 4: 777 (type: ♀, QUEENSLAND: SE part, Tambourine Mts, 11-18. IV. 1935 (R. E. Turner) [BMNH]).

This is evidently one of the more common species of the genus, ranging from south-eastern Queensland to Tasmania. The following ♀♀ have come to my attention since the original description: QUEENSLAND: 1 ♀, Lamington Nat. Park, 6.III.1965 (T. Weir) [UQB]; 1 ♀, National Park, XII. 1921 (H. Hacker) [QMB]; 2 ♀♀, Mt. Glorious, 13.II. 1961 (L. & M. Gressitt) [BPBM]; NEW SOUTH WALES: 1 ♀, Palm Ck., National Park, 29.XII.1950 [ANIC]; 1 ♀, Tubrabucca, 10.I.1948 [NMVM]; AUSTRALIAN CAPITAL TERRITORY: 1 ♀, Canberra, 5.XII.1950 (E. F. Riek) [ANIC]; 1 ♀, Mt Franklin,

24.I.1950 (E. F. Riek) [ANIC]; VICTORIA: 2 ♀♀, Glenelg River, 4 mi. NNE of Nelson, 25.XI.1966 (A. Neboiss) [NMVM]; 1 ♀, Kallista, 10.IV.1959 (A. Neboiss) [NMVM]; TASMANIA: 1 ♀, Dunalley, 9.XII.1917 (G. Hardy) [QMB].

This is an unusually variable species, and I may be confusing more than one species under this name. The antennae vary from wholly rufous to wholly fuscous; the legs are most often rufous, but in some specimens the middle and hind legs are infuscated (except the tarsi). In size the available specimens vary from 4 to 9.5 mm, fore wing from 3.5 to 7.3 mm; the middle interocular distance varies from $.52$ to $.64 \times$ the head width, the upper interocular distance from $.73$ to $.95 \times$ the lower interocular distance, antennal segment 3 from $.65$ to $.90 \times$ the upper interocular distance. Other features, however, show less variation: the apical segment of the maxillary palpus varies from $.7$ to $.9 \times$ antennal segment 3, the front femur from 2.4 to $2.7 \times$ as long as wide, submarginal cell 3 from 1.2 to $1.5 \times$ as wide as 2; the pronotum is consistently subangulate behind and the disc shorter than the mesoscutum along the midline. Queensland specimens sometimes have the wings quite yellow, but more commonly they are hyaline, at least basad of the major brown band.

I have studied 11 ♂♂, ranging from Queensland to Victoria, which I tentatively regard as belonging to this species. These are discussed in the final section of this paper.

12. *Epipompilus compactus* Evans, new species

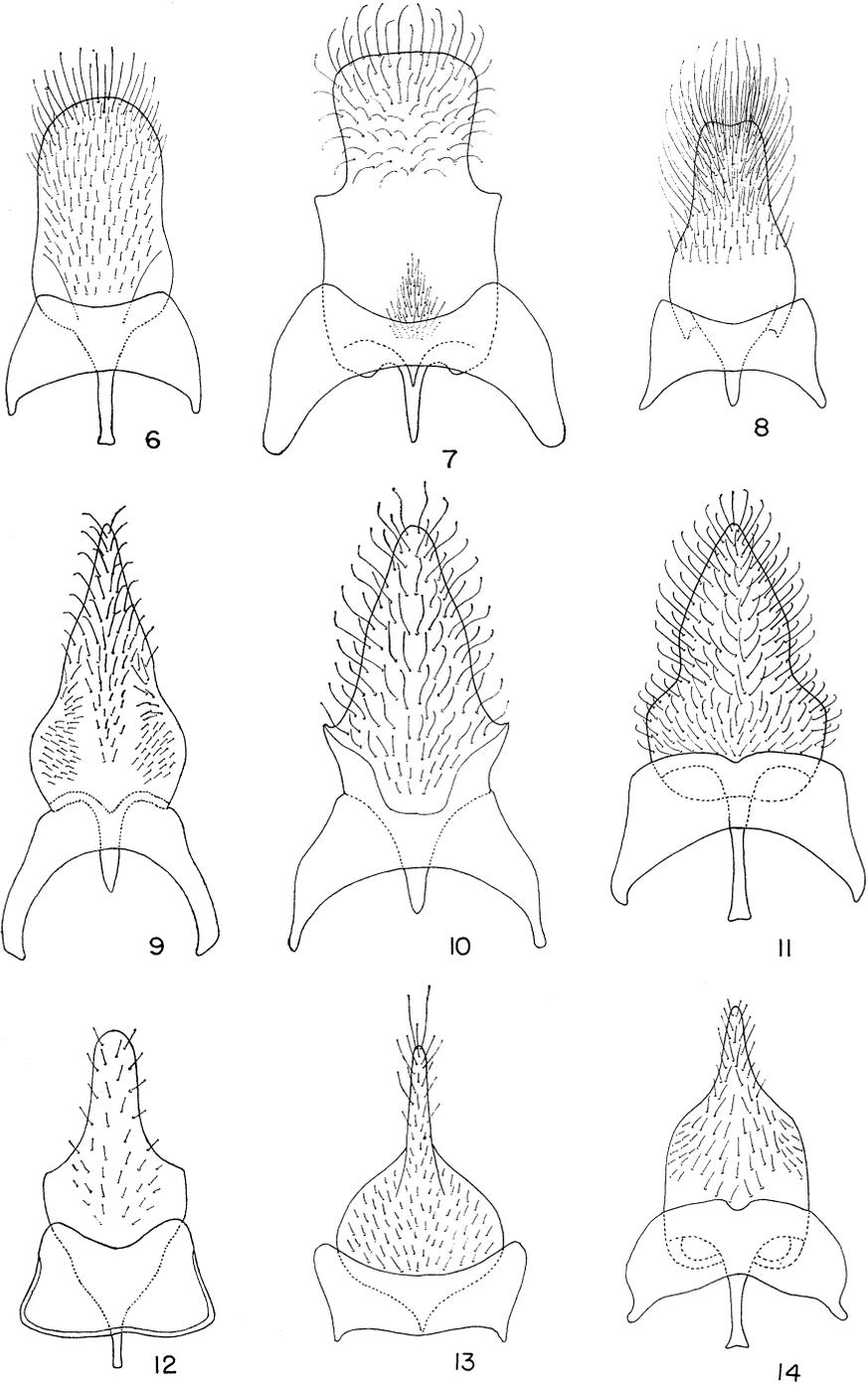
Holotype: ♀, NEW SOUTH WALES: Tuross, 17-22.I.1936 (K. C. McKeown) [AMS].

Description: Length 5.8 mm; fore wing 5.0 mm. Black; palpi, front tibiae, and all tarsi brown; antennae bright ferruginous beyond segment 2. Fore wings tinged with yellow, weakly infuscated at extreme base and with a brown band starting at basal vein and extending to include the 3rd submarginal cell; extreme outer wing margin also narrowly infuscated; hind wing somewhat yellowish basally, weakly infuscated apically. Front and thoracic dorsum with thin, pale hairs; pleura and coxae also with scattered pale hairs. Pubescence moderately dense, silvery but grading into golden-brown on dorsum.

Clypeus $2.5 \times$ as wide as high; labrum broadly rounded. Palpi rather short, apical segment of maxillary palpus $.70 \times$ median height of clypeus, $.70 \times$ length of antennal segment 3. Head $1.17 \times$ as wide as high; vertex weakly arched above eye tops; front broad, middle interocular distance $.67 \times$ head width; upper interocular distance $.88 \times$ lower interocular distance; malar space subequal to 2nd antennal segment; postocellar line: ocello-ocular line=2:1. Antennae short, 3rd segment much shorter than 4th, only $1.8 \times$ as long as thick, only $.35 \times$ upper interocular distance. Front alutaceous, micropunctate, dull. Pronotal disc rather flat, subangulate behind, along midline subequal in length to mesoscutum. Propodeum somewhat flat in front, more sloping behind, sides of declivity weakly transversely rugose. Front femur $2.4 \times$ as long as wide. Fore wing with 3rd submarginal cell $1.3 \times$ as wide as 2nd.

Paratype: ♀, VICTORIA: Seaford (W. F. Hill) [BMNH].

Variation: The paratype is closely similar to the type in size and in the nature of the pubescence and erect setae. However, the wings have very little tinge of yellow, the legs are bright rufous beyond the trochanters, and the last 3 antennal segments are fuscous. The sides of the propodeal disc are more strongly rugose, but all standard measurements are closely similar to those of the type.



13. *Epipompilus exleyae* Evans, new species

Holotype: ♀, NORTHERN TERRITORY: Glen Helen, 19.VII.1959 (E. M. Exley) [UQB].

Description: Length 6.0 mm; fore wing 4.7 mm. Black; antennae dusky ferruginous, scape and apical several segments somewhat darker; legs dull ferruginous except front coxae black, other coxae and also all tarsi, front tibiae, and apices of femora suffused with black; tibial spurs whitish. Wings hyaline, fore wing infuscated on basal .2, also with a broad brown band beginning at the basal vein and extending to include the 3rd submarginal cell; outer margin of wing not infuscated. Erect setae of front and thoracic dorsum thin and pale; pleura, coxae, and propodeum also with pale setae. Pubescence coarse, mainly silvery, but last 4 abdominal tergites with conspicuous golden pubescence.

Clypeus $2.7 \times$ as wide as high; labrum rounded apically. Palpi moderately long, apical segment of maxillary palpi $1.1 \times$ median height of clypeus, $.75 \times$ length of 3rd antennal segment. Head very broad, $1.26 \times$ as wide as high; vertex broad, very weakly arched above eye tops; middle interocular distance $.67 \times$ head width; upper interocular distance $.92 \times$ lower interocular distance; malar space slightly exceeding length of antennal segment 2; postocellar line: ocello-cular line = 2:1. Third antennal segment $2.4 \times$ as long as thick, $.40 \times$ upper interocular distance. Front and thoracic dorsum micropunctate, weakly shining. Pronotal disc rather flat, broadly angulate behind, along midline subequal in length to mesoscutum. Propodeum rather flat in front, sloping steeply on posterior half; sides of declivity rather strongly rugose. Front femur moderately incrassate, $2.2 \times$ as long as wide. Fore wing with third submarginal cell $1.1 \times$ as wide as second.

Paratype: ♀, SOUTH AUSTRALIA: Orparinna, North Flinders Range, 20.I.1950 (V. H. M.; found as external parasite on a spider [immature Sparassidae]) [AMS].

Variation: The paratype is slightly larger than the type (7.5 mm, fore wing 5.0 mm) and somewhat darker, the antennae being wholly fuscous, the legs mainly fusco-ferruginous. The head is somewhat distorted, probably the result of injury during the pupal stage or soon after emergence of the adult. However, there is close agreement with the type in virtually all structural details.

Remarks: The paratype represents the only firm prey record for members of this genus. The remains of the spider on which the wasp developed are glued to a card point, and they are identifiable as a sparassid [det. M. R. Gray]. The note quoted above is on a second card on the same pin.

14. *Epipompilus rieki* Evans, new species Fig. 1, 16.

Holotype: ♀, AUSTRALIAN CAPITAL TERRITORY: Canberra, 25.IV.1962 (E. F. Riek; pinned with a section of bark bearing a spider case within which is a cocoon from which the wasp was reared) [ANIC].

Fig. 6-14. Subgenital plates (= apical sternites) of ♂ *Epipompilus* species, ventral aspect. 6, *E. turneri* Evans; 7, *E. elongatus* Evans, n. sp.; 8, *E. rieki* Evans, n. sp.; 9, *E. collessi* Evans, n. sp.; 10, *E. bushi* Evans, n. sp.; 11, *E. semitinctus* Evans, n. sp.; 12, *E. eyreanus* Evans, n. sp.; 13, *E. stigmaticus* Evans, n. sp.; 14, *E. reductus* Evans, n. sp.

Description: Length 5.6 mm; fore wing 4.0 mm. Black; palpi brown; labrum testaceous; mandibles and clypeus light brown; antennae wholly rufo-testaceous; coxae and femora black, tibiae and tarsi (including spurs) rufo-testaceous (mid tibiae partially infuscated). Fore wings hyaline, weakly infuscated at extreme base, with a broad brown band extending from the basal vein to slightly beyond the 3rd intercubital vein (weakly divided by a pale streak); hind wings hyaline, weakly infuscated apically (fig. 1). Setae on front and thoracic dorsum pale, thin; pubescence pale, rather coarse, especially on propodeum and on apical part of metasoma, which also has an abundance of pale setae.

Clypeus a narrow band $3.7 \times$ as wide as high; labrum subtruncate. Apical segment of maxillary palpi subequal to median height of clypeus, $.67 \times$ length of 3rd antennal segment. Head broad, vertex (in anterior view) slightly concave, antennal insertions beneath a shelf that overhangs the clypeus; head $1.3 \times$ as wide as high; middle interocular distance $.67 \times$ head width; upper and lower interocular distances subequal; malar space slightly exceeding length of antennal segment two; postocellar line: ocello-ocular line=4:3. Third antennal segment $2 \times$ as long as thick, only $.3 \times$ upper interocular distance. Front and thoracic dorsum weakly shining, alutaceous and micropunctate. Thorax strongly depressed, the dorsum unusually flat; pronotal disc nearly $2 \times$ as long as mesoscutum, broadly angulate behind. Propodeum unusually flat except abruptly declivous on posterior fourth, its surface smooth, without rugae. Front femur strongly incrassate, $1.9 \times$ as long as its maximum width. Fore wing with 3rd submarginal cell slightly wider than 2nd.

Paratypes: AUSTRALIAN CAPITAL TERRITORY: 2 ♀♀, Canberra, April, May (E. F. Riek) [ANIC]; VICTORIA: 1 ♀, 7 mi. NE Stawell, 10.IV.1951 (H. M. Cane) [ANIC]; 1 ♀, Lan-Arum, 27.X.1955 (A. Neboiss) [NMVM]; 1 ♀, Edenhope (pupa VII.1948, adult 18.XI.1948; G. Stephens; pinned with cocoon) [NMVM]; 1 ♀, labeled simply "Victoria" [NMVM]; TASMANIA: 1 ♀, Hobart, 4.I.1951 (E. F. Riek) [ANIC].

Variation: The ♀♀ from Tasmania and "Victoria" are rather large, both measuring 8.5 mm in length, fore wing 5.6-5.8 mm; the remaining ♀♀ vary in size from 5.5 to 7.3 mm, fore wing from 4.0 to 5.2 mm. The 2 larger ♀♀ have the antennae wholly infuscated, while in 3 of the smaller ♀♀ they are infuscated basally and apically rather than entirely rufo-testaceous; the labrum and clypeus are fuscous in most ♀♀; and the larger ♀♀ tend to have the middle and hind legs mainly rufous (though the front coxae and femora are black in all specimens). The middle interocular distance varies from $.60$ to $.68 \times$ the head width, antennal segment 3 from 2.0 to $2.6 \times$ as long as thick and from $.30$ to $.40 \times$ the upper interocular distance. Otherwise little variation is to be noted, and despite the considerable range in size I feel confident that the eight ♀♀ are conspecific.

Remarks: I have tentatively assigned 2 ♂♂ to this species (see final section). One of these is from Western Australia, and if correctly assigned here considerably extends the known range of this species. The ♀♀ are the most depressed and have the most strongly swollen front femora of any *Epipompilus*, and would seem to be especially well adapted for seeking spiders in their retreats beneath bark.

Subgenus *Epipompiloides* Evans

Epipompiloides Evans, 1961, *Psyche*, 68: 28 (type-species: *E. insularis* Kohl, 1884 [New Zealand]).

Epipompilus (*Epipompiloides*) Evans, 1962, *Pacif. Ins.* 4: 774.

Females of this complex have the eyes smooth (actually with minute, sparse hairs which are visible with some difficulty). Otherwise they are diverse structurally, the palpi being rather variable in length, the claws dentate, sub-bifid, or bifid; and in several species there are only 2 submarginal cells. Although I have been unable to assign any ♂♂ with certainty to the 9 "female species" (numbers 15-23), it seems likely that the 2 "male species" with 2 submarginal cells (numbers 32, 33) belong here. These males have the subgenital plate very slender and pointed apically, and on this basis I regard it probable that other males having a slender subgenital plate may belong to this subgenus (numbers 27-31). Pending clarification of these matters, I shall use the subgeneric name *Epipompiloides* sparingly (the male of the type species is still unknown to me).

15. *Epipompilus gilesi* (Turner), new combination

Agenia gilesi Turner, 1910, *Proc. Zool. Soc. London*, 1910, p. 309 (type: ♀, WESTERN AUSTRALIA: South Perth, 1. I. 1909 (H. M. Giles) [BMNH]).

