

## NEW PSILACRUM FROM THE OLD WORLD (DIPTERA, CHLOROPIDAE)

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<https://doi.org/10.5109/2486>

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出版情報 : ESAKIA. 24, pp.19-35, 1986-01-31. Entomological Laboratory, Faculty of Agriculture,  
Kyushu University

バージョン :

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NEW **PSILACRUM** FROM THE OLD WORLD  
(DIPTERA, CHLOROPIDAE)\*

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**Abstract**

The genus *Psilacrum* is recorded from Singapore, Sri Lanka, Java, New Guinea, the Solomon Islands and Australia. Twelve new species, *Psilacrum glabrum*, ***P. missimense***, *P. macalpinei*, *P. nigrum*, *P. nigrocostale*, *P. variabile*, *P. jlavitibiale*, *P. pleurale*, *P. albiscutellatum*, *P. nigroscutellatum*, *P. milchioides* and *P. singaporense*, are described.

Ismay (1984) referred to Oscinellinae from New Guinea with the unusual combination of an elongate vein  $r_{2+3}$  (as in *Dicraeus*) and divergent proclinate ocellar setae. Some of these species and others from Singapore and Australia are here referred to *Psilacrum* Becker, 1912, previously recorded from the Afrotropical Region. *Psilacrum* may be placed in the ***Javanoscinis*** genus group of Andersson (1977) which also contains the widespread genus *Stenoscinis*. The generic limits of the New Guinea and Australian species with proclinate ocellar setae are far from clear, though about five major species groups or genera have been distinguished in this study. The species described here are considered congeneric with the type species of *Psilacrum*, *P. giganteum* Enderlein. A preliminary definition of the genus is given :

Ocellar setae divergent and proclinate, usually long ; more than five small reclinate orbital setae ; eye large, bare or with fine hairs, cheek with small setae ; 1+1 notopleural setae ;  $r_{2+3}$  usually elongate, second costal sector ( $r_1$  to  $r_{2+3}$ ) twice as long as third ; femoral comb absent ; hind tibial organ well developed, hind tibia and tarsal segments four and five black, segments one to three white or yellow ; male genitalia with inner process on surstylus, several longer setae on cercus and often elongate, arched hypandrium.

It is proposed to cover the remaining groups and their generic limits in a later paper.

Abbreviations used in the text are : JWI, J. W. Ismay ; BMNH, British Museum (Natural History), London ; BPBM, B. P. Bishop Museum, Honolulu ; ANIC, Australian National Insect Collection, CSIRO, Canberra ; AM, Australian Museum,

\* Supported in part by Grants-in-Aid for Overseas Scientific Survey from the Japan Ministry of Education, Science and Culture, No. 59041048 and No. 60043050 to Kyushu University (Prof. Y. H. Irashima).

Sydney ; KONE, Central Reference Insect Collection, DPI, Konedobu ; KU, Department of Entomology, Kyushu University ; USNM, United States National Museum, Washington. The term cheek is used rather than gena, after Sabrosky (1983). The costal ratios are measured from the base of the wing to the point where  $r_1$  meets the costa, then similarly to  $r_{2+3}$ ,  $r_{4+5}$  and  $m_{1+2}$ . The width of the scutellum is measured across the anterior bridges connecting it to the mesonotum. The following key includes all material presently available for study.

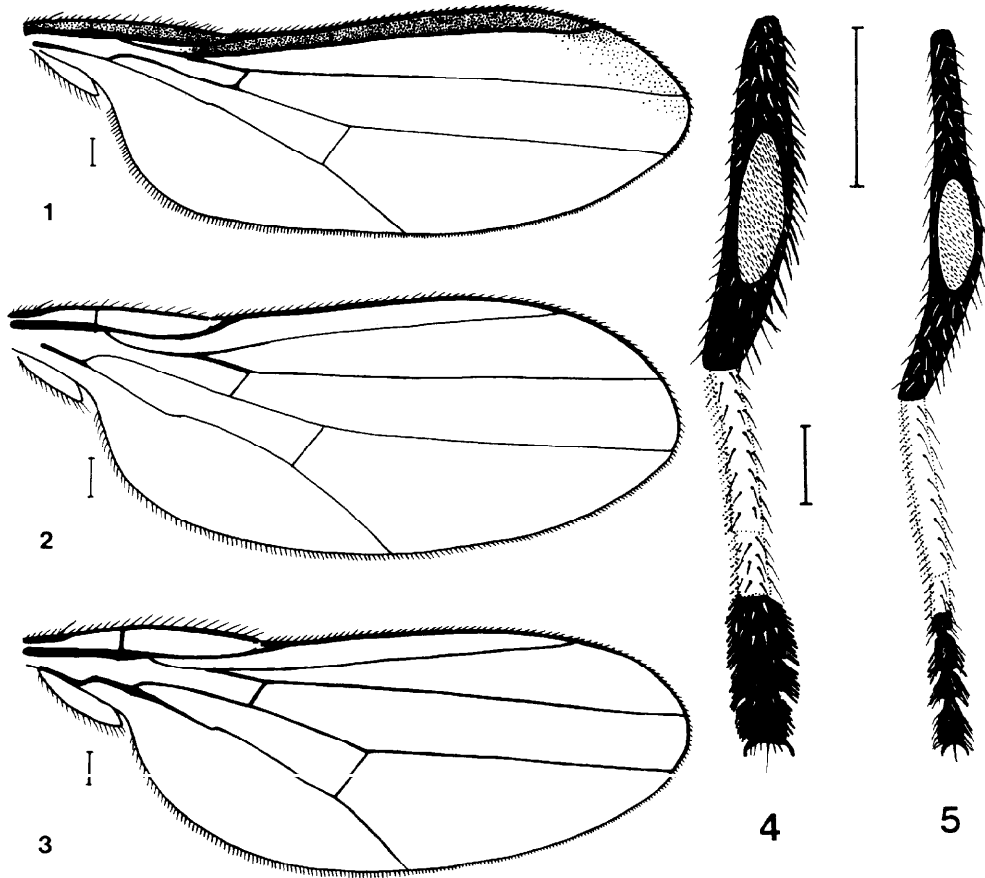
KEY TO INDO-AUSTRALIAN *Psilacrum*

- |   |                              |
|---|------------------------------|
| 1. Costal margin of wing heavily infuscated (Fig. 1) .....  | 2                            |
| - Wing clear or with diffuse suffusion of colour (Figs. 2-3) .....  | 5                            |
| 2. Humerus and propleuron yellow .....  | 3                            |
| - Humerus and propleuron black .....  | 4                            |
| 3. Apices of femora broadly black, notopleuron and other pleura, except yellow propleuron, black, apical and subapical scutellar setae arising from small tubercles ... <i>Psilacrum</i> sp. A  |                              |
| - Femora yellow, pleura yellow with small black marks, apical and subapical scutellar setae arising from minute tubercles .....   | <i>P. nigrocostale</i>       |
| 4. Scutellum white, mesonotal microsetae pale .....   | <i>P. albiscutellatum</i>    |
| - Scutellum black, mesonotal microsetae black .....   | <i>P. nigroscutellatum</i>   |
| 5. Pleura mainly black .....  | 6                            |
| - Pleura mainly yellow .....  | 12                           |
| 6. Scutellum black .....  | 7                            |
| - Scutellum yellow .....  | 8                            |
| 7. Face and frons yellow with black central mark (Fig. 20), segments 3-5 of hind tarsus appearing broader than 1-2 due to dense black microsetae (Fig. 4) .....   | <i>P. milichioides</i>       |
| - Face and frons black, segments 3-5 of hind tarsus no wider than 1-2 .....   | <i>P. nigrum</i>             |
| 8. Femora, face and cheek yellow, dusted spot on frons larger than ocellar triangle, extending to half length of frons .....  | <i>P. missimense</i>         |
| - Femora, face and cheek at least partly darkened .....   | 9                            |
| 9. Femora black except for extreme ends .....   | <i>P. sp. nr glabrum</i>     |
| - Femora pale at base .....   | 10                           |
| 10. Femora yellow, more or less infuscated on middle but without strong contrast between base and tip ; second antennal segment yellow ; second segment of hind tarsus yellow .....   | <i>P. macalpinei</i>         |
| - Femora pale at base, black apically ; second antennal segment dark yellow to black .....  | 11                           |
| 11. Femora broadly (1/4-1/3) pale at base, contrasting with dark apical portion ; frons (Fig. 18) with dusted spot small, well separated from hind ocellus ; posterior orbital setae larger than next, which is slightly larger than 4 anterior setae .....                                     | <i>P. glabrum</i>            |
| - Middle and hind femora narrowly (1/5) pale at base ; frons with dusted spot slightly larger than ocellar triangle and near to hind ocellus ; 3 posterior orbital setae longer than 3 anterior setae .....   | <i>P. lucidifrons</i> Becker |
| 12. Mesonotum yellow with black markings on disc .....  | 13                           |
| - Mesonotum black on disc, fore tibiae yellow .....   | 14                           |
| 13. Frons yellow, ocellar triangle and centre of front margin of frons black, scutellum black on disc, mesonotum (Fig. 17) yellow with five black bands, central complete, intermediate divided at suture, lateral partly fused to intermediate, hind tarsus as in <i>P. milichioides</i> ..... | <i>P. singaporense</i>       |
| - Frons black, scutellum yellow, mesonotum (Fig. 15) with three black stripes fused in front of suture, hind tarsal segments 4-5 no wider than 3 .....  | <i>P. pleurale</i>           |

