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CRABRONIDS FROM NEW GUINEA AND THE SOLOMON ISLANDS  
(HYM., SPHECIDAE, CRABRONINAE)

By K. TSUNEKI

Synopsis

Sixteen species with two subspecies belonging to eight genera of Crabroninae are recorded in the present paper, of which one genus, three subgenera, thirteen species and two subspecies are new to science.

New genus: Papurus (near to Podagritus)

New subgenera: Podagritus (Ebisus), Dasyproctus (Bishamonis), Ectemnius (Papua-crabro).

New species: Podagritus (Ebisus) toxopeusi, Papurus papuanus, Crossocerus (Eupliloides) inondensis, Cros. (Eupl.) olthofi, Cros. (Eupl.) hollandianus, Piyuma solomonica, Dasyproctus solomonensis, Das. (Bishamonis) gadalensis, Ectemnius (Cameronitus) papuensis, Ect. (Cam.) krombeini, Ect. (Papua-crabro) papuanus, Ect. (Cam.-Pap.) solomonicus, Lestica (Solenius) krombeini.

New subspecies: Piyuma butuana papuensis, Ectemnius (Cameronitus) papuensis iebeleus.

Other known species: Crossocerus (Eupliloides) bougainvilleae Pate, Vecthia rugosa (Smith), Piyuma butuana Leclercq, Lestica (Solenius) tobleri Tsuneki.

The material used in the present study is derived from the collections of Rijksmuseum van Natuurlijke Historie, Leiden, Nederland (RML), California Academy of Sciences, San Francisco, U. S. A (CAS) and United States National Museum of Natural History, Washington, D. C. (USNM). It was originally collected and prepared by Dr. K. V. Krombein for his own study, but he turned it to me when I published my study on the Crabroninae of the Southern Pacific Islands in 1977. Since then, however, I have been occupied by some prearranged projects and could not repay his good will until now.

Descriptions and records

EBISUS\*, a new subgenus of PODAGRITUS

This (based upon the male characters alone) may be a new genus, but slightly enlarging the category of Podagritus and is included within this genus.

Type: Podagritus (Ebisus) toxopeusi sp. nov.

Precoxal tubercle of prothorax developed into a strong forward directing tooth (stronger than in Papurus later described), recurrent vein joins cubitus at about middle, antenna 13-jointed, with scape ecarinate and flagellar joints bluntly carinate and gently rounded out beneath, postspiracular carina present, short and fine, while ocellal area (prepectus) thickly raised, lowering and attenuating downwards, forming an elongate triangle in both lateral and posterior view, accompanied with coarsely foveated (rather crenate) episternal furrow just posterior to it, while the anterior aspect of the elevation smoothly forming a flat plane with the epicnemial area (thus the prepectus is completely occupied by the elevation), precoxal carina of mesopleuron shortly toothed. Frons including upper half of scapal basin and dorsal area deeply inclined towards medial line, antennal sockets contiguous to eyes, but not to each other, with interantennal area as wide as antennal socket, the triangular area just above sockets flat, not smooth, closely covered with piliferous points, mandible slender and long, bidentate at apex, lower tooth very much shorter than the upper, on inner margin near base provided with a stout tooth; ocelli in a low triangle, pronotal collar not margined anteriorly with carina, medianly furrowed and at lateral ends stoutly toothed; propodeum without lateral carinae, gastral segment 1 comparatively thick, about as long as

\* Ebis is one of the seven Divinities of Good Luck in an old tale of Japan.

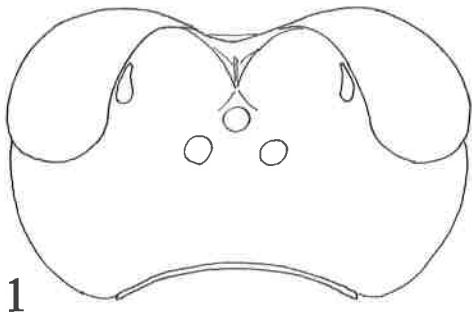
hind femur and gently nodose at apex, fore and mid metatarsi slightly modified. However, antennal joint 1 ecarinate, palpal formula 5-3, temple simple, occipital carina incomplete, not reaching buccal carina, acetabular carina and scrobal and hyposternal furrows lacking, metapleuron above depressed below level of mesopleuron and propodeal side, jugal lobe of hind wing as long as submedian cell and hind tibia clavate as in Podagrītus.

1. PODAGRITUS (EBISUS) TOXOPEUSI SP. NOV.

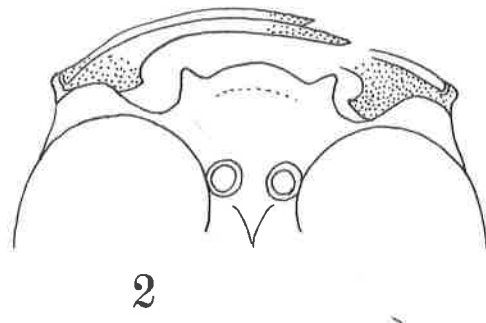
♂. 8.5-9.0 mm. Black, lemon yellow are antennal joint 1 (with a small brownish patch at apex above), galea of mouth parts, all knees, tibiae (mid and hind ones somewhat brownish) except apically enlarged dark brown streaks on outer and folded sides (leaving narrow yellow streaks on anterior and posterior sides), longer fore tibial spur, fore tarsus except black arolium (apices of joints slightly brownish), mid tibial spur, mid tarsal joints 1-3 (each with apex slightly brownish), hind metatarsus (also slightly brownish); ferruginous to pale brown are mandible except darker apex and inner margin, antennal flagellum largely beneath, tegula, apical half or more of gastral segment 1, apical margins of the following segments, on 2 and 3 medianly broadly enlarged, especially on tergites (marginal areas translucent and in some light appearing black) and sternite 7, mid tarsal joints 4 and 5 (sometimes at base only), spurs and rest of tarsi (apically slightly darker) of hind leg. Wings fairly strongly brownish, veins dark brown, but stigma pale. Hair on clypeus, lower sides and medio-lower plate of scapal basin and on lower part of temple golden, on upper frons and vertex very short, close and dark brown to black, while on sides and underside or posterior aspect of thorax and propodeum short and silky white.

Head from above: Fig. 1, upper frons nearly flatly inclined towards medial line, supraorbital fovea elongate oval, bluntly margined, smooth and polished and slightly impressed, becoming conspicuous by the closely punctured surrounding areas, no impressed smooth area between it and hind ocellus, OOD:Od:POD=10:4:5, occipital carina not so high, gradually lowering at ends and disappearing before reaching hypostomal carina, in lateral view temple at widest part as wide as widest part of eye, roundly curving and narrowing below and bluntly irregularly tridentate at its lower end. Head in frontal view subrectangular, with W:L=100:70, with outer margins of eyes roundly, very weakly convergent below, genae smooth and polished, with outer margins parallel, with smallest distance to eye at basal area of mandible as long as antennal joint 5, inner margins of eyes strongly roundly convergent below, but antennal sockets not contiguous to each other, they are separated by a distance as wide as socket diameter, interocular distance at antennal base half the length of antennal scape (11:20). Clypeus and mandible: Fig. 2, antennal joints 3-10 flattened above and longitudinally bluntly carinated beneath, each carina gently rounded out, joint 1 as long as joints 2-6 taken together, relative lengths of joints 3, 4, 5 = 10, 8, 7, joint 3 with relative widths at base, in middle and at apex (under the same scale as above) 3.5, 5, 4.5, thus joint 3 2.2 times as long as wide at apex, joint 13 apically compressed dorso-ventrally and in lateral view acutely pointed towards apex. Prothorax in dorsal view: Fig. 3, in obliquely dorso-posterior view: Fig. 4 (notice precoxal projection shown with arrow), mesoscutum medio-anteriorly fairly deeply furrowed, the furrow reaching beyond middle, but not posterior margin, parapsidal suture is a short outcurving raised line. Anterior part of mesopleuron in lateral view: Fig. 5 (PC pronotal collar, PT precoxal tubercle, Tb pronotal tubercle, Teg. tegulae, PSC postspiracular carina, OME omaulal area, EF episternal furrow), whole the left pleuron in oblique posterior view: Fig. 6, epimeral area roundly raised, with lower part just above scrobe longitudinally bluntly ridged, precoxal carina robustly toothed, but the tooth rather short, metapleural flange strong, area dorsalis on propodeum not distinctly enclosed, but in some light appears obscurely margined with weak furrow and medianly distinctly furrowed, median furrow of posterior inclination deep, at apex triangularly attenuate and margined with carinae, the carinae united at about middle of the inclination into a median carina which runs till apical margin of the segment, lateral carinae of propodeum only at apical part present. Gasteral segments 1-3 in dorsal view: Fig. 7, 1-2 in lateral view: Fig. 8, pygidial area: Fig. 9, fore metatarsus in posterior view: Fig. 10, mid one: Fig. 11, both with two strong spines near middle of postero-inner margin, longer hind tibial spur reaching slightly beyond middle of the following metatarsus. Relative length of abscissa 1 and 2 of cubitus in 3 specimens examined: 20:18 (holotype), 20:14 and 20:15.

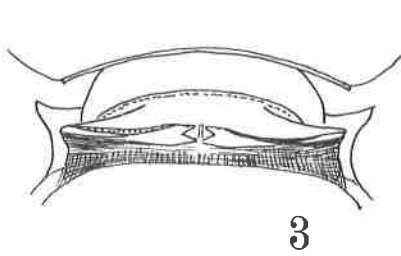
Upper frons and vertex very closely covered with very fine piliferous punctures, pronotum on anterior inclination and on median part of collar similarly punctured, but



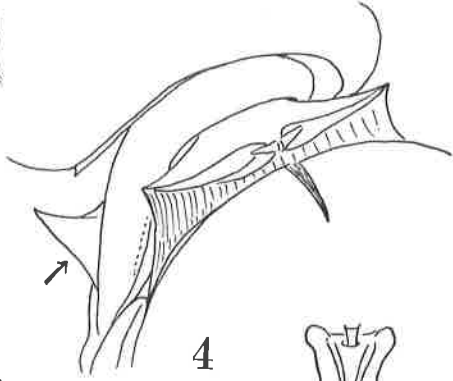
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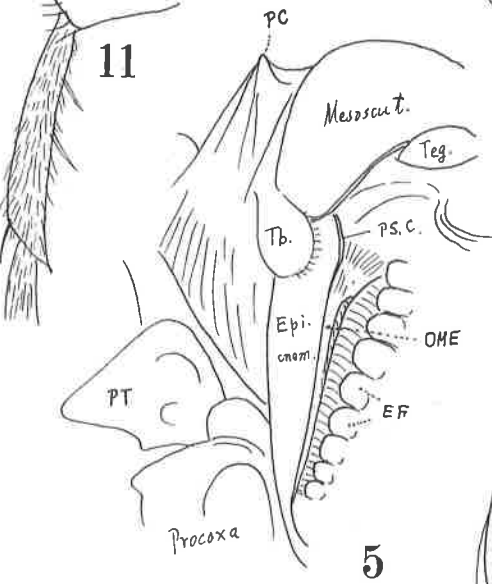
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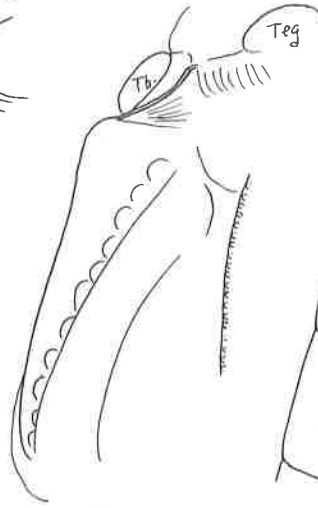


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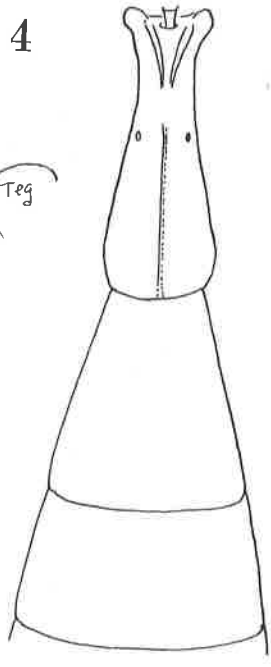


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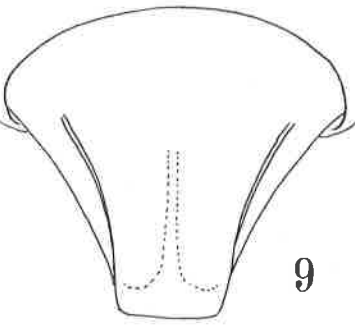
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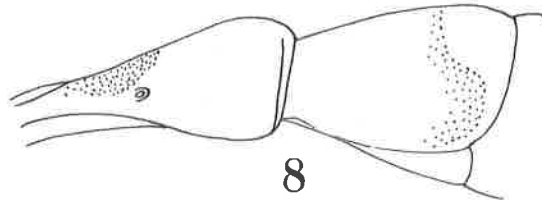
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the punctures on collar laterally sparser and on the toothed areas completely absent, with the surface smooth and polished, mesoscutum, scutellum, postscutellum and mesopleuron similarly finely and closely punctured, metapleuron longitudinally, very finely and fairly closely striate and further microcoriaceous between striae, side of propodeum finely and closely striate, but here striae before stigmal furrow (originating before and below stigmata) transverse and behind the furrow longitudinal, area dorsalis at base coarsely foveate, disc basally smooth and polished, but apically transversely and finely striate, striae by degrees closer posteriorly, posterior inclination finely, somewhat sparsely punctured and on upper area mixed with microstriae. Gastral tergite 1 delicately microcoriaceous and fairly closely superimposed with fine piliferous punctures, on posterior part punctures sparser and transversely microstriate, tergites 2-4 transversely, very finely and closely microstriolate and scattered with very fine piliferous points, tergites 5 and 6 closely covered with fine piliferous punctures as on scutum, but puncture-intervals microcoriaceous, tergite 7 largely occupied by pygidial area, with punctures at base very fine and close, but posteriorly larger and somewhat sparser and on both sides of medial impunctate gentle elevation distinctly elongated longitudinally.

♀ unknown.

Holotype: ♂, Netherlands, Indo-American New Guinea Expedition 2700 m Moss Forest Camp, 15.X.1938, L. J. Toxopeus leg. (Coll. Mus. Leiden) (Mid leg from middle of femur apically lacking).