In my 1962 paper, I overlooked the fact that *gilesi* is properly assigned to *Epipompilus*, subgenus *Epipompiloides*. The following description is drawn from the type and only known specimen.

Description: Length 8.0 mm; fore wing 5.5 mm. Black; palpi dark brown; antennae black basally and apically, segments 4-10 dull rufous, obscurely annulated with black; legs ferruginous except front coxae black at extreme base, all tarsi fuscous, hind tibiae fuscous behind. Hind wings and basal half of fore wings clear hyaline; fore wings with a broad brown band starting at the basal vein and extending to basal part of 3rd submarginal cell and all of outer discoidal cell; apex of wing milky-white except extreme margin infuscated. Front and thoracic dorsum with rather dense and long brown setae; propodeum, pleura, and leg bases with fine, pale setae; pubescence fine and relatively inconspicuous, mainly silvery.

Clypeus $2.3 \times$ as wide as high; labrum semicircular. Apical segment of maxillary palpus $.70 \times$ as long as median height of clypeus, $.80 \times$ as long as antennal segment three. Head $1.14 \times$ as wide as high; front broad, middle interocular distance $.66 \times$ width of head; upper interocular distance $.88 \times$ lower interocular distance; malar space about as long as antennal segment 2; postocellar line: ocello-ocular line=3:2. Third antennal segment $2.4 \times$ as long as thick, $.40 \times$ upper interocular distance. Front dull, alutaceous and micropunctate. Pronotum subangulate behind, about $.8 \times$ length of mesoscutum along midline; propodeum rather flat in front, obliquely declivous on posterior half. Front femur $2.5 \times$ as long as wide. Fore wing with radial vein quite distinctly angulate at 2nd transverse cubital vein; 3rd submarginal cell $1.3 \times$ as wide as 2nd.

16. *Epipompilus matthewsi* Evans, new species

Holotype: ♀, AUSTRALIAN CAPITAL TERRITORY: Canberra, 19.IV.1970 (R. W. & J. R. Matthews) [ANIC].

Description: Length 7.5 mm; fore wing 6.0 mm. Black; flagellum beneath and apical parts of legs suffused with dull ferruginous. Wings hyaline except fore wing slightly infuscated at extreme base and with a strong brown band beginning at basal vein and extending to middle of marginal cell and to 2nd transverse cubital vein; extreme apical wing margin also infuscated. Erect setae strong and dark on front, vertex, and thoracic dorsum; also some pale setae on

propodeum, pleura, and coxae. Pubescence coarse, mainly silvery but darker dorsally; abdomen with brilliant golden pubescence dorsally beyond the basal segment.

Clypeus $2.4 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus $.70 \times$ median height of clypeus, $.56 \times$ antennal segment three. Head $1.14 \times$ as wide as high; middle interocular distance $.64 \times$ head width; upper interocular distance $.82 \times$ lower interocular distance; malar space slightly shorter than antennal segment 2; postocellar line: ocello-ocular line=8:5. Third antennal segment $2.8 \times$ as long as thick, $.54 \times$ upper interocular distance. Front dull, alutaceous and micropunctate; thoracic dorsum somewhat more shining. Pronotum weakly subangulate behind, shorter than mesoscutum along midline. Propodeum with an oblique declivity on the posterior 3rd, without rugae. Front femur $2.5 \times$ as long as wide. Fore wing with radial vein angulate at 2nd transverse cubital vein; 3rd submarginal cell $1.4 \times$ as wide as 2nd, removed from tip of wing by about its own width.

Paratype: ♀, VICTORIA (no further data) [NMVM].

Variation: The paratype resembles the type closely in size, color, and all structural details.

17. *Epipompilus tasmanicus* Evans

Epipompilus (Epipompiloides) tasmanicus Evans, 1962, *Pacif. Ins.* 4: 779 (type: ♀, TASMANIA: Mt Wellington, 15. I. - 6. II. 1913 (R. E. Turner) [BMNH]).

This species is known only from 3 ♀♀ in the original type series; the ♂♂ I placed here in 1962 I now believe to belong with *pictipennis*. The ♀♀ resemble those of the preceding 2 species closely, but the wings are tinged with yellowish, the front is considerably narrower, the scape is rufous, and the body is generally less strongly setose.

18. *Epipompilus variegatus* Evans, new species

Holotype: ♀, VICTORIA: Glenelg Riv., 4 mi. NNE of Nelson, 25.XI.1966 (A. Neboiss) [NMVM].

Description: Length 5.0 mm; fore wing 4.0 mm. Head and abdomen black; thorax ferruginous, blotched with black in an irregular pattern; much of pronotal disc black, mesoscutum black laterally and posteriorly, propodeum black laterally and with a central dark blotch; antennae black above, brown beneath; legs black, irregularly suffused with rufo-testaceous, especially the anterior surface of the front femora; tibial spurs testaceous. Fore wing weakly infuscated on basal .25, then with a narrow milky-white band followed by a very broad brown band which is partially interrupted by pale streaks; apex of wing milky-white; hind wing hyaline. Erect setae short, sparse, and inconspicuous. Pubescence silvery, rather coarse on posterior slope of propodeum.

Clypeus $2.7 \times$ as wide as high; labrum subtruncate. Apical segment of maxillary palpus subequal to median height of clypeus and to antennal segment 3. Head $1.12 \times$ as wide as high; middle interocular distance $.61 \times$ head width; upper interocular distance $.90 \times$ lower interocular distance; malar space about half the length of 2nd antennal segment; postocellar line: ocello-ocular line=12:7. Third antennal $1.9 \times$ as long as thick; $.34 \times$ upper interocular distance. Pronotal disc much shorter than mesoscutum; propodeum without rugae, with an oblique posterior declivity. Front femur $2.5 \times$ as long as wide. Fore wing with 3rd submarginal cell $1.3 \times$ as wide as 2nd.

19. *Epipompilus submetallicus* Evans, new species

Holotype: ♀, NEW SOUTH WALES: Centravale, 10.I.1948 [NMVM].

Description: Length 9.0 mm; fore wing 6.5 mm. Black, head and thorax with obscure, deep metallic reflections; abdomen shining, with deep green and bronze reflections; palpi and antennae dark brown; front legs black, tips of coxae and lower surface of femora and tibiae suffused with rufous; middle and hind legs rufous, except tibiae and tarsi partially infuscated; tibial spurs colored like the legs. Wings subhyaline, fore wing infuscated on basal .25, also with a brown band extending from basal vein to third intercubital vein. Body setae short and pale; pubescence somewhat golden on apical half of abdomen.

Clypeus $2.3 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus $.70 \times$ median height of clypeus, $0.6 \times$ antennal segment three. Head $1.14 \times$ as wide as high; middle interocular distance $.65 \times$ head width; upper interocular distance $.77 \times$ lower interocular distance; malar space slightly longer than 2nd antennal segment; postocellar line: ocello-ocular line = 2 : 1. Third antennal segment $2.2 \times$ as long as thick, $.50 \times$ upper interocular distance. Pronotal disc slightly longer than mesoscutum along midline, its posterior margin arcuate; propodeum rather flat, steeply declivous behind, sides of the slope transversely rugose. Front femur $2.6 \times$ as long as wide. Fore wing with 3rd submarginal cell $1.1 \times$ as wide as second.

Remarks: This species forms a natural transition from the non-metallic, rather weakly sculptured 4 species preceding it to the 4 brilliantly colored, specialized species that follow.

20. *Epipompilus caeruleus* Evans, new species

Holotype: ♀ (BISHOP 9539), NE NEW GUINEA: Chimbu Valley, 1800 m, 16.V.1963 (J. Sedlacek) [BPBM].

Description: Length 8.0 mm; fore wing 6.2 mm. Entire body and legs brilliant metallic blue; palpi and antennae black, with bluish reflections on basal segments; tibial spurs fuscous. Wings hyaline, fore wing weakly infuscated at extreme base, also with a broad brown band starting at basal vein and extending slightly beyond the third submarginal cell; wingtip with a luteous tinge. Front and vertex with some fairly long, pale hair; mesosoma and leg bases with sparse, pale hair; pubescence and sparse inconspicuous except coarse and silvery on propodeum, pleura, and coxae.