14. Second antennal segment, lower face and cheek black ..... *P. variabile*  
 - Second antennal segment, lower face and cheek yellow ..... *P. flavitibiale*

*Psilacrum glabrum*, new species

Male: Head deeper and wider than long, black. Frons (Fig. 18) as broad as long (12:12), narrowed to front, black, shining, microsetae small, black and sparse. About six reclinate small orbital setae. Frontal triangle large, black, shining except on dusted ocellar triangle and hind corners of frontal triangle and frons where there is a dull patch. Ocellar setae large, proclinate, divergent. Outer vertical seta larger than inner, both strong. Postverticals large, crossed. All head setae black. Eye large, deeper than long (15:13), bare, occupying nearly all head in profile. Second antennal segment dark brown, third antennal segment orange-yellow, rounded. Arista black, microsetae equal to basal diameter of arista. Face black, slightly concave, lightly dusted. Cheek narrow, narrower than front tibia, densely dusted silver in front, shining black behind on lower margin, dusting continued up eye margin of face to level of antennal foveae. A single row of microsetae on cheek, a longer incurved seta anteriorly and larger down-curved seta at posterior corner. Palpi and



Figs. 1-5. Wing. 1 : *Psilacrum albiscutellatum* n. sp. 2 : *P. variabile* n. sp. 3 : *P. milichoides* n. sp.  
 Hind tibia and tarsus. 4 : *P. milichoides* n. sp. 5 : *P. glabrum* n. sp. Scale line=0.1 mm.

proboscis dark.

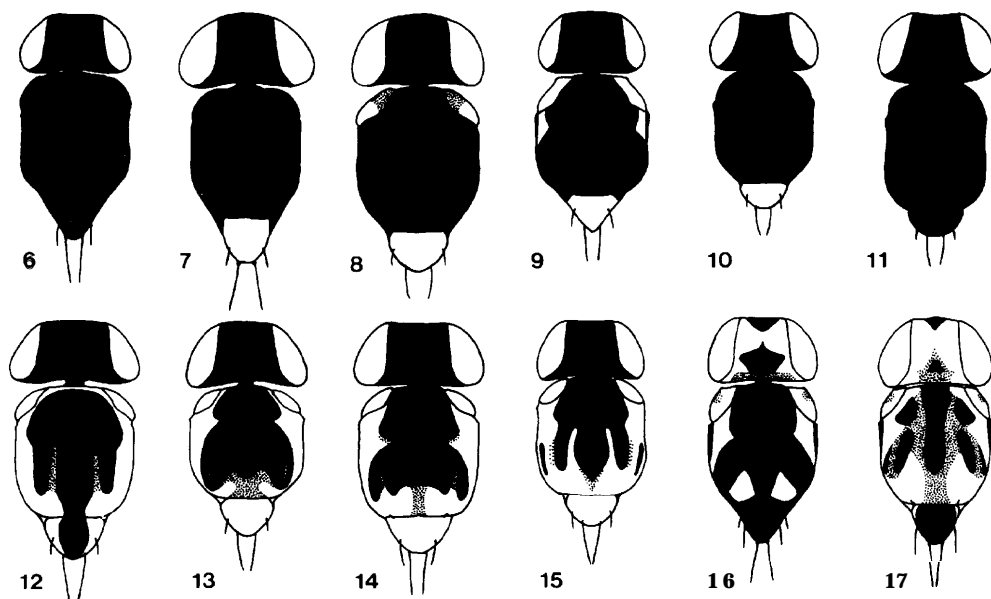
Mesonotum (Fig. 8) slightly longer than broad (23 :21), black, shining, with dark microsetae. Humerus dark yellow with one seta. 1 +1 notopleural, 1 prescutellar and 1 supralar setae. Pleura black, shining. Coxae to bases of femora yellow, most of femora contrasting black, extreme tips of femora and bases of tibiae paler, tibiae black, tarsi yellow on basal segments, apical four segments of anterior tarsus and three segments of hind tarsus black ; middle tarsus vaguely darkened at tip. Tip of second segment of hind tarsus darkened (Fig. 5). Hind tibial organ well developed, tibia swollen. Wing membrane clear, obscurely darkened apically on anterior half, veins pale brownish,  $r_{2+3}$  elongate, costal ratios 25 : 31 : 14 : 6. Haltere yellow. Scutellum (Fig. 21) shorter than broad (7 : 10), rounded, convex, pale yellow, shining, with a few dark microsetae on disc and four marginal black setae, apical pair set on minute tubercles.

Abdomen yellow at base, segments 3-5 black, shining with dark hairs. Tergite 9 (Figs. 26-27) rounded, cerci discrete and well developed, with several longer setae and short microsetae. Surstylus with inwardly directed sharply pointed tip. Hypandrium (Fig. 28) arched, pregonite long and narrow, postgonite apical to pregonite, curved, broad.

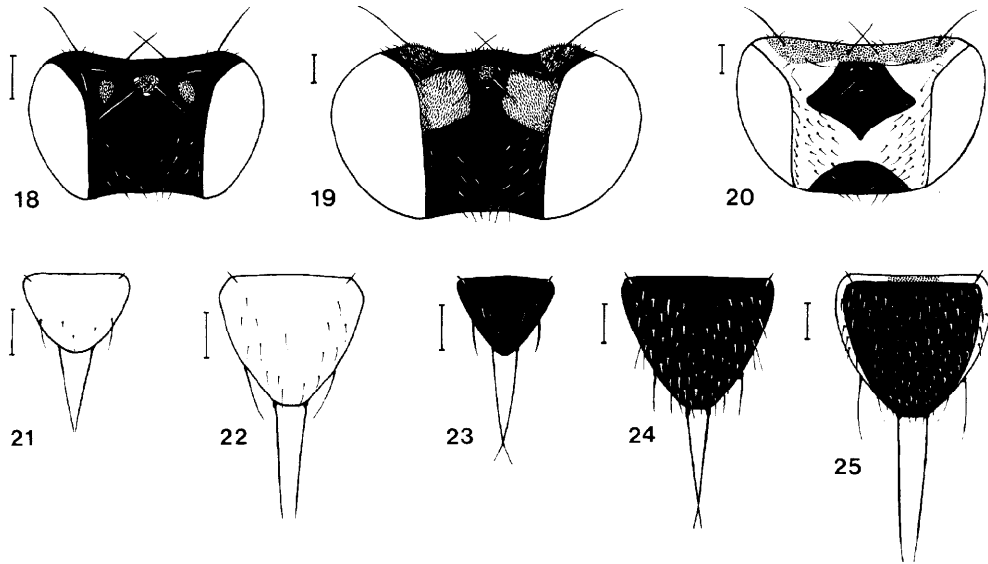
**Female** : Similar to male, abdomen ending in slender black cerci with black hairs.

