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## Sphecoidea taken by the Noona Dan Expedition in the Philippine Islands (Insecta, Hymenoptera)

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Very many erroneous changes were  
introduced in the description  
by the editor!

*Abstract.* A total number of 87 species and subspecies are recorded from the islands of Palawan, Balabac, Tawi Tawi and Mindanao. In addition to some redescriptions 46 new taxa are described in the genera *Dolichurus* (1), *Cerceris* (2), *Argogorytes* (1), *Bembecinus* (1), *Tachytes* (3), *Larra* (1), *Liris* (*Dociliris*) (10), *Trypoxylon* (11), *Stigmus* (*Carinostigmus*) (4), *Spilomena* (1), *Ectemnius* (*Cameronitus*) (2), *E.* (*Apoctemnius*) (1), *Vechtia* (1), *Crosso-cerus* (*Paroxybelus*) (1), *C.* (*Ablephariceps*) (1), *Dasyproctus* (3), *Isorhopalum* (1) and *Rhopalum* (1). Further 7 known taxa are new to the Philippines. New combinations are *Liris* (*Nigiliris*) *japonica manilae* (Ashmead) and *Oxybelus lamellatus banksi* (Ashmead). *Oxybelus philippinensis* Pate is suppressed as a junior synonym of *O. lamellatus banksi* (Ashmead), *syn. n.* The New World subgenus *Apoctemnius* (genus *Ectemnius*) is recorded from the Old World for the first time. The subgenus *Iwataia* is suppressed and as a section included in the subgenus *Cameronitus* (genus *Ectemnius*). The new *Liris* taxa are inserted in the key by Williams (1928) and a key is given to the treated females of *Tropoxylon*.

The present paper deals with the main part of the Sphecoidea collected during the stay of the Danish Noona Dan Expedition in the Philippine Islands in the autumn of 1961 (Petersen, 1966). Excluded from the present investigation are the Psenini (treated by J. P. van Lith), Sphecinae and Bembix. The material constitutes one of the most important collections ever made in Southeast Asia. Its content of more than 50% new taxa shows, that the fauna of the Philippines still needs investigation. The localities visited by the expedition (the islands of Palawan, Balabac and Tawi Tawi and the western peninsula of Mindanao) were particularly chosen to elucidate the faunal relationships between the Philippines and Indonesia. Unfortunately, however, such an analysis is not possible because our knowledge of the sphecoid fauna, especially of Borneo and Celebes, is quite incomplete.

All the types and other specimens, except a few duplicates in my collection, are preserved in the Zoological Museum, Copenhagen. I wish to express my sincere thanks to Dr. Børge Petersen, Copenhagen, for giving me the chance to examine this interesting material.

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The following abbreviations are used in the text. IOD: Interocular distance; OOD: Oculocellar distance; POD: postocellar distance; OCD: Ocelloccipital distance; OAD: Oculo-antennal distance; WAS: Width of antennal socket; IAD: Inter-antennal distance; CAD: Clypeo-antennal distance; AOD: Antenna-ocellar distance; OTD: Oculo-tentorialpit distance; ITD: Intertentorial-pit distance.

#### AMPULICIDAE

*Dolichurus amamiensis* Tsuneki and Iida, 1964

*Material.* PALAWAN: 1 ♀, 2 ♂, Uring Uring, 14–20.viii.1961; 1 ♀, Pinigisan, 600 m, 4.ix.1961. BALABAC: 3 ♀, 4 ♂, Dalawan Bay, 8–13.x.1961. TAWI TAWI: 7 ♀, 2 ♂, Tarawakan, 27.x.–13.xi.1961.

*Remarks.* The comparatively large number of specimens made it possible to examine the variation of characters.

(1) Supraantennal lamina. In all the specimens examined, as in specimens from the Ryukyus and Formosa, this is always broader than long and with much of the anterior margin transversely truncate, the corners rounded and the lateral margins nearly straight (♀♂) or roundly curved (♂); when curved the top of the curvature is either near the apical margin or towards the middle. In females the anterior margin is slightly incrassate and raised, but in males not raised and flattened; in both sexes the surface is slightly inclined towards the median line, sometimes with a gentle rounded elevation on each half; in males the medial impressed line may reach the anterior margin and the anterior margin thus appears to be triangularly incised. In Formosan and Ryukyu specimens the lamina is narrowed towards the base with the extensions of the lateral margins distinctly convergent upwards as strong carinae on the frons; in the Philippine material most females are as above, but in some the margins are nearly parallel and in males the first form is rather rare and the second one common. In the original specimens the surface of the lamina is almost always smooth and impunctate (♀♂); in the females examined here it is mostly arcuately or circularly, but not strongly, striate, sometimes accompanied with a few punctures on the antero-lateral portions, or simply sparsely punctate or rugosopunctate or bluntly striate but only rarely smooth. The upper border of the smooth area is varied in outline; it may be straight, triangularly incised or roundly produced, and occasionally indistinctly it shifts into the frontal sculpture.

(2) Frontal sculpture. In females short blunt longitudinal striae or rugae are present within the area just above the lamina and on its nearest sides, the remaining parts of the frons are sparsely and comparatively largely punctate; in males the frons is broadly longitudinally rugoso-striate and subreticulate, usually with a distinct median carina, but the density of the rugae is considerably variable. In one specimen from Balabac the sculpture is weak and obsolete upwards (but not as much as in the following species).

(3) Mesopleural sculpture. Upper epimeral area smooth and shining, with extremely fine scattered points; lower episternal area longitudinally rugoso-punctate and -striate, the relative strength of the punctures and the rugae is considerably variable.

(4) Sculpture of propodeum. In both sexes the dorsal aspect with 3 medial and, on each side, 3 lateral longitudinal carinae, the lateral 2 of the median 3 are parallel, or nearly so, and form the lateral margins of the area dorsalis, the inner 2 of each outer 3 encircle the area dorsalis as a series of fovea on lateral and posterior margins. This kind of sculpture is fairly constant in both sexes. This is not the case for the sculpture on the posterior aspect and on the sides. The posterior aspect is usually radiately coarsely subreticulate, but sometimes the main rugae are transverse, and the density and strength of the rugae are fairly variable. On the sides the surface is always longitudinally striate, but both the obliteration of the striae on the anterior and ventral parts and their density and strength are considerably variable. The size of the teeth at the middle of the lateral margins and of the rounded protuberances on the upper border of the posterior aspect of propodeum is also markedly varied.

The abdominal tergites are closely, distinctly, though finely, punctate in males.

*Dolichurus pigmaeus* sp.n.

*Types.* BALABAC: holotype ♂, Dalawan Bay, 8.x.1961; paratype, 1 ♂, same loc., 12.x.1961.

*Description.* ♂. Length about 4.5 mm. Black; mandibles at apical half ferruginous; palpi, antennae, tegulae and legs brownish in holotype (in paratype antennae and legs much darker); anterior margin of supraantennal lamina and top of postero-lateral elevations of pronotum white; wings hyaline, stigma and veins dark ferruginous. Hairs on clypeus long, and fairly close, on thorax long and sparse, whitish.

Head above more roundly raised than in *amamiensis*, especially transversely; OOD:POD = 2:1 (in *amamiensis* about 3:2); ratio of IOD at vertex, middle of face (maximum) and base of clypeus as 20:23:16; supraantennal lamina broader than long, with apex truncate, sides parallel and rounded at the corners; extended carinae of lateral margins of frons parallel in holotype, indistinct in paratype (3-branched); the surface of the lamina inclined gently towards the medial line and in paratype the anterior margin appears slightly incised at its apex; clypeus with median carina distinct down to apex; antennae filiform, joint 3 approximately 4 times as long broad at apex. Pronotum as in *amamiensis*, medio-posteriorly broadly depressed, with sides raised and tuberculate, the tubercles more strongly produced than in *amamiensis*; the three lobes of mesonotum slightly more roundly raised than in this species; propodeum also similar, but lateral teeth of posterior aspect are very short and low and the protuberances on the upper bordering line are also weak, less than semicircular in form, not marked. Apical depression of abdominal tergite 3 not strong, preapical transverse and arcuate impressed line or fold is distinct and marked. Relative length of abscissae of radial vein of fore wing different in the types, in holotype  $1 < 3 < 2 < 4$ , in paratype  $3 < 1 < 2 < 4$ .

Vertex very sparsely and finely punctate; frons above the lamina and on the lateral areas irregularly and not strongly rugoso-reticulate, the size of meshes varying between the types, the sculpture is weaker upwards and

becomes indistinct considerably before reaching the anterior ocellus. Medio-anterior part of pronotum transversely, closely, but weakly striate; mesonotum smooth and polished, with very fine hair-points sparsely scattered; propodeum sculptured as in *amamiensis*, but the lateral carinae of the 3 median longitudinal ones are slightly convergent posteriorly, the posterior aspect is finely, irregularly rugoso-reticulate, with a few rugose striae stronger, and the sides longitudinally and coarsely striate, the striae on upper portion strong, but they become weaker downwards (in paratype even obsolete downwards and the surface is shining). Abdomen finely and sparsely punctate, puncture-intervals far larger than the width of the punctures.

♀, unknown.

*Remarks.* This species closely resembles *D. amamiensis*, but is much smaller, with the sculpture on the frons weaker and indistinct upwards, OOD relatively much larger and the punctures on the abdomen markedly sparser.

#### SPHECIDAE PHILANTHINAE

*Cerceris variaesimilis* Maidl, 1926

*Material.* MINDANAO: 2 ♀, Sapamoro, 20-22.vii.1961.

*Distribution.* Java, Malaya, Thailand, SE. China, Philippines, Formosa, Okinawa and Kyushu.

*Remarks.* In the present specimens the ferruginous colour of abdominal segments 1 and 2 is much less developed than in those from Formosa and the punctures on the abdominal tergites are much sparser.

*Cerceris luzonensis* Crawford, 1910

*Material.* PALAWAN: 4 ♂, Uring Uring, 14-22.viii.1961.

*Distribution.* The Philippines and Formosa.

*Remarks.* Of the four specimens examined two have a small central mark on clypeus, but are without apical marks on tergite 2 and not maculated on tergites 4 and 5, while the other two do not have a clypeal mark, but are maculated on the postero-lateral areas of the tergites mentioned. The petiole of the abdomen is slightly wider than long in all specimens.

*Endemic to Philippines*  
*Cerceris dowi* Tsuneki, 1968

*Material.* PALAWAN: 2 ♀, 1 ♂, Uring Uring, 14-20.viii.1961. BALABAC: 1 ♂, Dalawan Bay, 1.x.1961. MINDANAO: 2 ♂, Sapamoro, 16,20.xii.1961.

*Description.* ♀ (hitherto unknown). Length 9 mm. Black, with the following portions yellow: Facial mark (fig. 1), mandible except apical third (fig. 2), scape in front, a spot above on temple behind the eye, two lateral marks on collar, postscutellum, a large mark on each latero-posterior part of propodeum, a transverse mark at base and postero-lateral spots on tergite 2, medially narrowed bands on tergites 3-5, large lateral spots on sternites 2 and 3, apices of all coxae, all trochanters, fore and middle femora except in part behind,

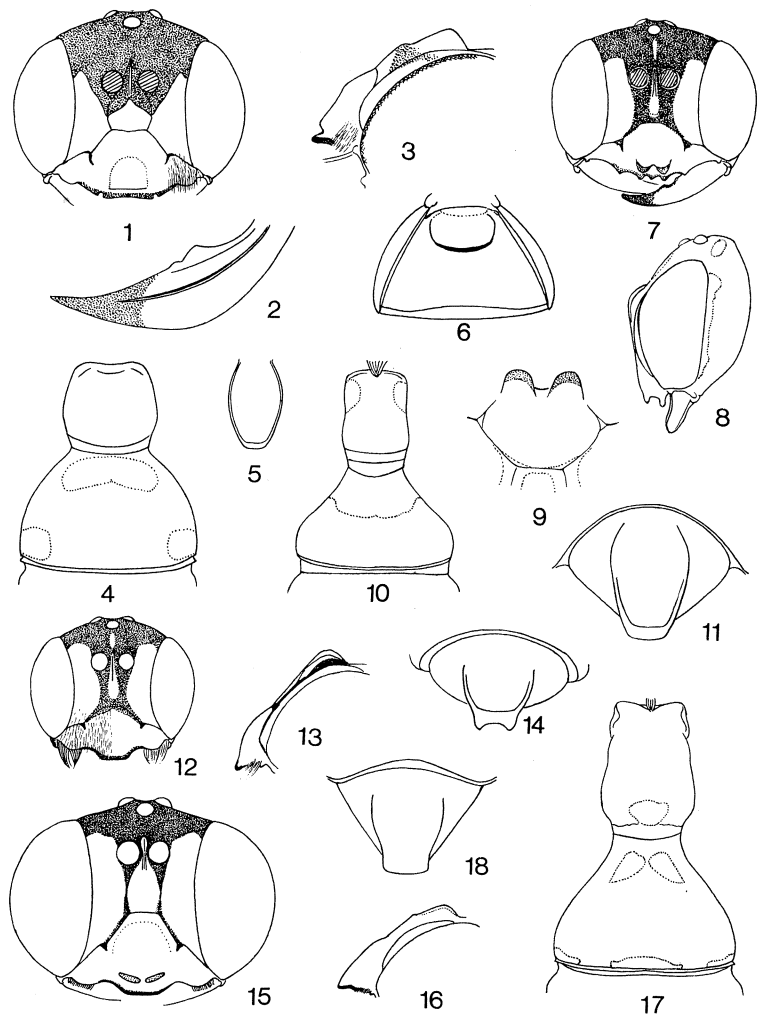
\* The colouration of the specimens is markedly changed to reddish, possibly due to cyanide vapour, but in the following it is described as follows

apices of hind femora, fore and middle tibiae and tarsi, hind tibiae except an apical mark on outside and hind tarsi beneath. Antennal flagella beneath ferruginous and tegulae and hind tarsi above dark brown. Wings hyaline, slightly darkened throughout, more strongly so on anterior half of radial cell and its outer part till apex; stigma and veins dark brown. Hairs sparse, moderately long and slightly ferruginous except for those on lateral lobes of clypeus, which are long, dense, appressed and silvery.

OOD:POD = 14:8; relative width of postocellus 5.5. Head seen in front (fig.1); OAD:WAS:IAD = 10:7:4; CAD relatively 12; interantennal carina markedly thin, highly raised and steeply inclined upwards; supraclypeal area nearly flattened; clypeus (figs. 1, 3) at base gently roundly raised, but broadly flattened (sometimes even slightly excavated) from above middle down below and acutely inclined above the apical margin; apical margin with a rounded incision on each side of the medial truncate part; mandible: fig. 2; length ratio of antennal joints 3, 4 and 5 approximately 3:2:2, joint 3 in dorsal view 1.7 times as long as broad at apex, ultimate joint normal, suddenly attenuate at apex. Collar of pronotum comparatively thick, without a distinct medial carina or incision but at antero-lateral corners a strong transverse carina is sinuately running down to the outer side of procoxa; mesopleuron with scrobal furrow broad and deep, not outlined, with epimeral area roundly raised; area dorsalis on propodeum rather small, nearly equilateral triangular in form, medianly with an impressed line and margined by the crenate furrows, posterior aspect of propodeum broadly concave, the concave area roundly narrowed upwards. Tergite 1 (fig. 4) wider than long; tergite 2 semicircular with the lamellate apical margin only slightly reflected; pygidial area: fig. 5; platform on sternite 2 (fig. 6) acutely bordered on apical margin; sides of the incrassate part of sternites 3-5 roundly swollen, but not transformed into a tooth even on 5. Hind tibia with a strong serrate carina carrying a row of 8 spines on outer side.

Vertex finely reticulate; upper frons somewhat <sup>more largely</sup> longitudinally rugulose; sides of lower face, supraclypeal area and medial lobe of clypeus increasingly <sup>markedly</sup> somewhat irregularly, rugosely punctate-reticulate in part; lateral lobes of clypeus with fine and close pile-bearing points. Thorax and propodeum except ventral side moderately largely and closely punctate-reticulate; mesonotum partly rugose, especially posteriorly; postscutellum finely and sparsely punctate; shining; area dorsalis finely and sparsely punctate at base, transversely and coarsely striate posteriorly; sides of pronotum, obliquely, and upper half of metanotum, longitudinally, rather sparsely striate. Punctures on tergites medium-sized, angular and closely placed, with variable intervals, subreticulate; pygidial area irregularly, mainly transversely rugose.

*Remarks.* This species is very closely allied to *C. pictiventris* Dahlbom, but the supraclypeal area is not <sup>as</sup> highly raised as in this species and in the female the disc of the clypeus is at its anterior end subtruncately emarginate above the apical margin. Further, the maculation of the abdomen is different from ~~that of~~ *pictiventris*. In the male the area dorsalis is obliquely striate, the striae varying in density with the specimens, but always becoming indis-



Figs. 1-6. *Cerceris dowi* Tsuneki, female; 1) head; 2) mandible; 3) face, lateral view; 4) abdominal segments 1 and 2; 5) pygidial area; 6) sternite 2. - Figs. 7-14. *C. palawanensis* sp.n., female; 7) head; 8) head, lateral view; 9) lamina of clypeus; 10) abdominal segments 1 and 2; 11) pygidial area, and 12) head, male; 13) head in profile, male; 14) pygidial area, male. - Figs. 15-18. *C. brevibarbata* sp.n., male; 15) head; 16) face, lateral view; 17) abdominal segments 1 and 2; 18) pygidial area.

tinct at the medio-basal part, which is rather sparsely punctate, metapleuron is always longitudinally striate and abdominal segment 1 is always shorter than long seen from above.

The two male specimens from Palawan and Balabac are not maculated on scutellum and mesopleuron and the marks on the propodeum are comparatively small.

*Distribution.* The Philippines.

*Cerceris palawanensis* sp.n.

*Types.* PALAWAN: holotype ♀, Pinigisan, 600 m, 3.ix.1961; paratype, ♂, same loc., 21.ix.1961.

*Description.* ♀. Length 8.5 mm. Black with the following portions yellow: Facial mark (fig. 7, apical margin of clypeus pale brown), mandibles except apical third and the inner margin, antennal joint 1 in front, outer orbits of eyes, two transverse marks on vertex obliquely behind postocelli, nape region of pronotum, a broad band on collar and a mark on each lateral aspect of pronotum, two large medianly contiguous marks on scutellum, postscutellum, two large marks on mesopleuron separated by the scrobal furrow, two very large marks on propodeum, two lateral spots on tergite 1, a large mark at base and a medio-apical spot on tergite 2, a broad band on tergite 3, a narrow one on 4, medially narrowed short band on 5, nearly all of sternites 1 and 2, sides of sternite 3, fore legs except base of coxae, the greater part of femora and a spot on inside of tibiae, mid and hind trochanters except underside, a mark in front and behind on apical portion of mid femora, a mark in front of hind femora, mid and hind tibiae in front and mid metatarsi. Antennae beneath, mandibles except yellow area and the greater part of abdominal segment 6 ferruginous; mid and hind tibiae except the yellow area and the rest of tarsi of the same legs dark brown. Wings hyaline, radial cell and its external part clouded, stigma and veins dark brown.

OOD:POD = 11:6.5, ocelli in a slightly low isosceles triangle; head seen in front (fig. 7), OAD:WAS:IAD = 8:6:4, CAD:AOD = 13:17, ATD:ITD = 6:22; clypeal lamina in two lobes with apex pale brownish (figs. 7, 9). Head seen in profile: fig. 8; length ratio of antennal joints 3, 4, 5 approximately 8:5:4.5, joint 3 about 2.3 times as long as broad at apex, 8 slightly longer than broad. Collar of pronotum not carinate on antero-lateral corners, not furrowed or raised in middle; mesonotum without medio-basal impression; mesopleuron with upper epimeral area and lower episternal area roundly raised, separated by the deep scrobal furrow, not tuberculate; area dorsalis of propodeum slightly low equilateral triangular, marked off by a weak crenate furrow, outside the area roundly inclined sideways and posteriorly, without distinct border; posterior aspect of propodeum flattened and in the middle longitudinally, broadly, but not strongly impressed. Tergites 1 and 2: fig. 10; apical margins of tergites 2-5 not highly reflected; pygidial area: fig. 11; sternite 2 with basal platform, the following sternites not markedly incrassate at the sides; sternite 6 with two pairs of apical teeth, sinus of the median pair rounded and between the inner and outer pairs a pencil of hairs is present. Hind coxae without a longitudinal carina on inner side; hind tibia provided with a spinebearing serra of which 4 apical teeth are strong and 2 basal ones are weak and not acutely pointed. Venation normal.

*the former without large punctures mixed but*

Vertex moderately largely punctate-subreticulate, on ocellular areas with more or less shining interspaces and the punctures posteriorly becoming finer and closer; upper frons longitudinally, closely rugoso-punctate; sides of lower face more largely and closely punctate; clypeus and supraclypeal area very finely and closely punctate, the latter also with a few medium-sized punctures interposed. Mesonotum and scutellum longitudinally, finely and closely, more or less rugosely striate, and also with indistinct fine punctures; mesopleuron sparsely scattered with indistinctly outlined comparatively large punctures and on the postero-ventral area mixed with oblique weak rugae; area dorsalis of propodeum sparsely, finely punctate, the lateral parts obliquely finely striate and on the posterior part the striae on both sides are arcuately connected with each other; rest of propodeum moderately largely, sparsely, not strongly punctate, with shining surface. Abdominal tergite 1 sparsely and rather finely punctate, shining; other tergites moderately largely, fairly closely punctate, the punctures on each tergite, except tergite 5, are anteriorly sparser and posteriorly closer, and as a whole the punctures on the dorsal side of abdomen become somewhat smaller, closer and weaker posteriorly, with interspaces closely covered with pile-bearing micropoints, not shining; area pygidialis irregularly, coarsely and weakly rugose; sternite 2 very sparsely scattered with a few medium-sized punctures, other sternites closely micropunctulate, without distinct punctures.

♂. Length about 7 mm. Black; in the yellow maculation similar to the female, except that marks on scutellum are distinctly separated, tergite 1 without yellow maculae, tergite 5 narrowly and 6 broadly banded and tergite 7 with the pygidial area wholly yellow.

OOD:POD = 11:6, OAD:WAS:IAD = 7:5:3.5, CAD:AOD = 11:13, OTD:ITD = 18:5. Head seen in front: fig. 12; curvature of clypeus in lateral view: fig. 13; length ratio of antennal joints 3, 4, 5 as 8.5:7:6; joint 3 about 2.2 times as long as broad at apex. Otherwise similar to the female, but area dorsalis almost equilateral triangular, tergite 1 longer, approximately twice as long as its maximum width, pygidial area different in form (fig. 14), sternite 7 with only one pair of apical teeth and hind coxa without carina on inner side. Punctuation and sculpture are also as found in the female except on the head above the punctures are comparatively slightly larger, while they are much sparser on abdomen of which the surface is more shining.

*Remarks.* The present species is apparently similar to *C. vulcanica* van der Vecht (? = *C. greeni* Bingham), but the sculpture on mesonotum and abdomen is markedly different and the form of the 1st abdominal segment and the clypeal lamina is also not the same. The species is similar to *C. malayana* Cameron in colour, but differs from this, however, at least in the sculpture of the area dorsalis of the propodeum.

*Cerceris brevibarbata* sp.n.

*Type.* TAWI TAWI: holotype ♂, Tarawakan, 29.x.1961.

*Description.* ♂. Length 10.5 mm. Black, with the following portions yellow. Facial mark (fig. 15), a spot at base,

*on outer side*

*Flagellum on basal portion dark brown*

of antennal joint 1, a spot above on temples behind eyes (without mark on vertex), two large marks on pronotum, tegulae, two large marks on scutellum, postscutellum, a spot on epimeral area and a large mark on lower episternal area of mesopleuron, a small mark on each side at base and two large marks near apex of propodeum, characteristic marks on tergites 1 and 2 (fig. 17), narrow apical bands on tergites 5-6, small lateral spots at base of tergite 3, large lateral marks on sternites 2 and 3, a streak at base and at apex of fore and middle femora, fore and middle tibiae except inside and at apex, and the greater part of all metatarsi (rest of tarsi brown). Wings slightly fuscous, anterior margin till apex rather broadly and fairly strongly darkened; stigma and veins black.

*in front behind*

OOD:POD = 12:9; head seen in front: fig. 15; AOD:WAS:IAD = 8:7:3, OTD:ITD = 7:22; CAD:AOD = 15:21; face markedly narrow, rather flattened without remarkable elevation or depression; supraclypeal area slightly raised upwards; median lobe of clypeus gently raised and broadly flattened, with a pair of strange windows near apical margin (fig. 15), the lateral lobes with a fringe of markedly short hairs; facial curvature in lateral view: fig. 16, length of antennal joints 3, 4, 5 as 14:11:10; joint 3 in the broadest view 2.2 times (in the narrowest view 2.5 times) as long as broad at apex; ultimate joint compressed laterally, with apex obliquely, gently roundly subtruncate. Collar of pronotum with antero-lateral areas transversely shortly carinate, the carina running down the side of the notum; mesopleuron with scrobal furrow broad and deep, without precoxal tooth or spine; area dorsalis comparatively small, nearly equilateral triangular in form, distinctly marked off by narrow grooves, without the distinct median furrow. Tergites 1 and 2: fig. 17; apical lamellae of tergites 2-6 only shortly raised; pygidial area: fig. 18; sternite 2 without raised area at base; latero-apical areas of the following sternites not strongly incrassate. Fore femora markedly swollen; hind coxae without longitudinal carina on inner side; hind tibia without serrate spines, only with a row of 6 short and fine bristles.

*relative*

Punctures on vertex moderately large and close, on upper frons strong and subreticulate, each slightly lengthened and longitudinally somewhat rugosely arranged; punctures on lower face and median lobe of clypeus somewhat larger, partly longitudinally irregularly confluent. Punctures on mesonotum large, close, elongate, with interspaces longitudinally rugosely confluent; mesopleuron coarsely subreticulate, on lower part with variable interspaces; mesopleuron closely micropunctulate and longitudinally sparsely striate on upper portion; area dorsalis longitudinally, somewhat obliquely, finely and closely striate, rest of the dorsal and posterior aspects of propodeum comparatively largely reticulate, the sides anteriorly micropunctulate and posteriorly, in addition scattered sparsely with rounded punctures. Tergite 1 largely, rather closely punctured, with more or less distinct interspaces; punctures on the following tergites gradually smaller and sparser posteriorly, with interspaces closely micropunctulate; tergite 7 with moderately large and close punctures, interspaces microcoriaceous; sternites almost without punctures, only a few can be seen laterally.

*more*

to this species

Remarks. According to the figure given by Williams (1919) of the female of *C. spiniger* Rohwer (Rohwer's own description (1919) is astonishingly simple), the present species ( $\delta$ ) is similar in coloration except for the maculae on the head and the propodeum. It is impossible, however, to make a detailed comparison on the basis of the incomplete description.

with such an

NYSSONINAE

*Argogorytes palawanensis* sp.n.

Types. PALAWAN: holotype ♀, Pinigisan, 600 m, 8.ix.1961; paratypes, 2 ♀, same loc., 9., 10.ix.1961.

Description. ♀. Length 8-9 mm. Black, variegated with yellow and ferruginous brown. Yellow are clypeus on basal half, collar and tubercles of pronotum, two lateral marks varying in size on scutellum, postscutellum, a large mark on prepectus behind humeral tubercle, a band before posterior margin of tergites 1-4, a narrow, often medianly interrupted band on sternite 2 and a lengthened large mark on outer side of each tibia. Ferruginous brown are palpi, labrum, antennae, tegulae, basal plates of wings, last segment of abdomen and legs except coxae, trochanters and apical portions of tibiae. Wings somewhat fuscous, with dark brown anterior margin covering the whole radial cell and the outer part of the wing; veins black. OOD:POD = 10:12; ocelli in a curve, with a transverse impressed line behind the ocellar area; (vertex gently raised behind the line) head seen in front: fig. 19: IOD at vertex and near base of clypeus (minimum) relatively 40:38 (ocular index 1.05) / width to length of clypeus 43:20 (clypeal index 2.2); OAD:WAS: IAD:CAD = 8:8:9:5; antennal joints 3, 4, 5 subequal in length; joint 3 twice as long as broad at apex; mandible thick and stout and robustly bidentate at apex; head seen in profile with eye slightly wider than temple. A marked scrobe from which a bundle of short hairs emerge present on scutellum in the middle before apex; postscutellum seen in front medianly somewhat swollen into a tubercle; on ventral side of thorax anteriorly the acetabular carina distinct and high; median carina of mesosternum thick and attenuate apically, the short longitudinal carina on each side of mesosternum rather weak, but the transverse furrow across mesosternum just in front of meso-coxae deep and distinct, sparsely, not strongly crenate. Area dorsalis of propodeum like a broad triangle in form, distinctly margined by the furrow and medianly with a broad furrow: from middle of the area propodeum begins to incline to form the posterior aspect: the propodeal sides transversely broadly depressed medially. Abdomen formed as usual in the genus; the lateral carinae of basal excavation of tergite 1 weakly curved: reaching posteriorly about 2/5 of the segment from base; pygidial area narrow, medianly carinate as in allied species such as *A. stenopygus*, *matangensis*, *tonkinensis* and *nipponis*. Wing venation and legs normal for the genus: middle tibia externally on apical half with a row of short teeth-like spinules and at apex with two thick spines, one of which is markedly stout; other tibiae without spines.

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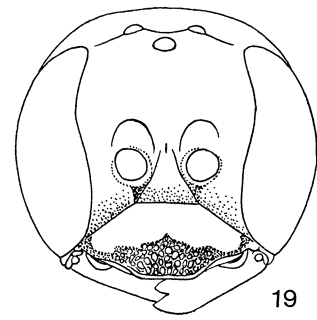


Fig. 19. *Argogorytes palawanensis* sp.n., female, head in frontal view.

Head finely and closely punctate; punctures on vertex with shining interspaces, but posteriorly and anteriorly they become finer and closer; on clypeus the punctures are gradually larger and coarser anteriorly and on the black area the sculpture becomes coarsely and partly rugosely reticulate; anterior margin of clypeus slightly raised, without punctures sometimes merely appearing transversely carinate. Mesonotum irregularly punctate-reticulate with medium-sized punctures and posteriorly rugoso-reticulate, the rugosity varying individually and sometimes almost the whole area is rugoso-reticulate; scutellum and postscutellum closely punctate; mesopleuron longitudinally coarsely striate, the striae weaker below and turning into sparse punctation; metapleuron smooth and polished. Area dorsalis longitudinally coarsely striate; outside the area dorsal aspect of propodeum very coarsely reticulate; posterior aspect from medio-apical centre radiately, rather closely striate, including the marginating carinae of the medial furrow; sides of propodeum longitudinally, very sparsely and coarsely striate, one or two of the lowermost striae curved up posteriorly. Abdomen finely and closely punctate, punctures on tergite 1 somewhat larger and basal excavation longitudinally, fairly distinctly striate; sternite 2 finely and sparsely punctate, mixed with rather large scattered punctures, rather similar to the condition in *A. fargei* (= *campestris*) than to *matangensis*.

Remarks. The new species is coloured almost as *A. stenopygus* Handl., known from Malaya, Celebes and Luzon, but differs from this at least in that the scuto-scutellar furrow is distinctly foveolate. In this character, as well as in some others, the present species is similar to *A. matangensis* Turner, described from Sarawak, Borneo, but differs in the punctation and sculpture on the clypeus and the posterior aspect of propodeum.

*Bembecinus insularis* (Handlirsch, 1892)

Material. PALAWAN: 2 ♀, Uring Uring, 15, 28.viii.1961; 2 ♀, Pinigisan, 600 m, 4, 9.ix.1961. BALABAC: 2 ♀, Dalawan Bay, 9.x.1961. TAWI TAWI: 70 ♀, 18 ♂, Tarawakan, 22.x.-14.xi.1961; 4 ♀, 10 ♂, Lapid Lapid, 21, 22.xi.1961.

Distribution. Malaya, Sumatra, West Java, Banka Is., Borneo, Celebes, Amboina, new to the Philippines.

*Redescription.* Hitherto the species has not been described in detail. The abundant material made it possible to investigate the variation.

*Coloration.* ♀. Clypeus and inner orbits wholly black; yellow are a mark on supraclypeal area, labrum on anterior margin, scape in front, flagellum beneath (apically brownish), a mark on nape region, a medially constricted band on pronotum, tubercles, a spot on tegulae, axillae of mesonotum, two lateral spots on scutellum (each about 1/4 the width of the sclerite), post-scutellum, large lateral marks on propodeum (about 1/8 the width of the sclerite), medially interrupted band on tergite 1, bands on tergites 2-5 (on 3 and 5 sometimes very short or completely lacking), small lateral marks on sternite 2, fore and middle femora apically beneath, fore and middle tibiae in front and fore tarsi except posterior margin.

♂. Generally similar to female, but the yellow tends to be more developed, with the maculae broader or larger. Inner orbit sometimes with an incomplete stripe, rarely clypeus with a small yellow spot, the yellow on axilla extends forwards into a lateral stripe, scutellar and propodeal maculae larger (the former about 1/3 and the latter from 1/6 to 1/4 the width of the respective sclerite), mesopleuron sometimes provided with one or two yellow spots, band on tergite 1 complete and broader, those on 2-6 always present, small lateral marks present on sternites 2-4 (those on 3 and 4 sometimes lacking), maculae on legs broader and larger, fore and middle tibiae except inside wholly yellow, fore tarsi except arolia and middle tarsi except terminal joint wholly yellow, hind tibiae each with a large mark on outer side and tarsi also partly yellowish.

*Structure.* Ocular index (IOD through postocelli by minimum IOD at base of clypeus) (average of 5 large and 5 small specimens) in ♀ 1.50-1.55, in ♂ 2.69-2.71. Clypeal index (minimum IOD by length of clypeus in middle) in ♀ 2.13-2.15, in ♂ 1.20-1.25. Ratio of OAD:WAS:IAD:CAD = 2:3:2:1 in ♀, and = 1:5:2:3 in ♂. A short impressed line or elongate impression on vertex just behind front ocellus present or absent in females, in males almost always present. Propodeum with the impunctate area of the area dorsalis narrower than postscutellum in both sexes, with the postero-lateral angles usually entire, broadly rounded, only rarely with a weak emargination. Tergite 6 uniformly punctate in both sexes; median carina on basal part of sternite 7 always present in male; medial spine of sternite 8 in male slender, weakly attenuate apically and rounded at the very slightly enlarged end. In fore wing the 2nd cubital cell triangular in 17 females and 13 males and quadrangular (with upper abscissa) in 55 females and 15 males, but in 8 females the cell is triangular in one of the wings and quadrangular in the other. Fore metatarsus is comparatively broad in female (fig. 20) and much less so in male (fig. 21).

*Bembecinus alternatus* van der Vecht, 1949

*Material.* BALABAC: 5 ♀, Dalawan Bay, 7-12.x.1961.

*Distribution.* Java, new to the Philippines.

*Remarks.* The mark on the supraclypeal area is variable in size, sometimes

the form of latero-posterior angles of propodeum as in the Javanese specimens

well developed occupying the whole area, sometimes divided in two and often completely lacking. Inner orbital band usually divided in two short stripes, sometimes entire. Clypeus usually black, but in one specimen yellow at base. Labrum yellow except black at base, the black mark when well developed reaching anterior margin, dividing the yellow into two lateral marks. Marks on thorax as in Javanese specimens; in 2 of the 5 present specimens the lateral yellow marks on scutellum are lacking; bands on tergites 1 and 2 are always broadly interrupted in the middle, tergite 3 is always immaculated, the medianly narrowly interrupted band on tergite 4 is sometimes lacking, and the small lateral spots on tergite 5 are also sometimes lacking.

Ocular index 1.90-1.93, clypeal index 1.47-1.56, OAD:WAS:IAD:CAD = 2:4:3:2. Second cubital cell of fore wing always distinctly quadrangular; fore tarsus similar in structure to that of *B. insularis*; impunctate area at base of propodeum distinct, slightly narrower than postscutellum; tergite 6 medianly distinctly impunctate. Average body length slightly larger than in *B. insularis*.

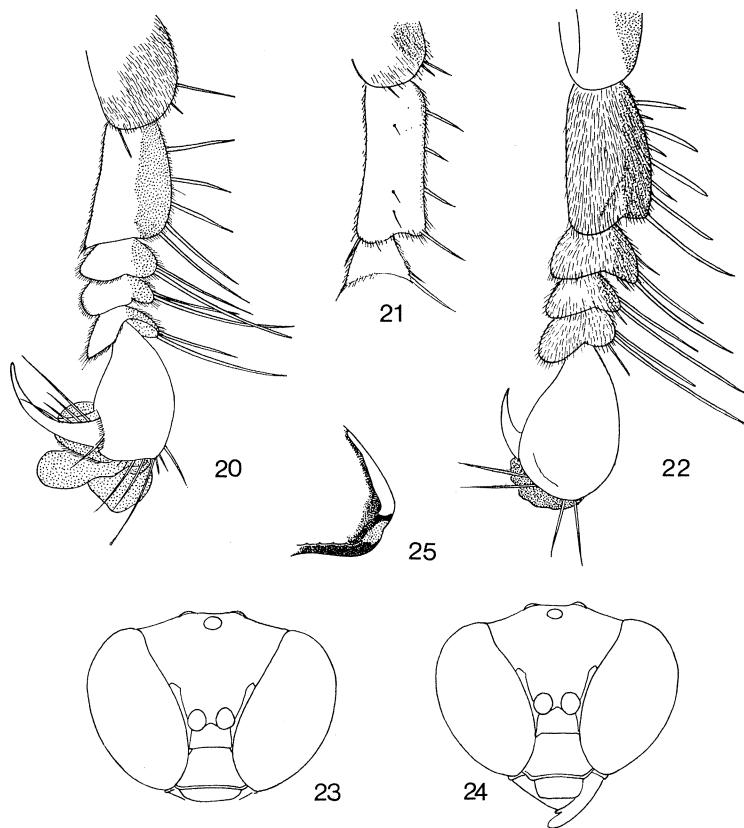
*Bembecinus littoralis* van der Vecht, 1949

*Material.* PALAWAN: 16 ♀, 2 ♂, Uring Uring, 15-30.viii.1961. BALABAC: 8 ♀, 6 ♂, Dalawan Bay, 7-12.x.1961.

*Distribution.* Malaya, Sumatra, Java, Riouw Arch., Banks Is., Kangean Is., new to the Philippines.

*Remarks.* The ocular index in the 16 females from Palawan is 2.59-2.87 (M 2.70), in the 8 females from Balabac 2.55-3.00 (M 2.79), the clypeal index in the former 1.18-1.38 (M 1.26) and in the latter 1.14-1.38 (M 1.23). In the 6 males from Balabac the ocular index is 3.29-3.43 (M 3.40) and the clypeal index 0.81-0.97 (M 0.91). The 2nd cubital cell of fore wing is always quadrangular, with the length of the upper vein considerably variable. Fore metatarsus comparatively slightly longer than in *B. insularis*, usually 1.8 times longer than maximum width, and usually with 4 spines on the outer margin, the spines about as long as the maximum width of the segment except the apical one, which is longer; the spines of the other tarsal joints generally similar to those of *B. insularis* (fig. 20). In males the median carina on sternite 7 is always present, though not reaching apex. This is the sole important difference from Javanese specimens. OAD:WAS:IAD:CAD = 1:3:2:2 in females and 1:4:2:4 in males.

*Varietas.* The two males from Palawan are somewhat different from those of Balabac. The head seen from in front is more rounded and the clypeus is less produced than the lower margin of the eyes (fig. 23, cf. fig. 24). If this difference shows to be constant the Palawan population is to be considered as a local race although the females from Palawan and Balabac apparently are quite alike. Apart from the shape of the head the Palawan males are not markedly different from the Balabac ones. The yellow abdominal bands are more complete as only the band on tergite 1 is distinctly interrupted in the middle. One of the specimens has an additional small yellow spot laterally on propodeum.



Figs. 20, 21. *Bembecinus insularis* (Handlirsch); 20) fore tarsus, female; 21) base of fore tarsus, male. - Fig. 22. *B. reticulatus* sp.n.; fore tarsus, female. - Figs. 23, 24. *B. littoralis* v. d. Vecht, head of male; 23) specimen from Palawan; 24) specimen from Balabac. - Fig. 25. *B. semperi* (Handlirsch), postero-lateral corner of propodeum, male and female.

*Bembecinus semperi* (Handlirsch, 1892)

*Material.* PALAWAN: 1 ♂, 1 ♀, Uring Uring, 25.viii. and 28.ix.1961.

*Distribution.* Philippines.

*Remarks.* OAD:WAS:IAD:CAD in the female is 1:2:2:1 and the 2nd cubital cell of the fore wing is triangular, but not petiolate. These attributes, together with the coloration, agree well with those of *semperi*.

As the description of this species is very brief and inadequate some comments will be given below. Additions to the original description of the whitish yellow parts or maculae are: The entire supraclypeal area except the lateral ends where the inner orbital bands are lacking, labrum except a medio-basal broad mark, palpi, a mark on nape, a spot on tegulae, postero-lateral corners of mesonotum, lengthened lateral marks of propodeum, a short band on

tergite 5, lateral marks on sternites 2-4, and hind tibiae with a large yellow mark on outer side. Ocular index 2.26 and clypeal index 1.58. A furrow or an impression behind fore ocellus absent. Propodeum with the postero-lateral angles not completely intact in the female examined, but weakly emarginate in lateral view (fig. 25). Triangular area of propodeum at base very narrowly impunctate. Tergite 6 without medial impunctate line. Antennal joint 3 in the narrowest view approximately 2.8 times (in the broadest view 2.6 times) as long as broad at apex. Fore metatarsus nearly twice as long as broad, on outer margin with five spines, four of them about as long as the width of the segment, the apical one longer, tarsal joints 2, 3 and 4 each carrying two spines, one of which is markedly long, about as long as the metatarsus. Length about 7 mm.

*Description.* ♂ (hitherto unrecorded). Length about 7.5 mm. Black, with the following portions whitish yellow (bands on abdomen more whitish): Clypeus, labrum, supraclypeal area, inner orbital lines, palpi, antennae beneath, a mark on nape, a band on pronotum, humeral tubercles, a spot on tegulae and on basal plate of wings, lateral marks on scutellum (each about 1/4 of the width of the sclerite), a band on postscutellum, postero-lateral marks on propodeum, complete bands on tergites 1-5 (laterally more or less broadened), lateral marks on sternites 2-5, fore and middle femora apically beneath, fore and middle tibiae and metatarsi except a streak behind, a large mark on outer side of hind tibiae and joints 2-4 of hind tarsi behind. Tarsi partly brownish.

Head seen in front as in fig. 23 except that the clypeus is produced slightly beyond the lower margins of eyes. Ocular index 2.87 and clypeal index 1.18; OAD:WAS:IAD:CAD = 1:3:2:2; antennal joint 3, about 2.3 times as long as broad at apex; the three apical joints as in *B. littoralis*. Propodeum behind the stigmata roundly convergent posteriorly, postero-lateral angle seen from the side very slightly emarginate as in female. Sternite 7 medianly distinctly carinate, the carina reaching near to the apex; medial spine of sternite 8 slender, with apical portion subparallel, very gently swollen at the apex. Cubital cell 2 of fore wing as in female, but in the present specimen subpetiolate. Fore metatarsus about 2.3 times as long as broad at the maximum breadth. Vertex very sparsely punctate, upper frons more closely, moderately large punctate; punctures on propodeum lacking in a narrow area at base, the impunctate area slightly extended in the middle.

*Bembecinus reticulatus* sp.n.

*Type.* BALABAC: holotype ♀, Dalawan Bay, 7.x.1961.

*Description.* ♀. Length about 10 mm. Black, except marks on head, thorax-complex and legs orange-yellow, bands on abdomen whitish or slightly greenish yellow: Clypeus, supraclypeal area, inner orbital bands, antennae broadly beneath, labrum, palpi, a spot on nape, medianly interrupted narrow line on pronotum, humeral tubercles, a spot on tegulae and at each postero-lateral corner of mesonotum, a lengthened spot on each side of scutellum (interspace about six times the width of the mark), a line on postscutellum,



a minute spot on each postero-lateral corner of propodeum, a medianly rather broadly interrupted narrow band on tergite 1, a narrow band on tergites 2-4, that on 3 briefly interrupted in middle, lateral marks on sternites 2 and 3, fore and middle femora at apex and beneath (in the middle much less developed), fore and middle tibiae except innerside and behind, a lengthened mark on hind tibiae, fore and middle tarsi except the posterior streak of some basal joints. Wings hyaline; veins black.

Ocular and clypeal indices 2.74 and 1.37, respectively: labrum short and broad with ratio of width to length 23:6.5; antennal joint 3 about 1.5 times as long as joint 4 and in the narrowest view approx. 3 times and in the broadest view about 2.7 times as long as broad at apex; vertex behind anterior ocellus weakly furrowed. Propodeum with lateral margins roundly convergent towards apex, much narrower at the apex than at the spiracles, postero-lateral corner entire, seen from the side rounded. Tergite 6 medianly bluntly carinated and the part narrowly impunctate. Fore tarsus: fig. 22.

Vertex covered with pubescence-bearing micropoints and scattered with medium-sized punctures; upper frons more closely covered with similar punctures; supraclypeal area and clypeus rather coarsely irregularly rugoso-reticulate. Punctures on mesonotum rather close, each puncture indistinctly outlined posteriorly. Base of area dorsalis of propodeum narrowly impunctate.

♂, unknown.

*Remarks.* The present species is very characteristic in having the clypeus and supraclypeal area coarsely, somewhat irregularly punctate-reticulate and is thus easily separated from related species.

## LARRINAE

*Tachytes banoensis palawanicus* ssp.n.

*Types.* PALAWAN: holotype ♀, Uring Uring, 15.viii.1961; 3 ♀, 1 ♂ paratypes, same loc., 20.viii.-12.ix.1961. BALABAC: 1 ♂ paratype, Dalawan Bay, 8.x.1961.

*Description.* Differs from nominate *banoensis* (from Luzon) mainly in the colour of the legs, as described below, and the pubescence on frons and clypeus, which in the present females is glittering silvery rather than brassy golden.

Colour of legs. The original description (Rohwer, 1919) as well as the description made by Williams (1928) give no clear picture of the colour of the legs in *banoensis* specimens from Luzon. The following is based on the examination of 3 pairs of homotypical specimens from Los Baños, Luzon, including a male identified by Williams (all on loan from the U.S. National Museum, Washington, through Dr. K. Krombein). In male *b. banoensis* the following parts are ferruginous: base and apex of fore and middle femora, apex of hind femora, fore tibiae broadly in front, middle and hind tibiae vaguely on both ends and tarsi beneath and on apical portion. The females are generally coloured as the males, but the apex of the femora is more broadly ferruginous, the fore tibiae are almost wholly so (only slightly dark

on inner side and behind), the main portion of mid and hind tibiae is chestnut brown and mid and hind tarsi are also more or less brownish.

In the present specimens from Palawan and Balabac the ferruginous colour is much brighter. In the females the bright ferruginous coloured area at base is extended into a streak going beyond the middle, and in mid tibiae the colour is distinct at base and the front (apex) is broadly coloured.

*Supplementary notes.* U-shaped pile band on mesonotum well defined seen obliquely from behind, pale brassy yellow, bristles on pygidial area cuppey brown (in the original description brown and in Williams' *golden*). ♀. Clypeus: fig. 26, in one of the specimens the medio-apical incision very feeble, antennal joint 3 about twice, joint 8 about 2.6 times as long as wide at apex. ♂. The hair on clypeus pale brassy, IOD at vertex equal in length to antennal joints 2 and 3 taken together, relative length to width of antennal joints 3 and 8 as in female; genitalia similar to the figure given by Williams, more dissected parts: figs. 27-32; sternite 8 as in the figure by Williams.

The same form as described here occurs also in Java. I have 2 females and 1 male sent by Dr. J. van der Vecht.

*Tachytes silvicoloides silvicoloides* Williams, 1928

*Material.* PALAWAN: 6 ♀, 1 ♂, Uring Uring, 9-23.iv.1961.

*Distribution.* The Philippines.

*Remarks.* This species was described on the basis of a single female and further material is not known. As to variation, therefore, nothing has been known about the species.

♀. Clypeus: Anterior inclined part is triangular, subglabrous, basally closely punctate, with interspaces microcoriaceous, and apically impunctate and without microsculpture; the part mentioned is sometimes smooth and polished, but usually irregularly uneven; the reflected anteriormost marginal area is gently curved at base, nearly straight, usually irregularly finely rugulose, sometimes fairly strongly shining and usually without medial incision, but sometimes with a feeble incision. IOD at vertex as long as antennal joint 3 (in all specimens); joint 3 equal in length to 4 and slightly shorter than 5 and 2.7 times as long as broad at apex. Propodeum with medial furrow very weak and indistinct, but sometimes slightly or strongly carinate; the apical impression rounded, comparatively large, usually flattened, with very feeble rugae and fairly shining, but sometimes, in specimens with medially carinate propodeum, also the impression is carinate with variable strength. Pubescence on head and thorax silky white, with a tint of brassy yellow; this is especially marked in the U-shaped pile band on mesonotum and the pile band of post-scutellum; pygidial bristles thick and robust, each suddenly narrowed and pointed at apex, golden; longer tibial spur of hind legs longer than the following metatarsus.

Varietas. One of the females (19.viii.1961), which is smaller (11.5 mm) than the others (13-14 mm), has larger punctures on the vertex and the IOD is slightly greater than the length of antennal joint 3 (10:9); other measurements on body and appendages agree with those of normal females.

mid metatarsi also broadly ferruginous and remaining joints of mid tarsi pale brown and ferruginous beneath; hind tibiae are also ferruginous on front and generally more on the remaining part of tibiae and tarsi;

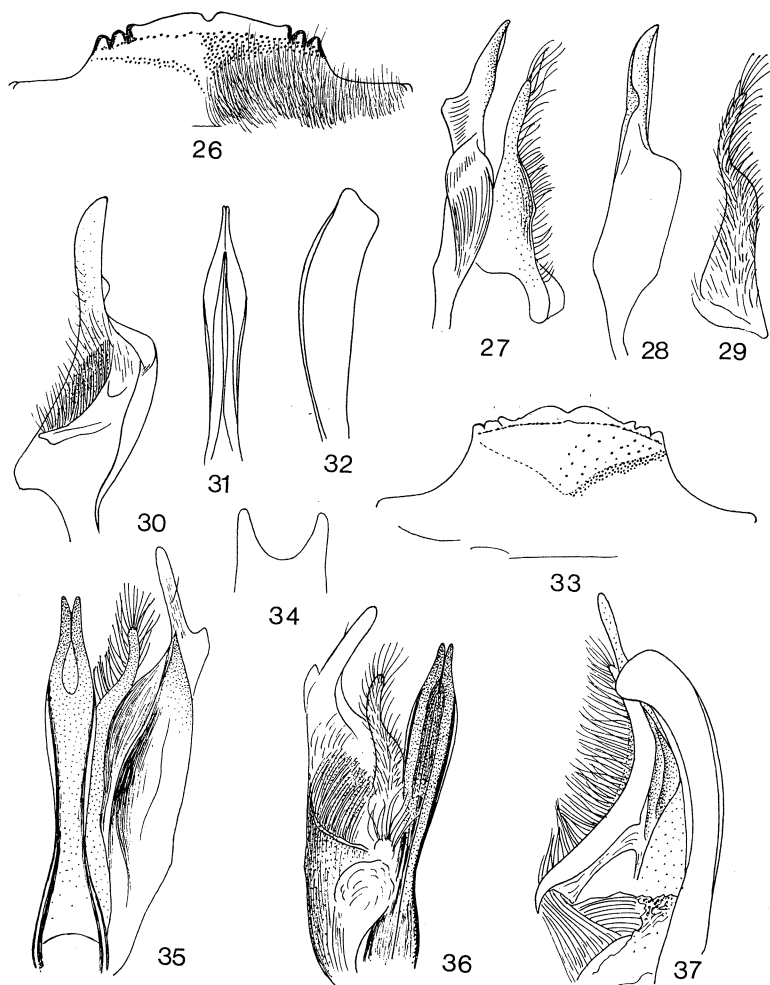
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Figs. 26-32. *Tachytes banoensis palawanicus* ssp.n., 26) clypeus, female; male: 27) left paramere and volsella, lateral view (position of volsella slightly altered); 28) left paramere, dorsal view; 29) left volsella, ventral view; 30) right paramere, ventral view; 31) penis, dorsal view; 32) penis, lateral view. — Figs. 33-37. *T. s. silvicoloides* Williams, male; 33) clypeus; 34) apex of sternite 8; 35) genitalia, left half, dorsal view; 36) same, ventral view; 37) same, dissected and seen from inside.

♂. Similar to the female, but the form of clypeus is slightly different (fig. 33); the inclined part microcoriaceous all over and sparsely punctate except for the medial area; marginal area largely smooth and shining. IOD at vertex slightly less than length of postocellar area (distance between posterior margin of postocelli and the supposed line connecting the posterior margins of the eyes), viz. 18:20, but slightly greater than the length of antennal joint 3

(18:16); joint 3 is 2.6 times as long as broad at apex. Pubescence on face more strongly brassy yellow; bristles of pygidium short and robust, silvery; sternite 8 deeply emarginate apically and distinctly bidentate (fig. 34). Genitalia: figs. 35-37.

*Tachytes silvicoloides tawitawiensis* ssp.n.

Types. TAWI TAWI: holotype ♀, Tarawakan, 4.xi.1961; paratype, 1 ♀, same loc., 23.x.1961.

Description. ♀. Slightly larger (15 mm) than specimens of *T. s. silvicoloides* in Palawan (usually 13-14 mm) and differs also in the following characters: IOD at vertex slightly greater than the length of antennal joint 3 (23:21); pile bands on abdomen narrower, and the bristles of the pygidium cupreous rather than pure golden.

Remarks. *cut* (comparison with var.)

*Tachytes vechti* sp.n.

Types. TAWI TAWI: holotype ♀, Uring Uring, 17.ix.1961; paratype ♀, same loc., 16.ix.1961. BALABAC: paratypes 2 ♀, 2 ♂, Dalawan Bay, 8-11.x.1961.

Description. ♀. Length 14 (12-14) mm. Black; mandibles yellowish red, apical third dark, but the extreme apex again reddish; tegulae on posterior half and tibial spurs and spines of all legs ferruginous; fore tibiae dark brown, paler in front; tarsi dark brown and paler beneath and on apical portion; wings flavo-hyaline, veins and stigma ferruginous, costa slightly darker. Pubescence on face and clypeus silky white, on mesonotum pale brassy yellow; pile on sides of head and thorax-complex and 4 pile bands of abdomen silvery; U-shaped pile band on mesonotum and the postscutellar band distinct. Bristles on pygidial area golden.

IOD at vertex as long as antennal joints 2 and 3 united and greater than the length of post-ocellar area of vertex (25:20) (in the closely allied *banoensis* 22:23); clypeus: fig. 38; antennal joint 3 subequal in length to 4 (under some circumstances appearing slightly shorter) and about 2.4 times as long as broad at apex (dorsal view). Scutellum and postscutellum medianly weakly longitudinally impressed; propodeum with median furrow fine but comparatively deep and quite distinct; the apical impression elongate, triangular in form, very deep, medianly raised and finely transversely striate; the median furrow of posterior aspect is also deep and distinct. Pygidial area with lateral margins nearly straight, with apex narrowly truncate, with the bristled area at base roundly produced. In fore wing abscissa 2 of radial vein is equal to or slightly longer than 3. Longer hind tibial apical spur longer than the following metatarsus.

Vertex and upper frons with surface microcoriaceous and irregularly not closely covered with small and smaller punctures; clypeus medianly bluntly carinate and polished in half of the inclined area; the area microcoriaceous, except the anterior portion, and comparatively closely covered with medium-sized punctures except for the medio-apical part (average intervals smaller than punctures); sometimes the bevelled area wholly microcoriaceous and nearly uniformly punctate all over. Mesonotum finely punctate-subreticulate

*till*

and microcoriaceous; scutellum somewhat sparsely punctate with intervals microcoriaceous; propodeum with dorsal aspect somewhat more irregularly and slightly more largely punctate-reticulate than on mesonotum.

♂. Length 11.5–12 mm. Similar to female, but mandibles brownish red, slightly darkened before apex. General coloration, pubescence (except for the silvery bristles on pygidial area) and punctuation are as in female. IOD as long as antennal joints 2 and 3 taken together and longer than post-ocellar area of vertex (21:18) as in ♀; antennal joint 3 slightly shorter than 4 and 2.2 times as long as broad at apex (dorsal view); clypeus very similar to that of *T. s. silvicoloides* (fig. 33). Medial impressed line on scutellum, post-scutellum and propodeum as in ♀; apical incision of sternite 8 similar to that of *T. s. silvicoloides* (fig. 34). Genitalia also similar to ~~this species~~, but the paramere without the longitudinal ridge on dorsal side (figs. 39, 40) and penis (fig. 41) much broader. In these respects the present species is close to *T. banoensis*, but the apical lobe of the paramere is distinctly narrower and the penis valve also somewhat slenderer.

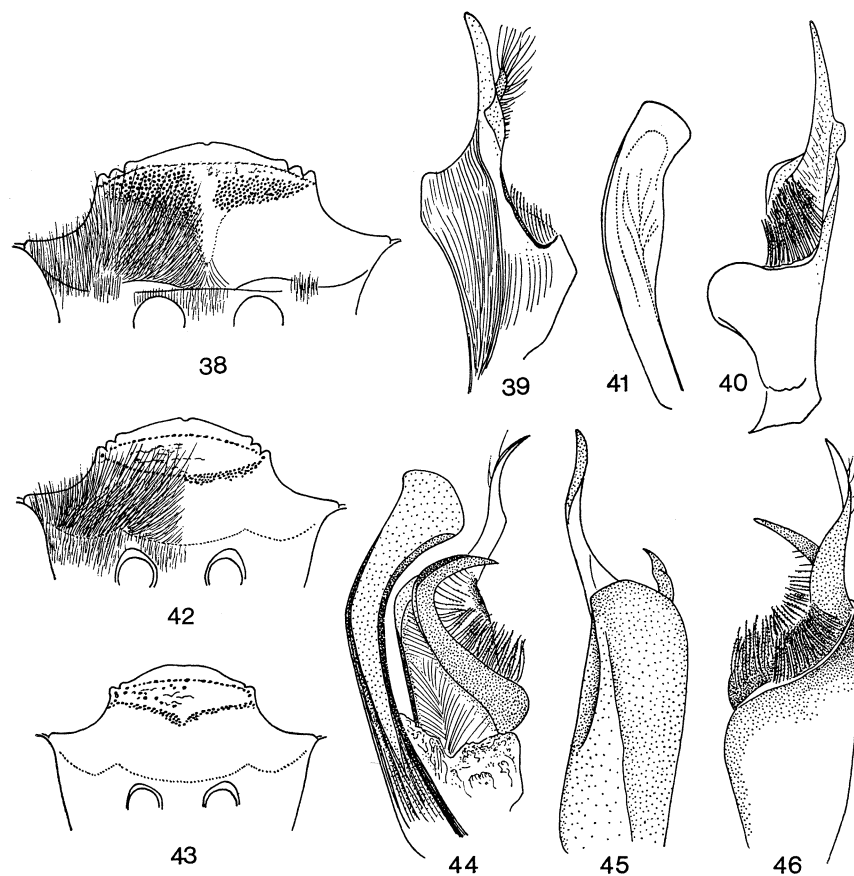
*Remarks.* The present species closely resembles *T. banoensis palawanicus* ssp.n. (see above), but differs from this at least in that the legs are not so broadly ferruginous, the vertex is relatively broader, the median furrow and apical impression of the propodeum are deeper and the bristles on the pygidial area being not cupreous in the female.

*Tachytes brevicornis* sp.n.

*Types.* PALAWAN: holotype ♀, Uring Uring, 1.ix.1961; paratypes, 1 ♂, 13 ♀, same loc., 15.viii.–16.ix.1961.

*Description.* ♀. Length 9.5–10.5 mm. Black; mandibles on apical 2/3 dark red, medially pale yellowish red; tegulae on posterior half, tibial spurs, articulations of tarsi and apical portion of fore (broadly) and middle (narrowly) tarsi ferruginous; spines of legs whitish; wings clear hyaline, stigma and veins brown, anteriorly slightly darker. Pubescence on lower face and clypeus silky white; pile on temples, sides of thorax-complex and coxae and femora of legs silvery; pubescence on upper frons, sides of ocellar area and pile on dorsal aspect of thorax, pile bands on abdomen and hair at base of hind tibiae brassy yellow; bristles on pygidial area usually coppery brown, sometimes cupreous golden.

IOD at vertex distinctly greater than the length of antennal joints 2 and 3 taken together (20:16), nearly as long as joints 3 and 4 united (20:21) and slightly more than the length of postocellar area; joint 3 about twice and joint 8 about 1.3 times as long as broad at apex. Clypeus: fig. 42; anterior inclination usually impunctate and polished, but not smooth, irregularly, rather coarsely wrinkled, in some specimens with a few scattered punctures; marginal area medianly minutely and shallowly incised. Medial impressed line absent on scutellum and very weak on dorsal aspect of propodeum, with medioapical impression slightly longer than wide, fairly deep and transversely distinctly striate; posterior aspect with a deep medial furrow, at its top the surface longitudinally, elliptically swollen, forming the posterior wall of the



Figs. 38–41. *Tachytes vechti* sp.n., 38) clypeus, female; male: 39) left paramere, latero-dorsal view (tip of volsella just visible); 40) right paramere, ventral view; 41) penis valve, lateral view. – Figs. 42–46. *T. brevicornis* sp.n., 42) clypeus, female; male: 43) clypeus; 44) genitalia, right half dissected and seen from inside; 45) paramere, dorsal view; 46) same, ventral view (apex of volsella visible).

apical impression of the dorsal aspect. Pygidial area with lateral margins nearly straight and with apex narrowly rounded. In fore wing abscissa 2 of radial vein most usually slightly shorter than 3 and as long as the distance between the tops of two recurrent veins on the cubital vein.

Vertex and upper frons minutely microcoriaceous (under 30 × magnification difficult to confirm) and, further, very closely covered with minute punctules. Mesonotum similarly punctulate and more feebly microsculptured; punctules on scutellum slightly larger and sparser; mesopleuron more distinctly microreticulate or microfoveolate and scattered with larger punctures; dorsal aspect of propodeum at base slightly obliquely, then transversely, very finely

• Bristles on pygidial area silvery.

and closely striate, interspaces closely microfoveolate; posterior aspect transversely, closely, but more strongly striate; sides obliquely, very finely and closely striolate, with minute points filling the space between the striae. Abdominal sternites 3-5 with a medianly interrupted zone of close fine points before apex and scattered with medium-sized punctures in front of the zone.

♂. Very similar to female, differs mainly in the form of clypeus (fig. 43) and the pygidial area. Pubescence on face pale golden all over and the pile bands on abdomen rather silvery. IOD at vertex about as long as the length of the postocellar area of vertex (18:17) and slightly greater than the length of antennal joints 2 and 3 combined (relatively 16), but slightly less than 3 and 4 united (relatively 20); joint 3 about 1.8 times and joint 8 about 1.2 times as long as broad at apex. Propodeum with medio-apical impression of dorsal aspect relatively slightly longer than in female. Bristles of pygidial area silvery, in some light with a slight tint of golden; 8th sternite with apex roundly emarginate. Genitalia (fig. 44) with basiparamere on dorsal side simple, without carina, ridge or partial elevation, its apical lobe slender, attenuate apically and twisted about 180° (figs. 45, 46); hair tuft on basiparamere long, hairs modified; volsella (fig. 44) strongly curved, basally densely, apically sparsely covered with modified hairs. Sculpture as in female.

*Remarks.* The present species is easily distinguished from the known congeners by the remarkable short flagellar joints of the antennae.

*Tachysphex mindorensis* Williams, 1928

*Material.* TAWI TAWI: 17 ♀, 9 ♂, Tarawakan, 27.x.-16.xi.1961.

*Distribution.* Philippines, Borneo and Formosa.

*Remarks.* Generally the fore tarsi (♀♂) are dark brown, but in some specimens they are fairly brightly brown apically; such specimens deviate from specimens from Formosa. In other characters, including the male genitalia, however, the populations of Formosa and Tawi Tawi agree with each other. The medial furrow on the vertex is extended posteriorly to the occiput as in the Formosan specimens, but is generally deeper.

*Tachysphex bengalensis bengalensis* Cameron, 1889

*Material.* PALAWAN: 4 ♀, Uring Uring, 16-20.viii.1961.

*Distribution.* India, Thailand, Philippines, Palaus, Marianas, Hawaii, Formosa, Ryukyus, Japan up to Hokkaido (ssp. *japonicus*).

*Remarks.* The specimens from Palawan are 9-10 mm long and distinctly larger than *T. mindorensis* and have the punctures on the vertex, mesonotum and mesopleuron somewhat sparser than in ssp. *japonicus*. Pile bands are present on tergites 1-3, the tarsal comb of the fore legs and the punctation on the pygidium are as in ssp. *japonicus*, but the sculpture of the propodeum is generally much finer.

*Tachysphex novarae* de Saussure, 1867

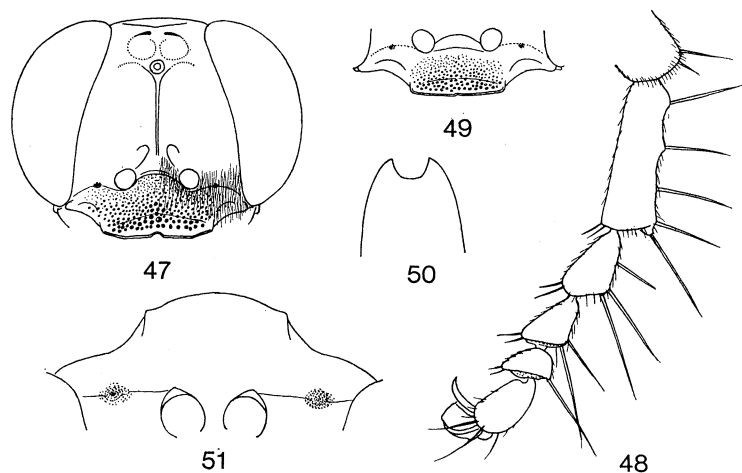
*Material.* PALAWAN: 1 ♀, Uring Uring, 25.viii.1961. BALABAC: 1 ♂, Dala-wan Bay, 10.x.1961.

The present species is characteristic in the structure of the clypeus, in the broad vertex and in the strong comb of the fore tarsi.

*Redescription.* ♀. Length about 11 mm. Black; mandibles towards middle reddish; tegulae ferruginous; tibial spurs and spines of legs dark brown; wings hyaline, more or less yellowish, without apical clouding; costa, subcosta and stigma black, remaining veins dark ferruginous. Hairs on face and temples long, appressed, brassy yellow; on clypeus shorter and sparser. U-shaped pubescence band on mesonotum visible only in oblique light, also brassy; silvery pile bands present on abdominal tergites 1-3.

Interocular space broad, nearly a third of the width of head (30:9.5) and slightly less than as long as antennal joints 2-4 combined, but slightly longer than 3+4; joint 3 with ratio to IOD at vertex as 12:30 and shorter than antennal joint 4, in dorsal view approximately 2.5 times (in lateral view 2.3 times) longer than broad at apex; joint 4 about 3.5 times as long as broad at apex. V-shaped impression on vertex fairly deep, much broader than long; medial furrow not extended over the posterior part of vertex; ocellar area gently roundly bituberculate, width of anterior ocellus relatively 6, with pupil 3.3. Head seen in front: fig. 47; frontal furrow fine but distinct, reaching below middle of the supraantennal tubercle; clypeus with disc very slightly roundly raised, with the anterior bevel not sharply marked off, nearly half as high at middle as the ~~totally wide~~ <sup>total</sup>; anterior margin very narrowly reflected, appearing finely carinate; medial incision small. Epicnemial furrow of mesopleuron deep and distinct, finely crenulate; scrobal furrow shallow but well-defined, not extending posteriorly over the scrobe; dorsal aspect of propodeum with distinct lateral carinae; the area just inside the carinae comparatively broadly and shallowly furrowed, without medial carina, but with an indistinct medial furrow posteriorly; posterior aspect nearly flattened, without lateral carinae, but with a deep, relatively narrow medial furrow, sharply edged and gradually narrowed posteriorly. Pygidial area triangular, with apex rounded; ratio of length to width at base about 30:25; lateral margins nearly straight and finely carinate and the disc longitudinally bluntly raised. Tarsal comb of fore leg: fig. 48; the longer tibial spur of hind legs slightly surpassing the length of the following metatarsus. In fore wing abscissae of radial vein with the length relations:  $5 \leq 3 < 1 < 2 < 4$ ; both recurrent veins received by cubital cell 2 distinctly before middle, with the interspace somewhat greater than the length of abscissa 3 of radial vein.

Vertex delicately microcoriaceous and very finely and sparsely punctulate; the microsculpture on ocellar area except around ocelli and on upper frons slightly stronger, with punctures more distinct and closer; on sides of face (covered by appressed pubescence) punctures very fine and sparse and the microsculpture very feeble; clypeus at base distinctly microsculptured and finely punctate, punctures anteriorly larger and on the bevelled area fairly large, with intervals less than the width of puncture; apical margin without punctures. Mesonotum and mesopleuron distinctly microcoriaceous and punctate, punctures larger than those on upper frons; on broad central area of mesonotum fairly sparse while on peripheral area fine and close; punctures on mesopleuron moderately close and slightly larger and sparser towards sternum; scutellum more weakly sculptured, more sparsely punctate and fairly



Figs. 47-50. *Tachysphex novarae* Saussure, 47) head, female; 48) fore tarsus, female; 49) clypeus, male; 50) sternite 8, male. - Fig. 51. *Larra tawitawiensis* sp.n., clypeus, male.

well shining. Propodeum finely, longitudinally, slightly divergently rugoso-striate, partly irregularly subreticulate, the rugae posteriorly finer and closer and on the impressed zones along the lateral carinae oblique, strong and sparse; posterior aspect on upper portion more or less coarsely, on lower portion more finely and transversely, both irregularly rugoso-reticulate; sides of propodeum obliquely, very finely, closely, but distinctly, rugoso-striate or -reticulate; the rugae on antero-dorsal area arcuately curled. Pygidial area smooth and polished, almost impunctate; sternite 2 with anterior half and the sides very finely and closely punctulate; posterior half of sternite 2 and the following sternites smooth and polished except for the ante-apical row of sparse bristle-bearing punctures and a few scattered small punctures; sternite 6, however, with lateral areas fairly closely covered with medium-sized punctures.

♂. Length 5.5 mm (possibly a very small specimen). Black; mandibles on apical third reddish; tegulae and tibial spurs ferruginous; tarsi light chestnut brown; spines of legs pale ferruginous, in some light appearing whitish. Wings clear hyaline; stigma and veins dark ferruginous, anteriorly somewhat darker. Pile bands on tergites 1-3 silvery. Head seen in front as in female, but pubescence silky white, without brassy shade; IOD at vertex 19; antennal joints 2, 3, 4, and 5 in dorsal view with length ratio as 4:5:7:6.5; joint 3 about 1.7 times and joint 4 about 2.3 times as long as broad at apex; vertical and frontal structure as in female; clypeus (fig. 49) also similar except that the medial incision is almost absent. Apex of last sternite: fig. 50. Abscissae of radial vein of fore wing  $5 < 3 \leq 1 < 2 < 4$ , difference between 1 and 2 is very slight. Basal excavation of fore femora beneath large and medially weakly carinated.

*Remarks.* The present specimens have been identified by Dr. W. J. Pulawski, Wroclaw, Poland, after comparison with types. Later investigations may divide the species into several subspecies as a certain amount of variability occurs within the large geographical range from the Solomon Islands to Singapore (Pulawski, pers. comm.).

*Larra polita* (Smith, 1858)

*Material.* PALAWAN: 6 ♀, 2 ♂, Uring Uring, 8-25.viii.1961. BALABAC: 1 ♀, Dalawan Bay, 8.x.1961. MINDANAO: 4 ♀, 5 ♂, Sapamoro, 18-21.xii.1961.

*Distribution.* Borneo and Formosa, new to the Philippines.

*Remarks.* *Larrada rufipes* Smith may be a synonym of the present species. If so the range of the species is extended to India, Celebes and the Bétel Tobago Is.

*Larra tawitawiensis* sp.n.

*Type.* TAWI TAWI: holotype ♂, Tarawakan, 26.x.1961.

*Remarks.* The specimen is strongly chestnut brown, but this may be due to a post-mortem change. It may be the male of *Larra tisiphone* (Smith, 1858, nec 1873), but the descriptions hitherto given of this species are quite incomplete and an identification on the basis of such information is mere guesswork. The specimen is thus provisionally regarded as representing a new species. Some comments on the specimen in comparison with the closely related *L. carbonaria* (Smith) seem to be sufficient to characterize the species.

*Description.* Length 5.5 mm (smaller than *carbonaria*). Wholly black, except for apical half of mandible reddish and tubercles and tegulae ferruginous. