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PERGIDAE (HYMENOPTERA) FROM NEW GUINEA AND AUSTRALIA IN THE BISHOP MUSEUM[1]

By **David R. Smith**[2]

Abstract. Ten new sawflies of the family Pergidae are described: *Pergagrapta bensoni, P. owanda, P. sonoda, Pterygophorus breviantennatus, Lophyrotoma minuta, L. nacenta, L. towenda, L. zimba,* and *Cladomacra opa* from the island of New Guinea, and *Eurys sembla* from Northern Territory, Australia. Females of the genus *Cladomacra* are described for the first time. New distribution records are given for other species, including the first sawflies, *Cladomacra* sp., from the islands of New Ireland and Umboi.

The Pergidae is the largest sawfly family in the Australian Region and the third largest in the Neotropical Region. Representatives are found only in the Australian area and in the New World. In the Australian Region, the Pergidae includes 9 subfamilies with 23 genera and 139 species (Smith 1978). This study deals with 5 subfamilies, Perginae, Pterygophorinae, Euryinae, Philomastiginae, and Perreyiinae. They are not common in many collections, especially from certain localities such as the island of New Guinea, but the Bishop Museum, Honolulu, has a significant collection from New Guinea. The following notes from specimens in the Bishop Museum collection (BISHOP) include the first records of *Pergagrapta* from New Guinea, new species of *Lophyrotoma* and *Pterygophorus* from New Guinea, a new species of *Eurys* from Northern Territory, Australia, a new species of *Cladomacra* from New Guinea, descriptions of the females of *Cladomacra* which were not previously known, and other distribution records.

The arrangement of taxa follows my catalog of Pergidae (Smith 1978).

Subfamily PERGINAE

Xyloperga univittata (Kirby)

Specimens examined. AUSTRALIA: 1♀, Queensland, 32–48 km N of Brisbane, 11.II.1964, J. Sedlacek.

Perga affinis affinis Kirby

Specimens examined. AUSTRALIA: 1♀, New South Wales, Tamutu Riv, 1956, J. Sedlacek.

1. Material examined is partially the results of fieldwork supported by grants to Bishop Museum from the U.S. National Science Foundation (G-2127, G-4774, G-10734, GB-518, GB-3245, GB-5864, GB-8728), the U.S. National Institutes of Health (AI-01723), and the U.S. Army Medical Research & Development Command (DA-MD-49-193-62-665) and a grant to J. L. Gressitt from the J. S. Guggenheim Foundation (1955-56).

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Perga dorsalis dorsalis Leach

Specimens examined. AUSTRALIA: 1♀, New South Wales, Mt Victoria, I.1920, F. Muir; 1♀, Queensland, Brisbane, 11.IV.1964, M. Smith.

Pergagrapta bicolor (Leach)

Specimens examined. AUSTRALIA: 1♀, New South Wales, Greta, 1951, J. Sedlacek.

Pergagrapta latreillii (Leach)

Specimens examined. AUSTRALIA: 1♂, New South Wales, Kuringai Chase, 8.XI.1967, J. & M. Sedlacek.

Pergagrapta polita (Leach)

Specimens examined. AUSTRALIA: 1♀,1♂, New South Wales, Greta, 1951, J. Sedlacek.

This is the first record I have seen from New South Wales, though it is not surprising as the species is known from Queensland and Victoria.

Pergagrapta bensoni Smith, **new species** FIG. 1, 10, 11, 22

♀. Length, 13.0 mm. Antenna black, apex of 1st segment and 2nd segment brownish. Head mostly reddish brown with blacker areas on labrum, each side of center of clypeus, supraclypeal area, paraantennal fields, genae, and postocellar area, and with yellowish areas on antennal crests, apical margin of clypeus, apical margin of labrum, narrow line on outer orbits, and palpi. Thorax dark reddish brown, blacker on each mesonotal lobe except for sutures separating lobes and brownish on pleurae. Legs yellowish with apical ½ hind femur, hind tibia, and hind tarsus black except for apex of each tarsal segment which is brownish. Abdomen black above with metallic tinge, lateral downturned margins of terga and all sterna yellowish; sheath yellow with apical margin brown. Wings uniformly brownish; veins dark brown, stigma paler brown.

Antenna (FIG. 1) 6-segmented, equal to or very little less than head width behind eyes; 1st segment 1½× longer than broad, 2nd segment broader than long; segments 3–5 subequal in length; 4th segment 2½× longer than broad; 6th segment enlarged, 1¼× length of segments 4 and 5 together. Maxillary palpus 4-segmented, labial palpus 3-segmented. Malar space 1½× diam. of front ocellus; postocellar area longer than broad, slightly raised, with lateral furrows; head densely punctate from level of antennae through postocellar region to hind margin of head, remaining parts of head smooth and shining with few punctures on malar area. Mesonotum and hind margin of pronotum densely and evenly punctate, granulose, without shining interspaces; lateral lobes lateral to lateral carinae, lower pronotum, pleurae, and sterna shining with few punctures; center of mesepisternum with few widely separated punctures and with finely punctate sculpturation between punctures; mesoscutellum without median furrow or depression. Abdominal terga with fine transverse striation, mostly shining. Hind basitarsus equal to remaining tarsal segments combined. Forewing with 3rd cubital crossvein straight and directed toward apex of stigma. Cubital cell of hindwing ½ length of free end of cubital vein. Sheath (FIG. 10, 11) truncate at apex in lateral view. Lancet (central portion in FIG. 22) long, equal in length to hind femur, with 44 serrulae, each serrula slender, lobelike, directed ventrally.

♂. Unknown.

Holotype ♀ (BISHOP 11,848), IRIAN: NEW GUINEA (NW): Wisselmeren, Enarotadi, VIII.1962, J. Sedlacek. In the Bishop Museum.

Distribution. Indonesia (Irian Jaya).

Remarks. This and the next 2 species are the first records of *Pergagrapta* from New Guinea. The genus is widely distributed in Australia. In Benson's (1939) key to *Pergagrapta, bensoni* goes to the *glaber* group and to *glabra* (Kirby) (= *malaisei* Benson) in couplet 8. From *glabra, bensoni* is separated by the black dorsum of the abdomen, yellowish legs with the apical ½ of the hind femur and all the hind tibiae and tarsi black, uniformly brownish forewings, punctate head above the antenna and punctate mesonotum including the mesoscutellum, and the slightly longer antennae with segments 3–5 subequal in length.

The species is named for the late Robert B. Benson of the British Museum, who made significant contributions toward the classification of the Australian Pergidae.

Pergagrapta owanda Smith, **new species** FIG. 32, 33

♀. Unknown.

♂. Length, 13.0 mm. Orange to dark orange with yellowish areas on supraclypeal area, clypeus, and labrum, dark orange areas on top of head, mesonotal lobes, and apex of abdomen, and whitish areas on mesepisternum and metepisternum. Wings yellowish with apical margins somewhat more hyaline; basal ½ of costa dark brown, remaining veins yellowish, stigma dark orange.