Paratypes: 1 ♂, same as above, but 2500 m high (Coll. do., in this specimen ultimate joint of left antenna lacking); 1 ♂, same as holotype, left antenna from joint 3 apically lacking and clypeal hair is shaved off to observe the structure).

Genus PAPURUS, a new genus, related to PODAGRITUS

Type: Papurus papuanus sp. nov. (♂).

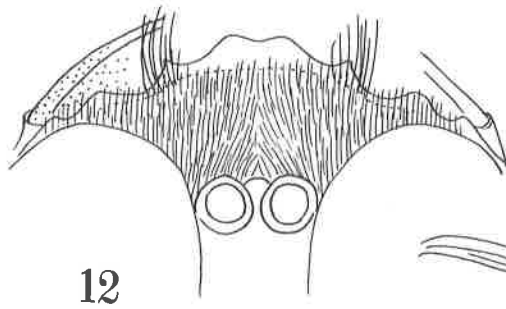
Diagnosis. Palpal formula 5-3 (confirmed by dissection), propleuron with a forward directed stout tooth in front of coxa, postspiracular and epicnemial carinae forming a curved, acutely raised line and reaching below episternal furrow, completely closing prepectus, a short impressed line present in about middle of border line of mesopleuron and -sternum, scrobe large, slightly longitudinally elongated, precoxal carina present, metapleuron with flange strong, except upper swollen area strongly inclined posteriorly, propodeal side with a strong and complete stigmal carina (not furrow), crossing obliquely the median part of the area (Fig. 20), antennal scape acutely unicarinate on inner margin, supraorbital marks not foveate, but gently raised, not distinctly outlined, occipital carina complete, but at ends very feeble, ocelli in an isosceles triangle, with top angle about 90°, pronotal collar transversely carinate at antero-lateral areas only, gastral structure as in Crossocerus (Euplioides) (Fig. 21), recurrent vein 1 received by cubital cell at about middle (strictly slightly before middle). Eyes bare, inner orbits convergent below, scapal basin simple, antennal sockets contiguous to each other and to eyes, gena simple, male antenna 13-jointed, markedly modified, mandible without extero-ventral incision, in ♂ at apex bidentate, fore and mid metatarsi slightly modified in ♂.

Distribution. New Guinea (high altitude).

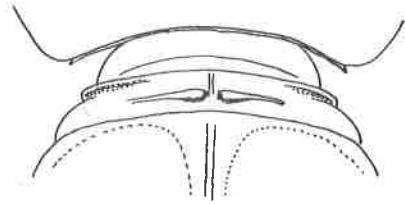
2. PAPURUS PAPUANUS SP. NOV.

♂, 9.0 mm. Black, with a bronzy bluish shine on mesoscutum and scutellum; mandible apically slightly dark reddish, antenna brownish black, joint 1 on inner side broadly ferruginous, articulations of joints 1, 2, 3, 4, 5 brown, 6-9 brown above and ferruginous beneath, tegula translucent brown, anteriorly dark, basal plates and veins of wing dark brown, stigma brown, femora somewhat brownish, fore femur and tibia pale brown on folded side, apical half of tarsal joint 1, whole of 2-4 and claws of fore and mid legs and 3-4 largely of hind leg white. Wings hyaline, hair on clypeus silvery, at lateral teeth of apical margin particularly long and produced forwards (Fig. 12), on epicnemial area and sides of thorax and propodeum silky white.

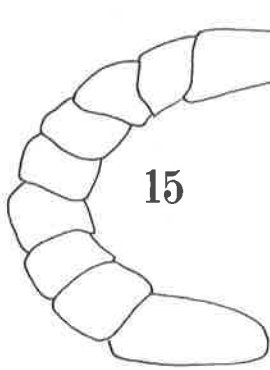
Head from above with occipital margin strongly roundly emarginate, with maximum



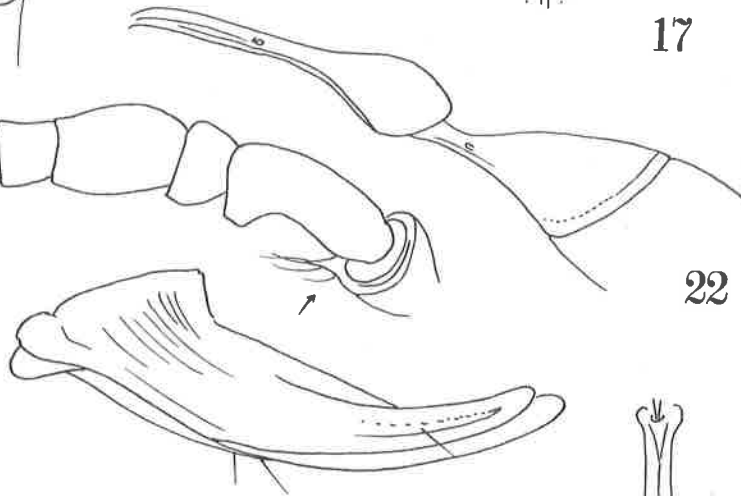
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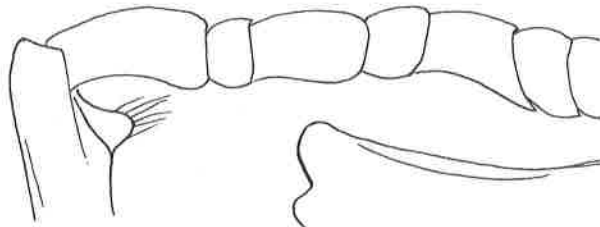
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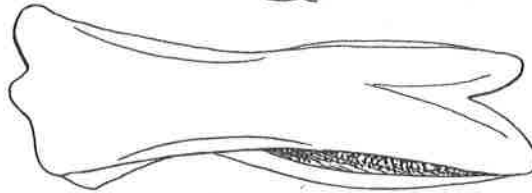
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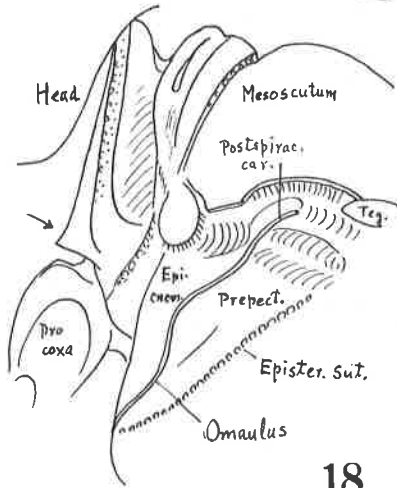


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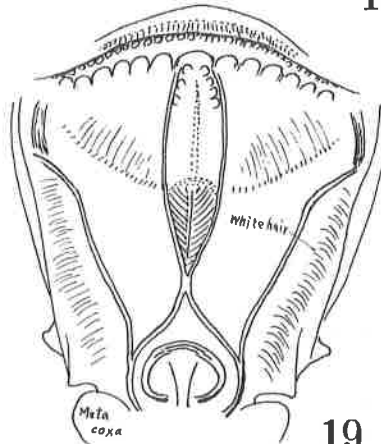


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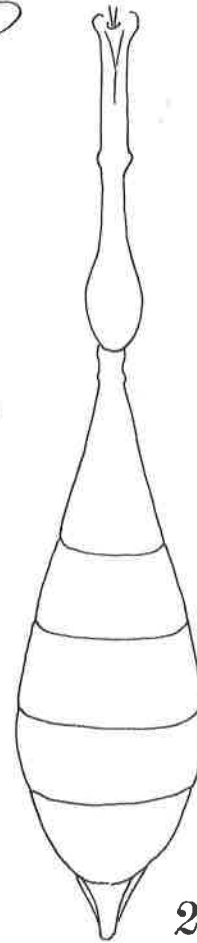
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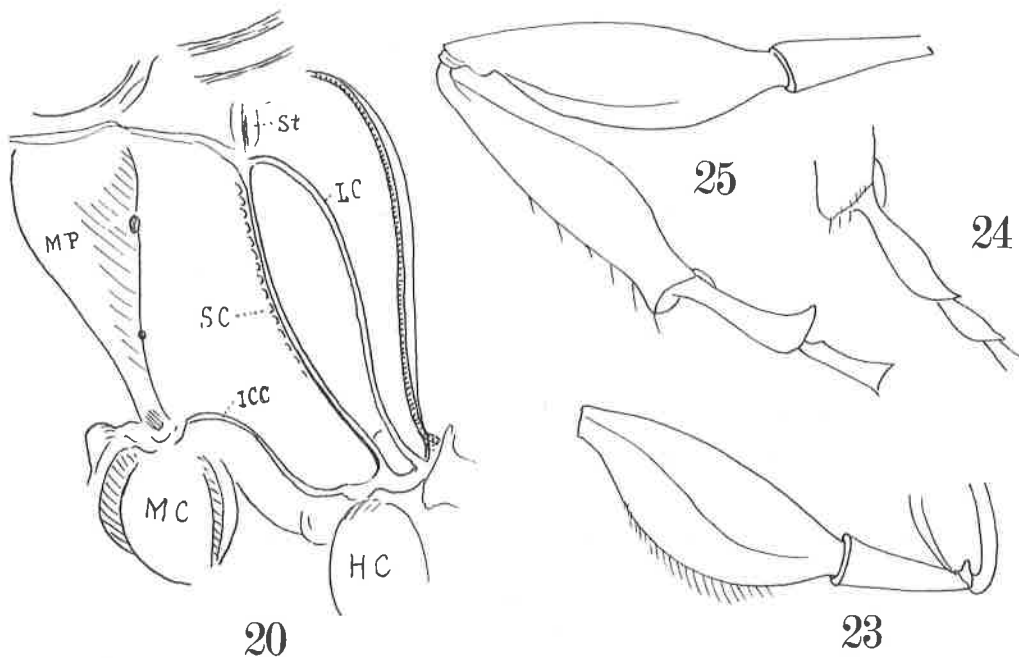
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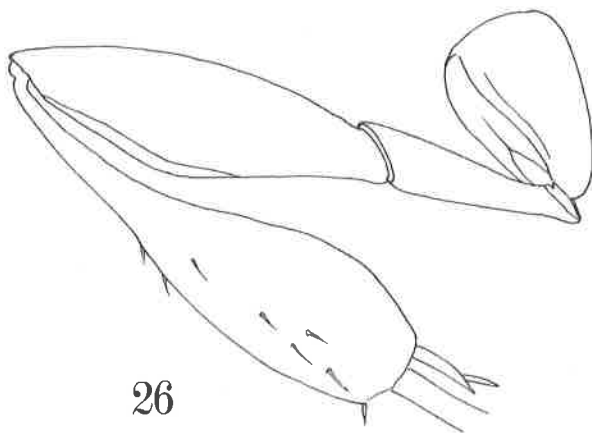


width and length at eye and in middle relatively 100,64,54, width at occipital margin relatively 60. OOD,Od,POD=10,7,8.5. Supraorbital marks not distinctly outlined, not foveate, but gently roundly raised, smooth and polished, elongate oval along inner orbit, longer than Od, the area between the mark and hind ocellus slightly depressed and also smooth and shining, frontal furrow fairly deep, running from fore ocellus to anterior verge of upper frons, clypeus: Fig. 12, mandible (right one) in frontal view: Fig. 13, in external view: Fig. 14, much shorter and robuster than in *Crossocerus* (*Dipliloides*), antenna in dorsal view: Fig. 15, basal part in frontal view: Fig. 16, with joint 1 markedly incrassate and robust, bearing a strong tooth on outer margin at apex which is flattened in dorsal view (Fig. 15) and triangular in frontal view (Fig. 16) and topped with a bundle of long hair. Temporal carina or tooth absent, ocellar triangle broader than high, but somewhat higher than usual, with top angle about 90°, pronotal collar in dorsal view: Fig. 17, anterior margin transversely carinate at lateral areas only and in broad median area without carina, sides weakly constricted, propleural ante-coxal tubercle strongly toothed and produced forwards (in Fig. 18, shown with arrow), mesoscutum longitudinally deeply furrowed medio-anteriorly, the furrow reaching about middle of the scutum shallowing, parapsidal suture short and impressed, pro- and mesopleura (left side) in lateral view: Fig. 18, mesopleural scrobe large and slightly narrowly lengthened longitudinally, as if to be a primitive scrobal furrow, precoxal carina toothed, a short longitudinal impressed line present at about middle of the border line between mesopleuron and -sternum, metapleural flange strong, area below this gently roundly swollen, but as a whole the pleuron strongly inclined posteriorly; propodeum in dorso-posterior view: Fig. 19, lateral carinae strong and strongly convergent posteriorly, area dorsalis obscurely enclosed with feeble furrow, bearing a broad and deep medial furrow which is margined with carinae and extended till near apex of posterior inclination, thence the carina divided again and run along gastral socket rim, side of propodeum (left side) with metapleuron in latero-posterior view: Fig. 20 (MP metapleuron, MC mesocoxa, HC hind coxa, St stigmata, SC stigmatal carina, ICC intercoxal carina, LC lateral carina of dorsal and posterior aspects), characteristic is the presence of stigmatal carina (not furrow), accompanied with foveolated



furrow just in front, crossing obliquely the median part of the aspect, the area before the carina flat and depressed, while the area behind the carina roundly raised, forming a completely enclosed elliptic space between this and the lateral carina of the dorsal and posterior aspects of the segment; gaster: Fig. 21, in lateral view: Fig. 22, parallel-sided part of segment 1 as wide as hind metatarsus at apex, the seg-





ment greater in length than the maximum width of head, segment 2 at base very narrow, elongate triangular, longer than 2 following segments united, all trochanters much longer than usual, fore trochanter and femur in posterior view: Fig. 23, its modified tarsus in frontal view: Fig. 24, mid leg in posterior view: Fig. 25, with metatarsus slightly modified at apex, hind leg: Fig. 26, tibia distinctly clavate.

Punctures on upper frons medium-sized, close, with PIS less than PD, on vertex finer and close, and much finer towards occipital carina. Punc-

tures on mesoscutum fine, finer than those on frons, but larger than on vertex, close, with PIS (puncture interspace) less than PD (puncture diameter), but on postero-median area somewhat sparser, PIS subequal to PD, on scutellum finer, closer and mixed with close fine longitudinal striae on posterior half, postscutellum longitudinally, finely and closely striate; on mesopleuron epimeral area and prepectus closely covered with fine weak piliferous punctures, episternum longitudinally, closely but weakly striate, mixed with fine feeble (rather indistinct) punctures, but punctures becoming distinct and striae absent below, epimeral area without striae and weakly punctured, fairly shining, but posteriorly the pleuron without striae and finely coriaceous. Area dorsal is at base coarsely foveate, disc on lateral and posterior areas and outside of the area obliquely, finely and closely striate, striae extended on to posterior inclination, but at apical area turning transverse and mixed with fine shallow punctures; metapleuron finely and closely punctured, side of propodeum closely covered with somewhat larger piliferous punctures, gastral tergite 1 finely and shallowly punctured, punctures basally close, but apically sparse and on apical swelling completely absent, tergite 2 anteriorly microcoriaceous, posteriorly and basal half of tergite 3 transversely closely microstriolate, but on apical half of 3 striae almost lacking and surface shining, tergites 4,5,6 sparsely covered with fine piliferous points. Pygidial area sparsely scattered with somewhat large punctures, with PIS transversely microstriolate.