Clypeus $2.5 \times$ as wide as high; labrum weakly emarginate. Apical segment of maxillary palpus subequal to median height of clypeus, $.80 \times$ antennal segment three. Head $1.17 \times$ as wide as high; middle interocular distance $.60 \times$ head width; upper interocular distance $.86 \times$ lower interocular distance; malar space subequal to 2nd antennal segment; postocellar line: ocello-ocular line = 16 : 11. Third antennal segment $2.8 \times$ as long as thick, $.50 \times$ upper interocular distance. Pronotal disc much shorter than mesoscutum, its posterior margin weakly subangulate; propodeum evenly rounded, with numerous fine transverse striations on the posterior slope. Front femur $2.3 \times$ as long as wide; tarsal claws bifid, i. e., the tooth close to the outer ray and subparallel to it. Fore wing with the 3rd submarginal cell $1.4 \times$ as wide as 2nd.

21. *Epipompilus papuensis* Evans, new species

Holotype: ♀ (BISHOP 9540), SE, NEW GUINEA (PAPUA): W District, Oriomo Govt. Sta., 26-28.X.1960 (Malaise trap, J. L. Gressitt) [BPBM].

Description: Length 6.5 mm; fore wing 5.0 mm. Head and thorax dark blue, rather dull; abdomen more shining, black with dark blue reflections; labrum rufo-testaceous; antennae ferruginous but becoming infuscated toward the apex, especially above; legs wholly ferruginous except tibial spurs stramineous. Fore wing brown on basal .2, followed by a milky-white band of about equal width, then a brown band starting at basal vein and extending beyond the 3rd intercubital vein; wing milky-white beyond this band except extreme tip very weakly infuscated; hind wing hyaline, weakly tinged with brown apically. Front with only a few weak, pale setae, thorax virtually without erect setae; pubescence silvery and conspicuous over most of body, especially coarse on propodeal slope.

Clypeus unusually small, about $2 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus subequal to median height of clypeus, $.80 \times$ antennal segment three. Head $1.18 \times$ as wide as high; middle interocular distance $.57 \times$ head width; upper interocular distance $.78 \times$ lower interocular distance; malar space slightly shorter than antennal segment 2; postocellar line: ocello-ocular line = $9:2$, the lateral ocelli removed from the nearest eye margin by about their own diameters. Third antennal segment $2.5 \times$ as long as thick, $.50 \times$ upper interocular distance. Pronotal disc rather flat, angulate behind, along midline considerably shorter than mesoscutum; propodeum with an oblique declivity on the posterior 3rd, sides of declivity weakly rugose. Front femur $2.2 \times$ as long as wide; claws sub-bifid, i. e., the outer ray is curved in such a way as to be nearly parallel to the erect tooth. Fore wing with the 2nd and 3rd submarginal cells subequal in width.

Paratype: ♀, QUEENSLAND: Cairns (J. F. Illingworth) [ANIC].

Variation: Despite the great difference in place of origin, the paratype resembles the type closely. The front femora of the paratype have bluish reflections and are somewhat more robust than those of the type, measuring $2.1 \times$ as long as wide. In this specimen the 1st transverse cubital vein is completely absent in one fore wing (though complete in the other), thus presaging the condition in the 2 species that follow.

22. *Epipompilus incompletus* Evans, new species

Holotype: ♀, QUEENSLAND: Brisbane, 25.I.1960 (Haseler) [UQB].

Description: Length 6.5 mm; fore wing 4.5 mm. Head and thorax dark blue-green, abdomen deep violet; antennae and palpi dark brown; legs black, with bluish reflections, except tarsi brown; tibial spurs stramineous. Fore wing lightly infuscated on basal 4th, then with a rather narrow milky-white band followed by a broad brown band which starts at the basal vein and extends to the outer transverse cubital vein; wingtip milky-white except extreme apical margin weakly infuscated; hind wing hyaline. Front and thoracic dorsum with stiff, dark setae; pleura, propodeum, and coxae with scattered pale setae. Pubescence silvery to cinereous, rather coarse on pleura, coxae, propodeum, and abdomen.

Clypeus $2.3 \times$ as wide as high; labrum truncate. Apical segment of maxillary palpus $.90 \times$ median height of clypeus, $.60 \times$ antennal segment 3. Head $1.20 \times$ as wide as high; middle interocular distance $.67 \times$ head width; upper interocular $.85 \times$ lower interocular distance; malar space slightly exceeding antennal segment 2; postocellar line: ocello-ocular line = $16:9$. Third antennal segment $2.6 \times$ as long as thick, $.48 \times$ upper interocular distance. Head and thoracic

dorsum strongly alutaceous and micropunctate. Pronotal disc broadly arcuate behind, along midline slightly shorter than mesoscutum; propodeum strongly rugose on sides of posterior slope. Front femur $2.5 \times$ as long as wide; claws dentate. Venation as in preceding species except that the 1st transverse cubital vein is wholly absent, so that there are 2 submarginal cells, the 1st very long.

Paratype: ♀, WESTERN AUSTRALIA: Jiggalong (SE of Port Hedland) (J. Hickmer) [NMVM].

Variation: The paratype is similar to the type in size and in most structural details; the wings are somewhat more strongly tinged with luteous, the front femora slightly more slender, $2.6 \times$ as long as wide.

23. *Epipompilus formosus* Evans, new species

Holotype: ♀, NE NEW GUINEA: Eastern Highlands, South of Okapa, 27.X.1964 (R. Hornabrook) [ANIC].

Description: Length 6.6 mm; fore wing 5.0 mm. Entire body brilliant blue-green, abdomen with violet reflections also; legs dark blue-green to tarsi, which are brown; tibial spurs stramineous; scape dark blue-green, flagellum fuscous. Wings strongly banded; fore wing with basal .2 fuscous, followed by a milky-white band of about the same width, this by a broad brown band extending from the basal vein to slightly beyond the outer transverse cubital vein; wingtip milky-white except extreme apical margin weakly infuscated; hind wing hyaline. Front and thoracic dorsum with short, pale setae; pleura, coxae, and propodeum with coarse silvery pubescence.

Clypeus $2.5 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus $1.2 \times$ median height of clypeus, $.90 \times$ antennal segment 3. Head $1.15 \times$ as wide as high; middle interocular distance $.61 \times$ head width; upper interocular distance $.88 \times$ lower interocular distance; malar space slightly shorter than antennal segment 2; postocellar line: ocello-ocular line=16:6. Third antennal segment $2.4 \times$ as long as thick, $.50 \times$ upper interocular distance. Front and thoracic dorsum moderately shining, micropunctate. Pronotal disc somewhat longer than mesoscutum, subarcuate behind; propodeum strongly transversely rugose on side of posterior slope. Front femur $2.3 \times$ as long as wide; claws sub-bifid, the apical ray curved so as to be subparallel to the tooth. Fore wing with 1st transverse cubital vein absent, so that there are only 2 submarginal cells, as in the preceding species (fig. 3).

Paratypes: NE NEW GUINEA: 1 ♀, Wau, 1250 m, 9.VIII.1965 (J. & M. Sedlacek; Malaise trap) [BPBM]; 1 ♀, Wau, Mt Kaindi, 1230 m, 5.X.1964 (J. Sedlacek; Malaise trap) [BPBM]; SE NEW GUINEA: 1 ♀, Mondo, 5000 feet, II.1934 (L. E. Cheesman) [BMNH].

Variation: The paratypes are very similar to the type in body and wing color and in all major morphological features. Wing length varies from 5.0 to 6.0 mm. In the 2 specimens from Wau, the basal flagellar segments are in part dull ferruginous and the front tibiae and tarsi partially ferruginous. In the 3 paratypes the pronotal disc is subequal in length to the mesoscutum.

Male *Epipompilus*

The 13 species known from the ♂ sex are grouped here to permit more direct com-

parison of the descriptons. Three (7, 11, 14) have been tentatively assigned to ♀♀ considered earlier in the text, while the remainder are unassigned. The ♂♂ are all rather similar and without the color characters, hairiness of the eyes, swollen front femora, or other features that have proved useful in distinguishing the ♀♀. The best characters are to be found in the ♂ terminalia, and these must usually be extracted for accurate identification.

Although the ♂♂ cannot be assigned subgenerically with certainty, I feel it probable that none of these ♂♂ fall in *Epipilpomus*, that those with a broad subgenital plate probably go in *Epipompilus* s. str. (7, 11, 14, 24-26), and those with a slender and acute subgenital plate in *Epipompiloides* (27-33).

7. *Epipompilus pictipennis* Evans

As mentioned on an earlier page, I now believe that the ♂ I described as that of *tasmanicus* in fact belongs here (see my 1962 paper, p. 779, fig. 1 and 2). This is a distinctive form, having yellowish and weakly banded wings, an extremely short aedeagus, and a broad subgenital plate that tapers to a rounded apex fringed with long setae. I have seen no additional specimens since my 1962 treatment based on material from Mt Wellington and Eaglehawk Neck, Tasmania.