**Holotype** : ♂ Papua New Guinea, Central Province, 20 km South East Port Moresby, 1. i. 1981, J.W.I. swept trees ; paratypes, 1 ♀ same data ; 5 ♂♂ 2 ♀♀ same data but 27. xii. 1981 ; 1 ♀ same data but 30. i. 1982 ; 1 ♂ same data but 31. iii. 1984, swept bushes.

Type depository : BMNH ; paratypes also in ANIC, AM, BPBM, KONE, KU and USNM.



**Figs. 6-17.** Head, thorax and scutellum, dorsal view, antennae and setae omitted except for marginal scutellar setae. 6 : *Psilacrum nigroscutellatum* n. sp. 7 : *P. albiscutellatum* n. sp. 8 : *P. glabrum* n. sp. 9 : *P. missimense* n. sp. 10 : *P. macalpinei* n. sp. 11 : *P. nigrum* n. sp. 12 : *P. nigrocostale* n. sp. 13 : *P. variabile* n. sp. 14 : *P. flavitibiale* n. sp. 15 : *P. pleurale* n. sp. 16 : *P. milchioides* n. sp. 17 : *P. singaporense* n. sp. Diagrammatic figures, not to scale.



**Figs. 18-25.** Head, dorsal view, antennae omitted. 18: *Psilacrum glabrum* n. sp. 19: *P. albiscutellatum* n. sp. 20: *P. milichioides* n. sp. Scutellum, dorsal view. 21: *P. glabrum* n. sp. 22: *P. albiscutellatum* n. sp. 23: *P. nigroscutellatum* n. sp. 24: *P. milichioides* n. sp. 25: *P. singaporense* n. sp. Scale line = 0.1 mm.

### ***Psilacrum* sp. nr. *glabrum***

The above type specimens are similar in that all have yellow fore trochanter and bases of femora and darkened second antennal segment. In other specimens, some from the same locality as the type of *P. glabrum*, the second antennal segment is yellow, the fore trochanter and entire femora may be black, the propleuron and notopleuron may be yellow and the third antennal segment may be darkened.

The only constant feature distinguishing them from the type series of *P. glabrum* is that the second antennal segment is orange, no darker than the third antennal segment. This variation may be within the limits of *P. glabrum* but the material is inadequate for conclusive studies and the specimens are excluded from the paratypes.

Further material : 1 ♀ Papua New Guinea, Central P., 20 km SE Port Moresby, 27. xii. 1981, JWI, swept trees ; 1 ♀ same data but 1. i. 1982 ; 1 ♂ same data but 6. i. 1985, bushes ; 1 ♀ same data but 20. i. 1985 ; 1 ♂ same data but 36. i. 1985 ; 1 ♀ same data but 9. ii. 1985 ; 1 ♂ Eilogo, 23. x. 1980, JWI ; 1 ♂ Eilogo Cr. 31. i. 1982, JWI, rainforest ; 3 ♂♂ same data but 14. iii. 1982.

### ***Psilacrum* *Zucidifrons* (Becker, 1911) **comb. n.****

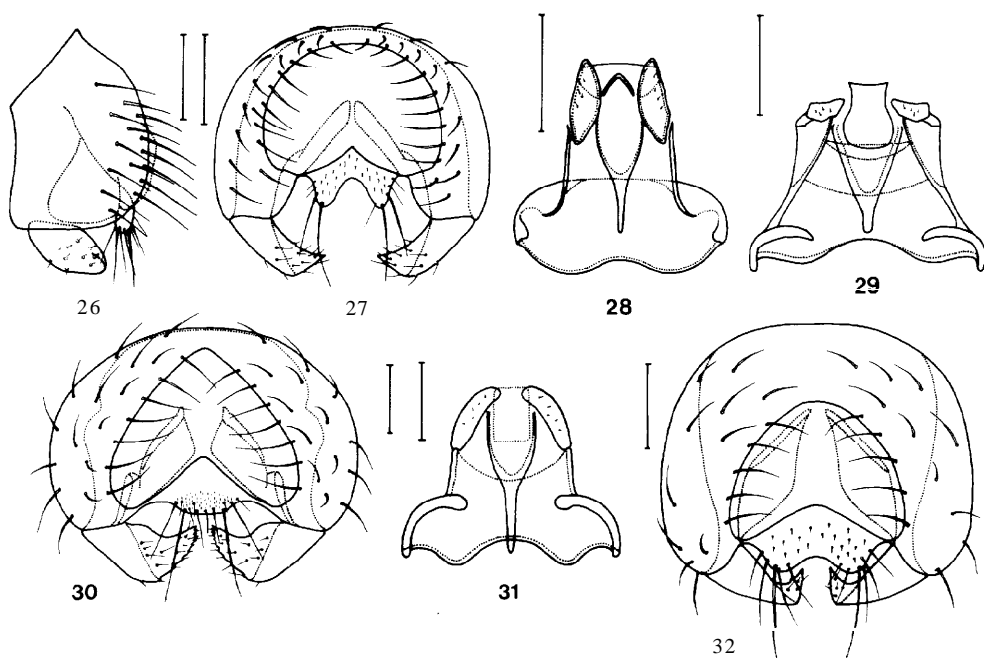
*Oscinella lucidifrons* Becker, 1911.

This species has not been examined by the author but Dr C. W. Sabrosky has

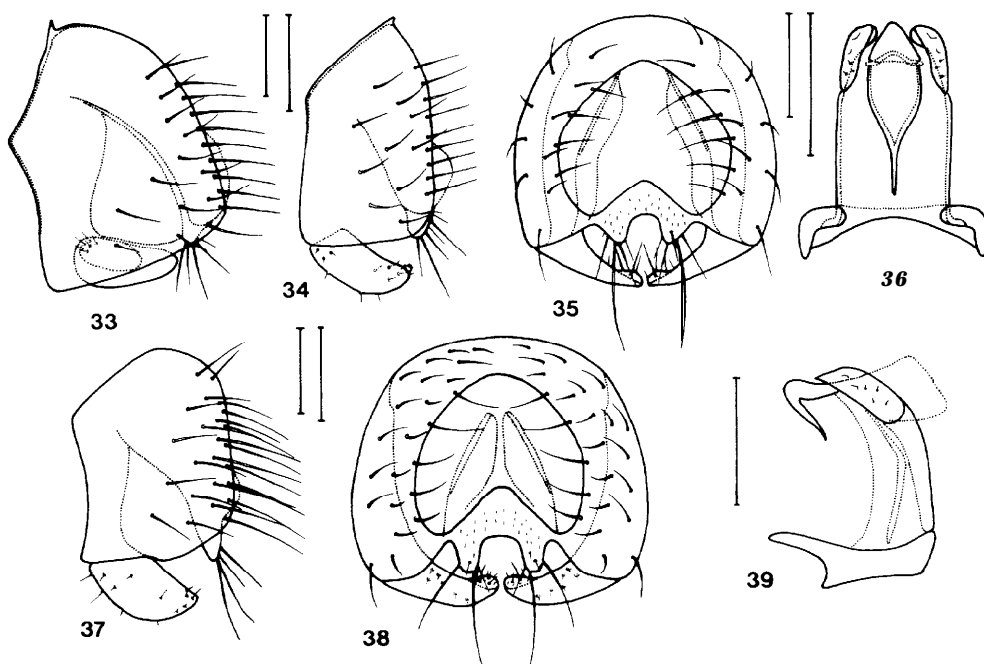
kindly allowed examination of his notes on the type and other specimens in Amsterdam Museum. The holotype is from Batavia, Java and the other specimens from Semarang, Java, all collected by Jacobson. Becker's original description is inadequate for recognition but from Dr Sabrosky's notes it is clear that the species is a *Psilacrum* close to *P. glabrum*. The following appear to be the main differences.