Antenna (similar to FIG. 1) slightly shorter than head width, about $^{9}/_{10}$ of head width behind eyes; 1st segment 1½× longer than broad; 2nd segment broader than long; segments 3–5 subequal in length; apical segment enlarged, slightly longer than segments 4 and 5 together. Maxillary palpus 4-segmented; labial palpus 3-segmented. Malar space 2× diam. of front ocellus; postocellar area 1⅓× longer than broad, well defined and with lateral furrows; head long and broadened behind eyes; head behind eyes slightly less than eye length; head shining with few punctures, area from antennae to occiput between eyes densely and finely punctate with very short shining interspaces. Mesonotum densely punctate, granulose; mesopleuron with large separated punctures and rugulose between punctures; area lateral to lateral carinae of lateral lobes and rest of thorax shining and nearly impunctate; mesonotum with very shallow depression medially. Abdomen smooth and shining; terga 1 and 2 with very fine punctiform microsculpture. Hindbasitarsus longer than 3 following segments combined. Forewing with 3rd cubital crossvein straight, directed toward apex of stigma. Cubital cell of hindwing ⅔ length of free end of cubital vein. Genitalia as in FIG. 32, 33.

Holotype ♂ (BISHOP 11,849), PNG: NEW GUINEA (NE): Mt Kaindi, 2350 m, 15.V.196-[1963 or 1965], in flight, R. Straatman. In the Bishop Museum.

Distribution. Papua New Guinea.

Remarks. In Benson's (1939) key, *owanda* keys best to *bella* (Newman); however, *owanda* does not exactly conform to couplets 2 and 10 because the cubital cell of the hindwing is shorter than the length of the free end of the cubital vein, and there are no unsculptured patches on each side of the postocellar area. The pale coloration, sculpturation of the head and thorax, genitalia, and relatively long antennae with segments 3–5 subequal in length distinguish *owanda* from other *Pergagrapta* species. The genitalia of *owanda* and *sonoda,* n. sp., are compared in FIG. 32–35. The female, when found, should not be difficult to associate with the male.

The species name is an arbitrary combination of letters and is to be treated as a noun.

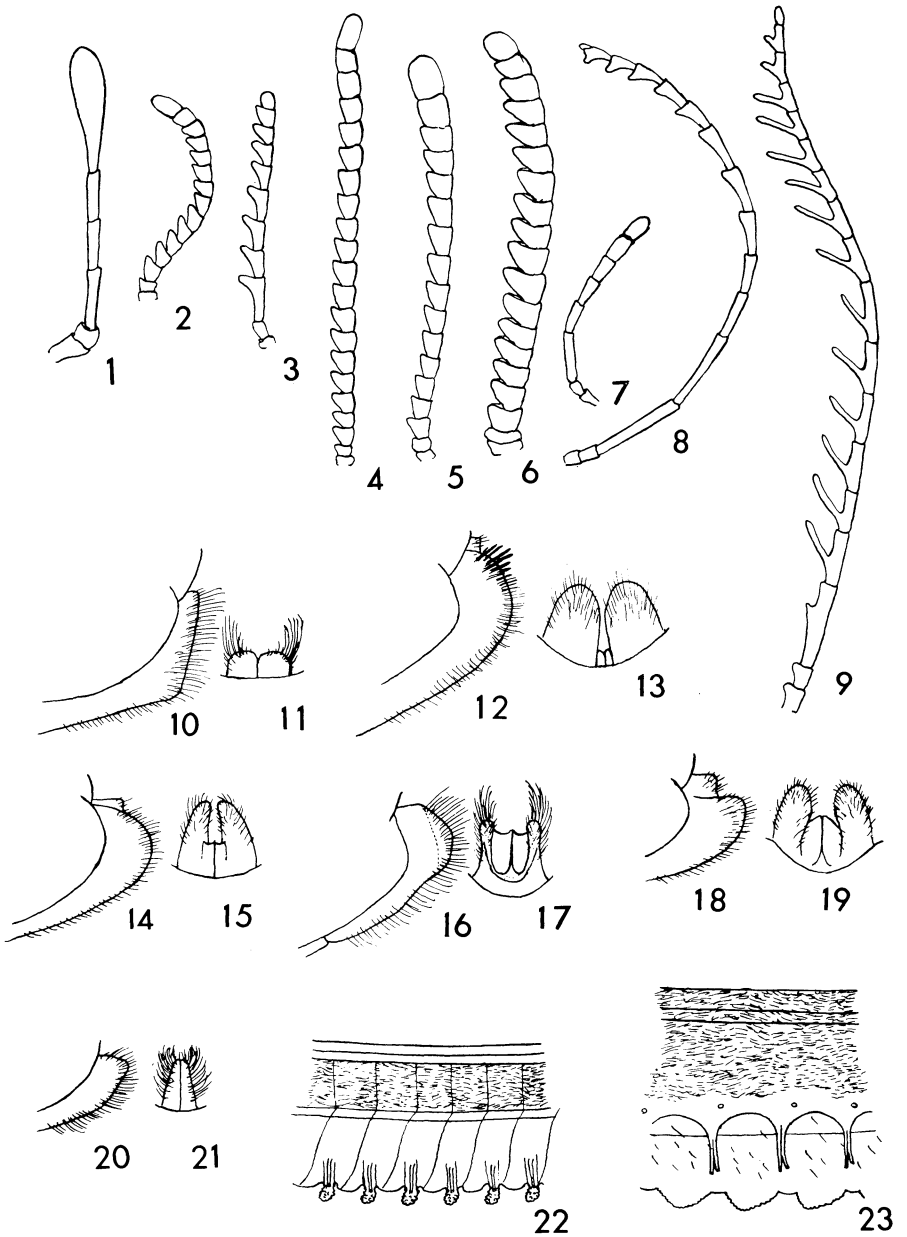

FIG. 1–23. **1–9.** Antennae: **1,** *Pergagrapta bensoni*; **2,** *Pterygophorus breviantennatus*; **3,** *Lophyrotoma minuta*; **4,** *L. towenda*; **5,** *L. zimba*; **6,** *L. nacenta*; **7,** *Eurys sembla*; **8,** *Cladomacra nigriceps*, ♀; **9,** *Cladomacra* sp., ♀. **10–21.** Female sheaths: **10,** lateral, **11,** dorsal of *Pergagrapta bensoni*; **12,** lateral, **13,** dorsal of *Pterygophorus breviantennatus*; **14,** lateral, **15,** dorsal of *Lophyrotoma towenda*; **16,** lateral, **17,** dorsal of *L. minuta*; **18,** lateral, **19,** dorsal of *L. nacenta*; **20,** lateral, **21,** dorsal of *Eurys sembla*. **22–23.** Female lancets: **22,** *Pergagrapta bensoni,* central portion; **23,** *Lophyrotoma towenda,* central portion.

Pergagrapta sonoda Smith, **new species** FIG. 34, 35

♀. Unknown.

♂. Length, 12.0 mm. Coloration as that of *owanda*. Structure similar to that for *owanda* with the following differences: head in dorsal view short behind eyes, about ½ of eye length; postocellar area as long as broad; mesonotum shiny, not granulose, with short shining interspaces between punctures; mesoscutellum without median groove or depression; mesopleuron with large widely scattered punctures, not rugose between punctures but rather smooth with very fine striation. Antennae, except for scape and pedicel, missing. Genitalia as in FIG. 34, 35.

Holotype ♂ (BISHOP 11,850), PNG: NEW GUINEA (NE): Mt Michael, Saddle Camp, NW Arete, 3050 m, 18–22.VI.1967, G.A. Samuelson. In the Bishop Museum.

Distribution. Papua New Guinea.