♀, unknown.

Holotype: ♂, Netherlands-Indo-American New Guinea Expedition, Mist Camp, 1800 m, 11.I.1959, L. J. Toxopeus leg. (Coll. Mus. Leiden).

### 3. CROSSOCERUS (EUPLILOIDES) BOUGAINVILLEAE PATE, 1946

Crossocerus (Eupliloides) bougainvilleae Pate, Proc. Ent. Soc. Wash., 48(3): 59, 1946 (1 ♀, Bougainville I., Solomon Is.).

Crossocerus (Eupliloides) bougainvilleae: Leclercq, Bull. Ann. Soc. R. Ent. Belg., 91 (11-12): 302, 1955 (keyed).

Crossocerus (Eupliloides) bougainvilleae: Leclercq, Monogr. Crabro., p. 302, 1954 (listed).

Crossocerus (Eupliloides) bougainvilleae(?): Bohart and Menke, World Sphecid., p. 400, 1976 (listed).

Crossocerus (Eupliloides) bougainvilleae dentatus Tsuneki, SPJHA, 3: 9, 1977 (2 ♀, New Britain, Bismarck Arch.).

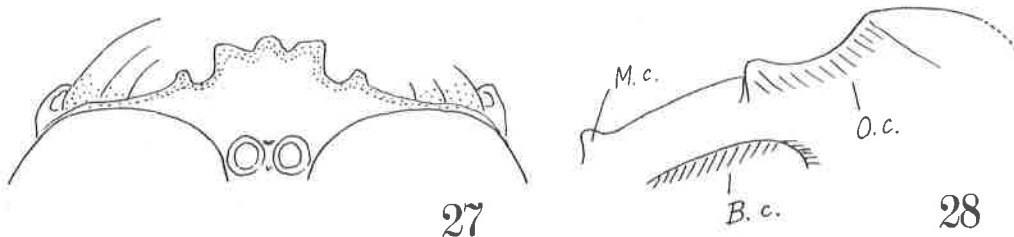
#### 1. A male from Bougainville Island.

1 ♂, detailed locality undescribed, 10.IV.1944, W.G. Downs leg. (Coll. USNM)

Description of ♂ (hitherto unknown). 4.8 mm, smaller and somewhat slenderer than ♀. Shining black, mandible somewhat translucent lemon yellow, at base slightly blackish and at apex reddish brown; antennal joint 1 and 2 pale yellow, 1 at apical area above and 2 above slightly brownish and 1, further, markedly whitish beneath;

ivory white are fore and mid tibiae on basal  $\frac{2}{3}$  of outer side (in mid tibia on basal third wholly), hind tibia on basal half wholly, fore tarsal joints 1, 2, 3, mid ones 1 and 2 and basal half of hind metatarsus, rest of legs (except rather darker coxae) pale to moderate castaneous brown, pronotal collar on posterior half, tegulae, antennal flagellum, wing veins and stigma and gastral petiole also bright castaneous, clypeus except narrow apical marginal area somewhat translucent yellowish; wings hyaline, on radial and accessory cells anteriorly slightly brownish. Hair on clypeus silvery.

Head seen from above with ratio of W:L(middle)=100:60, emarginations at frontal and occipital margins somewhat weaker than in ♀, forward inclination at verge of upper frons more rounded, frontal furrow fine and deep, with elevations on both sides more rounded than in ♀ and without short ridge-like elevation along eyes (in ♀ present as seen in Fig. 40 - *olthofi* ♀), the hollow around each ocellus shallower, OOD:Od:POD:OCD=10:4.5:6:13, clypeus; Fig. 27, antennal joint 1 long (relatively 36 when HW=100), appr. as long as joints 2-6 combined and unicarinate in front, flagellar joints slightly serrate on posterior margin, but somewhat less marked than in *hollandianus* (Fig. 31), flange of occipital carina strong, the carina at apical area shortly outcurved and slightly raised, rather suddenly ended in a blunt tooth (not long extended in a weak indistinct ledge and ended in a strong genal tooth as seen in ♀), seen obliquely from



beneath with upturned head: Fig. 28 (left one, Oc occipital carina, Mc mandibular condyle, Bc buccal carina); pronotal collar medianly raised, anteriorly not margined with carina, antero-lateral corners shortly and bluntly toothed, surface behind the tooth shortly transversely ridged, but both the tooth and the ridge are much weaker than in ♀, lateral margins of the anterior inclination distinctly carinated from the tooth below as in ♀; medio-anterior deep broad furrow of mesoscutum and rounded elevations on both sides of the furrow generally as in ♀, but the parapsidal sutures not finely impressed, but raised into short carinae, scuto-scutellar furrow medianly longitudinally carinate, with each side coarsely crenated with  $\frac{3}{4}$  foveoles, acutellum flat, with margins minutely rounded and acutely inclined (in ♀ surface gently roundly elevated), post-scutellum not distinctly furrowed in middle. Pro- (with toothed ante-coxal tubercle), meso- (with precoxal carina shortly extended forwards - not raised into a tooth) and metapleurons generally as in ♀, but metapleural elevation at upper area stronger than in ♀, propodeum also similar in structure, lateral carinae of posterior inclination not extended on to dorsal area and on area dorsalis the hollows on both sides of medial furrow not distinct and there is no oblique striae outside the hollows. Gastral petiole slightly longer than the width of head (100:110), relative width at base, in front of spiracles, narrowest part behind them and at apical swelling = (when HW 100) 16, 10, 6 and 20, spiracles located at 36 from base, pygidial area indistinct, not margined with carinae.

Punctures on anterior verge of upper frons stronger and sparser than in ♀, the same is also the case on mesoscutum, though the punctures are fine in the general sense.

## II. Two females from Guadalcanal Island.

2 ♀, Tenaru River, I.1945, G.E.Bohart leg. (Coll. CAS).

1. Legs are more richly white maculated than in the holotype ♀ of nominate species from the Bougainville and also than ssp. *dentatus* from the New Britain:

All tibiae at base broadly ringed with white, fore tarsal joints 1-4 and mid ones 1-2 white, but sometimes fore tarsal joints 3 and 4 or 4 alone and mid one 2 slightly brownish.

2. Antennal joint 1 unicarinate in front in both specimens. In the diagnostic feature of the subgenus in the original description Pate says that scape is ecarinate and

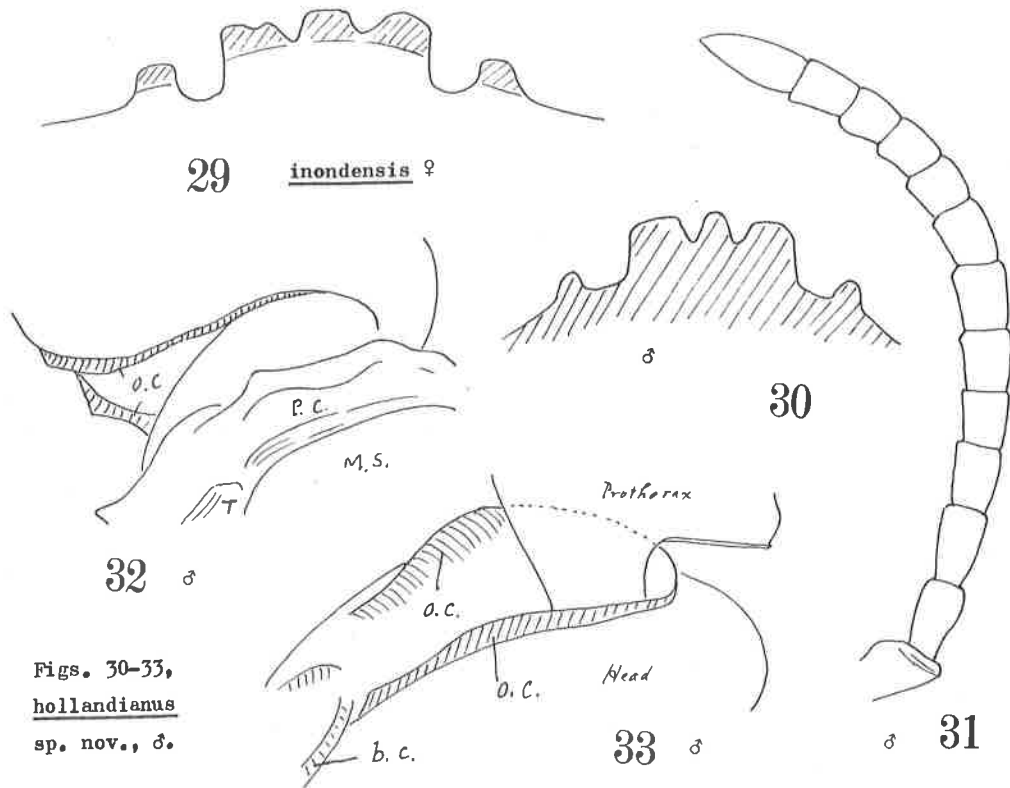
as to *bougainvilleae* no comment is given in the original description regarding scape.

3. On some other characters. Antennal joint 1 dark brown, paler beneath, 2 wholly pale brown. Occipital carina ended in a strong genal tooth on each side as given by me in connection with *b. dentatus* m. Precoxal carina of mesopleuron fairly distinct, shortly extended forwards and suddenly ended at apex, in some direction, therefore, appears to end in a blunt tooth. Parapsidal suture is a small shallow depression, not so conspicuous as in *cheesmanae*. Collar of pronotum except the median elevation of the anterior half (not flat), structured as given in the original description.

4. *CROSSOCERUS* (*EUPHLOIDES*) *INONDENSIS* SP. NOV.

♂. Closely resembles *C.* (*E.*) *cheesmanae*, bearing three hollows on mesoscutum, but differs from it in the form of the clypeus (Fig. 29, cf. Fig. 36), antero-lateral corners of pronotal collar, in the lack of genal tooth and in the colour of tarsal joints.

Length 5.5 mm, shining black, fore tarsal joints 1-4 and mid ones 1-2 ivory white. Head seen from above comparatively thick, occipital carina strongly flanged, W:L=100:60 (L in middle), ocelli in a nearly equilateral triangle, fore ocellus slightly smaller than hind ones, each in a fairly deep hollow, frontal median furrow acute and deep, but not continued on to scapal basin, supraorbital foveae indistinct, but a small elliptic mat area present obliquely in front of hind ocellus (as shown in Fig. 40 with m m, but here much smaller), occipital carina suddenly ending far before reaching hypostomal carina, without gradual lowering and weakening and genal teeth absent, clypeus: Fig. 29 (rather close to *C. papuanus* Tsuneki, 1977), with covering hair silvery, mandible slightly brownish ferruginous, bidentate at apex, with upper tooth slightly shorter than the lower, antennal joint 1 very slender and long, acutely unicarinate anteriorly, as long as joints 2-6 combined, pronotal collar medianly gently raised, not furrowed in middle, without anterior carina, with lateral corners somewhat angulate, but



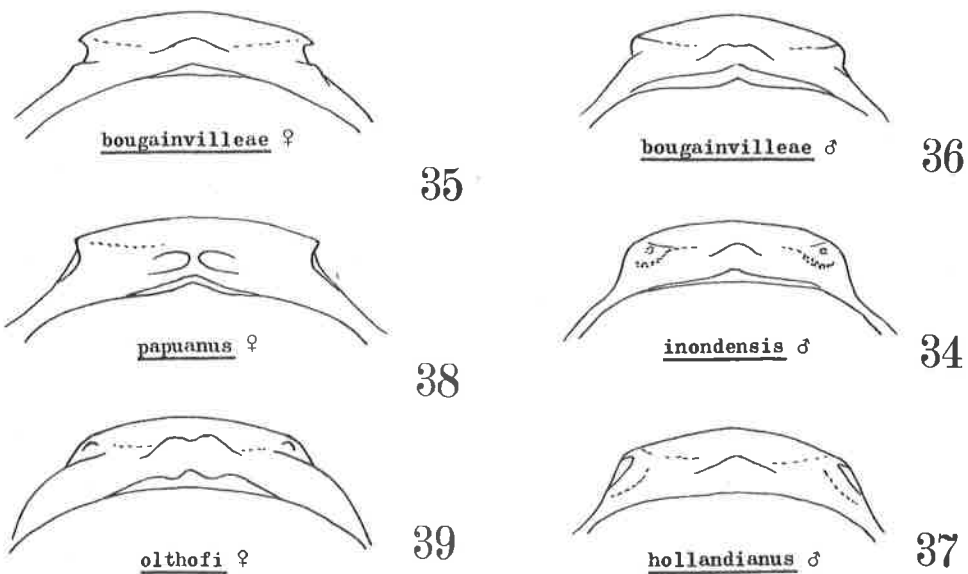
Figs. 30-33,  
*hollandianus*  
sp. nov., ♂.

not toothed, while lateral margins of anterior inclination bluntly carinated, mesoscutum medio-anteriorly with a large deep hollow as in cheesmanae, parapsidal sutures also in each small hollow, both much deeper than in bougainvilleae, scuto-scutellar furrow medianly carinate, with each side coarsely foveate with 2-3 foveoles (similar to bougainvilleae and different from cheesmanae), on mesopleuron precoxal carina present, shortly running forwards and abruptly ended at apex, not raised into a tooth, on propodeum area dorsalis enclosed with weak fine groove and medianly deeply furrowed, accompanied with a comparatively large, somewhat transverse hollow on each side at base, separated from the furrow by a short fine carina, the furrow except the carinae at base not margined with carinae on both side, posterior inclination on upper half smooth and polished and medianly deeply furrowed (much more strongly so than on area dorsalis), on posterior half transversely and coarsely striate and further delicately striolate between striae, lateral carinae distinct through the posterior aspect, but weaker and indistinct basally on sides of dorsal aspect. Gastral petiole equals in length to the width of head, gently attenuate till spiracles (not parallel-sided and slightly swollen at spiracles), relative width at base, at spiracles, in front of apical swelling and at swelling, when HW=100, 17, 9.5, 8, 18 and at base and apex of segment 2 =9.5, 40. Legs not modified.

Smooth and shining, only on upper frons very finely and very sparsely punctured. ♀, unknown.

Holotype: ♂, Inonda, Horanda District, Papua, 2.XII.1943, H. G. Bodenstern (Coll. K. V. Krombein).

Remarks. We are tempted to combine the present species (♂) with cheesmanae Lecl., known from New Guinea, by considering the differences above mentioned to be sexual. However, in the male of bougainvilleae pronotum at antero-lateral corner toothed as in ♀, though much weaker than in this (Figs. 35 ♀ and 36 ♂) and scuto-scutellar furrow similarly foveolated as in ♀. In the present species the two characters are distinctly different from cheesmanae (cf. Fig. 34, pronotum of the present species - near the lateral corner a minute shallow impression present and surface gently raised around it) and I feel a resistance to combining it with this species. Rather it may be the male of papuanus m. (♀, Figs. 38 pronotum, 43 clypeus) which is also close to cheesmanae, differing mainly in the form of clypeus and in the complete lack of carina in scuto-scutellar furrow, but here also the present species differs from papuanus in the non-dentate pronotal collar and in the coarsely foveated scuto-scutellar furrow. Possibly in New Guinea a considerable number of the species of this subgenus may occur (vide Figs. 37 in hollandianus ♂ and 39 in olthofi ♀ below described) and it seems not safe to make easy sexual combination before rich material from the same locality will be investigated.



Supplementary notes. Mandible pale brown and reddish at apex, antennal joints 1 and 2 pale brown, rest of antenna and legs except white parts markedly brownish; antennal flagellum simple, not serrate as in Fig. 31, mat marks located obliquely in front of hind ocelli small, slender, slightly curved and impressed, with L:W=4:1. The marks are particular thing to this group and not the variation from the supraorbital foveae as was considered once by me in connection with Cr. (Eupl.) papuanus m.

5. CROSSOCEIUS (EUPLILOIDES) HOLLANDIANUS SP. NOV.

♂. Closely similar to inondensis, but differs from it in the following characters: Clypeus (Fig. 30, cf. Fig. 29), antenna (flagellar joints shortly produced at apex on ventral side, with somewhat a serrate appearance - Fig. 31), mandible (relatively slightly shorter), occipital carina (suddenly ending at apex - Figs. 32, seen obliquely from beneath from left side and 33, with head turned up-side-down and seen from the right side -, but here once slightly raised and then somewhat obliquely cut), mesoscutum (medio-anterior deep hollow narrower, but longer), parapsidal sutures (not impressed, but shortly finely raised), scuto-scutellar furrow (more weakly carinate in middle and not foveolate in bottom, smooth), scutellum not flat, but gently roundly convex, median furrow of postscutellum weaker, with lateral elevations not so marked as in compared species, medial furrow of area dorsalis margined on both sides with fine carinae as in bougainvilleae (in inondensis not margined with carinae, except base), gastral petiole longer, when HW=100 it is relatively 120 (in inondensis 100), in colour mandible generally similar, but somewhat yellowish in front, antennal scape dark brown, only in front pale, legs much less brownish, with bright parts of tarsi somewhat brownish. ♀, unknown.

Holotype: ♂, Netherlands-Indo-American New Guinea Expedition 1938-39, Hollandia, VII, 1938, M. J. Toxopeus (Coll. Mus. Leiden). In the specimen gaster from segment 3 apically lost.

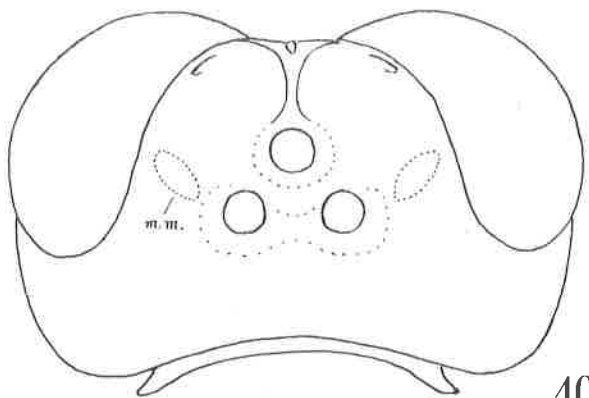
6. CROSSOCEIUS (EUPLILOIDES) ORTHIOFI SP. NOV.

Similar in many characters to cheesmanae, but much larger and robuster and in the form of the clypeus considerably different from it.

♀. In the specimen gaster is lacking from segment 2 apically, but it measures amply 5 mm till the apex of the petiole and presumably it reaches 7 mm or more when complete. Compared with the same sized (till apex of petiole) specimens of the related species it was made clear that head and thorax of the present species are markedly larger and robuster. Shining black, mandible ferruginous brown, with extreme base and

apex dark brown, antenna dark, on joint 1 beneath and 2 wholly pale brown, tegula translucent brown, legs dark brown, on fore and mid tibiae broadly and tarsi wholly much paler, but basal parts of fore and mid tarsi considerably whitish. Wings hyaline, with anterior parts of radial and accessory cells slightly darkened, veins and stigma dark brown. Hair on clypeus silvery.

Head seen from above: Fig. 40, notice the presence of large mat marks (m.m. in the Figure) located obliquely in front of hind ocelli, but supraorbital foveae indistinct, while verge to scapal basin on each side distinctly raised, HW:ML in middle =100:54



40

(length relatively shorter than in papuanus), but gastral petiole relatively 100 as in this species. Frontal furrow acute and deep, ending at top of scapal hollow as usual. Ocelli same in size, subequilateral triangle, each in a hollow; antennal joint 1 slender

and long (relatively 44 when  $HW=100$ ), as long as joints 2-6 combined and fairly acutely unicarinate beneath, relative length of 2:3:4=8:10:8.5 scapal basin narrow, antennal socket rims contiguous to eye and to each other. Clypeus:

Fig. 41 (cf. Figs. 42, cheesmanae, 43, papuanus), occipital carina strongly flanged, at apical part outcurved and weakened (almost disappeared) and at each end strongly raised into the genal tooth as in bougainvilleae and papuanus

(cf. Fig. 58 of my 1977 paper SPJIA, 3: 24), pronotum (Fig. 39, p. 11) with antero-lateral corner rounded and slightly behind there minutely tuberculate and then weakly constricted and transversely raised,

on propleuron precosal tubercle shortly produced into a minute cone, but not marked, mesoscutum medio-anteriorly broadly and deeply hollowed as in cheesmanae and at parapsidal sutures minutely impressed also as in this species, scuto-scutellar furrow medianly longitudinally shortly carinate, but not foveolate on each side just as in cheesmanae, scutellum fairly strongly roundly elevated, without median furrow or impression, while postscutellum medianly finely furrowed, with both sides roundly raised till lateral hollows; on mesopleuron postspiracular and epicnemial carinae acutely continued as usual, precoxal carina shortly runs forwards, ending in a minute blunt tooth at apex; area dorsalis on propodeum enclosed with fine shallow groove, medianly longitudinally strongly furrowed and at base on both sides of the furrow broadly depressed, the surface outside the depressions obliquely finely striate, posterior inclination with upper  $2/3$  occupied by a large deep hollow, with a longitudinal bottom line in the middle, apical third flat, obliquely or transversely coarsely striated with 3 or 4 carinules and medianly also longitudinally strongly carinate, with the surface between striae micropunctulate, not shining, lateral margins of posterior inclination bordered with strong carinae, each accompanied with a foveated furrow inside, the carina extended upwards on to side of dorsal aspect, but there weakened and vanished before reaching spiracle. Gastral petiole as long as  $HW$ , with relative length and width (when  $HW=100$ ) 100: 20 (at extreme base), 10 (at mid point between base and spiracles), 6 (at narrowest point between spiracles and apical swelling) and 18 (at apical swelling), spiracles located at relatively 36 from base. Legs normal, hind tibia not strongly clavate, each tibia haired and spined on outer side, wing with jugal lobe and venation as in bougainvilleae.

Body smooth and shining, upper frons on both sides of medial furrow fairly closely covered with piliferous micropoints (pile short and blackish in colour), vertex and mesoscutum sparsely scattered with very fine punctures, mesopleuron somewhat closely covered with fine silky white hair, but the piliferous points almost unobservable.

♂, unknown.

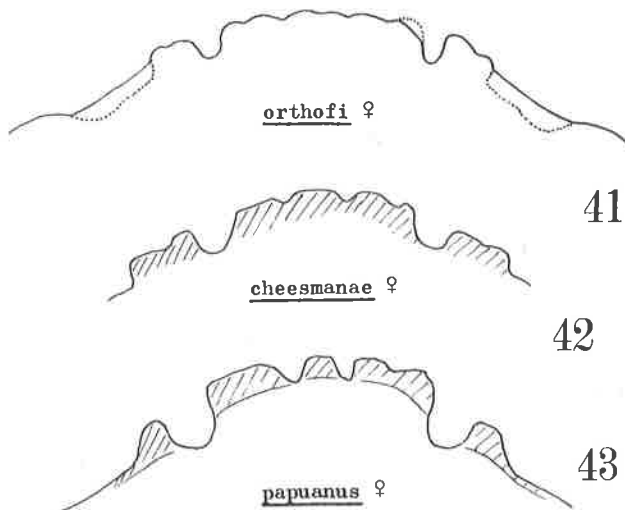
Holotype: ♀, Netherlands-Indo-American New Guinea Expedition, Bernhard Camp, 50 m, VII-XI.1938, J. Olthof leg. (Coll. Mus. Leiden).

#### 7. PIYUMA BUTUANA PAPUENSIS SSP. NOV.

Piyuma butuana Leclercq, Bull. Ann. Soc. R. Ent. Belg., 90: 59, 1963 (♀ ♂, Mindanao, Sibuyan, Negros, Mindoro and N. Borneo).

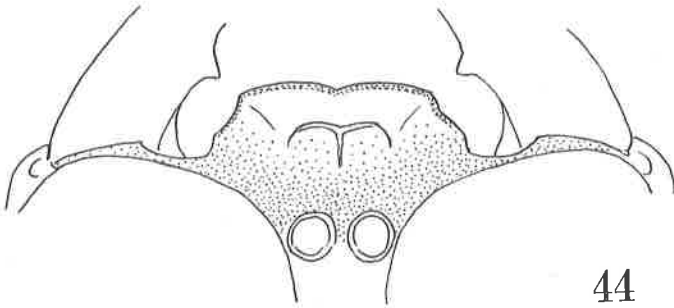
Piyuma butuana: Bohart and Menke, World Sphecid., p. 410, 1976 (listed).

The present species is most characteristic in having a transverse lamina on disc of clypeus. The New Guinean subspecies (5 ♀) differs from the Philippines (5 ♀ 1 ♂ examined) slightly in the form of lamina and apical margin of clypeus and considerably

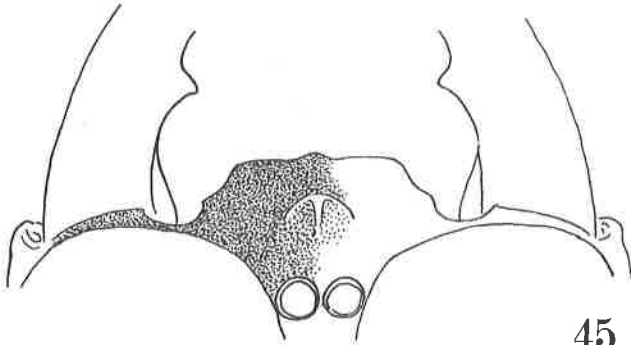


in the colour of clypeus, mandible, antenna and legs:

Apical margin of clypeus gently bilobed - Fig. 44 (in the Philippine race sub-truncate and medianly minutely produced - Fig. 45), apical margin of lamina shallow triangularly incised - Fig. 44 (in the nominate race rounded out - Fig. 45), hair on medianly area of clypeus in front of lamina slightly sparser than on other areas (in butuana s.str. the area almost hairless, smooth and shining). Clypeus pale brown and



44



45

basally gradually darker, with apical margin of median produced part narrowly castaneous (in nom. race completely black).

Mandible pale reddish brown and on basal area and inner margin darker (in nom. race black and area along central line dark red except basal area)

Antennal flagellum ferruginous brown, much paler beneath (in n.r. black above and brown beneath).

Area dorsalis at base coarsely foveate, short striae between foveae not extended posteriorly (in n.r., of the striae between foveae those in middle area fairly long extended posteriorly, central one dividing the medial furrow)

Coxae and arolia black, mid and hind trochanters pale brown, rest lemon yellow (in n.r. coxae and arolia black, all trochanters brown to dark brown, hind tibia except inner side brown to dark brown and

tarsi broadly pale brown - Leclercq says "les pattes entièrement jaune").

♀. Slightly smaller than nominate race, 6-7 mm and mostly 6.5 mm (in n.r. mostly 7 mm). Black; lemon yellow are antennal joint 1, mouth parts (galea slightly brownish) pronotal collar and humeral tubercles, scutellum and postscutellum completely (except furrow between them), anterior patch on tegula (ground colour translucent pale yellow), basal plates of wings and legs as above mentioned. Gaster ferruginous red, sometimes segment 3, or 3-4 or 3-5, broadly or partly blackish.

Structure (with mesonotal lateral furrows along lateral carinae) and puncturation as in the nominate race (area dorsalis not margined with furrow or carina, but distinct by difference of punctation, here smooth and polished, while the surrounding areas finely and closely punctured; the area at base coarsely foveate and medianly weakly furrowed. ♂, unknown.

Holotype: ♀, N.W. New Guinea, Solong, 24-31.X.1948, M. A. Liefstinck (Coll. Mus. Leiden).

Paratypes: 4 ♀, same data (in three of them added by handwriting to Solong "Kp. Roefei" (Coll. Mus. Leiden).

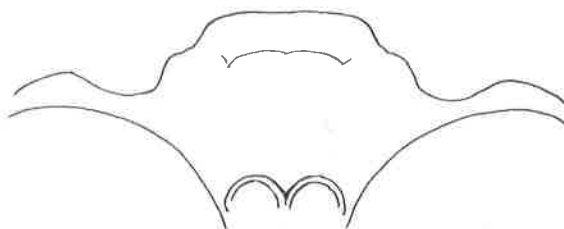
Remarks. The strongly brownish colouration above mentioned of the New Guinean specimens may partly be due to the germicide agent used for preservation.

#### 8. PIYUMA SOLOMONICA SP. NOV.

♂. Closely resembles P. butuana ♂ in structure, but the gaster is nearly completely black, mandible largely and antennal flagellum wholly ferruginous brown and maculae on thorax and legs, except black coxae, orange yellow. Further, clypeal lamina broader



and lower, area dorsalis enclosed with fine weak furrow, constriction between gastral segments 1 and 2 very much stronger, with sternite 2 more strongly swollen and segments 2 and 3 also considerably constricted (in butuana not).



46

♂. Slightly smaller than butuana, measuring 5-6 mm. Black, orange yellow are antennal joint 1, palpi, pronotal collar and tubercle (in both posterior margin translucent orange), scutellum (with lateral depressed areas also), axillae (extended into lateral hollows), postscutellum except lateral hollows (furrow behind scutellum ferruginous), tegula (bearing anterior transverse and posterior rounded translucent windows), basal plates and veins of wing (the latter on basal half only, apical half brownish) and from apical part of coxae to near apices of metatarsi of all legs. Antennal flagellum, clypeus in front of lamina except extreme apical margin, galea, sternite 7 and rest of legs ferruginous; arolia black. Apical margin of gastral segments in some light appearing translucent brownish. Hair on clypeus silvery, sparser on medio-apical produced part.

Head form in dorsal and frontal view similar to that of butuana, OOD, Od, POD also similar, clypeus: Fig. 46, apical margin truncate, lamina broader, less highly raised than in butuana. Mesoscutum with lateral furrows along lateral carinae abruptly cut by verge of anterior area of the scutum at the level of anterior margin of tegulae (as in butuana), area dorsalis on propodeum medianly finely furrowed, disc on both sides of the furrow gently roundly raised and weakly margined with fine furrow, at base coarsely foveate, striae between foveae strong, but not so long extended posteriorly as in butuana s. str., surface smooth and polished, while outside the area surface finely (but slightly stronger than in butuana), somewhat sparsely punctured and some of punctures spread into posterior part of area dorsalis.

Puncturation on frons and mesoscutum generally similar to that of the compared species, but punctures slightly stronger, this is more marked on mesopleuron; sides of propodeum on antero-dorsal area broadly smooth and polished, on postero-ventral area obliquely striate and medio-dorsal area sparsely punctured (in butuana ♂ femoral sinus alone smooth and polished, central area more sparsely and more finely punctured, mixed with weak striae and dorso-anterior and ventro-posterior areas obliquely strongly striate). ♀, unknown.

Holotype: ♂, Solomon Islands, Guadalcanal I., Tenaru River, I.1945, G. E. Bohart leg. (Coll. CAS.)

Paratypes: 2 ♂, same data (Coll. same).

#### 9. VECHTIA RUGOSA (SMITH, 1857)

Vechtia rugosa: Leclercq, Ent. Ber., 17: 106, 1957 (♀ ♂, Sumatra, Java, synonyms, distribution).

Vechtia rugosa: Leclercq, Bull. Ann. Soc. R. Ent. Belg., 99: 80, 1963 (♀ ♂, Philippines with synonyms).

Vechtia rugosa: Tsuneki (ssp. palawana), Steenstrupia, 4: 108, 1976 (♀, Palawan).

Vechtia rugosa: Bohart and Menke, World Sphecid., p. 417 (listed, distribution).

Specimens examined: 2 ♂, Netherlands-Indo-American New Guinea Expedition, Bernhard Camp, 50 m, 15.IX., -X.1938, J. Olthof leg. (Coll. Mus. Leiden).

In one of the specimens pronotum black, only posterior margin of tubercle pale brownish, axillae and scutellum black, only two spots on postscutellum yellowish white, a minute spot at base of fore tibia, basal ring of tibia and basal half of metatarsus of mid leg, basal half of hind tibia above and basal 3/4 of following metatarsus, white. While in the other two spots on collar and tubercle posteriorly, two large marks on postscutellum, a spot at base of fore and mid tibiae, narrow basal ring of hind tibia and basal 3/4 of mid and hind metatarsi, white. In both specimens antennal scape in front apically broadly and lateral spots of gastral tergites 1-4 white.

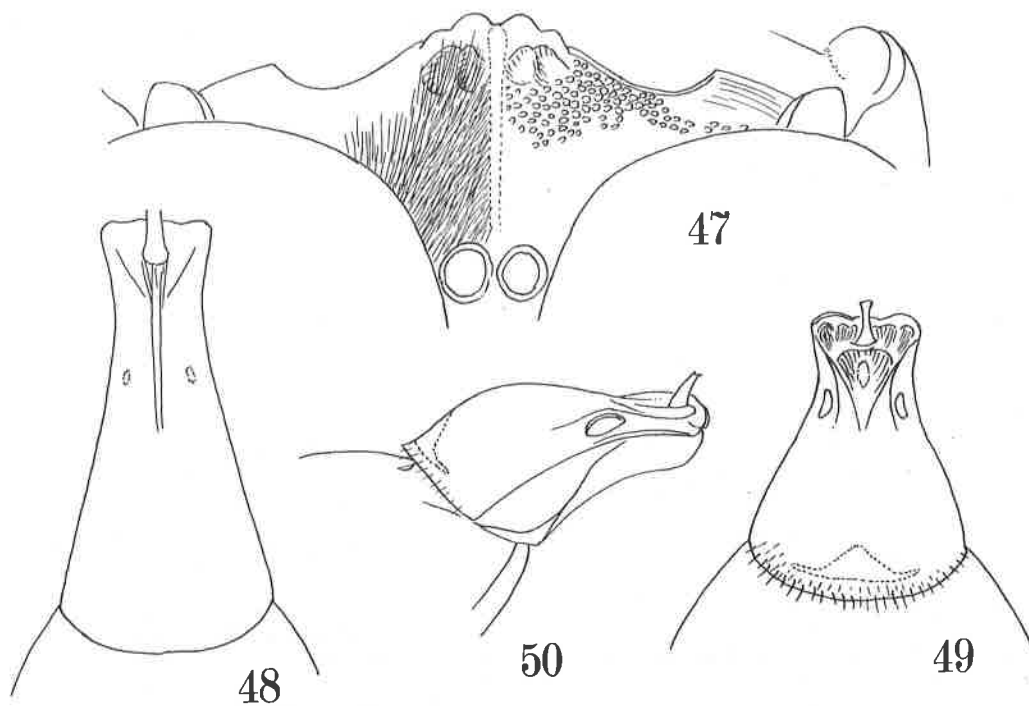
10. DASYPROCTUS SOLOMONENSIS SP. NOV.

The present species (♀) is characterized by the combination of the following characters: Frontal transverse carina indistinct, lower temporal carina present, clypeus medio-anteriorly minutely emarginate, anterior marginal carina of pronotum turns posteriorly to connect with the anterior carina of tubercle, gastral tergite 1 twice as long as its maximum width, but distinctly longer than hind femur (width at spiracles of the former less than that at middle of the latter), thorax poorly maculated and gaster almost completely immaculated and legs black and yellow maculated.

♀. 8.5 mm. Black; lemon yellow; antennal joint 1 except brown streak above, 2 beneath, a spot at lateral ends of pronotal collar, tubercle, extreme sides of postscutellum (sometimes lacking), sometimes a mark on prepectus, a spot at basal sides of gastral petiole, knees (in mid and hind legs somewhat broader), base and apical mark of all tibiae, tibial spurs and joints 1 and 2 of all tarsi. Black parts of legs medially broadly and apical 3 joints of tarsi dark brown; mandible with a dark reddish patch before apex, tegula castaneous brown, anteriorly dark. Hair of clypeus silvery.

Head from above with maximum width, length at eye and in middle relatively 100:74:60, seen in front length from top of scapal basin to apex of clypeus relatively 55, OOD:Od:POD:OCD=15:7:13:32 (under the same scale), supraorbital fovea slender, L:W=4:1, shorter than antennal joint 3 (4:3), impressed and shining, a fine delicate carina runs from fore ocellus to anterior verge of upper frons and to above posterior inclination of vertex, but not reaching occipital carina, verge to scapal basin somewhat broadly incrassate and smooth and shining, but not carinate. Clypeus: Fig. 47, relative length of antennal joints 1,2,3,4,5=30,4,10,5,5. Precoxal carina of mesopleuron runs upwards till near scrobe, area dorsalis on propodeum weakly enclosed with shallow furrow, lateral carinae weak (weaker on median part), but complete in length, gastral segment 1: Fig. 48, pygidial area deeply gutterwise excavated. Legs without modification. In fore wing abscissae 1 and 2 of radius and of cubitus relatively 10:13 and 14:6.

Upper frons finely, somewhat closely, vertex far more sparsely punctured, punctures on mesoscutum medium-sized, but very shallow and weak, anteriorly fairly close, PIS less than PD, but posteriorly much sparser, scutellum more finely but somewhat deeply, very sparsely punctured, on posterior third longitudinally, finely and closely striate, postscutellum very finely, somewhat closely as on frons punctulate, with pos-



terior 2/5 longitudinally striate, striae stronger and sparser than on scutellum; area dorsalis with distinct median furrow, disc obliquely, closely striate, striae fine and mixed with very fine delicate ones and partly sparsely punctulate between them, surface outside the area obliquely, posterior aspect transversely, finely and closely striate; mesopleuron fairly closely covered with very weak indistinct punctures, area behind precoxal carina not mat, with punctures fine but distinct, fairly close, metapleuron and side of propodeum longitudinally, finely, closely and distinctly striate, pygidial area smooth and polished, with a large shallow puncture at central bottom and near apex, mat areas as usual. ♂, unknown.

Holotype: ♀, Solomon Islands, Florida I., Siota, III.1945, G. E. Bohart leg. (Coll. CAS).

Paratype: 1 ♀, Solomon Is., Guadalcanal-Florida Is., I-III. 1945, G. R. Stuntz leg. (Coll. CAS).

Remarks. In the paratype an additional yellow mark is present on upper part of prepectus, but yellow spots on postscutellum and on basal sides of gastral petiole are weak and indistinct, while the basal half of petiole and black parts of legs are more strongly brownish than in holotype.

#### BISHAMONIS\*, a new subgenus of DASYPROCTUS

In the new subgenus gastral segment 1 is not elongated into petiole, but short and almost sessile; in other characters similar to the nominate genus.

According to the prevailing classification of the Crabroninae the present subgenus seems to be worthy of separation at the generic rank, because in this group the first gastral segment is not petiolated, but rather sessile. However, in all other characters it agrees well with the genus Dasyproctus and, furthermore, the segment in question is not completely sessile as is given in Figure 49, and in some species of Dasyproctus the segment is somewhat intermediate in form between pedunculate and sessile, as is shown by the preceding species (cf. Fig. 48). Such being the case it is allocated within the category of Dasyproctus as a new subgenus.

\* Bishamon is the name of one of the seven Deities of Good Fortune in a fairy tale of Japan.

#### 11. DASYPROCTUS (BISHAMONIS) GUADALENSIS SP. NOV.

♀, 6.5-7.5 mm. Frontal transverse carina absent, pronotal carina runs to anterior margin of tubercle, thorax luxuriously yellow maculated, on gaster tergite 1 alone maculated medio-apically, lateral carinae of propodeum complete, antennal joints 2, 3, 4 with relative length appr. 3, 4, 3.

Black; lemon yellow are mandible except extreme base and apex and marginal lines, antennal joint 1 nearly completely, pronotal collar and tubercle, scutellum nearly wholly, axillae, postscutellum, a mark on gastral tergite 1, apical third or fourth of femora, all tibiae, spurs and basal two joints of tarsi. Ferruginous to pale brown are antennal joints 2-8 beneath partly, mouth parts, tegula, pygidial area apically and rest of tarsi; rest of legs strongly brownish. Wings hyaline, veins and stigma dark brown. Hair on clypeus silvery, long bristle-like hair on caudal area brownish yellow.

Head seen from above with width and length at eye and in middle relatively 100,76, 60, seen in front with length from top of scapal basin to apex of clypeus relatively 56, under the same scale OOD:Od:POD=17:7:17. Frontal foveae slender, elongated oval, length to maximum width appr. 3:1, smooth and shining, a fine carina runs from fore ocellus to verge of scapal basin and much weaker ones to hind margins of frontal foveae, but none posteriorly to vertex. Occipital carina strong, highly raised, accompanied with a line of foveoles inside, reaching to buccal carina. Thorax and propodeum very similar in structure and sculpture to D. solomonensis, differing in that posterior margin of scutum not longitudinally striate and scuto-scutellar furrow not foveolate, posterior margin of scutellum more coarsely striate, area dorsalis distinctly margined posteriorly with carina and lateral carinae of propodeum thoroughly strong and distinct. Generally the striation similar in pattern, but much coarser. Precoxal carina of mesopleuron similar, but also stronger. Gastral tergite 1 in dorsal view: Fig. 49, in lateral view: Fig. 50, pygidial area at base triangular, on apical half narrow, sub-

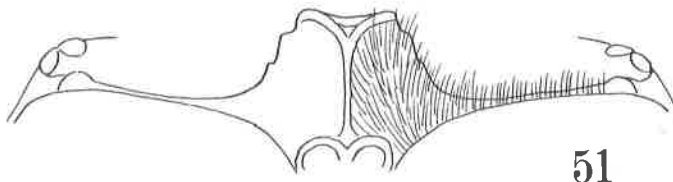
parallelsided and deeply excavated. ♂, unknown.

Holotype: ♀, Solomon Is. Guadalcanal I., Tenaru River, I.1945, G. E. Bohart (CAS).  
Paratypes: 1 ♀, USNM, No. 164 (data undescribed)  
Other specimen: 1 ♀, same data as holotype, but gaster is lacking.

Remarks. In the holotype the medio-apical mark on gastral tergite 1 is fairly large, low triangular, with base widely extended laterally, while in the paratype it is very small, spot-like. In the gasterless specimen the maculae on the thorax and legs are strongly orange in tone.

Supplement.

The description of clypeus left out. It is illustrated with Fig. 51. Antennal joint 3 1.5 times as long as wide at apex. On mesopleuron precoxal carina runs upwards till behind the scrobe.



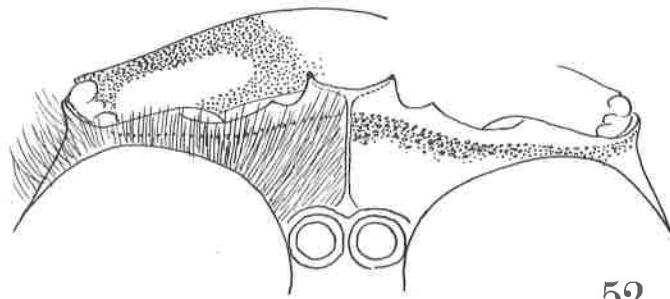
12. ECTENNIUS (CAMERONITUS) PAPUENSIS SP. NOV.

♀. 9 mm, thorax, gaster and appendages with rich yellow maculae, gastral segment 1 pale brown, bearing a yellow mark, wing fairly strongly darkened, clypeal hair brassy, clypeus quadridentate at apex, pronotal collar transversely acutely carinated, mesoscutum very finely and closely punctured, prepectus longitudinally coarsely striated, area dorsalis not enclosed.

Black; yellow (on body orange- and on appendages lemon-) are pronotal collar completely, tubercle, axilla, anterior half of scutellum, postscutellum largely, a large mark on gastral tergite 1, a thorough band at base of tergite 2, a narrow, medianly and laterally interrupted band on 3, a mark on mandible occupying antero-basal area and inner half, antennal scape completely, two marks at dorsal and outer spex of fore femur, inner margin largely and two elongate marks on outer side of fore tibia, apical large mark of mid femur extending from dorsal to outer side, a streak on outer side of mid and hind tibiae and tibial spurs of fore and mid legs; brown to pale brown: gastral segment 1 (darker beneath), inner side partly of fore and mid tibiae and extreme apices of all tibiae, all tarsi (joints 1 and 5 always darker above) and hind tibial spurs. Hair on clypeus dense, appressed, brassy in colour, on sides of scapal basin short, dense, golden, on temple silvery, on its anterior area in some light somewhat brassy, on sides of thorax and propodeum and on femora of legs silvery, erect long and sparse hair on head above black, on thorax above brown to dark brown, on propodeum ashy white, hair on ultimate and penultimate segments of gaster pale yellowish.

Head seen from above transverse, when HW=100 HL at eye and in middle relatively 64 and 52, width of scapal basin at top and of occipital margin, under same scale, relatively 36 and 60, both strongly roundly emarginate, surface of head above very slightly roundly raised, almost without depression around ocelli (outside depression of hind ocelli very broad and shallow, quite indistinct), frontal furrow shallow and broad, also indistinct, ocelli in low triangle, posterior margin of fore ocellus and anterior margins of hind ocelli located in a transverse line, OOD:Od:POD:PCD=10:4.3:8.5:15, supraorbital foveae not clearly margined, but distinct due to difference of punctation, large, elliptic, gently impressed, with L:W=2:1 and as long as antennal joints 4 and 5 combined, with surface microcoriaceous, fairly shining. Clypeus: Fig. 52, medianly distinctly carinate, scapal basin medianly finely grooved, the groove margined with fine carinae on both sides; antennal joint 1 anteriorly nearly flat, with lateral margins somewhat bluntly edged, with surface enlarged upwards and slightly twisted (or inclined) outwards at upper area (Fig. 53) and somewhat sparsely covered with fine (not very fine) punctures, relative length of joints 1:2:3:4:5=20:5:7:5.5:3.5, joint 3 in dorsal view 2.3 times as long as broad at apex, joint 7 slightly wider than long, thence apically, except joint 12, distinctly wider than long. Pronotal collar about as wide as occipital carina in dorsal view, acutely carinated across middle and deeply furrowed in middle, on mesoscutum notauli and admedian lines present, the former opaque, the latter shining, area between notauli gently depressed, parapsidal suture a short shining line, scutellum gently roundly raised, postscutellum about a third the length of scutellum, both without medial furrow, on mesopleuron postspiracular and epicnemial

53



52

carinae forming a bent acute line, precoxal carina a short transverse bent ridge, attenuate to both ends, appearing like a tooth in dorsal view. Propodeum without enclosed area dorsalis (posterior margin very shallowly and broadly depressed), without lateral carinae, the margins only bluntly edged; tergite 1 of gaster nearly as long as wide at apex, pygidial area gutterwise excavated, apical trough parallel and very long.

Punctures on head above and mesoscutum very fine and close, the latter as in members of *Clytochrysus* and at posterior inclined area punctures arranged in longitudinal close lines, scuto-scutellar furrow smooth, scutellum longitudinally, very finely and closely striate, with somewhat velvety appearance, the furrow between scutellum and postscutellum stepped, shallow part distinctly foveolate, but posterior deep bottom smooth and shining. Prepectus longitudinally, coarsely striate, episternum without the scrobal furrow, with epimeral area not particularly raised, surface delicately microcoriaceous and somewhat sparsely (PIS > PD) imposed with medium-sized punctures (gradually slightly larger below) and on anterior portion mixed with weak longitudinal striae; propodeum on dorsal aspect longitudinally, somewhat radiately, finely and very closely striate, mixed sparsely with strong striae, without medial furrow, posterior inclination medianly broadly and shallowly depressed, with median bottom line somewhat deep and strongly crenate, surface outside the depression obliquely, very finely and very closely striate, sides longitudinally, delicately striate, gaster very finely and closely punctulate, in some light appearing microcoriaceous, tergite 5 before apical translucent brownish marginal area strongly punctured, basal triangular part of pygidial area and the outside the area strongly, coarsely punctured, mat marks on sternite 2 comparatively small, about as long as suprorbital fovea and slightly wider than this.

♂, unknown.

Holotype: ♀, Netherlands-Indo-American New Guinea Expedition, Sugi Camp, 1500 m, 22.II.1939, L. J. Toxopeus leg. (Coll. Mus. Leiden).

*Ectemnius* (*Cameronitus*) *papuensis iebeleus* ssp. nov.

♀. Ground colour of gastral segment 1 not brown, but black and apical margin of clypeus, especially toothed areas distinctly incassate, frons more distinctly inclined towards medial line and the outside depression of hind ocelli more marked. Otherwise very similar to typical race. Length 8.5-10.0 mm, living in high altitude (2250 m).

But the yellow marks are markedly varied in development between the two specimens that are collected in the same place and in the same season of the same year:

In specimen A (leg. 9.XI., holotype) maculae poorly developed and in B (leg. 1. XII.) richly so. Antennal scape always completely yellow, mark on mandible in B larger and thence apically broadly brown, in A smaller, without brown area; pronotal collar in B completely yellow as in typical race, while in A black and marked with two short narrow bands, in A both tubercle and axilla with anterior half black, in B both completely yellow, band on scutellum in A on basal fifth, in B on basal half, that on postscutellum in A basally linear, in B wholly, propodeum in A without mark, in B with a large, medianly interrupted subtriangular mark dorsally, a mark on gastral tergite 1 in A medium-sized, subtriangular and longitudinally constricted in middle, in B large, medianly narrowly brownish and at apex extended to the sides, thence enlarged forwards, basal band on tergite 2 in A medianly broadly linear, in B widely spread over basal

third, that on 3 in A a spot and a short narrow band on each side, in B a narrow but complete band, that on 4 in A same as on 3, but much smaller and shorter, in B medianly interrupted narrow band; marks on legs markedly different: in A femora almost completely black, only fore and mid knees narrowly and a short line near apex of mid femur yellow, in B a broad band from lower half of outer side to apical area wholly of fore femur and a broad, up-turned U-shaped band on mid femur and knee of hind femur yellow, a streak on tibiae in A narrow or incomplete, in B broad, sometimes with an additional one, tarsi in A pale brown and dark on joint 1 and 5 above, in B generally paler, though similar in pattern. Wings fairly darkened and posteriorly paler in both as in typical race. ♂, unknown.

Holotype: ♀ (A), Netherlands-Indo-American New Guinea Expedition, Iebele Camp, 2250 m, 9.XI.1938, L. J. Toxopeus (Coll. Leiden Mus.).

Paratype: 1 ♀ (B), same locality, 1.XII.1938, same collector (in this specimen the caudal segment is heavily damaged and pygidial area is completely broken, Coll. Mus. Leiden).

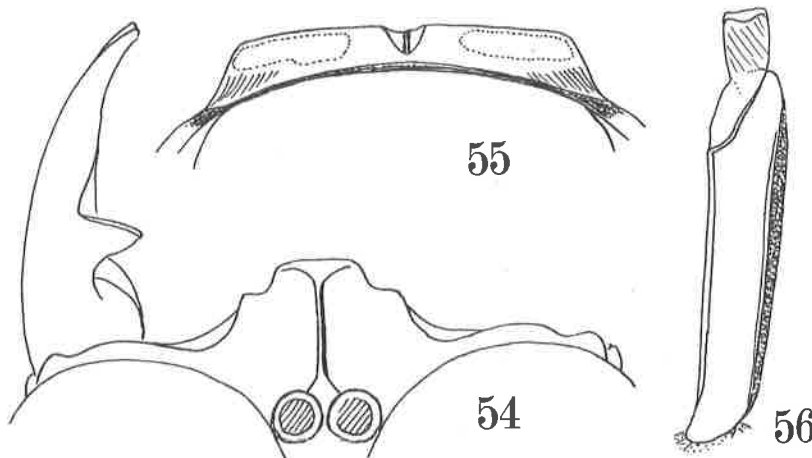
13. ECTEMNIUS (CAMERONITUS) KROMBEINI SP. NOV.

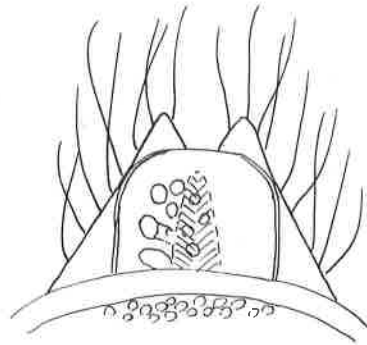
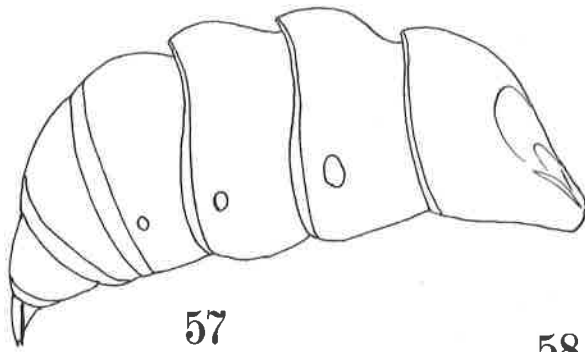
♂. Characteristic in the separated medium-sized punctures on mesoscutum and -pleuron and strongly constricted gaster at intersegmental areas and can easily be distinguished from all the allied species known from Australia, New Guinea and the Bismarck and the Solomon Archipelagoes.

Length 6.2 mm. Black; yellow are antennal joint 1 in front, 2 at apex, palpi, a medianly broadly interrupted band on pronotal collar, tubercle, axilla, a spot near axilla on scutellum, a small round spot at sides of gasteral tergites 2, 3, 4, smaller posteriorly, knees broadly of fore and mid femora, outer side of all tibiae (in mid and hind ones not reaching apex) and all metatarsi; brown to pale brown are mandibular tooth on inner margin, tegula (translucent), wing veins, tibial spurs and rest of tarsi; rest of antenna and basal plates and stigma of wings dark brown, rest of legs somewhat brownish. Hair on clypeus, sides of scapal basin and temples silvery.

Seen from above HW:HL at eye and in middle =100:66:58, frontal and occipital margins markedly roundly emarginate, the latter relatively 62 in width, supraorbital foveae indistinct, represented by a fine, shining, impressed and long line along inner orbit of upper frons, occupying about apical 2/3, OOD:Od:POD:OCD=10:4.5:11:20, outside depression of hind ocellus shallow and impunctate, depression in front of fore ocellus elongate triangular, forming base of frontal furrow, but the furrow anteriorly completely absent. Seen in front HW:HL(in middle):eye-length:scapal-length=100:80:66:30. Antennal joint 1 = 2-6, scape flat beneath and bicarinate at its lateral margins, inner carina weaker, but straight, outer stronger, but turned inwards before apex along excavation of outer side at apex (Fig. 56 - right one), relative length of joints 1-5=32,6,8,7,6; 3 twice as long as wide at apex, 4-10 each very slightly produced beneath at apex, but without distinct excavation anywhere, no tooth above antennal sockets. Clypeus and mandible: Fig. 54, occipital carina highly flanged, at apex gradually lowered, ending before reaching hypostomal carina.

Pronotal collar: Fig. 55, precoxal swelling of propleuron strongly toothed. Mesoscutum with medio-anterior depression weak, admedian line a distinct carina, while notauli indistinct, parapsidal suture in a short impressed line, scuto-scutellar furrow only a suture, not foveolate nor crenul-





ate, scutellum and postscutellum roundly, highly raised, without medial impression. On mesopleuron postspiracular-epicnemial-acetabular carinae continued into a strong carina, epimeral area not raised, precoxal carina curved along the depression in front, with lower part shortly extended forward, upper part vertical, reaching near middle to scrobe, metapleuron gently swollen, with upper area strongly inclined to a deep hollow at upper part of metapleural suture; propodeum with curved distinct lateral carinae, separating sides from dorsal and posterior aspects, lateral roundly curved carina of area dorsalis far apart from the lateral carina of the segment, not continuous with the posterior carina which is accompanied with a foveated furrow just inside, though apical part of the former is in touch with the inner margin of the foveated furrow of the latter, surface of the area gently roundly raised, posterior aspect nearly flat, medianly above deeply furrowed, the furrow at posterior part margined with carinae that are united into a median carina and runs to gastral socket rim; gastral segment 1 about as long as wide at apex, on basal half broadly depressed, the depression at base in middle furrow-like and margined with highly raised carinae on both sides, segments 2-4 markedly roundly swollen and constricted at base (Fig. 57), pygidial area: Fig. 58. Legs without modification, but each metatarsus markedly long, longer than the rest of each tarsus. In fore wing abscissa 1 of cubitus 2.7 times as long as abscissa 2, the latter slightly longer than transverse cubital vein (7:6) (wings heavily damaged).

Punctures on upper frons comparatively large, angled and fairly close, PIS smaller than PD, with surface strongly microcoriaceous, on the roundly inclined verge to scapal basin punctures very large and sparse at medial area and finer, closer towards latero-posterior area and replaced with transverse close striae on latero-anterior area, punctures on ocellar area and vertex finer, slightly sparse and sparser, finer and weaker posteriorly, temples very finely, rather sparsely covered with piliferous punctures. Punctures on mesoscutum generally as large as those on upper frons, but on broad central area sparser, PIS partly 1-2 times PD, on antero-lateral areas finer, closer and mixed with short transverse rugae, on posterior margin slightly fine, close and longitudinally (laterally somewhat obliquely) arranged in short rows; scutellum on anterior half punctured as on central part of scutum, posteriorly finer, closer and longitudinally arranged, postscutellum covered with irregular-sized punctures. Mesopleuron more finely than on scutum and on prepectus somewhat sparsely and on episternum moderately closely (PIS 0.5-1 times PD) punctured, on the latter punctures somewhat larger and closer towards sternum, metapleuron longitudinally, strongly and closely striate, striae on upper area weaker; area dorsalis with basal furrow coarsely foveate and longitudinally strongly carinated in middle, disc except anterior inclination to basal furrow closely subreticulate-punctate, punctures slightly smaller than on scutellum and distinctly obliquely arranged, outer side of the area coarsely, irregularly reticulate, posterior aspect obliquely rugoso-striate and punctate, but on lower portion transversely closely striate; sides longitudinally, finely and closely striate. Gastral tergites fairly closely covered with punctures that are similar in size to those on the disc of area dorsalis, on tergite 1 somewhat sparser, on 2, 3 and 4 anteriorly finer and sparser and mixed with delicate transverse microstriae, on constricted base surface smooth and shining, tergites 5 and 6 covered with piliferous fine points, without distinct puncture. ♀, unknown.

Holotype: ♂, New Guinea, Port Moresby, 25-28.VIII.1944, K. V. Krombein (USNM).



PAPUACRABRO, a new subgenus of ECTEMNIUS Dahlbom

Type: Ectemnius papuanus sp. nov. ♀ (♂ unknown).

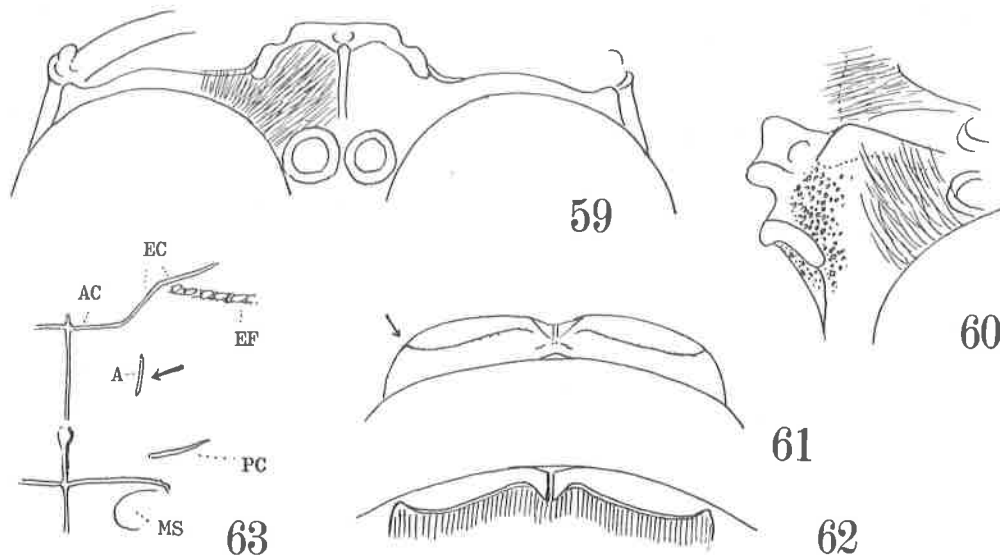
Closely resembles subgenus Iwataia in the somewhat sparse, longitudinally confluent punctures on mesoscutum, sparse punctures on mesopleuron, constricted gastral segments, unicarinate antennal scape etc., but mesopleuron distinctly mixed with longitudinal striae, abscissa 1 of cubitus only thrice as long as abscissa 2 (exceptional to Ectemnius) which is longer than transverse cubital vein (ditto) and mesopleuron with precoxal carina and, further, mesopleuraulus not furrowed, but distinctly raised and toothed on median top just below scrobe (ditto).

According to the prevailing keys to the genera of Crabroninae it seems that the present subgenus is worth while to be raised to the generic rank. However, it is in general very close to subgenus Iwataia Tsuneki of Ectemnius and, therefore, it is allocated within the range of Ectemnius as an exception.

14. ECTEMNIUS (PAPUACRABRO) PAPUANUS SP. NOV.

♀. 8.5 mm. Black; antennal scape except above and an obscure short narrow streak at median part of fore tibia in front yellow, mandible before apex narrowly dark brown, tegula, tibial spurs and tarsi also dark brown. Hair on clypeus, temples and sides of thorax silvery, comparatively long erect hair on head, thorax above and on whole of pro-podeum greyish white.

Head seen from above transverse, W:L at eye and in middle =100:63:55, frontal margin rather strongly and occipital margin gently, both roundly emarginate (the latter relatively 55 in width), frontal furrow broad and shallow, supraorbital foveae not distinctly outlined, depressed, almost smooth, markedly long, anteriorly somewhat entering the verge of upper frons, only slightly shorter than antennal joints 2-4 combined (10:11) and less than half as wide as long, OOD:Od:POD=10:4:9. Clypeus: Fig. 59, medio-apical smooth marginal area distinctly roundly incrassate, but lateral marginal area of lateral tooth with the smooth incrassate area slightly retreated from the extreme apical margin, this is due to that apical margin is thick and lower (or ventral) margin is more advanced than the upper (or dorsal) margin (Fig. 60, in oblique lateral view), disc medianly strongly carinate, the carina slightly raised at apex into a blunt tooth and in front of it smooth triangular area minutely roundly impressed (Figs. 59 and 60). Antennal joint 1 unicarinate at antero-outer margin, antero-inner margin only bluntly edged, anterior surface between them gently roundly swollen, relative lengths of eye and antennal joint 1 to HW(100) are 29 and 18; when antennal joint 3 is 10, re-



lative length of joints 1,2,3,4,5,6,11,12=38,7,10,8,7,6,5,9. Joint 3 twice as long as as wide at apex in dorsal view, occipital carina rather low, at apices gradually lowering and disappears before reaching hypostomal carina. Pronotal collar at anterior margin as wide as head at occipital carina, comparatively short (Fig. 61), except medial and posterior furrows almost flatly raised towards anterior margin, but on both sides of medial furrow gently roundly swollen, anterior margin fairly acutely edged and inclined steeply towards nape area, lateral margins also distinctly edged, with lateral corners acutely angled and slightly produced; the angled structure is best defined when seen in front (Fig. 62), but indistinct when seen from above (Fig. 61), this is due to that the tooth is included inside the rounded apical margin when seen from above, medial furrow broad and deep. On mesoscutum admedian lines distinct, but notauli indistinct, parapsidal suture small elliptic in form, very slightly raised, with inside depressed, opaque and minutely irregularly sculptured, appearing like a slightly larger elongate punctures, scuto-scutellar furrow not deep, not broad, appearing like a fine simple suture, while postscutellar furrow normally broad and deep, foveolate; on mesopleuron postspiracular and epicnemial carinae continued, forming a strong bent line, acetabular carina present, very fine but distinct, further a short longitudinal carina present, partly bordering pleuron and sternum (Fig. 63, A, shown with an arrow, AC acetabular carina, EC epicnemial carina, EF episternal furrow, PC precoxal carina, MS mesocoxal socket). Very curious is the tooth just below scrobe, the place along lower margin of scrobe longitudinally raised and topped with a tooth in middle, without scrobal furrow and without elevation at above scrobe, thus epimeral area not well developed; metapleuron with flange strong, without swelling at upper area, as a whole inclined towards metapleural suture. Dorsal and posterior aspects of propodeum separated from the sides by a carina originating from just below spiracle, acute and distinct within the range of dorsal aspect, but blunt and weak at the lateral margin of posterior aspect, except apicalmost area, area dorsalis distinctly roundly margined by a fine carina at each side which is subparallel with the lateral bordering carina of the dorsal aspect (strictly both the carinae slightly convergent posteriorly), but the carina absent on the posterior margin, the area defined there only by the inclination of posterior aspect, it is twice as broad as long in middle, nearly semicircular in outline (somewhat constricted at base), with a fine furrow in middle, posterior aspect broadly roundly flat, with a deep, slightly broad furrow in middle which is replaced at the posterior third by a median carina. Gastral tergites 1-4 depressed at each posterior margin and 2-4 also depressed at each base, stronger at 2 and weaker at 4, thus intersegmental areas distinctly constricted, strongest at 1-2 and weaker posteriorly and at 4-5 almost without constriction; pygidial area narrowly long extended posteriorly, gutterwise excavated; hind tibia not clavate, with outer margin strongly toothed with about 12-13 teeth, several apical ones each carrying a short spine at apex, longer hind tibial spur slightly longer than half the following metatarsus.

Upper frons at the broad, roundly inclined verge to scapal basin closely, irregularly covered with medium-sized punctures, with narrow PIS microsculptured, not shining, dorsal flat area without distinct puncture, shining and longitudinally, irregularly striated except the areas around ocelli, orbital area behind the fovea scattered with shallow indistinct impressions, vertex behind eyes and ocelli sparsely weakly covered with indistinctly outlined medium-sized punctures, punctures finer laterally to upper temples, but not stronger and closer. Mesoscutum longitudinally striate and punctate, punctures large, longitudinally elongate and joined, giving rise to striae between next rows, thus the striae rugosed, not always strong and long continuous, punctures at base close and somewhat finer, with striae strong, on lateral areas almost without striae, on broad central area large and somewhat sparse and on posterior area very sparse and replaced with strong close and fine striae that are longer inwards, scutellum closely covered with longitudinal, strong but fine striae, without puncture except narrow apical margin and sides, postscutellum irregularly microrugulose and micropunctulate; prepectus longitudinally coarsely striate and finely punctate between striae, episternum sparsely punctured and striate just as on central part of scutum, punctures below rounded, distinct in outline, sparse and without striae mixed, while above on epimeral area fine, close, with mixed striae stronger and closer, metapleuron wholly longitudinally strongly striate. Propodeum on area dorsalis longitudinally rather radiately, finely and closely striate, letting the fine median furrow indistinct, striae on lateral areas oblique and stronger and somewhat sparser than on medial area and on the area between two lateral carinae strong, oblique and rugosed and apically finer and closer; posterior aspect transversely, distinctly, finely and closely striate laterally, but medianly, on broad flat area striae weaker, strongly, irregularly rugosed and, further, surface microcoriaceous and not shining, sides longitudinally,

very finely and closely striate. Gastral tergite 1 sparsely scattered with fine piliferous punctures, posterior part of tergite 5 more closely covered with black-hair-bearing medium-sized punctures, tergite 6 outside pygidial area strongly punctured, punctures larger, with hair stronger and also black, rest of tergites practically impunctate (under high magnification transversely microstriolate and partly microcoriaceous). Mat areas on sternite 2 large, flat, but not clearly outlined, with surface more finely and closely punctulate than the surrounding areas.

♂, unknown.

Holotype: ♀, New Guinea: Netherlands-Indo-American New Guinea Expedition, Sigi Camp, 1500 m, 18.II.1939, L. J. Toxopeus leg. (Coll. Mus. Leiden).

15. ECTEMNIUS (CAMERONITUS-PAPUACRABRO) SOLOMONICUS SP. NOV.

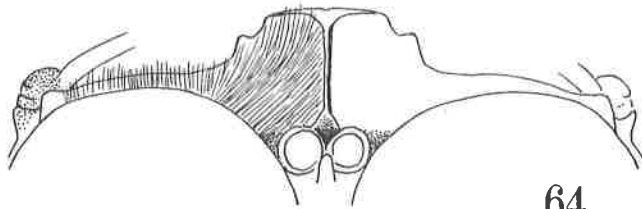
♀. Puncturation of mesoscutum somewhat similar to that of Papuacrabro, although less distinctly so, but mesopleuron without longitudinal striae, without short longitudinal carina below, without scrobal tooth, abscissa 1 of cubitus 4.5 times as long as abscissa 2 and the latter equal in length to transverse cubital vein. Head above finely and sparsely punctured, antennal scape bicarinate.

9.0 mm. Black; only the antennal scape in front and a large mark on mandible yellow (in papuanus wholly black); antennal joint 2 at apex and broadly beneath, tegula (translucent), a spot on mandible behind apex and tibial spurs bright brown; basal plate of wing, knees beneath and tarsi of all legs dark brown. Hair on clypeus, temple and coxae silvery, that on vertex (very sparse), mesoscutum, -pleuron and propodeum silky white.

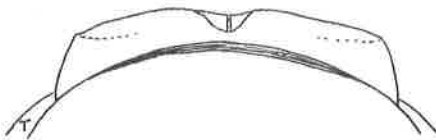
Seen from above HW:HL at eye and in middle =100:66:57, occipital margin strongly roundly emarginate, anterior margin of upper frons nearly straight, supraorbital foveae large, elongate elliptic, not distinctly outlined, defined by the slight depression and sparser punctation, occupying nearly whole the span of supraorbit in length, about 4 times as long as wide in middle. OOD:Od:POD:OCD=10:4.3:7:19, depression around fore

ocellus very weak, on outer and posterior area of hind one broad, shallow, without puncture and well shining. Seen in front HW : length of eye : antennal scape = 100:54:32, scape anteriorly flat and strongly and acutely carinate on outer margin and somewhat less acutely so on inner margin, antennal joint 1 as

long as joints 2-6 combined, relative length of 1-6 (when joint 3=10) =38,9,10,8,7,5,3. Clypeus: Fig. 64, median area strongly raised towards apex, forming a distinct angle against eye-plane, apical margin not particularly incrassate and medianly distinctly carinate, scapal basin just above antennal sockets provided with a marked projection (in Fig. 64), occipital carina highly flanged, not reaching hypostomal carina, with apical part gradually lowering. Pronotal collar at anterior margin as wide as head at occipital carina, similar in structure in general to papuanus, but with antero-lateral corners more weakly angled, whereas in dorsal view (Fig. 65) the angle apparently more distinct, this is due to that the angles are not behind the apical margin, in frontal view the weaker angles better defined, with anterior margin much less strongly waved (Fig. 66). Mesoscutum medio-anteriorly broadly depressed, admedian line is a fine carina, reaching near middle of the scutum, notauli are impressed lines, parapsidal sutures are short impressed lines as usual, scuto-scutellar suture as in papuanus, not furrowed, scutellum roundly highly raised, with fur-



64



65



66

terior margin as wide as head at occipital carina, similar in structure in general to papuanus, but with antero-lateral corners more weakly angled, whereas in dorsal view (Fig. 65) the angle apparently more distinct, this is due to that the angles are not behind the apical margin, in frontal view the weaker angles better defined, with anterior margin much less strongly waved (Fig. 66). Mesoscutum medio-anteriorly broadly depressed, admedian line is a fine carina, reaching near middle of the scutum, notauli are impressed lines, parapsidal sutures are short impressed lines as usual, scuto-scutellar suture as in papuanus, not furrowed, scutellum roundly highly raised, with fur-

row-like depression in middle, postscutellum roundly highly raised and gently impressed medially, the furrow in front of it deep and foveolate. On mesopleuron postspiracular and epicnemial carinae forming a bent line as usual, acetabular carina unobservable (the area heavily broken by the needle), precoxal carina distinct, reaching upwards till about mid point to scrobe, scrobal tooth absent, metapleuron with flange distinct and upper area gently swollen. Propodeum with lateral carinae thorough and distinct, area dorsalis incompletely enclosed with carina, the carina broadly absent at postero-lateral oblique parts, at the rest it is strong and accompanied with weakly foveolated furrow just inside, the area medianly finely furrowed; posterior inclination with upper broad central area nearly flat and medianly comparatively finely furrowed, the furrow with a shining bottom line and on posterior third replaced with the median keel, the areas on both sides of it deeply hollowed. Gastral tergites 1-4 with posterior marginal areas depressed as in papuanus, tergite 2 also depressed at base, thus the intersegmental area of 1 and 2 appears constricted, while between others constriction not marked. Pygidial area apically narrowly extended, long and deeply gutterwise excavated. Hind tibial structure generally as in papuanus, but the teeth on outer side are more abundant and mostly spiniferous.

Upper frons on anterior inclined verge closely covered with medium-sized punctures that are closer anteriorly, PIS on the verge microcoriaceous, on flat dorsal area punctures fine, sparse and weak, and finer, sparser and weaker posteriorly, on ocellar area and on vertex till occipital margin punctures more distinct, somewhat large and close; punctures on mesoscutum medium-sized, close, anteriorly and on broad central area longitudinally elongate and partly joined, with PIS partly appearing like rugosed carinae, posterior marginal area longitudinally, finely and closely striate, striae longer inwards; scutellum closely punctured, on posterior area longitudinally punctate and striate, punctures on postscutellum irregular in size, generally close. Area dorsalis at extreme base coarsely foveate, on disc closely covered with medium-sized and very shallow punctures, punctures not smooth on bottom and posteriorly somewhat deeper, closer and mixed with oblique striae, outside area dorsalis and inside the basal part of lateral carinae surface obliquely rugoso-striate and partly mixed with punctures, posterior inclination on flat central area transversely rugosed and punctured, on lateral areas transversely striate, whole the surface irregularly microsculptured, half-mat. Mesopleuron somewhat sparsely covered with medium-sized shallow punctures all over, but on anterior area punctures partly longitudinally confluent, metapleuron coarsely, propodeal side finely, both longitudinally striate. Gaster above, except finely, sparsely punctured tergite 1 and strongly, closely punctured posterior part of tergite 5 in front of impunctate marginal area, practically impunctate, pygidial area and outside it very strongly and coarsely punctured; mat areas of sternite 2 large, rounded, but not outlined and rather indistinct.

♂, unknown.

Holotype: ♀, Solomon Is., Russel I., Pavuvu, 20.IV.1945, G. E. Bohart leg. (Coll. CAS).

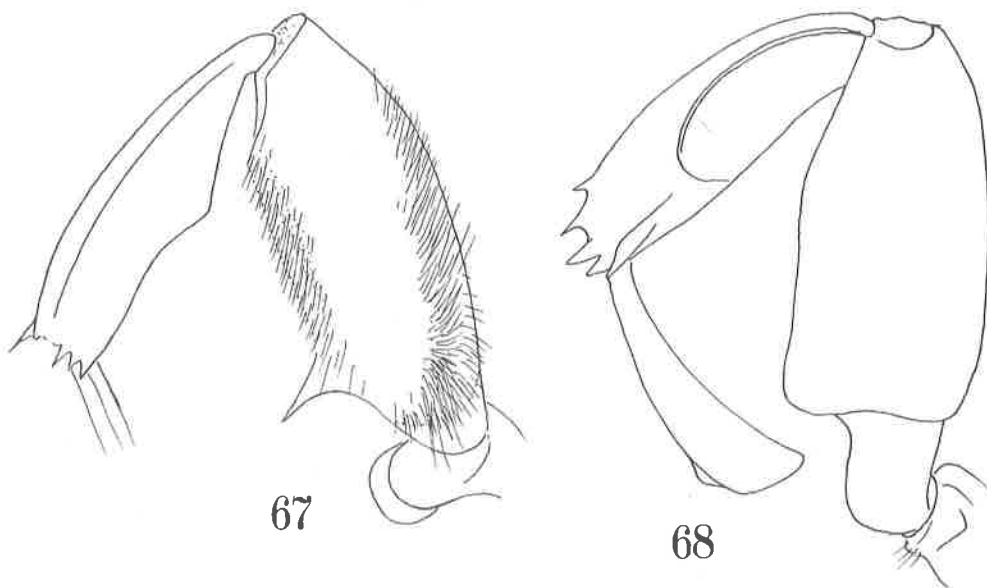
16. LESTICA (SOLENIUS) TOBLERI TSUNEKI, 1977

Lestica (Solenius) tobleri Tsuneki, SPJMA, 3: 17, 1977 (2 ♂ 30 ♀, Solomon Is. Bougainville I., Kieta District).

Specimens examined:

10 ♀ 2 ♂, Guadalcanal I. (6 ♀ 1 ♂, Tenaru River, I.1945, G. E. Bohart, CAS; 4 ♀ 1 ♂, 1944, D. Elden - Coll. Mus. Comp. Zool. Harvard Univ.)  
6 ♀ 9 ♂, Russel I., Pavuvu, 20.IV.1945, G. E. Bohart (Coll. CAS).  
1 ♀, L. Florida I., III.1945, G. E. Bohart (Coll. USNM).

Remarks. In the original description the femora and tibiae of the fore and mid legs in the male are not illustrated. Seen from posterior (or outer) side fore femur and tibia: Fig. 67, those of mid leg with metatarsus: Fig. 68.



Figs. 67 and 68. Lestica tobleri Tsuneki, ♂

17. LESTICA (SOLENIUS) KROMBEINI SP. NOV.

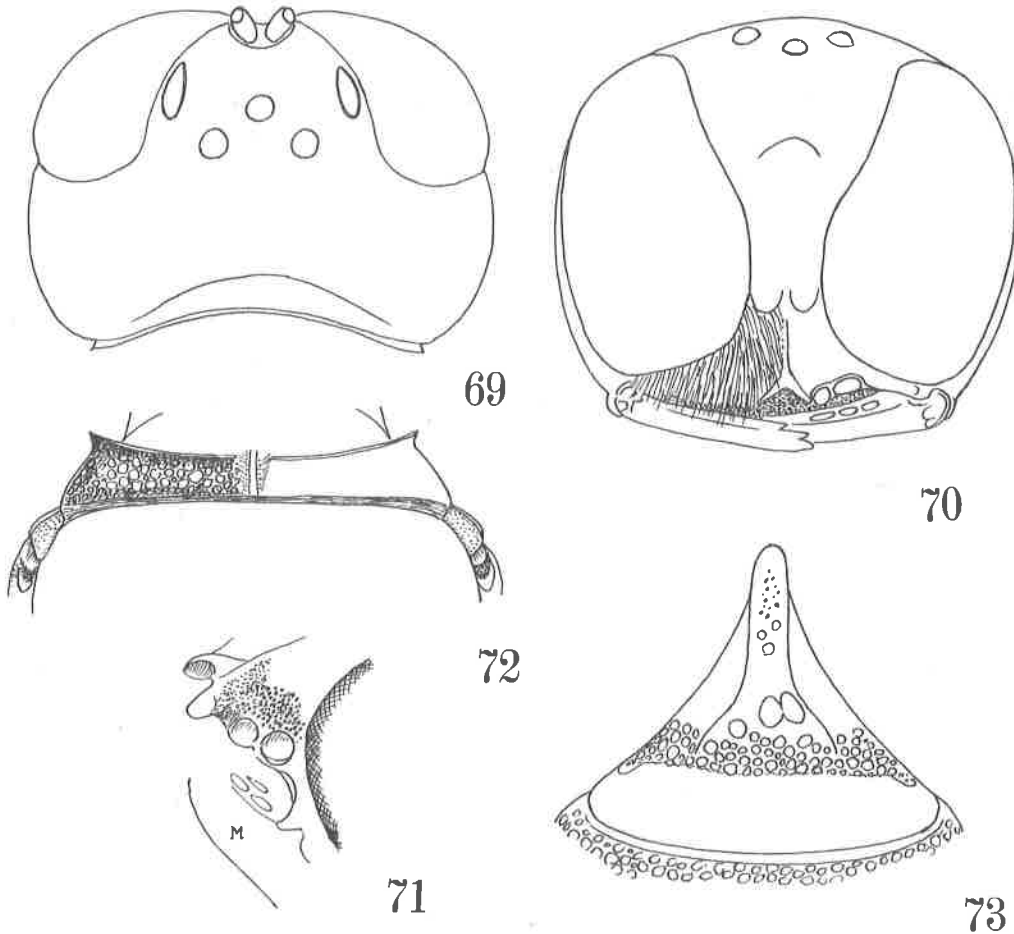
♀. Allied to L. molucca Leclercq, differs from it at least in that the antennal scape is yellow, pronotum including tubercles is completely black and characteristic is that each of gastral tergites 1-4 is transversely acutely carinated in front of apical marginal area.

8.5 mm. Black; antennal joint 1 lemon yellow (basal condyle dark brown), joint 2 translucent pale brown (in some light appears blackish above), 3 and 4 slightly brownish beneath, mandible with a dark reddish patch before apex, pronotum completely black, tegula translucent pale brown, with anterior narrow punctate area blackish, gastral tergites 1-5 each with a yellowish mark on each side (possibly lemon yellow under natural condition, now orange or brownish yellow), it is transverse, irregular in form, on 2 largest, with interspace less broad than the mark, on 1 as wide as the mark, on 3, 4, 5 gradually wider than the mark and on 3 and 4 each mark separated in two; apical marginal area of each tergite narrowly brownish. Fore knee and each tibia except brown inner side lemon yellow, spurs and tarsi yellowish ferruginous, apex of each tarsal joint and all apical joints brown, outer margins of tibial spurs appear in some light condition brownish. Hair on clypeus silvery, with a slight brassy lustre, short velvety pile covering the lateral flattened areas of gastral sternite 2 silvery.

Head seen from above: Fig. 69, seen in front: Fig. 70, flat-bottomed supraorbital foveae margined with fine shining carina, bottom also shining, antennal joint 1 as long as joints 2-7 united, ultimate joint more than twice as long as penultimate joint, clypeus medianly produced, with apex broad triangularly incised into bidentate structure (in Fig. 70, here ventral - or inner - rounded margin more advanced, appearing black), with oblique sides of median produced part thick and excavated by two contiguous large foveae (Fig. 71, oblique lateral view), mandible stumpy, tridentate at apex (in Fig. 70), occipital carina reaching close to hypostomal carina, but not reaching there, with apex not toothed. Pronotum seen from above: Fig. 72, mesoscutum longitudinally impressed medio-anteriorly, area dorsalis on propodeum not distinctly margined posteriorly with carina, gastral tergites 2 and 3 broadly depressed at base, pygidial area: Fig. 73. Abscissae 1 and 2 of radius relatively 20:24, of cubitus 30:9 (under same scale), femora of legs thick and each longitudinally acutely keeled beneath, hind tibial spurs dilated, fringed with short hair beneath, appearing finely serrate, on shorter one the

hair slightly long at apical half.

Upper frons and central part of vertex closely and strongly punctured, rest of vertex finely and closely punctured, punctures on pronotal collar irregular in size, on mesoscutum large, deep and longitudinally lengthened, with shining puncture-interspaces that are wider posteriorly, on lateral and posterior areas punctures finer and closer; mesopleuron very coarsely punctured, with interspaces partly as wide as puncture diameter and on epimeral area mixed with longitudinal striae, metapleuron and side of propodeum longitudinally closely striate, striae on the latter posteriorly



sparse and finally turned into weak network; area dorsalis longitudinally coarsely striate, appearing a transverse series of large elongate foveae, posterior inclination with lateral margins distinctly carinate, but the carina weak and less marked on sides of dorsal aspect; punctures on gastral tergites as large as those on lateral parts of vertex, fairly close, but finer and closer on basal and apical areas, apical marginal area behind transverse carina of each segment weakly microcoriaceous, tergite 6, except base of pygidial area and outside of the area, impunctate and delicately microcoriaceous.

♂, unknown.

Holotype: New Guinea, Nadzab, Markham, River valley, 14.V.1944, K. V. Krombein (Coll. USNM).

#### L i t e r a t u r e

Bohart, R.M. & A.S. Menke. 1976. The Sphecoid Wasps of the World. Univ. Calif. Press.

Tsuneki, K. 1977. On the Crabronine wasps of the southern Pacific and Australia. SPJHA, 3: 1-27 (with complete list of references).

I N D E X

<u>Genus or Subgenus</u>		<u>Species (Genus)</u>	
* Bishamonis*	17	bougainvilleae (Crossocerus)	8
Cameronitus*	18-20	butuana (Piyuma)	13
Ceratocrabro	1	* guadalensis (Dasiproctus)	17
Crossocerus	8-12	* hollandianus (Crossocerus)	12
Dasiproctus	16-17	* iebeleus* (Ectemnius)	19
* Ebisus*	2	* krombeini (Ectemnius)	20
Ectemnius	18-24	* krombeini (Lestica)	26
Epliloides*	8-12	* inondensis (Crossocerus)	10
Lestica	25-26	* orthofi (Crossocerus)	12
* Papuacrabro*	22	* papuanus (Papurus)	5
* Papurus	5	* papuanus (Ectemnius)	22
Piyuma	13-14	* papuensis*(Piyuma)	13
Podagritus	2-5	* papuensis (Ectemnius)	18
Solenius*	25-26	rugosa (Vechtia)	15
Vechtia	15	shimoyamai (Ceratocrabro)	1
		* solomonensis (Dasiproctus)	16
		* solomonica (Piyuma)	14
		* solomonicus (Ectemnius)	24
		tobleri (Lestica)	25
		* toxopeusi (Podagritus)	3

Remarks. Names that are topped with an asterisk show new to science and those tailed with this indicate subgenus or subspecies.