Dusted spot on hind corner of frontal triangle of *P. lucidifrons* larger than in *P. glabrum*, extending nearer to hind ocellus and larger than ocellar triangle ; posterior three orbital setae of *P. lucidifrons* longer than three anterior setae, in *P. glabrum* last seta largest, next smaller and four anterior smaller and equal in size ; pubescence of arista of *P. Zucidifrons* appearing from sketch to be longer than that of *P. glabrum*, femora of *P. lucidifrons* narrowly pale at base, basal 1/3 to 1/4 of femora of *P. glabrum* pale.

Dr Sabrosky's notes do not completely cover other points which may be significant. The humerus in *P. glabrum* is yellow, variably darkened. If it is black in *P. lucidifrons* this would be a further distinguishing feature. In *P. glabrum* the tip of the second segment of the hind tarsus is darkened, but in Dr Sabrosky's figure only the third to fifth segments are shown to be darkened. Dr Sabrosky's notes do not indicate that the ocellar triangle differs from the remainder of the frons, but in *P. glabrum* it is slightly dusted. It is concluded from the above that there are two closely allied species, justifying the description of *P. glabrum*.



**Figs. 26-32.** 26 : *Psilacrum glabrum* n. sp., male tergite 9 lateral view. 27 : ditto tergite 9, apical view. 28 : ditto hypandrium ventral view. 29 : *P. macalpinei* n. sp., hypandrium ventral view. 30 : *P. nigrum* n. sp., tergite 9 apical view. 31 : ditto hypandrium ventral view. 32 : *P. macalpinei* n. sp., tergite 9 apical view. Scale line=0.05 mm.



**Figs. 33-39.** 33 : *Psilacrum macalpinei* n. sp., male tergite 9 lateral view. 34 : *P. variable* n. sp., tergite 9 lateral view. 35 : ditto tergite 9, apical view. 36 : ditto hypandrium ventral view. 37 : *P. flavitibiale* n. sp., tergite 9 lateral view. 38 : ditto tergite 9 apical view. 39 : *P. variable* n. sp., hypandrium lateral view. Scale line=0.05 mm.

### *Psilacrum missimense*, new species

**Female** : Differing from *P. glabrum* as follows : Head broader than deep or long (30 : 20 : 14). Frons as broad as long (15 : 14), shining, dusted spot at hind corner of frontal triangle larger than in *P. glabrum*, extending to half length of frons. Frontal triangle possibly represented by shining polished area slightly broader than ocellar triangle behind extending narrowly to front of frons. Second antennal segment, face, cheek except posterior lower margin and palpus yellow.

Mesonotum as Fig. 9. Humerus bright yellow. Notopleuron, propleuron and edges of suture between meso- and pteropleuron below wing-base yellow. Coxae and femora yellow, fore and middle tibiae yellow, hind tibia narrowly yellow at base, remainder black. Fore and middle tarsi yellow, obscurely darkened at tip, hind tarsus yellow on segment 1, slightly darkened apically on segment 2, segments 3 to 5 black. Wing clear, slightly infuscated apically, costal ratios 35 : 50 : 21 : 10. Scutellum yellow, longer and more pointed apically than in *P. glabrum*.

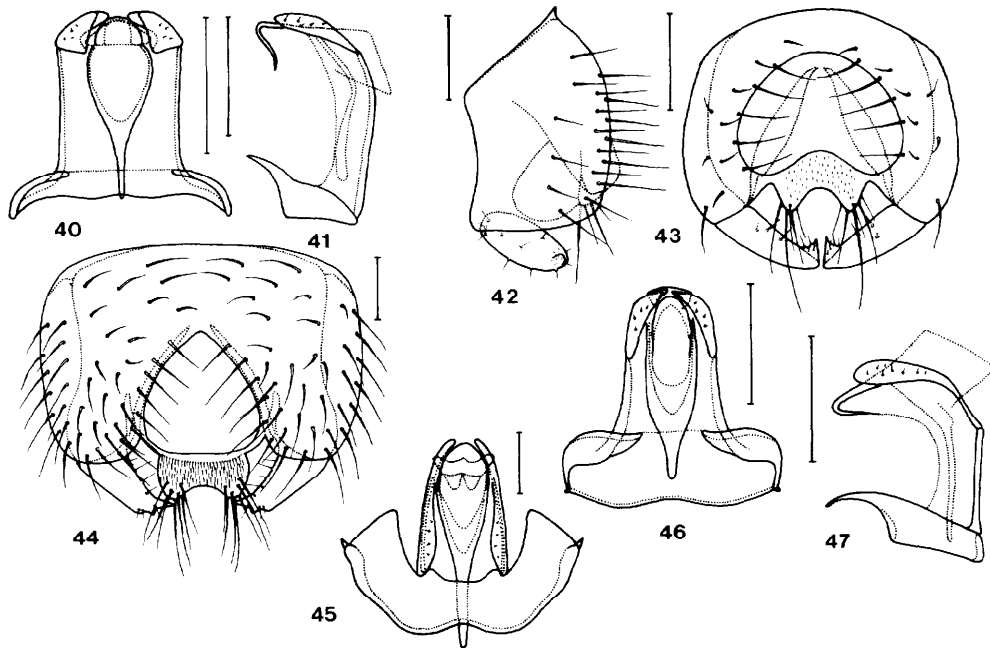
Abdomen yellow on tergite 1, tergite 2 yellow at base, remainder and tergites 3 and 4 black, tergite 5 yellow, darkened centrally. Cercus slender, black.

Holotype : ♀ Papua New Guinea, Morobe P., Mt Missim, S. side, 2,000 m, 15. vi. 1986, W. Gagne, *Castanopsis* 330 A : paratypes, 2 ♀♀ same data ; 1 ♀ Morobe P., Mt Kaindi, 2,350 m, 15-23. ii. 1971, *Nothophagus*, J. L. Gressitt, Malaise trap.

Type depository : BPBM ; paratype in BMNH.

The Kaindi paratype is teneral but has the third antennal segment slightly darkened, frons pale at front and the scutellum less pointed and darkened on margins.





Figs. 40-47. 40 : *Psilacrum flavitibiale* n. sp., male hypandrium ventral view. 41 : ditto hypandrium lateral view. 42 : *P. pleurale* n. sp., tergite 9 lateral view. 43 : ditto tergite 9 apical view. 44 : *P. milichioides* n. sp., tergite 9 apical view, 45 : ditto hypandrium ventral view. 46 : *P. pleurale* n. sp., hypandrium ventral view. 47 : ditto hypandrium lateral view. Scale line=0.05 mm.

### *Psilacrum macalpinei*, new species

Male : Differing from *P. glabrum* as follows : Head broader than deep or long (16 : 12 : 9). Frons about as broad as long (14 : 14), dull patch on hind part of frons large, occupying almost all space between lateral ocellus and margin of eye, area greater than ocellar triangle. Second antennal segment yellow. Cheek on hind part slightly broader than front tibia, shining area on lower hind margin more extensive than in *P. glabrum*, anterior part of cheek dark yellow beneath dusting.

Mesonotum (Fig. 10) slightly longer than broad (29 : 26), humerus black. Coxae yellow, femora vaguely and generally infuscated, base and tip not contrasting in colour, fore and middle tibiae yellow-brown, fore and middle tarsi darker yellow at tip. Wing membrane slightly infuscated on apical part of anterior margin, costal ratios 30 : 41 : 15 : 8. Scutellum broader than long (12 : 7), darker yellow than in *P. glabrum*.

Abdomen yellow on segment 1+2, black on segments 3-5. Tergite 9 (Figs. 32, 33) with large cerci less deeply divided than in *P. glabrum*, surstylus more sharply pointed and hypandrium (Fig. 29) angular with transverse postgonite.

Female : Resembling male, cercus black hairs.

Holotype : ♀ Australia, NSW, Mooney Mooney Creek, near Gosford, 3. xii. 1976, D. K. McAlpine; paratypes, 4♂♂ 5 ♀♀ same data, 1♀ same data 20. xi. 1975.

Type depository : AM; paratypes also in BMNH, ANIC, BPBM and USNM.

The degree of infuscation of the femora and tibiae varies, some being scarcely infuscated, but in no specimen is there the sharp contrast between the yellow base and

the black tip of the femora shown in *P. glabrum*. The base of the abdomen varies from yellow to dark brown.

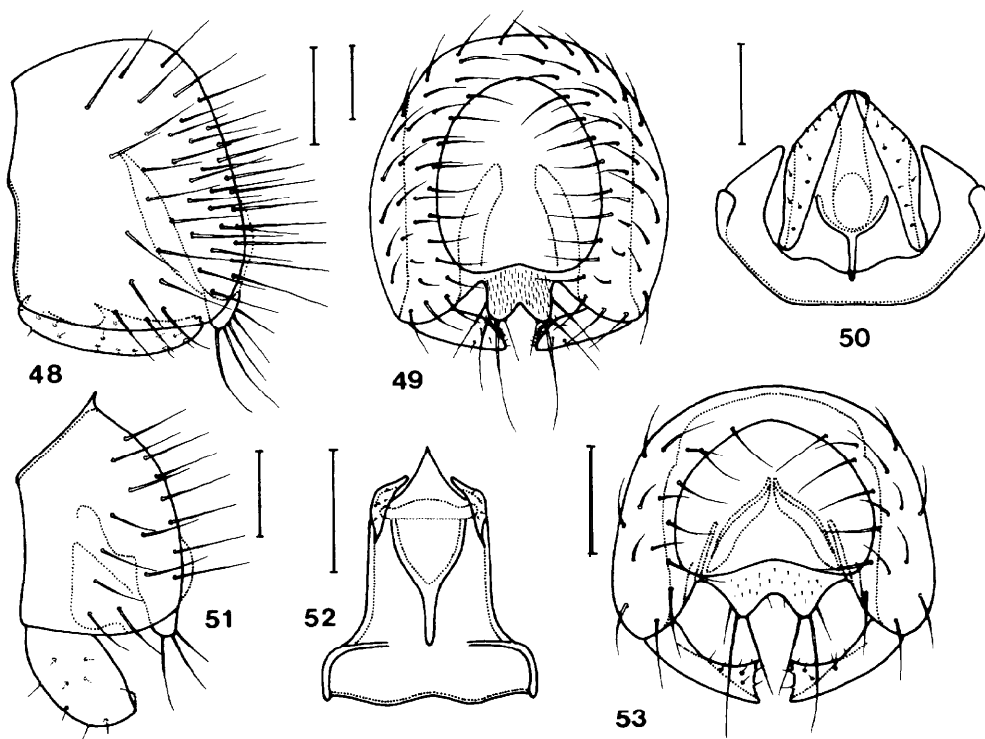
The species is named after Dr D. K. McAlpine in recognition of his many valuable contributions to the taxonomy of Diptera and his assistance in this and other studies.

### *Psilacrum nigrum*, new species

**Male** : Differing from *P. glabrum*, as follows : Head broader than deep or long (30 : 21: 18). Frons about as broad as wide (14 :15), dull patch about equal in size to ocellar triangle, thus intermediate between *P. glabrum* and *P. macalpinei*. Second antennal segment yellow. Cheek broader than front tibia, brown, dusted at front and along most of upper margin, hind and lower margins shining.

Mesonotum (Fig. 11) longer than broad (30 : 26). Coxae brown, trochanters yellow, femora black, paler at base and tip, fore and middle tibiae broadly banded black, hind tibia almost entirely black, paler narrowly at base, fore and middle tarsi darkened apically. Wing hyaline with faint infuscation on apical part of anterior margin, veins yellow on basal 1/3, yellow brown apically, costal ratios 35 : 40 : 11: 8. Scutellum broader than long (12 :8), black, lateral margins with several dark microsetae in addition to two pairs of marginal setae, apical pair of latter arising from minute tubercles.

Abdominal tergite 9 (Fig. 30) broad and rounded, cerci fused with several long setae, surstylus



**Figs. 48-53.** 48 : *Psilacrum albiscutellatum* n. sp., male tergite 9 lateral view. 49 : ditto tergite 9 apical view. 50 : ditto hypandrium ventral view. 51 : *P. nigroscutellatum* n. sp., tergite 9 lateral view. 52 : ditto hypandrium ventral view. 53 : tergite 9 apical view. Scale line=0.05 mm.

with long inner process. Hypandrium (Fig. 31) with postgonite apical to pregonite.

Female : Resembling male, cercus black with black hairs.

Holotype : ♂ Australia, NSW, Mooney Mooney Creek, near Gosford, 3. xii. 1976, D. K. McAlpine ; paratypes, 1♂ 2 ♀♀ same data.

Type depository : AM ; paratypes also in BMNH and ANIC.

### *Psilacrum nigrocos tale*, new species

Differing from *P. glabrum* in the following features :

**Male** : Dusted area on frontal triangle longer, extending in front of level of ocellar tubercle by length of ocellar tubercle.

Mesonotum (Fig. 12) yellow with a broad central stripe extending over scutellum, anterior to transverse suture disc of mesonotum black, behind suture a scarcely differentiated lateral stripe nearly fused to central stripe. Humerus, notopleuron and posterior lateral corner of mesonotum yellow. Lower margin of notopleuron black at front. Pleurae yellow except for a dark marking on lower sternopleuron. Coxae, femora, middle leg and hind metatarsus yellow. Front tibia and tarsi and hind tibia and last four tarsal segments black. Scutellum yellow with a black central stripe. Wing clear with brownish veins,  $r_{2+3}$  elongate, costal region as far as  $m_{1+2}$  deeply infuscated, costal ratios 29 : 36 : 15 : 7.

Abdomen yellow, hind margins of tergite 1+2 and most of tergite 3 black. Remainder of abdomen and tergite nine yellow.

Female : Unknown.

Holotype : ♂ Papua New Guinea, Central P., 20 km SE, Port Moresby, 27. xii. 1981, JWI, swept bushes ; paratype, 1♂ Papua New Guinea, Bainyik, 13. xii. 1963, D. K. McAlpine.

Type depository : BMNH ; paratype in AM.

### *Psilacrum variabile*, new species

Male : Differing from *P. glabrum* in the following features : Dusted area on hind corner of frontal triangle and frons slightly larger than ocellar tubercle.

Mesonotum (Fig. 13) black on disc, humerus, notopleuron, supralar callus and hind margin yellow. Pleurae yellow without markings. Fore and middle legs yellow, hind tibia and three apical tarsal segments black. Scutellum yellow. Wing (Fig. 2) clear with brownish veins. Costal ratios 20 : 25 : 12 : 7.

Abdominal segments 1+2 and 3 yellow, remainder black. Tergite 9 (Figs. 34, 35) rounded, with few setae, cerci discrete and small, surstylus with small rounded inner process. Hypandrium (Figs. 36, 39) elongate, small.

**Female** : Similar to male, ovipositor and cerci black.

Holotype : ♂ Papua New Guinea, Central P., 20 km SE Port Moresby, 9. i. 1982, JWI, swept bushes ; paratypes, 2 ♀♀ same data but 8. viii. 1981, forest ; 3 ♂♂ 1 ♀ same data ; 3 ♂♂ 2 ♀♀ same data but 28. xi. 1981, along creek ; 4 ♂♂ 3 ♀♀ same data but 27. xii. 1981, swept trees ; 7 ♂♂ 2 ♀♀ same data but 1. i. 1982 ; 1 ♀ same data but 30. i. 1982, trees ; 1 ♂ same data but 6. ii. 1982, bushes ; 1 ♀ same data but 26. ii. 1983, swept bushes ; 3 ♂♂ 1 ♀ same data but 11. iii. 1983 ; 1 ♂ same data but 15. iii. 1983 ; 1 ♂ same data but 26. iii. 1983 ; 1 ♂ same data but 31. iii. 1983 ; 4 ♂♂ same data but 8. iv. 1983 ; 2 ♂♂ same data but 30. iii. 1984 ; 1 ♂ 2 ♀♀ same data but 23. xii. 1984

bushes ; 1 ♂ nr Rouna, 10. v. 1981, JWI, forest ; 2 ♂♂ 1 ♀ same data but 17. v. 1981, rainforest.

Type depository : BMNH ; paratypes also in ANIC, AM, BPBM, KONE, KU and USNM.

### ***Psilacrum flavitibiale*, new species**

**Male:** Differing from *P. glabrum* in the following features: Second antennal segment yellow, rather darker than third antennal segment. Cheek dusted, yellow with black setae. Lower 1/3 of face yellow, parafacialia yellow up to antennal bases. Proboscis and palpi yellow.

Mesonotum (Fig. 14) black on disc, humerus, notopleuron, alar callus and area around prescutellar seta yellow. Pleurae yellow with a dark mark on lower mesopleuron. Legs yellow, last four segments of fore tarsus slightly darkened, hind tibia and last three segments of hind tarsus black. Wing clear with vague infuscation apically along fore margin. Costal ratios 29 : 36 : 14 : 8.

Abdomen yellow on tergites 1 and 2, 2 with dark lateral spot, 3 and 4 black, the remainder of tergites, genitalia and venter yellow. Tergite 9 (Figs. 37, 38) with more setae than *P. variabile*, cercus longer and narrower, surstylus broader and inner process rounded. Hypandrium (Figs. 40, 41) with broader postgonite than in *P. variabile* or *P. pleurale*.

**Female :** Similar to male, ovipositor and cerci black.

**Holotype :** ♂ Papua New Guinea, Central P., 20 km SE Port Moresby, 12. iv. 1983, JWI, Swept bushes ; paratypes, 5 ♂♂ 1 ♀ same data ; 1 ♂ 2 ♀♀ same data but 27. xii. 1981, swept trees ; 1 ♂ 1 ♀ same data but 1. i. 1982 ; 1 ♂ same data but 30. i. 1982 ; 1 ♂ same data but 6. ii. 1982, trees ; 3 ♂♂ 1 ♀, same data but 13. ii. 1982, swept bushes ; 2 ♀♀ same data but 26. ii. 1983 ; 1 ♂ same data but 11. iii. 1983 ; 3 ♂♂ 2 ♀♀ same data but 31. iii. 1984 ; 1 ♀ same data but 26. i. 1985 ; 1 ♂ nr Eilogo, 8. viii. 1981, JWI, forest.

Type depository : BMNH ; paratypes also in ANIC, AM, BPBM, KONE, KU and USNM.

### ***Psilacrum pleurale*, new species**

Differing from *P. glabrum* in the following features:

**Male :** Second antennal segment black. Cheek dark yellow to black behind, dusted. Palpi black. Face black, lightly dusted. Mesonotum (Fig. 15) yellow with five black stripes, central one extending from attachment of head to just short of scutellum, inner lateral stripe fused with central in front of mesonotal suture and extending nearly to posterior dorsocentral seta, outer lateral stripe faint, narrow, extending from behind mesonotal suture to above supralar seta. Lower margin of notopleuron black. Lower mesopleuron with a faint dark stripe. Front tibia, except at base, and tarsi black, hind tibia and last three tarsal segments black. Wing hyaline, tip faintly infuscated. Costal ratios 22 : 30 : 12 : 6.

Abdomen yellow on tergites 1 and 2, 2 with a black lateral spot, 3 and 4 black, remainder of the abdomen yellow. Tergite 9 (Figs. 42, 43) rounded, cerci discrete but more shallowly separated than in *P. flavitibiale*, surstylus differing from *P. variabile* or *P. flavitibiale* in having strongly pointed inner process. Hypandrium (Figs. 46, 47) similar to that of *P. variabile*.

**Female :** Similar to male, ovipositor and cerci black.

**Holotype :** ♂ Papua New Guinea, Central P., 20 km SE Port Moresby, 8. iv. 1983, JWI, swept bushes ; paratypes, 3 ♂♂ 3 ♀♀ same data ; 1 ♀ same data but 1. i. 1982 ; 1 ♂ same data but 9. i. 1982 ; 1 ♀ same data but 6. ii. 1982 ; 1 ♀ same data but 13. ii. 1982 ; 1 ♂ 1 ♀ same data but 20. ii. 1982 ; 2 ♂♂ same data but 15. iii. 1983 ; 1 ♂ same data but 19. iii. 1983 ; 1 ♂ same data but **26.** iii. 1983 ; 2 ♂♂ 3 ♀♀ same data but 31. iii.

**1983** ; 4♂♂ 6♀♀ same data but 12. iv. 1983 ; 2♂♂ 2♀♀ same data but 31. iii. 1984 ; 7♂♂ 1♀ same data but 28. iv. 1984 ; 3♂♂ same data but 9. ii. 1985.

Type depository : BMNH ; paratypes also in ANIC, AM, BPBM, KONE, KU and USNM.

A ?male specimen from the Solomon Is., Guadalcanal, Honiara, xii, 1980-i. 1981, coll. N. L. H. Krauss B. M. 1983-91 is probably referable to this species and is the only *Psilacrum* seen from the Solomons. It differs from the type series in being darker, the mesonotal stripes being almost completely fused just behind the suture and extending to the scutellum. The cheek is entirely black. These differences may indicate a separate species but the specimen is too damaged to be designated holotype.

### *Psilacrum albiscutellatum*, new species

**Male** : Head wider and deeper than long, frons (Fig. 19) little longer than broad (20 :18), almost parallel-sided, black, shining but with a slightly sculptured surface, dusted on hind corners of frons and frontal triangle from front ocellus to a point halfway along eye margin. Front of frons narrowly yellow. Head setae as in *P. glabrum* except that ocellar setae are much smaller, but still proclinate and divergent. Eye large, deeper than long, occupying nearly all head in profile. Antennal segments two and three orange-yellow with black setae on the second segment, arista black, hairs slightly shorter than basal diameter of arista. Face concave, dark brownish-black, dusted. Cheek equal in width to front tibia, black and shining behind and below, dusted silver and yellowish-brown in front and above. Palpus and proboscis black.

Mesonotum (Fig. 7) longer than wide (43 :37), black, shining. Microsetae white, on small tubercles, thus giving the surface of the mesonotum a roughened appearance. Humerus black with one seta. 1+1 notopleural, 1 posterior dorsocentral and 1 supralar seta, all black. Pleurae shining black, sternopleuron with pale microsetae on upper and lower margins. Legs yellow ; all tibiae, front tarsi, apical half of middle and hind femora and three apical hind tarsal segments black. Hind tibial organ well developed. Scutellum (Fig. 22) broader than long (15 : 13) whitish-yellow with black microsetae and setae, upper surface more flattened than in other species of the genus. Apical scutellar setae arising from well-developed tubercles, slightly approximated so that separation of apical scutellar setae is less than distance between each and subapical scutellar setae, which arise from small but distinct tubercles. Wing membrane clear except for a broad dark anterior band running from base through cell  $r_1$ , and beyond its tip nearly to wing apex (Fig. 1). Veins pale basally, long veins dark at apex. Costal ratios 44 : 61 : 19 : 10. Haltere yellow.

Abdomen yellow on segments 1 and 2, a square black lateral mark on segment 2, segments 3-5 black, shining, microsetae dark. Tergite 9 (Figs. 48, 49) densely covered in setae, cerci approximated, long, with longer and denser microsetae than in *P. glabrum*, surstylus without discrete inner process. Hypandrium (Fig. 50) sort and broad, lower margin broad, postgonite long, overlying pregonite.

**Female**: With a black ovipositor and slender black cerci with black hairs.

**Holotype** : ♂ Papua New Guinea, Central P., nr Eilogo, 23. viii. 1981, JWI, swept rainforest ; paratypes, 1♂ same data but 3. v. 1981, rainforest ; 3♂♂ same data but 17. v. 1981, rainforest ; 2♂♂ 1♀ same data but 2. vii. 1981, rainforest ; 1♀ same data but 4. xi. 1981, rainforest ; 1♂ Eilogo Cr., 9. viii. 1981, JWI, swept rainforest ; 1♀ same data but 14. iii. 1982, rainforest ; 1♂ Central P., Aieme R., 7. xi. 1982, forest edge ; 1♀ Central P., 5 km NW Brown River Bridge, 6. ix. 1984, forest ; 1♂ 1♀ Western P., Sapoka, 11. ii. 1981, rainforest.

Type depository : BMNH ; paratypes also in ANIC, AM, BPBM, KONE, KU and USNM.

*Psilacrum nigroscutellatum*, new species

Differing from *P. albiscutellatum* in the following features :

Male : Frons black at front margin. Face black. Cheek narrower than fore tibia. Mesonotal microsetae black, surface of mesonotum with a less sculptured appearance (Fig. 6). Scutellum (Fig. 23) black, rounded, with sparse microsetae, apical setae more widely spaced and on minute tubercles. Fore femur broadly darkened at tip. Second abdominal tergite black except for a narrow yellow central stripe. Tergite 9 (Figs, 51, 53) rounded, cerci discrete, well separated, with sparse microsetae, surstylus with very strong pointed inner process. Hypandrium (Fig. 52) arched, postgonite apical to pregonite.

Holotype : ♂ Papua New Guinea, Central P., nr Eilogo, 17. v. 1981, JWI, rainforest ; paratypes, 2 ♂♂ 3 ♀♀ same data ; 1 ♂ same data but 27. vi. 1981 ; 1 ♀ same data but 8. viii. 1981, swept rainforest ; 1 ♀ same data but 4. ix. 1981 ; 1 ♂ 1 ♀ same data but 19. vi. 1983, forest ; 1 ♂ 1 ♀ same data but 29. v. 1984, forest 500 m ; 3 ♂♂ 7 ♀♀ Eilogo, 2. vii. 1981, rainforest ; 2 ♂♂ 1 ♀ same data but 24. viii. 1981, forest ; 1 ♂ 2 ♀♀ Eilogo Cr., 14. iii. 1982, rainforest ; 1 ♂ 1 ♀ same data but 13. vi. 1983, forest 500 m.

Type depository : BMNH ; paratypes also in ANIC, AM, BPBM, KONE, KU and USNM.

*Psilacrum* sp. A

Differing from *O. albiscutellatum* in the yellow humerus and propleuron.

The apex of the fore femur is black. Material of this species is in poor condition and no specimen is suitable for designation as holotype. It is therefore not named in this paper.

Specimens examined : 1 ♂ Bainyik, TPNG, 21. xii. 1963, D. K. McAlpine (headless) ; New Guinea (NE) : Maprik, 160 m, 15. x. 1957, J. L. Gressitt, Collector.

*Psilacrum milichoides*, new species

Male : Head wider than deep or long, yellow with black markings. Frons (Fig. 20) about as broad as long (20 : 20) yellow, ocellar tubercle with a black mark extending to half length of the frons, only lateral margin and a triangular area around vertical seta yellow. Front half of frons yellow with a semi-circular black mark on front margin, narrowly separated from black marking on rear half of frons. Frons with small black microsetae. Frontal triangle small, narrow behind and difficult to distinguish from frons, narrowing to 1/4 width of frons just beyond front ocellus, and continuing to narrow to front of frons ; black except for a narrow yellow section at front, shining. Frons shining with microscopic sculpturing in lines, this more pronounced on an area in front of vertical seta corresponding to dull patch of other *Psilacrum*. Orbital seta little larger than microsetae of frons at front ; three larger upcurved black orbitals behind. Inner and outer verticals well developed, black. Ocellar setae shorter than vertical setae, black, procurved, divergent. Postvertical setae upright, crossed. Ocellar triangle black, shining. Eye nearly circular, long axis oblique, with very few scattered microsetae. Basal antennal segments brown, third antennal segment orbicular, brown, paler basally, arista brown with microsetae distinct but shorter than basal diameter of arista. Face yellow with shining central black mark. Parafacialia yellow, dusted, broad. Cheek broad, yellow dusted ; lower margin shining brown, a triangular shining brown mark extending upwards to the eye at centre of cheek. A row of strong black microsetae on the lower margin, anterior seta enlarged. Palpi and proboscis small, black. Occiput dully shining brownish-yellow.

Mesonotum (Fig. 16) longer than broad (44 : 41), black, with black microsetae, shining. Humerus pale yellow with one seta and a darker mark. Notopleuron pale yellow with a black lower margin, 1 + 1 setae. Posterior dorsocentral seta well developed, surrounded by a pale yellow mark. Mesonotal transverse suture deeply impressed. Pleurae deep shining brown, all pleurae except propleuron with black marks. Central area of sternopleuron from dorsal margin to ventral corner with pale microsetae. Coxae dark brown to black, trochanters paler, femora black except at joints, fore tibia dark brown, middle and hind tibiae black. Fore and hind tarsi yellow tinged with brown, hind tarsi (Fig. 4) pale yellow on segments one and two, the remainder black with dense thickened microsetae. Wing membrane slightly tinged brown,  $r_{2+3}$  elongate, costal ratios 43 : 45 : 19 : 11 (Fig. 3). Haltere creamy white with yellow stalk. Scutellum (Fig. 24) wider than long (18 : 15) shining black, brown laterally, disc with numerous black microsetae, arising from small tubercles. Sub-apical scutellar setae arising from smaller tubercles. Postnotum shining black.

Abdomen yellow on tergites 1 and 2, 2 with a black lateral spot, remainder of tergites black, shining, with dark microsetae. Tergite 9 (Fig. 44) broad, with numerous setae, cerci shallowly separated, long, with numerous long microsetae, surstylus with apical process and subapical outer process. Hypandrium (Fig. 45) similar to that of *P. albiscutellatum* with broad lower margin and postgonite overlying pregonite, but pregonite narrower.

**Female** : Similar to male, with a black ovipositor and slender black cerci with black hairs.

Holotype : ♂ Papua New Guinea, Central P., 20 km SE Port Moresby, 27. xii. 1981, JWI, swept bushes ; paratypes, 1 ♀ same data ; 1 ♀ same data but 1. i. 1982, swept trees ; 1 ♀ same data but 13. ii. 1982, swept bushes ; 1 ♀ same data but 31. iii. 1984.

Type depository : BMNH ; paratypes also in ANIC, BPBM and KONE.

### *Psilacrum singaporense*, new species

**Female** : Differing from *P. milichioides* as follows : Head wider than deep or long (49 : 33 : 22). Frons about as broad as long (22 : 23), yellow, ocellar triangle and area around ocelli darkened, a black spot at centre of anterior margin of frons. Frontal triangle small, occupying half width of frons posteriorly, narrowed to thin line at 3/4 length of frons, lateral margins and central portion yellow, shining. Dull patch on lateral corner of frontal triangle poorly developed. Microsetae on frons and rest of body denser than in *P. milichioides*. Larger setae small, as in *P. milichioides*, in comparison to other *Psilacrum*. Ocellar setae no longer than inner vertical setae. Smaller anterior orbital setae more numerous than in *P. milichioides*, three longer orbital setae posteriorly as in *P. milichioides*. Eye slightly deeper than long, long axis slightly oblique, surface with scattered pale microsetae. Second antennal segment yellow-brown, third brown, paler at base inside, arista with microsetae equal to basal diameter of arista. Face yellow. Cheek narrower than in *P. milichioides*, little broader than width of front tibia, entirely yellow.

Mesonotum (Fig. 17) shining, slightly longer than broad (49 : 44), yellow, a black central stripe constricted at level of suture, becoming brown on posterior 1/4, intermediate stripe divided by suture into two spots, anterior rounded triangular, posterior elongate and separated from small lateral stripe by brown region. Humerus with faint darker mark. Notopleuron yellow with brown lower margin, dorsal half with black microsetae. Pleurae yellow with brown marks : mesopleuron entirely brown, propleuron with mark on lower anterior part, sternopleuron dark on most of lower half. Central area of sternopleuron from dorsal margin to ventral corner with dark microsetae.

Legs yellow, fore and middle femora black, hind femora with dark central band and tip, fore tibia dark at tip on outer side, middle tibia broadly darkened at tip, hind tibia black on apical 2/3, yellow at base, fore and middle tarsi darkened apically, hind tarsus with segments 3-5 black with dense, thickened microsetae as in *P. milichioides*. Wing membrane tinged brown with yellow-brown veins, costal ratios 46 : 55 : 24 : 13.

Scutellum (Fig. 25) about as wide as long (18 : 19), shining but rugose, more rounded than in *P.*

*milichioides*, dorsal surface slightly convex, without angled margins, with numerous black microsetae and two pairs of marginal setae mounted on small tubercles. Dorsal surface and tip of ventral surface black, lateral margins and most of ventral surface yellow.

Abdomen similar to *P. milickioides*.

Holotype : ♀ Singapore, University Campus, 24. v. 1971, D. K. Murphy.

Type depository : BMNH.

The species is clearly related to *P. milichioides* by the orbital setae, sternopleural microsetae and the structure of the hind tarsus.

Further material : A male specimen in the British Museum, Sri Lanka, Colombo Distr., Labugama, 18. ii. 1974, A. E. Stubbs & P. J. Chandler, is tentatively referred to *P. singaporense*.

It differs from the holotype of *P. singaporense* in having less extensive black markings on the mesonotum and particularly the basal corners of the scutellum. The second antennal segment is darker and the hind femur more extensively darkened. These differences are probably only intraspecific variation but since the specimens are from Singapore and Sri Lanka the identification must remain tentative. The scutellum has lost most of the marginal setae. The genitalia of this specimen have numerous setae, cerci fused into a median projection, surstylus with a small basal projection and postgonite overlying pregonite.

### ***Psilacrum giganteum* Enderlein**

Two Afrotropical specimens of *Psilacrum* were kindly lent by Mr J. C. Deeming. Both were from N. Nigeria, Niger P., Mokwa, Zugurma, J. C. Deeming, Kurmi, 26. xii. 1971. A female was identified by Mr Deeming as *P. giganteum*, a male as *P. sp. C.* They agree well with the definition given earlier in this paper. There are about 7 longer orbital setae, only the most posterior being longer and not differing in orientation. The frons is slightly shining but in the position of the dusted patches of the *P. glabrum* group there is a patch of short dense pubescence. In the *P. glabrum* group it appears that this pubescence is shorter and denser, giving the dusted appearance. *P. albiscutellatum* has pubescence of intermediate length between *P. giganteum* and the *P. glabrum* group. The eye is bare. The scutellum is slightly rugose, long, with numerous microsetae and marginal setae on small tubercles as in *P. albiscutellatum*. The sternopleuron has fine microsetae from the lower to the upper margin, as in *P. milickioides*. The hind tibia is yellow on basal two thirds, black at tip, similar to that of *P. singaporense* but the distal tarsal segments are not broadened.

The genitalia of the male have fused cerci with long microsetae as in *P. milickioides*, a large basal process on the inner side of the surstylus, an elongate pregonite and apical curved postgonite, as in the *P. glabrum* group.

### **Oscinoidea**

Specimens of *Oscinoidea arpidia* Malloch, 1916 and its forms *ater*, *humeralis* and *elegans* were examined in the USNM. They agree with the generic definition given earlier in this paper. The dusted spot on the hind corners of the frontal triangle was faintly represented in *O. arpidia* but not the other subspecies. All have a band of microsetae extending from the lower to the upper margin of the sternopleuron. The eyes are minutely haired. There is no strong distinction between the anterior and posterior orbital setae.

Thus *Oscinoidea* cannot be distinguished from *Psilacrum*, since the characters



which might be used to divide the Afrotropical and Australasian *Psilacrum* into groups are present in a different combination in *Oscinoidea*. It is therefore concluded that *Oscinoidea* is a synonym of *Psilacrum* and *Psilacrum annulicrum*, *P. arpidium* var. *atrum*, *P. arpidium* var. *elegans* and *P. arpidium* var. *humerales* **comb. n.** are established.

There are no records of reared specimens of *Psilacrum*. Five species (*P. variabile*, *P. flavitibiale*, *P. pleurale*, *P. nigrocostale* and *P. milichioides*) were attracted to the young shoots of a creeper *Faradaya splendida* (Verbenaceae) over several seasons at a site 20 km SE. of Port Moresby and nearly all the specimens of these species come from this source. The flies were seen to apply the proboscis to the surface of the shoots and leaves, but there was no obvious plant or insect (homopteran) secretion present. Several other species of Chloropidae and Milichiidae were similarly attracted to the shoots.

### Discussion

In this discussion the relationships of the species are considered before the problem of the correct generic name. Table 1 gives some of the character states found in each species group. The data could be used in a phylogenetic analysis, but there are further species not considered in this paper.

*P. singaporensis* and *P. milichioides* are entered separately but are evidently very closely related; the partly yellow hind tibia of *P. singaporensis* is also a character of *P. giganteum*. The character of the hypandrium having postgonites apical to pregonites or overlying them would appear to be a useful division but does not correlate with any other characters; in particular *P. milichioides* and *P. albiscutellatum* have the latter formation of gonites and densely haired tergite 9, while in *P. giganteum* the postgonites are apical to the pregonites and tergite 9 is densely haired. *P. giganteum* is here considered to belong to one species group, *P. milichioides* and *P. singaporensis* to a second and *P. albiscutellatum* to a third group.

**Table 1.** Some character states in *Psilacrum*.

Species/group	character state									
	1	2	3	4	5	6	7	8	9	10
<i>Psilacrum giganteum</i> /P. sp. C	+	+	-	+	-	-	-	-	-	-
<i>P. arpidium</i> group	+	?	+	?	-	-	-	-	-	?
<i>P. milichioides</i>	+	+	+	-	+	+	+	-	-	-
<i>P. singaporensis</i>	+	?	+	+	?	+	+	-	-	-
<i>P. albiscutellatum</i>	-	+	-	-	+	-	-	+	+	-
<i>P. glabrum</i> group		-		-	-	-	-	+	+	+

Characters : 1, sternopleuron with microsetae from upper margin to lower corner + ; 2, male tergite 9 with dense setae, cerci long with long microsetae + ; 3, eye with microsetae + ; 4, hind tibia yellow at base + ; 5, male postgonite overlying pregonite + ; 6, apical 3 segments of hind tarsus enlarged + ; 7, posterior 3 orbital setae larger than anterior + ; 8, anterior margin of wing darkened + ; 9, dusted patch on frons well developed + ; 10, scutellum with fewer than 6 small setae on disc + : ? = no data.

*P. arpidium* is placed in a fourth group pending further study. All the remaining species are placed in the *P. glabrum* group. *P. nigroscutellatum* has a superficial resemblance to *P. albiscutellatum* but its scutellum and male genitalia show a much closer relationship to *P. glabrum*. *P. lucidifrons* is tentatively assigned to the *P. glabrum* group pending further study. Table 1 does not show any clear dichotomy within the species surveyed and it is therefore concluded that the species are congeneric.

### Acknowledgements

I am particularly indebted to Dr C. W. Sabrosky, U. S. D. A. Washington, and Mr J. C. Deeming, Cardiff for correcting my generic placement of the species described below, commenting on the manuscript and providing notes on type specimens. Dr D. G. Frodin (University of Papua New Guinea, Port Moresby) corrected the new names and identified plants. Professor Y. Hirashima of Kyushu University assisted with this study and kindly provided the opportunity to publish it. I thank Dr D. K. McAlpine (Sydney), Dr D. K. Murphy (Singapore), Dr. C. W. Sabrosky (Washington), Mr J. C. Deeming (Cardiff) and Mr B. H. Cogan (London) for permission to study the collections under their care. The Department of Primary Industry, Papua New Guinea provided facilities for research.

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