11. *Epipompilus turneri* Evans Fig. 15.

I described this species in 1962 from two ♀♀ from southeastern Queensland, and earlier in the present paper presented additional locality records from Queensland, New South Wales, Australian Capital Territory, Victoria and Tasmania. I now believe that I can recognize the ♂ of this species. The description below is based on a ♂ with the following data: QUEENSLAND: Moggill Farm, 25 miles W of Brisbane, 27. I.-1.II.1961 (J. L. & M. Gressitt, Malaise trap) [BPBM]. The following additional ♂♂ also belong here: QUEENSLAND: 1 ♂, same data [BPBM]; 1 ♂, Mackay, X.1899 [BMNH]; NEW SOUTH WALES: 4 ♂♂, 17 miles N of Macksville, 4.XII.1948 (E. B. Britton, P. B. Carne) [BMNH]; 1 ♂, Childowlah, 30.XII.1956 (E. F. Riek) [ANIC]; 1 ♂, Mogo, 15. X.1968 (J. Cardale, on *Leptospermum*) [ANIC]; 1 ♂, Warrell Creek, No. Coast, 11.X. 1962 (D. H. Colless) [ANIC]; VICTORIA: 1 ♂, Millgrove, 27 March 1954 (A. Neboiss) [NMVM].

Description: Length 5 mm; fore wing 4.3 mm. Black; labrum testaceous; palpi light brown; antennae ferruginous except first 2 segments and apical half slightly infuscated, more especially on upper surface; legs fuscous, including the tibial spurs, except front tarsus, tibia, and part of the femur rufotestaceous. Wings subhyaline, tinged with yellow on basal half, veins yellow here; apical half of fore wing very lightly infuscated, veins and stigma dark brown. Body without erect hairs; pubescence rather coarse, pale.

Clypeus $2.3 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus subequal to median height of clypeus, $.88 \times$ length of third antennal segment. Head $1.13 \times$ as wide as high, vertex barely arched above eye tops; middle interocular distance $.57 \times$ head width; upper interocular distance subequal to lower interocular distance; malar space slightly exceeding length of antennal segment 2; postocellar line: ocello-ocular line=13:7. Third antennal segment $1.7 \times$ as long as wide, much longer than scape and subequal to 4th segment; 3rd and 4th segments together equal to $.95 \times$ upper interocular distance. Front and thoracic

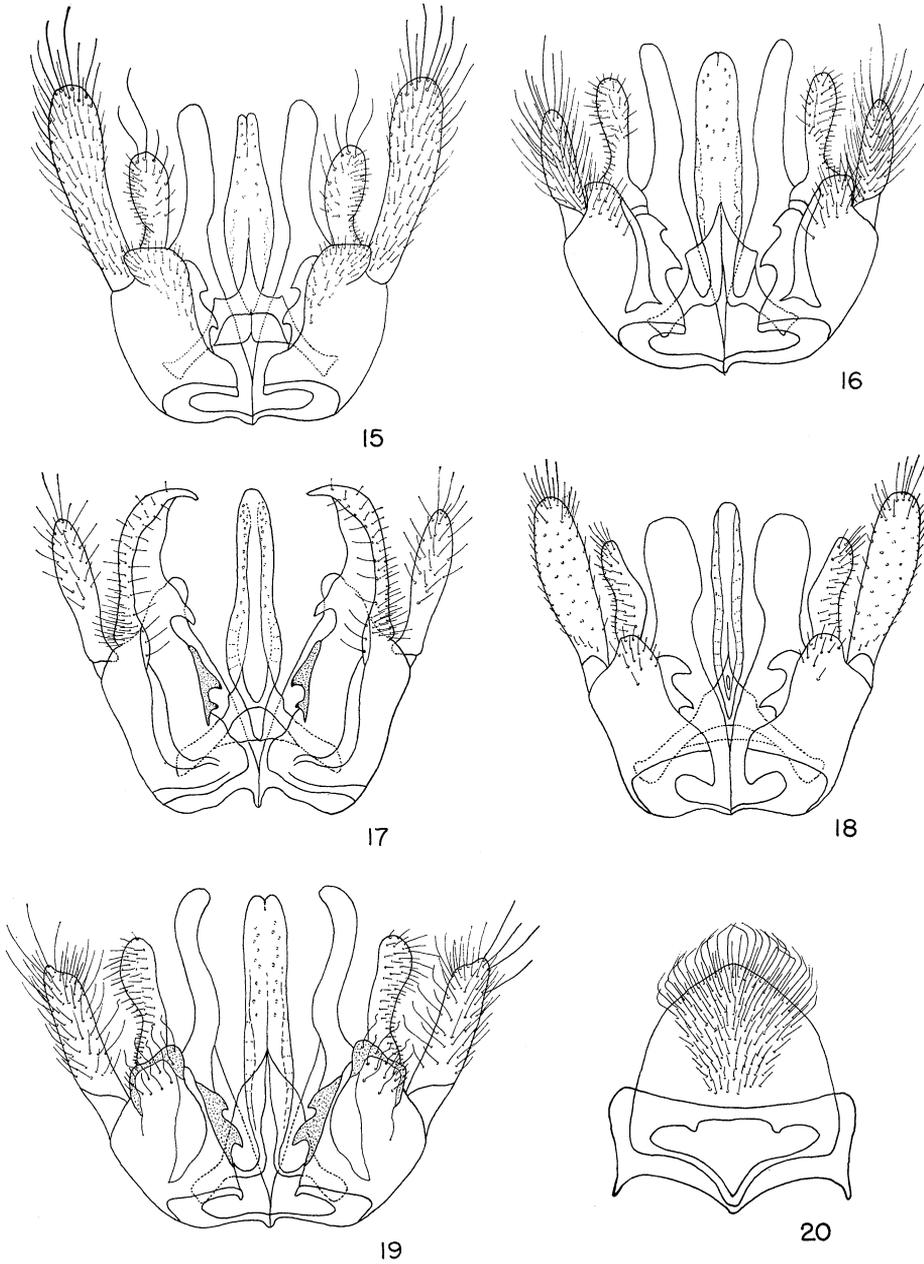


Fig. 15-20. 15, ♂ genitalia, ventral aspect, of *E. turneri* Evans ; 16, same of *E. rieki* Evans, n. sp. ; 17, same of *E. elongatus* Evans, n. sp. ; 18, same of *E. eyreanus* Evans, n. sp. ; 19, same of *E. carbonarius* Evans, n. sp. ; 20, subgenital plate of *E. carbonarius* Evans, n. sp.

dorsum dull, with strong surface sculpture. Pronotum short, broadly subangulate behind; propodeum with smooth surface, sloping evenly in profile; front femur $2.6 \times$ as long as wide; longer hind tibial spur $.95 \times$ length of hind basitarsus. Third submarginal cell $1.2 \times$ as wide as 2nd, narrowed only slightly above. Subgenital plate broad and flat, rounded apically, covered with strong setae (fig. 6). Genitalia with relatively short, broad parameres which are strongly setose; digiti bearing several large apical setae and many shorter ones; cuspides with only short setae; parapenial lobes slender, slightly exceeding the aedeagus (fig. 15).

Variation: The ♂♂ vary in length from 3.2 to 5.5 mm, fore wing from 2.8 to 4.5 mm. Most specimens have the wings at least weakly tinged with yellow basally, but several have dark antennae, in fact with only several of the basal flagellar segments ferruginous beneath. The middle interocular distance varies from $.56$ to $.65 \times$ the head width, antennal segments 3 and 4 from $.68$ to $.97 \times$ the upper interocular distance.

14. *Epipompilus rieki* Evans, new species Fig. 8, 16.

This species was described from the ♀♀ sex on an earlier page. I assign two ♂♂ here tentatively. These bear the following data: AUSTRALIAN CAPITAL TERRITORY: 1 ♂, Canberra, Nov. 1946 (E. F. Riek; marked "parasite of spider" and pinned with spider case) [ANIC]; WESTERN AUSTRALIA: 1 ♂, Crawley, 20.Feb.1935 (K. R. Norris) [ANIC]

Description: Length 4.6 mm; fore wing 3.8 mm. Black; palpi dark brown; labrum testaceous; antennae bright ferruginous except segments 1, 2, and 13 somewhat infuscated; legs ferruginous except coxae and trochanters black, front femora slightly infuscated; spurs whitish. Wings hyaline, veins and stigma brown. Erect setae pale, fairly numerous on front, vertex, thoracic dorsum and pleura, propodeum, and front coxae; pubescence inconspicuous.

Clypeus $2.5 \times$ as wide as high; labrum rounded. Maxillary palpi elongate, apical segment $1.3 \times$ median height of clypeus, $.90 \times$ 3rd antennal segment. Head $1.22 \times$ as wide as high; front broad, middle interocular distance $.65 \times$ head width; upper interocular distance $.90 \times$ lower interocular distance; malar space nearly twice the length of 2nd antennal segment; postocellar line: ocellular line=2:1. First 2 antennal segments very short, the first 4 in a ratio of 10:5:16:16; segment 3 $1.6 \times$ as long as wide, 3 and 4 together equal to $.85 \times$ upper interocular distance. Front and thoracic dorsum moderately shining. Pronotum very short, broadly subangulate behind; thoracic dorsum somewhat flattened; metanotum longitudinally striate, the striae more or less continuous with similar ones on the propodeum; median stria of propodeum very strong; sides and posterior slope of propodeum coarsely foveolate. Front femur $2.2 \times$ as long as wide; longer spur of hind tibia $.7 \times$ length of basitarsus. Third submarginal cell $.9 \times$ as wide as second. Subgenital plate moderately broad, slightly emarginate apically, clothed with long setae (fig. 8). Genitalia with short, setose parameres; papapenial lobes exceeding the other genitalic appendages (fig. 16).

Remarks: The above description is based on the ♂ from Canberra. The Western Australia ♂ is slightly larger (length 5.4 mm, fore wing 4.6 mm) and has the 3rd submarginal cell $1.3 \times$ as wide as the 2nd. The legs are wholly bright ferruginous except that the front coxae are black, the other coxae partially infuscated. In all other features, including the terminaila, this specimen resembles the type closely, though it should be pointed out that the ♀ *rieki* has so far been collected only in the eastern part of Australia.

24. *Epipompilus elongatus* Evans, new species Fig. 7, 17.

Holotype: ♂, AUSTRALIAN CAPITAL TERRITORY: Lees Spring, 3 April 1951 (E. F. Riek) [ANIC].

Description: Length 5.8 mm; fore wing 5.5 mm. Black; palpi light brown; antennae dark brown; coxae, trochanters, and femora black, tibiae and tarsi ferruginous except tips of tarsi fuscous; middle and hind tibial spurs stramineous. Wings subhyaline, veins and stigma brown. Body without erect hairs, pubescence sparse, mainly pale.

Clypeus $3 \times$ as wide as high; labrum rounded. Palpi relatively short, apical segment of maxillary palpi subequal to median height of clypeus, $.70 \times$ length of 3rd antennal segment. Head $1.23 \times$ as wide as high; middle interocular distance $.60 \times$ head width; upper interocular distance $.95 \times$ lower interocular distance; malar space slightly exceeding antennal segment two; postocellar line: ocello-ocular line = 3 : 2. Antennae elongate, somewhat serrate in profile; 3rd segment about $2 \times$ as long as wide, 3rd and 4th segments together equal to $.85 \times$ upper interocular distance. Front dull, but thoracic dorsum somewhat shining. Pronotum short, subangulate behind; postnotum longitudinally striate; propodeum elongate, rather flat in front, declivous on posterior 3rd; front femur $2.6 \times$ as long as wide. Third submarginal cell $1.2 \times$ as wide as second, narrowed by $1/3$ above. Subgenital plate of unusual form, broad and subtruncate apically, angulate laterally; surface with long setae which are bent apically, also with a group of short setae at the extreme base (fig. 7). Genitalia also of unusual form, in that the digiti are extremely large and hook-like, but the parapenial lobes reduced to short, rounded structures which are visible only with some difficulty (fig. 17).

25. *Epipompilus hyalinipennis* Evans

Epipompilus (Epipompiloides) hyalinipennis Evans, 1962, *Pacif. Ins.* 4: 781 and Fig. 3 (type: ♂, TASMANIA: Mt Wellington, 15.I.-6.II. 1913 (R. E. Turner) [BMNH]).

This species has been known only from the type. A ♂ from Blundells, A. C. T., collected by E. F. Riek on 6.Jan.1961 [ANIC] appears to belong here. It is smaller (fore wing 4.2 mm) but differs only in minor details from the type of *hyalinipennis*. The subgenital plate is virtually identical, the genitalia very similar except that the aedeagus is slightly broader, the parameres rather irregular in shape apically rather than being truncate. The coarse sculpturing of the propodeum is similar to that of *pictipennis*, as is the form of subgenital plate.

26. *Epipompilus carbonarius* Evans, new species Fig. 19, 20.

Holotype: ♂, WESTERN AUSTRALIA: Rottnest Island, 21-22.X.1969 (H. E. Evans & R. W. Matthews) [ANIC].

Description: Length 5.8 mm; fore wing 4.3 mm. Black; antennae dull brown beneath; legs black, including spurs. Wings hyaline, veins and setulae yellowish on basal half of wings, darker on apical half; stigma black. Erect setae short and inconspicuous, mainly pale; pubescence sparse, coarse, silvery except brownish on dorsum.

Clypeus $2.2 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpi $.90 \times$ median height of clypeus, $.80 \times$ antennal segment 3. Head $1.15 \times$ as wide as high; middle interocular distance $.63 \times$ head width; upper interocular distance $.88 \times$ lower interocular distance; malar space $1.5 \times$ length of 2nd antennal segment; postocellar line: ocello-ocular line =

18 : 7. Third antennal segment $1.5 \times$ as long as wide, 3rd and 4th segments together equal to $.83 \times$ upper interocular distance. Front dull, alutaceous; thoracic dorsum weakly shining. Pronotum short, broadly angular behind; postnotum longitudinally striate; propodeum strongly reticulate, reticulations with a longitudinal bias anteriorly, strongly foveolate posterolaterally. Front femur $2.6 \times$ as long as wide; longer spur of hind tibia $.8 \times$ length of basitarsus. Third submarginal cell subequal in width to 2nd. Subgenital plate unusually short and broad, covered with setae medioapically, the margining setae strongly bent apically (fig. 20). Genitalia with the parapenial lobes strongly, doubly curved, as in *hyalinipennis*, the parameres shorter and less densely setose than in that species (fig. 19).

27. *Epipompilus collessi* Evans, new species Fig. 9, 21.

Holotype: ♂, NEW SOUTH WALES: Otford, 31.XII.1962 (D. H. Colless) [ANIC].

Description: Length 4.3 mm; fore wing 3.7 mm. Black; labrum and apical part of mandibles testaceous; palpi light brown; antennae fuscous, scape testaceous beneath, flagellum dull brown beneath; legs rufo-testaceous beyond trochanters except middle and hind tarsi partially infuscated, spurs white. Wings hyaline, veins and stigma brown. Pubescence rather coarse, suberect, mainly silvery; body without erect setae which extend above the pubescence.

Clypeus $2.2 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus $.90 \times$ median height of clypeus, $.90 \times$ antennal segment three. Head $1.17 \times$ as wide as high; vertex weakly arched above tops of eyes; front narrow, middle interocular distance $.60 \times$ head width; upper interocular distance $1.1 \times$ lower interocular distance; malar space subequal to 2nd antennal segment; postocellar line: ocello-ocular line=13 : 7. Third antennal segment $1.5 \times$ as long as wide, $1.2 \times$ as long as scape, barely shorter than 4th segment, 3rd and 4th segments together equal to $.75 \times$ upper interocular distance. Front and thoracic dorsum weakly shining, micropunctate. Pronotum short, angulate behind; propodeum smooth, sloping gently; front femur $2.6 \times$ as long as wide; longer spur of hind tibia subequal to basitarsus in length. Third submarginal cell slightly wider than 2nd. Subgenital plate with the sides roundly bulging sub-basally, tapering to an acute point, strongly setose (fig. 9). Genitalia with the parameres far exceeding the parapenial lobes, the latter barely exceeding the aedeagus (fig. 21).

Paratypes: ♂, NEW SOUTH WALES: Kiandra, 19.XII.1962 (E. F. Riek) [ANIC]; ♂, AUSTRALIAN CAPITAL TERRITORY: Canberra, 11 Feb. 1970 (H. E. Evans & R. W. Matthews) [ANIC].

Variation: The 2 paratypes resemble the type closely in size and color. Fore wing length varies from 3.4 to 3.7 mm, the middle interocular distance from $.59$ to $.62 \times$ head width.

28. *Epipompilus ferrugineipes* Evans, new species Fig. 22.

Holotype: ♂, QUEENSLAND: SE part, Mt Glorious, 13.II.1961 (L. & M. Gressitt) from Bishop Museum [ANIC].

Description: Length 4.6 mm; fore wing 3.9 mm. Black; labrum testaceous; palpi brown; antennae rufotestaceous except scape and apical few segments weakly infuscated; legs (including tibial spurs) ferruginous, except front coxae mostly black. Wings subhyaline, veins and stigma brown. Body without erect setae, the pubescence silvery to golden-brown.

Clypeus $2.5 \times$ as wide as high; labrum subtruncate. Apical segment of maxillary palpus $.90$

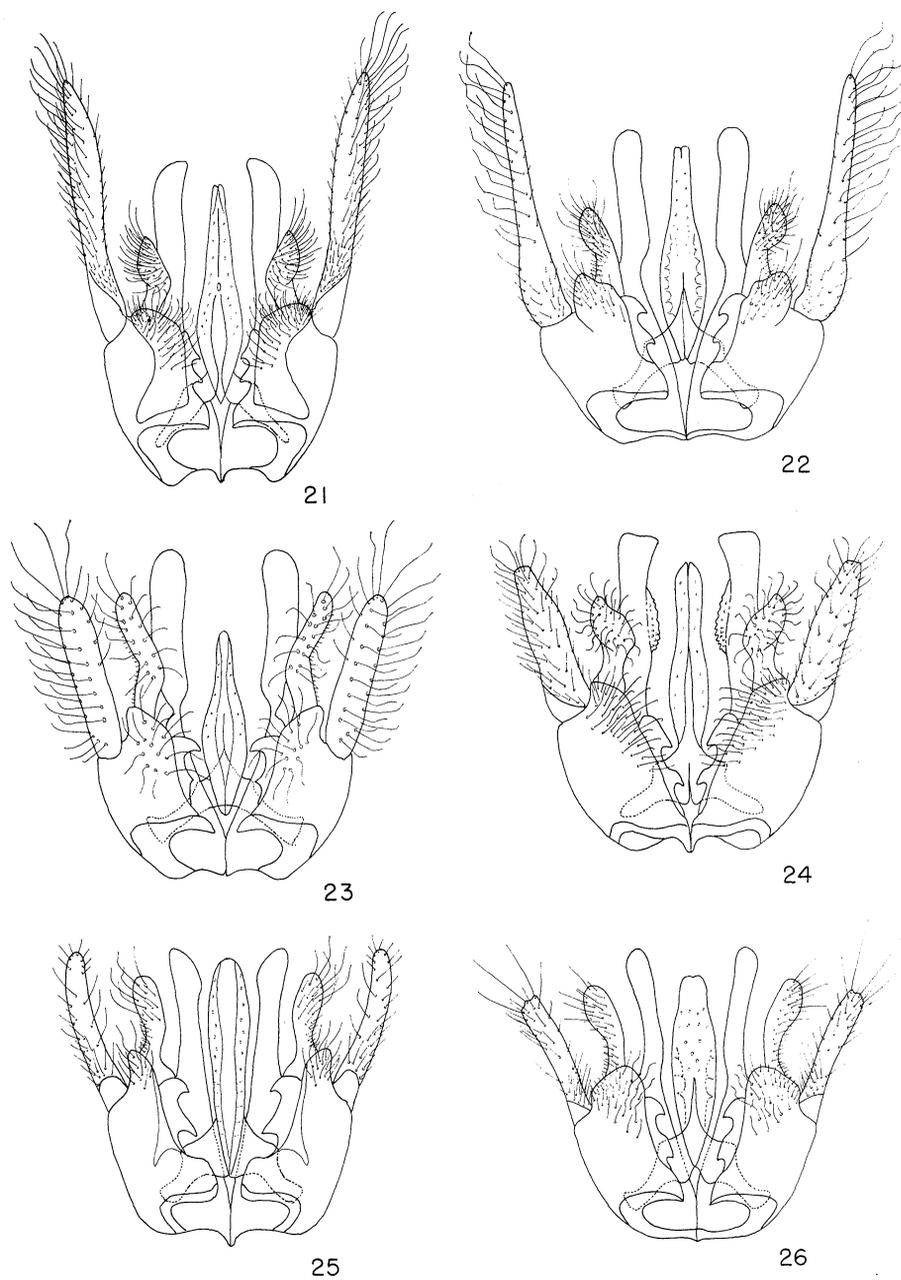


Fig. 21-26. ♂ genitalia of *Epipompilus* species, ventral aspect. 21, *E. collessi* Evans, n. sp.; 22, *E. ferrugineipes* Evans, n. sp.; 23, *E. bushi* Evans, n. sp.; 24, *E. semitinctus* Evans, n. sp.; 25, *E. reductus* Evans, n. sp.; 26, *E. stigmaticus* Evans, n. sp.

× median height of clypeus, $.70 \times$ antennal segment 3. Head $1.18 \times$ as wide as high, vertex barely arched above eye tops; front narrow, middle interocular distance $.57 \times$ head width; upper interocular distance subequal to lower interocular distance; malar space subequal in length to antennal segment 2; postocellar line : ocello-ocular line = 11 : 6. Third antennal segment $2.0 \times$ as long as wide, much longer than scape and slightly longer than 4th segment; 3rd and 4th segments together equal to $.90 \times$ upper interocular distance. Front and thoracic dorsum dull, alutaceous. Pronotum short, broadly subangulate behind; propodeum smoothly rounded; front femur $2.6 \times$ as long as wide; longer spur of hind tibia $.95 \times$ length of basitarsus. Third submarginal cell $1.3 \times$ as wide as 2nd, only narrowed toward the top. Subgenital plate slender and tapering, strongly hirsute, much as figured for *collessi* (fig. 9) except sides angulate at extreme base. Genitalia with extremely slender, tapering parameres; parapenial lobes rounded apically, slightly exceeding the aedoeagus (fig. 22).

29. *Epipompilus bushi* Evans, new species Fig. 10, 23.

Holotype: ♂, SOUTH AUSTRALIA: 10.2 miles W of Nundroo, 15.X.1964 (G. L. Bush) [ANIC].

Description: Length 4.8 mm; fore wing 4.3 mm. Black; labrum and 1st 2 antennal segments margined with testaceous, antennae otherwise black; palpi brown; legs rufous beyond apices of coxae except middle and hind tarsi infuscated; tibial spurs white. Wings hyaline, veins and stigma brown. Erect setae absent aside from a few short ones on head and thoracic dorsum. Pubescence rather coarse, silvery, conspicuous on pleura, coxae and propodeum.

Clypeus $2.3 \times$ as wide as high; labrum subtruncate. Apical segment of maxillary palpus $.80 \times$ median height of clypeus, subequal to 3rd antennal segment. Head $1.17 \times$ as wide as high; middle interocular distance $.65 \times$ width of head; upper interocular distance $1.1 \times$ lower interocular distance; malar space subequal to length of antennal segment 2; postocellar line: ocello-ocular line = 17 : 8. Third antennal segment only $1.3 \times$ as long as wide, slightly shorter than scape and much shorter than segment 4, 3rd and 4th segments together equal to $.65 \times$ upper interocular distance. Front and thoracic dorsum somewhat shining, micro-punctate. Pronotum somewhat flat, subangulate behind; propodeum smooth, roundly sloping from front to rear; front femur slender, $2.8 \times$ as long as wide; longer spur of hind tibia $.8 \times$ length of basitarsus. Third submarginal cell slightly wider than 2nd. Subgenital plate gradually tapered to a narrowly rounded apex, its sides angulate sub-basally; covered with long setae which are curved apically (fig. 10). Genitalia with the parameres shorter than the parapenial lobes, with sparse, long setae; aedoeagus rather short (fig. 23).

Paratype: ♂, WESTERN AUSTRALIA: Gascoyne Exp. Sta., Carnarvon, 3-7.X.1969 (Malaise trap, H. E. Evans & R. W. Matthews) [ANIC].

Variation: The paratype is slightly smaller (fore wing 3.5 mm); it is colored much like the type, but the tarsi are more heavily infuscated, the middle and hind tibiae somewhat infuscated above. In this specimen the apical segment of the maxillary palpus is $1.2 \times$ as long as the 3rd antennal segment, the 3rd and 4th antennal segments together equal to $.55 \times$ the upper interocular distance. The terminalia resemble those of the type closely.

30. *Epipompilus eyreanus* Evans, new species Fig. 12, 18.

Holotype: ♂, SOUTH AUSTRALIA: 15 miles W of Nullarbor Hmst., Eyre Highway,

12.IX.1964 (G. L. Bush) [ANIC].

Description: Length 3.5 mm; fore wing 2.7 mm. Black; palpi and antennae dark brown; legs dark brown to black, except front tibiae and tarsi light brown, middle and hind tibial spurs white. Wings very pale, clear hyaline, the veins mostly colorless, but the stigma dark brown. Erect, pale setae numerous on front, vertex, thoracic dorsum, pleura, coxae, and propodeum. Pubescence silvery, rather sparse.

Clypeus $2.4 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus $.70 \times$ median height of clypeus, $.85 \times$ antennal segment three. Head $1.10 \times$ as wide as high; vertex strongly arched above eye tops; middle interocular distance $.64 \times$ head width; upper interocular distance $1.1 \times$ lower interocular distance; malar space slightly shorter than antennal segment two; postocellar line: ocello-ocular line = 2 : 1. Third antennal segment $1.3 \times$ as long as wide, slightly shorter than scape or fourth segment, 3rd and 4th segments together equal to $.53 \times$ upper interocular distance. Front and thoracic dorsum strongly shining, covered with small punctures. Pronotum short, arcuate behind; propodeum smooth, strongly rounded; front femur $3.3 \times$ as long as wide; longer spur of hind tibia $.65 \times$ length of basitarsus. Third submarginal cell only $.85 \times$ as wide as second. Subgenital plate rather slender and narrowly rounded apically (fig. 12). Genitalia with the parameres rather broad, only slightly exceeding the aedoeagus and the broad parapenial lobes (fig. 18).

31. *Epipompilus semitinctus* Evans, new species Fig. 11, 24.

Holotype: ♂, QUEENSLAND: Bunya Mts, 19.XI.1967 (J. & M. Sedlacek) from Bishop Museum [ANIC].

Description: Length 4.5 mm; fore wing 4.2 mm. Black; labrum testaceous; palpi brown; antennae bright ferruginous except last few segments infuscated; legs also bright ferruginous except base of front coxae and apex of hind tarsi infuscated; tibial spurs colored like the legs. Wings lightly tinged with yellow on basal half, the veins there yellowish; veins on outer part of wing dark, stigma dark brown. Body without erect hairs, but the pubescence somewhat coarse, pale.

Clypeus $2.5 \times$ as wide as high; labrum subtruncate. Apical segment of maxillary palpi equal in length to median height of clypeus, $.90 \times$ antennal segment three. Head $1.15 \times$ as wide as high, vertex barely arched above eye tops; middle interocular distance $.59 \times$ head width; upper interocular distance $1.06 \times$ lower interocular distance; malar space subequal in length to 2nd antennal segment; postocellar line: ocello-ocular line = 3 : 2. Third antennal segment $1.6 \times$ as long as wide, longer than scape and subequal to 4th segment; segments 3 and 4 equal to $.85 \times$ upper interocular distance. Front and thoracic dorsum dull, alutaceous. Pronotum short, broadly subarcuate behind; propodeum smoothly rounded; front femur $2.6 \times$ as long as wide; longer spur of hind tibia $.86 \times$ length of basitarsus. Third submarginal cell only $2/3$ as wide as second, narrowed by $2/3$ above. Subgenital plate tapering to a subacute apex, covered with setae which are curved at their tips (fig. 11). Genitalia unusual in that the parapenial lobes have a swollen, roughly spinose area on their mesal margin; the parameres are shorter than the parapenials and bear relatively short setae (fig. 24).

Remarks: A 2nd ♂ is assigned here somewhat tentatively. It is from 25 miles W of Brisbane, Queensland, 27.I-1.II.1961 (J. L. & M. Gressitt) [BPBM]. This specimen is about the same size as the type, but lacks the yellow tinge on the wing-bases and has the antennae and legs mainly black (but the tibial spurs white). The middle interocular distance is $.63 \times$ the head width, antennal segments three and four only $.70 \times$ the

upper interocular distance. As in the type, the 3rd submarginal cell is smaller than the 2nd, but it is narrowed by only about one half above. The subgenital plate resembles that of the type closely, and the genitalia are very similar except that the parameres are not as abruptly truncate apically and the aedoeagus is slightly broader.

32. **Epipompilus stigmaticus** Evans, new species Fig. 13, 26.

Holotype: ♂ NEW SOUTH WALES: Wilcannia, 23.XI.1949 (E. F. Riek) [ANIC].

Description: Length 3.2 mm; fore wing 2.8 mm. Black; palpi, antennae, and legs predominantly dark brown, except front legs partly testaceous, tibial spurs white; labrum, apical half of mandibles, and margin of clypeus testaceous. Wings very pale, hyaline, veins colorless but stigma large, dark brown. Erect setae absent except for a few weak ones on front and on scutellum; pubescence sparse and inconspicuous.

Clypeus $3 \times$ as wide as high; labrum rounded. Apical segment of maxillary palpus subequal in length to 3rd antennal segment, slightly exceeding median height of clypeus. Head $1.18 \times$ as wide as high; middle interocular distance $.69 \times$ head width; upper interocular distance $.88 \times$ lower interocular distance; malar space about $1.5 \times$ length of 2nd antennal segment; postocellar line: ocello-ocular line=13:5. Third antennal segment $1.4 \times$ as long as wide, 3rd and 4th together equal to $.67 \times$ upper interocular distance. Front and thoracic dorsum moderately shining, micropunctate. Pronotum short, broadly subangulate behind; thoracic dorsum rather strongly flattened; postnotum narrow, with longitudinal striae; propodeum broad, rather flat in front, declivous on posterior 3rd, surface strongly reticulo-foveolate on extreme sides. Front femur $2.6 \times$ as long as wide; longer spur of hind tibia $.75 \times$ length of basitarsus. Wings as shown in fig. 4, unusual in that the 1st transverse cubital vein is wholly absent. Subgenital plate with a slender, hirsute apical process (fig. 13). Genitalia exhibiting truncate parameres which slightly exceed the digiti and are exceeded by the simple, nearly straight parapenial lobes (fig. 26).

33. **Epipompilus reductus** Evans, new species Fig. 5, 14, 25.

Holotype: ♂, WESTERN AUSTRALIA: Nilemah Station, 50 miles S of Denham, 8-9.X.1969 (H. E. Evans & R. W. Matthews) [ANIC].

Description: Length 3.2 mm; fore wing 2.4 mm. Black; labrum, antennae, and palpi dark brown; legs black except front tibiae and tarsi testaceous, all tibial spurs white. Wings hyaline, veins and stigma brown. Erect setae absent; pubescence silvery to brownish, sparse but fairly conspicuous.

Clypeus $2.3 \times$ as wide as high, its apical margin truncate; labrum rounded. Apical segment of maxillary palpus subequal in length to antennal segment 3 and to median height of clypeus. Head $1.13 \times$ as wide as high; middle interocular distance $.64 \times$ head width; upper interocular distance slightly exceeding lower interocular distance; malar space subequal to 2nd antennal segment; postocellar line: ocello-ocular line=11:4. Third antennal segment $1.2 \times$ as long as wide; 3rd and 4th segments together equal to $.65 \times$ upper interocular distance; segments 7-12 barely longer than wide. Front and thoracic dorsum shining, with relatively strong punctures. Pronotum short, subarcuate behind; dorsum not strongly flattened, scutellum rather convex; postnotum short, simple; propodeum rather short, declivous on posterior third, its surface smooth. Front femur $2.7 \times$ as long as wide, longer spur of hind tibia $.85 \times$ length of basitarsus. Fore wings with the 3rd transverse cubital vein absent, the second submarginal cell about $1.5 \times$ as wide as high, much narrowed above (fig. 5). Subgenital plate tapered to a slender

process apically (fig. 14). Genitalia rather similar to those of the preceding species, but the parameres more slender and less strongly setose and the other elements differing in details (fig. 25).

Paratype: ♂, WESTERN AUSTRALIA: Rottnest Island, 21-22.X.1969 (H. E. Evans & R. W. Matthews) [ANIC].

Variation: The paratype is even smaller than the type (2.2 mm; fore wing 1.8 mm) and has relatively shorter antennae and palpi; antennal segments three and four together equal $.43 \times$ the upper interocular distance, and segments 7-12 are slightly wider than long. The front legs are wholly dark brown. The 2nd submarginal cell is $1.7 \times$ as wide as high but is narrowed by more than half above.