Remarks. This species will key to *glabra* (=*malaisei* Benson) in Benson's (1939) key but can be separated from that species by the yellowish wings, the quadrate postocellar area, the hind basitarsus being longer than the 3 following segments, and the mostly pale orange coloration. The shinier texture of the head and mesonotum and pale coloration separate *sonoda* from *bensoni*.

The name is an arbitrary combination of letters and should be treated as a noun.

Pseudoperga belinda (Kirby)

Specimens examined. AUSTRALIA: 1♂, New South Wales.

Subfamily PTERYGOPHORINAE

Pterygophorus cinctus Klug

Specimens examined. AUSTRALIA: 2♀, Sydney, XII.1903; 1♀, Sydney, 28.I.1906.

Pterygophorus facielonga Benson

Specimens examined. AUSTRALIA: 1♀,2♂, New South Wales, Greta, 1951, J. Sedlacek.

Pterygophorus insignis Kirby

Specimens examined. AUSTRALIA: 1♀, Queensland, Southport, 29.II.1964, R.A. McLachlan.

Pterygophorus breviantennatus Smith, **new species** FIG. 2, 12, 13, 24

♀. Length, 8.0 mm. Antenna yellowish brown. Head black, only labrum brownish. Thorax black. Abdomen bright orange with basal 3 terga black. Legs black with front and mid tibiae and tarsi and hind tarsus pale brown, extreme base of mid tibia black. Wings lightly, uniformly, black infuscated, forewings darker black on basal ½; veins and stigma black.

Antenna (FIG. 2) 15-segmented, short, length equal to head width; 1st and 2nd segments each broader than long; segments 2–8 more distinctly serrate than remaining segments. Malar space long, equal to length of first 2 flagellar segments, greater than medial length of clypeus, more than ½ breadth of mandibles at base; clypeus shallowly, circularly emarginated, breadth of clypeus equals ⅔ of eye length; labrum 1¼× breadth of clypeus, ligula extends to apex of 3rd palpal segment; postocellar area 2 × broader than long; eyes converging below, distance between eyes below slightly greater than eye length, about $1^{1}/_{10}$× eye

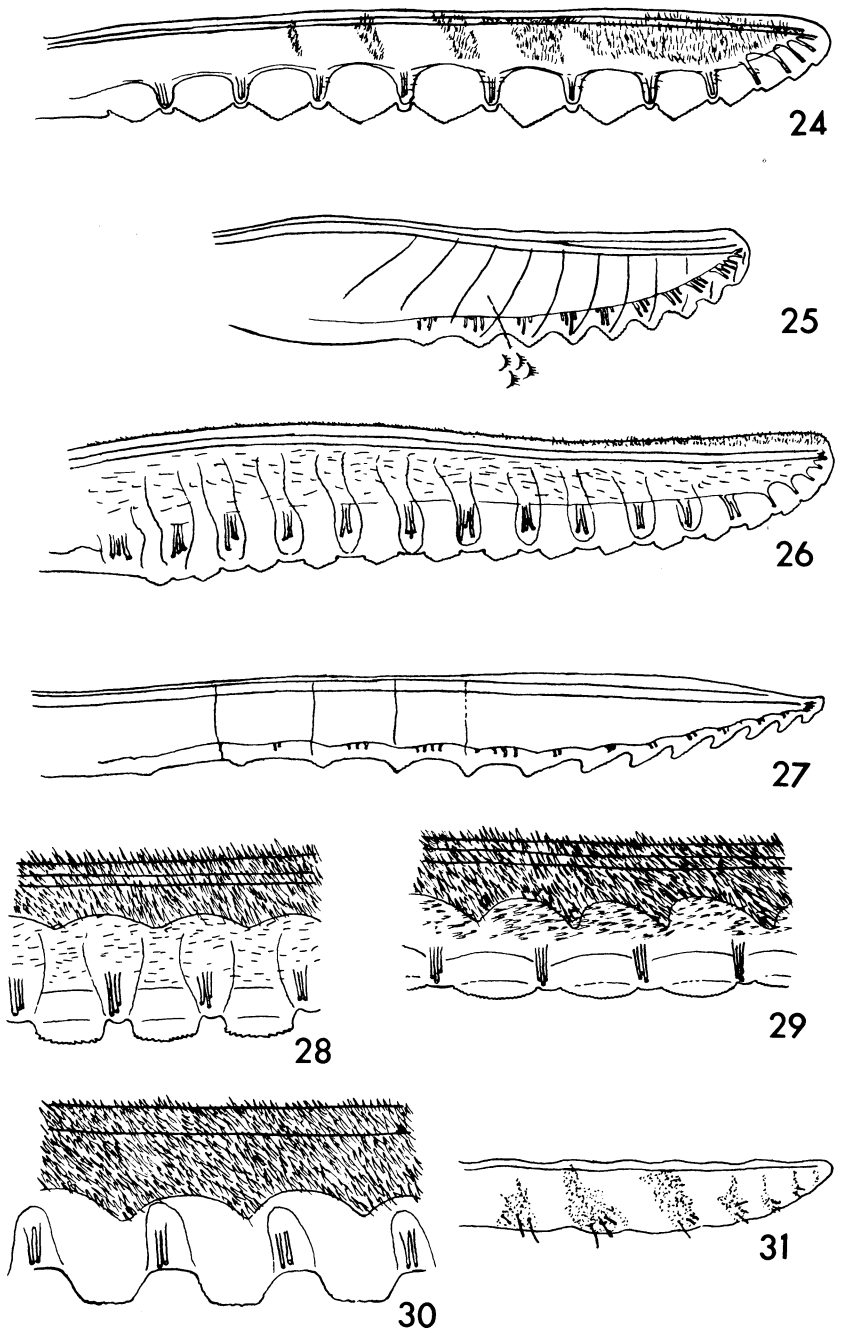

FIG. 24–31. Female lancets: **24,** *Pterygophorus breviantennatus*; **25,** *Lophyrotoma minuta,* with texture of lancet shown in close-up; **26,** *L. zimba*; **27,** *Eurys sembla*; **28,** *Lophyrotoma nacenta,* central portion; **29,** *L. interrupta,* central portion; **30,** *L. zonalis,* central portion; **31,** *Cladomacra nigriceps.*

length. Head and body smooth and shining, clothed with short white pubescence; accessory furrow of lateral margins of pronotum subparallel with side margin of pronotum. Hind basitarsus subequal in length to following segment. Sheath (FIG. 12, 13) rounded at apex; short, slender projection dorsally; lateral halves broad and rounded in dorsal view; setae on upper margin of sheath stout, much thicker than those at apex and below. Lancet (FIG. 24) with 12 serrulae, each serrula pointed at apex.

♂. Unknown.

Holotype ♀ (BISHOP 11,851), PNG: NEW GUINEA (SE): Fly Riv, Kiunga, 35 m, VIII.1969, J. & M. Sedlacek. In the Bishop Museum.

Distribution. Papua New Guinea.

Remarks. The short, 15-segmented antennae and mostly black coloration with the orange abdomen are not like any other species of *Pterygophorus.* Other species have a black and yellow color pattern, usually with the abdomen black and yellow banded, and the thorax black with the pronotum and scutellum yellow or light orange. All other species have 20 or more segmented antennae the length of which is greater than the head width.

The species name is based on the characteristic short antennae.

Lophyrotoma analis (Costa)

Specimens examined. AUSTRALIA: 1♂, Queensland, Brisbane, Moggil, 27.IX.1958, J.L. Gressitt.

Lophyrotoma cibdeliformis Benson FIG. 39–41

Specimens examined. IRIAN: NEW GUINEA (NW): 1♀, Wisselmeren, Enarotadi, 1800–1900 m, 19.VII.1962, J. Sedlacek; 1♀, same data, 25.VII.1962; 1♂, same data, 17–18.VII.1962; 1♀, NW, Wisselmeren, Moanemani, Kamo Val, 1500 m, 16.VII.1962, J. Sedlacek.

These specimens come from near the type-locality, Wisselmeren, Paniai, 1750 m. The male genitalia (FIG. 39–41) were not illustrated by Benson (1958).

Lophyrotoma cyanea (Leach)

Specimens examined. AUSTRALIA: 3♀,1♂, New South Wales, Greta, 1951, J. Sedlacek.

Lophyrotoma interrupta (Klug)

Specimens examined. AUSTRALIA: 2♀, New South Wales, Greta, 1951, J. Sedlacek; 1♀, Sydney, 5.III.1919, F.X. Williams.

Lophyrotoma leachii (Kirby)

Specimens examined. AUSTRALIA: 1♀, Northern Territory, Arnhem Land, Maningrida, 5 m, 19.III.1961, J.L. & M. Gressitt; 1♀, Adelaide Riv, 70 mi S of Darwin, 25.III.1945, B. Malkin.

These are the first records I have seen from Northern Territory; the species was

known only from Queensland. The specimen from Adelaide River is from the U.S. National Museum Collection.

Lophyrotoma zonalis (Rohwer) FIG. 30

Specimens examined. PNG: NEW GUINEA (SE): 1♀, Brown Riv, 5 m, 23.X.1960, J.L. Gressitt.

This species was described from Mackay, Queensland, and this is the first record for New Guinea. It is identical in color and structure to Australian specimens; I was unable to find any differences in genitalia in the New Guinea specimen. The central portion of the lancet of *zonalis* is illustrated in FIG. 30.

Lophyrotoma minuta Smith, **new species** FIG. 3, 16, 17, 25

♀. Length, 6.5 mm. Brownish with following black: antenna, head posterior to antennal insertions, genae to middle of eye, legs except for coxae and trochanters and dark brown femora and tibiae, mesonotum except for narrow lines along sutures separating lobes; clypeus yellowish; labrum and base of mandibles whitish. Wings hyaline with faint brownish spot below base of stigma; veins and stigma dark brown.

Antenna (FIG. 3) 11-segmented, serrate, $1^1/_5\times$ head width; each flagellar segment, except apical, with short rounded rami; 1st and 2nd segments broader than long; 3rd segment longer than 4th segment; segments 3–6 longer than broad; segments 7–11 about as long as broad. Malar space 3× diam. of front ocellus, longer than medial length of clypeus; labium much shorter than breadth of clypeus, lugula not extending to apex of 1st segment of labial palpus; clypeus truncate, breadth of clypeus subequal to eye length; postocellar area 3× broader than long; distance between eyes below 2× eye length; eyes subparallel; head narrow and contracted behind eyes, in dorsal view distance behind eyes about ½ eye length. Head smooth, shining, very few widely spaced minute punctures but more dense on interocellar area, interantennal area, and paraantennal fields. Thorax smooth and shining with few scattered small punctures on mesepisternum. Abdomen with fine microsculpture slightly dulling the shining surface. Hind basitarsus subequal in length to following segment. Sheath rounded in lateral view with slightly emarginated ventroposterior margin; with short, slender, posteriorly directed scopae (FIG. 16, 17). Lancet (FIG. 25) short, with 10 serrulae; serrulae rounded; microsculpture on lancet as figured.

♂. Unknown.

Holotype ♀ (BISHOP 11,852), PNG: NEW GUINEA (SE): S Highlands, Dimifa SE of Mt Giluwe, 2200 m, 12.X.1958, J.L. Gressitt. In the Bishop Museum.

Distribution. Papua New Guinea.

Remarks. There are no other species of *Lophyrotoma* resembling *minuta.* The small size, short, 11-segmented, serrate antennae, and short lancet are all characteristic of *minuta.*

The species name is based on the unusual, small size of the species.

Lophyrotoma nacenta Smith, **new species** FIG. 6, 18, 19, 28

♀. Length, 9.5 mm. Antenna and head black with apical margin of labrum, spot at base of mandibles, and palpi whitish. Thorax black with pronotum, mesoscutellum, metanotum, and narrow anterior margin of mesepisternum yellow-orange. Legs black with extreme apex of front femur, each tibia, and each tarsus whitish; apical 2 segments of each tarsus blackish. Abdomen orange-yellow with segments 6–9 black laterally and ventrally; sheath black. Wings subhyaline with blackish to brownish infuscated darker area below stigma; costa dark yellowish, other veins and stigma black.

Antenna (FIG. 6) 21-segmented, serrate, 1½× head width; segments 3 to penultimate segment with

rounded rami, each ramus a little longer than basal width of its segment; segments broader than long. Malar space equal to diameter of front ocellus and about ½ medial length of clypeus; clypeus very shallowly emarginated; breadth of clypeus subequal to eye length; length of labium about ⅔ breadth of clypeus, ligula extending beyond 3rd segment of labial palpus; postocellar area 2× broader than long; head strongly narrowing behind eyes, distance behind eyes about ⅓ of eye length; eyes slightly converging below and emarginate on inner margins; distance between eyes below 1¼× eye length. Head and body smooth and shining, impunctate; short white pubescence on head, mesonotum, and abdomen, but sparse on mesopleurae, pubescence shorter than diameter of an ocellus. Hind basitarsus subequal in length to following segment. Sheath (FIG. 18, 19) with broad, posteriorly projecting scopae on ventral portion, dorsally at base with slender projection. Lancet (central portion in FIG. 28) with about 19 serrulae, each serrula rounded, broad, and separated from each other by deep notches.

♂. Unknown.

Holotype ♀ (BISHOP 11,853), PNG: NEW GUINEA (SE): Port Moresby, 19.V.1956, E.J. Ford, Jr. In the Bishop Museum.

Distribution. Papua New Guinea.

Remarks. This species will key to *interrupta* in Benson's (1938) key (the generic name used was *Platypsectra* Benson), and *nacenta* is nearly identical in coloration to *interrupta,* which is widespread in eastern Australia. The significant characters differentiating *nacenta* from *interrupta* are the deeper serrulae of the lancet (FIG. 28), compared to the low rounded serrulae in *interrupta* (FIG. 29), and the antennae which have the projections of the segments longer than the basal width of the segments and all the segments of the flagellum except for the apical one with distinct projections. In *interrupta* the length of the projections are evident only on flagellar segments 1–9 or 10. Benson (1938) regarded *interrupta* as a species complex because he found variation in color and some external structures, but these variations were linked by intermediates, and he found stability in the structure of the lancet. In this New Guinea counterpart, however, the structure of the lancet and antennae are distinctly different.

The species name is an arbitrary combination of letters and is to be treated as a noun.

Lophyrotoma towenda Smith, **new species** FIG. 4, 14, 15, 23, 36–38

♀. Length, 10.0–11.0 mm. Black, only head with greenish metallic tinge; brownish infusions on mesopleurae, dorsum and venter of abdomen on basal ½–¾, and tibiae and tarsi. Wings brownish, uniformly infuscated; veins dark brown, costa and stigma black.

Antenna (FIG. 4) 21–22 segmented, serrate, 1½× head width; each segment with short, rounded projection; basal width of segments subequal to length of segments, those on apical ⅓ broader than long except for apical segment. Malar space 1½× diam. of front ocellus, equal to medial length of clypeus; clypeus slightly emarginated at center, breadth of clypeus subequal to eye length; eyes small, far apart, subparallel, distance between eyes below 1⅓× eye length; labium shorter than ½ breadth of clypeus, ligula not extending to apex of 1st segment of labial palpus; postocellar area 2× broader than long; in dorsal view, head contracted behind eyes, head behind eyes about ⅓ eye length. Head shining, with rugose sculpturation between eyes, antennae, and ocelli. Thorax shining, impunctate. Abdomen shining and impunctate. Hind basitarsus subequal in length to following segment. Hypopygium deeply excised [as for *cibdeliformis* (Benson 1958, FIG. 2)]. Sheath (FIG. 14, 15) rounded with short, slender dorsal projection, from above lateral halves thick and rounded at apex. Lancet (central portion in FIG. 23) with about 24 serrulae, each serrula rounded and with fine teeth.

♂. Length, 9.0 mm. Similar to ♀ except for following: tibiae and tarsi whitish with extreme apex of each tibia and each tarsal segment blackish. Antenna 24-segmented, pectinate. Genitalia as in Fig. 36–38.

Holotype ♀ (BISHOP 11,854), PNG: NEW GUINEA (NE): E Highlands, Purosa, 1700 m, 17–25.V.1966, Gressitt & Tawi. Paratypes. PNG: NEW GUINEA (NE): Torricelli Mts, Sugoitei Vill, 900 m, 24.I–5.II.1959, W.W. Brandt (1♀); IRIAN: NEW GUINEA (NW): Wisselmeren, Enarotadi, 1800–1900 m, 17–18.VII.1962, J. Sedlacek (1♂). In the Bishop Museum.

Distribution. Indonesia (Irian Jaya); Papua New Guinea.

Remarks. The long, multisegmented antenna, strongly contracted head behind the eyes, black coloration, and deeply excised female hypopygium place *towenda* close to *cibdeliformis* and also separate both species from all other *Lophyrotoma.* In *towenda* the wings are uniformly brownish, the head has a metallic tinge, and characters of the genitalia, especially the male genitalia, are distinctive; the male genitalia of *towenda* and *cibdeliformis* are compared in FIG. 36–41. In *cibdeliformis* the infuscation of the wings is black and the dark infuscation is confined to the anterior ½ of the wing, especially around the stigma and radial cell, and both the head and body have a metallic tinge.

The male described above is from northwestern New Guinea and is from the same locality as specimens of *cibdeliformis.* Perhaps this male is mislabeled since it is far from the localities of the described females; however, the characters of this male conform to those of *towenda,* and it is clearly different from the males of *cibdeliformis.*

The name is an arbitrary combination of letters and is to be treated as a noun.

Lophyrotoma zimba Smith, **new species** FIG. 5, 26

♀. Length, 9.5 mm. Antenna black with basal 2 flagellar segments and base of 3 or 4 following segments white. Head black. Thorax black with broad lateral corners of pronotum, posterior ½ of mesoscutellum, and metascutellum yellow. Abdomen black; sheath black. Legs black with basal ½–¾ of front and mid tibiae on inner surfaces, extreme base of front and mid tarsal segments, hind tibia except for extreme apex, and hind tarsus except for extreme apices of each segment white. Wings subhyaline with black infuscated area on anteroapical margin of forewing extending below stigma from cubital cells through radial cell to apex of wing; veins and stigma black.

Antenna (FIG. 5) 17-segmented, serrate, subclavate, 1½× head width; segments with very short projections, segments 2–9 longer than broad and remaining segments about as long as broad. Malar space 2× diam. of front ocellus and equal to medial length of clypeus; clypeus very shallowly emarginated; breadth of clypeus ⅔ of eye length; postocellar area 2× broader than long; labium equal to breadth of clypeus, ligula extending a little beyond 3rd segment of labial palpus; eyes slightly emarginate on inner margins, slightly converging below; distance between eyes below a little greater than eye length; head narrowing behind eyes; head behind eyes about ⅓ of eye length. Head and body smooth and shining, impunctate; dense whitish pubescence on head and body. Hind basitarsus equal to following tarsal segment. Sheath (similar to FIG. 18, 19) rounded in lateral view, with slender dorsal projection; in dorsal view lateral halves thin and rounded at apex, directed posteriorly. Lancet (FIG. 26) with 13 serrulae, serrulae shallow and rounded.

♂. Unknown.

Holotype ♀ (BISHOP 11,855), PNG: NEW GUINEA (NE): Morobe Distr, Aseki, 1 km SE, 1260 m, 13.IV.1974, *Glochidion,* "Bishop Museum Collection 1975, 254," Reni Sakomdaro, Wau Ecology Inst. In the Bishop Museum.

Distribution. Papua New Guinea.

Remarks. This species keys to *zonalis* in Benson's (1938) key but can be separated from *zonalis* by the mostly black coloration, longer antennal segments, and shallow serrulae of the lancet. Lancet characters of *zimba* and *zonalis* can be compared in FIG. 26 and 30. *Lophyrotoma zonalis* has the pronotum, meso- and metascutellum, most of the mesopleuron, and the basal 4 abdominal segments yellowish.

The species name is an arbitrary combination of letters and is to be treated as a noun.

Lophyrotoma sp.

Specimens examined. PNG: NEW GUINEA (SE): 1♂, Fly River, Kiunga, VIII.1969; 1♂, NEW GUINEA (SE): Variarata, Astrolabe Range near Port Moresby, 400 m, 18.III.1956.

These specimens are structurally similar to *zonalis* and *zimba* and may be one of the described species of *Lophyrotoma*. They are not described further because it is impossible to associate them with females at present.

Subfamily EURYINAE

Eurys laetus (Westwood)

Specimens examined. AUSTRALIA: 1♀, New South Wales, J. Sedlacek.

Eurys sembla Smith, **new species** FIG. 7, 20, 21, 27

♀. Length, 5.5 mm. Antenna black. Head and thorax metallic green with labrum, clypeus, mandibles, and palpi whitish. Legs reddish brown to whitish with coxae, at least 1st segment of trochanters, and femora except extreme apices black to dark reddish brown; extreme base of hind tibia whitish. Abdomen black with lateral white spots on segments 2–8, white spots becoming larger toward 8th segment; sheath black. Wings subhyaline, uniformly dusky; veins and stigma blackish.

Antenna (FIG. 7) 8-segmented (in 1 specimen 9-segmented), subclavate, 1⅓× head width; 1st and 2nd segments each longer than broad; 3rd segment longer than 4th segment. Malar space ½ diam. of front ocellus; postocellar area 3× broader than long; clypeus very shallowly emarginated; ligula of labium extends beyond labial palpus by distance as great as length of palpus; eyes large and converging below; distance between eyes below less than eye length; head in dorsal view strongly narrowing behind eyes, eyes very close to hind margin of head. Hind basitarsus slightly shorter than following 2 segments. Head and thorax finely punctate, shining; head, body, and legs clothed with fine white pubescence. Sheath (FIG. 20, 21) slender, from above narrowly rounded at apex, without projecting scopae and with short, curved setae. Lancet in FIG. 27.

♂. Unknown.

Holotype ♀ (BISHOP 11,856), AUSTRALIA: Northern Territory, Arnhem Land, Maningrida, 5 m, 22.III.1961, J.L. & M. Gressitt. Paratypes. Same data as holotype except dates, 21.III.1961 (1♀), 17.III.1961 (2♀). In the Bishop Museum.

Distribution. Australia (Northern Territory).

Remarks. This is the first record for a species of *Eurys* from Northern Territory. The most significant feature of *sembla* is the structure of the sheath; the sheath is slender and without laterally projecting scopae as is found in all other species [see Fig. 5b, 5c in Benson (1934)]. The dark femora, presence of lateral white spots on

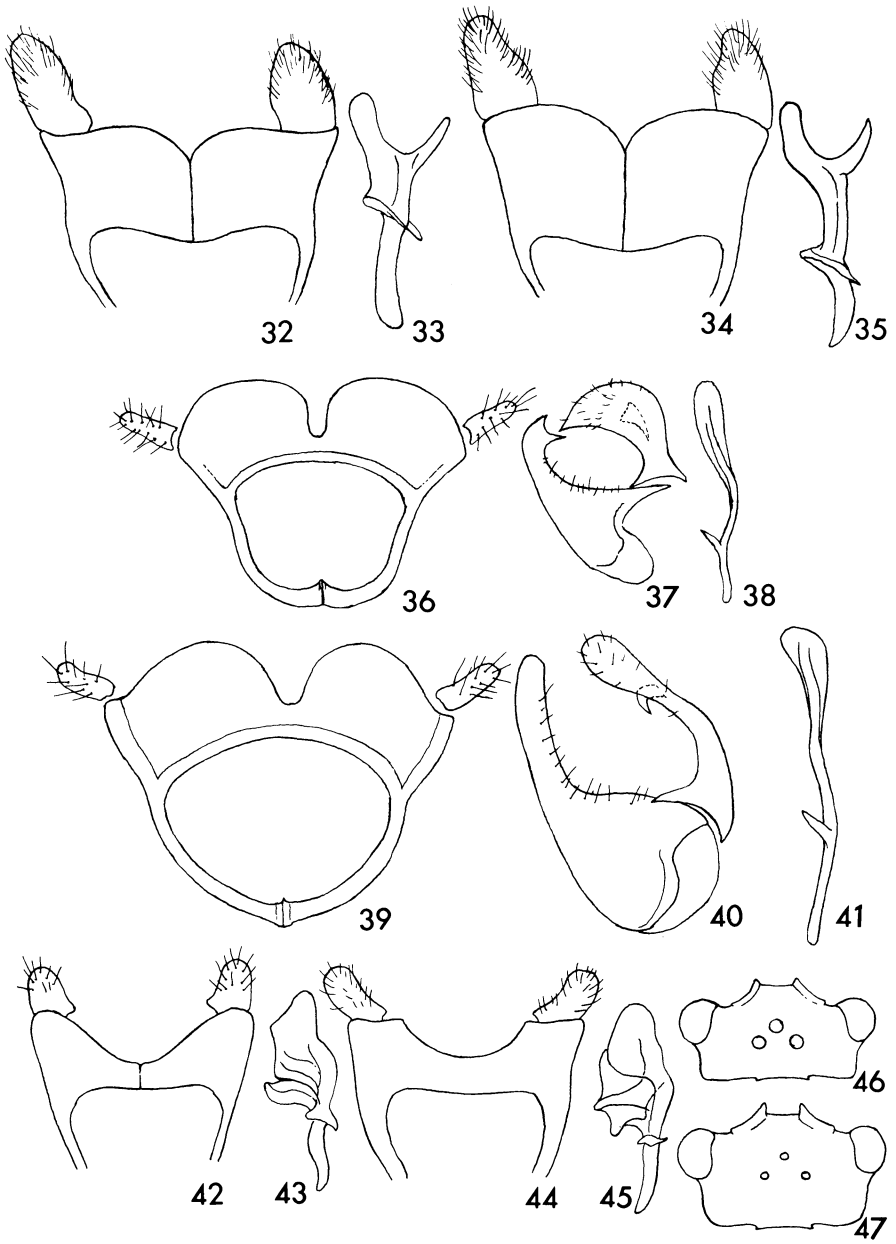

FIG. 32–47. **32–45.** Male genitalia: **32,** genital capsule, ventral, **33,** penis valve, lateral of *Pergagrapta owanda*; **34,** genital capsule, ventral, **35,** penis valve, lateral of *P. sonoda*; **36,** genital capsule, ventral, **37,** volsella, dorsal right, **38,** penis valve, lateral of *Lophyrotoma towenda*; **39,** genital capsule, ventral, **40,** volsella, dorsal right, **41,** penis valve, lateral of *L. cibdeliformis*; **42,** genital capsule ventral, **43,** penis valve, lateral of *Cladomacra opa*; **44,** genital capsule, ventral, **45,** penis valve, lateral, of *C. macropus*. **46–47.** Dorsal view of head: **46,** *C. opa*; **47,** *C. macropus*.

the abdomen, dull metallic color, and very short malar space are other distinctive features of *sembla*. *Eurys chloe* Benson, *laetus* (Westwood), and *nitidus* Kirby are brilliant, shining metallic insects with bright orange legs; *rutilans* Morice lacks white spots on the abdomen; *pulcher* Benson and *aglaia* Benson have a solid white lateral line on the abdomen; and *aeratus* Newman has a broad malar space and distinct laterally projecting scopae on the sheath. *Eurys sembla* will key to *aeratus* in Benson's (1934) key; other species subsequently described by Benson do not key out to that species.

The name is an arbitrary combination of letters and is to be treated as a noun.

Neoeurys caudatus Morice

Specimens examined. AUSTRALIA: 3♀, Mt Field Natl. Park, Dobson Lake, 1000 m, 25.XII.1960, J.L. Gressitt.

Neoeurys inconspicuus (Kirby)

Specimens examined. AUSTRALIA: 1♀, N Queensland, Moreeba, Atherton, Tableland, 300 m, 10.III.1956, J.L. Gressitt.

Neoeurys variabilis Forsius

Specimens examined. AUSTRALIA: 1♀, SE Queensland, Mt Glorious, nr Brisbane, 13.II.1961, J.L. & M. Gressitt; 1♀, Queensland, Lamington Natl. Park, 28.I–3.II.1963, G. Monteith.

Polyclonus atratus Kirby

Specimens examined. AUSTRALIA: 4♂, SE Queensland, Mt Glorious, nr Brisbane, 5–8.II.1961, J.L. & M. Gressitt; 1♀,4♂, same data, 13.II.1961; 2♂, same data, Sclerophyll Forest, 16–20.II.1961.

This is the first record I have seen from Queensland; it is known from New South Wales.

Ancyloneura frontalis Benson

Specimens examined. IRIAN: NEW GUINEA (NW): 1♂, Vogelkop, Manokwari, 75 m, 24.VII.1957, D. Elmo Hardy.

Ancyloneura nigripes (Smith)

Specimens examined. I have seen many specimens collected in all months of the year from nearly sea level to as high as 3000 m, though most were collected at elevations above 1000 m. IRIAN: NEW GUINEA (NW): Wisselmeren, Enarotadi; Star Mts, Sibil Val; Waris, S of Hollandia. PAPUA NEW GUINEA: Western Highlands, Minj; NW Banz; Korgua; Koibuga; Bismarck Range, Simbai; Mt Wilhelm; Central Distr, Guar'l; Owen Stanley Mts: Iongai; Mt Strong; Woitape; Tapini; Brown Riv; Enga Distr, Liagam; Yaibos; Dimifa, SE of Mt Giluwe; Mt Giluwe; Koroba W of

Tari; Betege, NW of Koroba; Aunde Val to Keglsugl; Lake Aunde; Keglsugl; Lake Sirunki; Fly Riv, Olsobip; SE Okapa; Purosa SE of Okapa; Karimui; Mt St Mary; Huon Penin, Tobo-Salembeng; Morobe Distr: Arabuka; Mindik; Edie Creek; Mt Missim; Wau; Bulolo Riv; Mt Kaindi; Bulldog Rd, 60 km S of Wau.

One specimen labeled "British N. Borneo, Liawan, Jan 14–19, 1959, sweeping, T. C. Maa" is *nigripes*. This specimen is possibly mislabeled; at least North Borneo (Sabah) should be queried when citing the distribution of *nigripes*. One specimen is labeled "on *Eurya*" and another "*Psychotria*"; these are the only clues concerning the host plant. I have noticed some variation, mainly the antennal segments which number from 11 to 13, the tibiae which may be whitish or entirely black, the annular teeth on the lancet which may be distinct or appear worn down, and the serrulae of the lancet which differ slightly in shape but probably because of use. However, all specimens appear to be *nigripes*.

Ancyloneura varipes Cameron

Specimens examined. I have seen specimens collected from May to November mostly from lower elevations from sea level to about 1000 m, though 1 record is 1665–2530 m. IRIAN: NEW GUINEA (NW): Nabire, S Geelvink Bay; Waris, S of Hollandia; Swart Valley, Karubaka; Japen I, SSE Sumberbaba, Dawai Riv. PAPUA NEW GUINEA: Madang Distr, Wanuma; Morobe Distr, Ulap; May Riv, Patrol Station; Feramin; Eliptamin Vall; Baiyer Riv; Ambunti, Sepik Riv; Wau; Fly Riv, Kiunga.

The species was described from Aru.

Subfamily Philomastiginae

Philomastix macleaii (Westwood)

Specimens examined. AUSTRALIA: 1♀, Queensland, Mt Glorious, 10.IV.1962, J.L. & M. Gressitt; 1♀, same data, 17.I.1963, T. Brooks; 2♂, same data, 5–8.II.1961, J.L. & M. Gressitt; 2♂, Queensland, Lamington Natl. Park, 900–1000 m, 16–18.II.1964, J. Sedlacek.

These are the first records I have seen from Queensland; the species was known from New South Wales.

Subfamily Perreyiinae

The Perreyiinae are best represented in the Neotropical Region where over 50 species are known. Only several species in 1 genus, *Cladomacra* Smith, are found in the Australian area, from the Celebes and from New Guinea. Only the males were known for *Cladomacra,* but I have now seen specimens representing females of 2 species. Very much like their South American counterparts, males are most commonly collected. For 2 species from New Guinea, I have seen more than 70 specimens of each; for one I have only 6 females, for the other, none. One female cannot be identified at present. Accordingly, for a species of *Perreyiella* Conde from Venezuela,

I have 69 males but only 1 female. The females are much larger than the males and of much stouter build; they are no doubt very clumsy fliers and are more secretive and sedentary in their habits; thus they are not as commonly collected.

Cladomacra macropus Smith FIG. 44, 45, 47

Specimens examined. This species was described from the Celebes. The only specimen I saw referable to *macropus* is from Indonesia: IRIAN: NEW GUINEA (NW): Star Mts, Sibil Val, 1245 m, 18.X–8.XI.1961, S. & L. Quate.

The dorsal view of the head is as in FIG. 47 and the male genitalia are illustrated in FIG. 44, 45.

Cladomacra nigriceps Benson FIG. 8, 31

Specimens examined. Specimens have been collected in all months of the year at elevations of 1200–2800 m; 1 specimen is labeled 300 m. IRIAN: NEW GUINEA (NW): Wisselmeren, Itouda, Kamo Val; Wisselmeren nr Enarotadi; Bokondini, 40 km N of Baliem Val; Wamena. PAPUA NEW GUINEA: Tomba, slope of Mt Hagen; above Kerowagi; Kassam Pass; Okapa; Lufa; Aiyura; Dimifa; Mt Ialibu; Mt Giluwe; nr Mendi; above Tigobi; nr Tari; Yaibos; Kiambavi; Moife; Bulldog Rd, 19–29 km and 40 km S of Wau; Wau; Wau, Nami Crk; Mt Missim; Mt Kaindi; Mt Otto; Huon Penin.: Zengaren, Finistere Range, Saidor. One specimen is labeled "N. India: Sukna, 55 km S of Darjeeling, V.1966, J. & M. Sedlacek"; I assume this is mislabeled.

The female of this species is described below for the first time.

♀. Length, 7.5–8.0 mm. Black, only labrum and trochanters with whitish tinge; sometimes legs, especially tibiae and tarsi brownish. Wings subhyaline, more faintly blackish on basal ½; veins and stigma black. Antenna (FIG. 8) 14–16 segmented, about 2½× head width; 3rd segment longer than 4th segment; segments simple, without projections except segments 7 or 8 to penultimate segment serrate, segments not with long slender rami as in ♂. Sheath very short, rounded. Lancet (FIG. 31) small and fragile, without distinct serrulae; several setae on ventral portion of each segment. Other characteristics as for ♂.

Remarks. This description is based on 6 females from the following localities: Wau, Nami Creek; Mt Kaindi; E Highlands, 10 km NE of Lufa; Kassam Pass. The lancet is remarkably similar to those of the South American genera *Lophyroides* Ashmead and *Perreyia* Brullé.

Cladomacra opa Smith, **new species** FIG. 42, 43, 46

♀. Unknown.

♂. Length, 6.0–7.5 mm. Antenna black with segments 1 and 2 orange. Head orange, only narrow ring surrounding each ocellus black. Thorax orange. Abdomen with segments 1–2 or 3 orange, remaining segments black, sometimes part of 4th tergum orange. Legs orange with apical 3 or 4 segments of front and mid tarsi, apical ⅓ to ½ of hind tibia, and all hind tarsi infuscated to black. Wings dusky, very lightly infuscated, darker black areas on intercostal area, extreme margins of wings, and edge of radial cell; veins and stigma black.

Antenna pectinate, 5× width of head behind eyes, 18-segmented; 3rd segment with ramus nearly as long as segment; ramus of 6th segment as long as 4 following segments. Malar space long, at least 2× medial length of clypeus and a little less than interantennal distance; eyes strongly protruding from sides

of head; head behind eyes short, from above head behind eyes ⅔ of eye length; head from above with squared posterior corners (FIG. 46); ocelli large, distance between ocelli equal to diameter of an ocellus. Head and body smooth and shining, impunctate. Hind basitarsus equal to length of 3 following segments. Hypandrium slightly emarginated at apex; genitalia as in Fig. 42, 43.

Holotype ♂ (BISHOP 11,857), PNG: NEW GUINEA (NE): Bulldog Rd, 2070 m, 60 km S of Wau, 22–31.V.1968, J. Sedlacek. Paratypes. All ♂. PNG: NEW GUINEA (NE): Morobe Distr, Wau, Mt Missim, 1700 m, 7.III.1963, J. Sedlacek (13); same locality except 1600 m, 17.III.1966, Gressitt (2); same locality except 1.III.1963, J. Sedlacek (1); same locality except 1650 m, 1.III.1963, J. Sedlacek (1); Wau, 1200–1300 m, IX.1965, J. Sedlacek (1); Wau, Nami Crk, 1700–1800 m, XII.1965, J. Sedlacek (1); Morobe Distr, Mt Amingwiwa, 1200–1800 m, 10.IV.1970, J.L. Gressitt (1); Wau, 1200 m, 7.I.1966, J.L. & M. Gressitt (1); Morobe Distr, Wau, 1400 m, 27.VII.1961, J. Sedlacek (1); Wau, N, 1700 m, 16.V.1965, J. & M. Sedlacek (1); 24–32 km SE of Wau, 1500–1900 m, 20.III.1962, J. Sedlacek (3); Wau, Coviak Ridge, 763 m, 7.XII.1963, H.C. (1); Wau, Wau Crk, 1200–1500 m, 16–18.IX.1964, M. Sedlacek (1); Morobe Distr, Wau, 1200–1700 m, 10.VIII.1962, J. Sedlacek (1); Morobe Distr, Wau, 1700 m, 7.II.1963, J. Sedlacek (1); Wau, 1500 m, 17.VI.1971, M. Sedlacek (2); Wau, 1200 m, X.1971, J. & M. Sedlacek (1); Wau, 1200–1500 m, 16–18.IX.1964, M. Sedlacek (1); Morobe Distr, Wau, 1300–1500 m, 28.XIII.1961, J. & M. Sedlacek (1); Wau, Big Wau Crk, 1200 m, XII.1965, P. Shanahan (1); Wau, Nami Crk, 1700–1850 m, II.1966, J. Sedlacek (1); Wau, 1200–1300 m, 14.IX.1965, J. Sedlacek (1); Wau, 1750–1900 m, 19.VIII.1965, J. & M. Sedlacek (2); Wau, Big Wau Crk, 1200 m, IX.1965, P. Shanahan (1); Wau, 1750 m, 14.V.1969, J. Sedlacek (1); Wau, Big Wau Crk, 1200–1500 m, IX.1965, J. & M. Sedlacek (1); Morobe Distr, Mt Kaindi, 2250 m, 27.IX.1967, G.A. Samuelson (1); Mt Kaindi, 1500–2200 m, 19.VIII.1965, J. & M. Sedlacek (3); Morobe Distr, Mt Kaindi, 1500 m, 2.I.1969, J.H. Sedlacek (1); Morobe Distr, Mt Kaindi, 2250 m, 27.IX.1967, G.A. Samuelson (2); 7°15′S,146°48′E, Mt Missim, 1600 m, 6.II.1970, J. Sedlacek (2); Mt Kaindi, 2350 m, 14.1969, J. Sedlacek (1); 7°15′S,146°48′E, Mt Missim, 1500–1800 m, 7.I.1970, M. Sedlacek (2); same locality, J. & M. Sedlacek (1); Bulldog Rd, 2070 m, 60 km S of Wau, 22–31.V.1969, J. Sedlacek (2); Bulldog Rd, 1100–1800 m, 70 km S of Wau, 22–31.V.1969, J. Sedlacek (2); same locality except 1200 m, 23.II.1966 (1); U. Watut, SW, 1800–2200 m, 2.V.1968, J.L. Gressitt (1); Watut Riv, X.1959, 900–1900 m, A.B. Mirza (2); U. Watut, SW, 1100–1600 m, 30.IV.1968, J.L. Gressitt (2); U. Watut, SW, 1300–1600 m, 1.V.1968, J.L. Gressitt (2); S Garaina, 900–1800 m, 8–14.I.1968, J. & M. Sedlacek (3); Garaina, 800 m, 16.I.1968, J. & M. Sedlacek (1); Arai, 1400 m, 40 km E of Kainantu, 15.X.1959, T.C. Maa (1); Milne Bay, 14–23.II.1969, J. & M. Sedlacek (1); Morobe Distr, Mt Amingwiwa, 1200–1800 m, 10.IV.1970, J.L. Gressitt (1); Bulolo, 732 m, 28.VIII.1956, E.J. Ford, Jr. (1). In the Bishop Museum.

Distribution. Papua New Guinea.

Remarks. In coloration and structure, *opa* is similar to *macropus,* but *opa* can be separated by the following: wings dusky, mostly subhyaline; legs mostly orange, in-

fuscated to black only on apical portion of hind tibiae and on tarsi; head narrow behind eyes and with squared posterior corners when seen from above; large ocelli; relatively longer rami on the antennal segments; and characters of the genitalia (compare FIG. 42–45). From *nigriceps, opa* is separated by its orange coloration, presence of a long ramus on the 3rd antennal segment, and genitalia characters (see Benson 1965: FIG. 1–4 for antenna, head, and genitalia of *nigriceps*).

Cladomacra sp. FIG. 9

The following female is not associated with males and cannot be identified at present. It is different from that of *nigriceps* and probably belongs to *macropus, opa,* or an unknown species. It is the first record of a Symphyta from the island of New Ireland.

♀. Length, 8.5 mm. Antenna black, 1st and 2nd segments orange. Head and thorax orange. Abdomen black with basal plates dark orange. Legs orange with hind femur and all tibiae and tarsi dark orange to blackish. Wings uniformly, darkly, black infuscated; veins and stigma black. Antenna (FIG. 9) 18-segmented, 3½× width of head behind eyes; 3rd segment longer than 4th segment; 3rd segment with short projection; rami of 4th to apical segments slender, each about same length except segments 13–15, which have longer rami, longer than their respective segment. Sheath short and rounded. Lancet small and fragile, probably similar to that described for *nigriceps*. Other characteristics as for those described for the ♂ of *opa*.

Remarks. This female is described from 1 specimen, PNG: BISMARCK ARCH: NEW IRELAND (SW), Gilingil Pl'n, 2 m, 6.VII.1956, E.J. Ford, Jr. Though not named, I describe this specimen to show the differences between it and *nigriceps*.

Cladomacra spp.

Several specimens, all mostly orange with a black abdomen, do not exactly fit *opa* or *macropus* and are not described further. They possibly represent variations of one or both of those species. Two males have genitalia similar to *opa,* but the wings are very dark; these are from Morobe Distr, Wau, 1200 m, 26.VII.1961 and Ifar, Cyclops Mts, 450–500 m, 8.IX.1962. One specimen has genitalia similar to *macropus* (FIG. 44, 45) but has a black head, black legs except for the coxae, and all black abdomen; this is from Nondugl, 1600 m, 9.VII.1955. Another male has genitalia similar to *macropus* (FIG. 44, 45), very dark wings, and head shape similar to *opa* (FIG. 46) though with the posterior corners of the head more rounded; this specimen is from Umboi I, summit 1125 m peak, ca 3 km N of Awelkom, 24.II.1967, G.A. Samuelson, and represents the first sawfly recorded from Umboi.

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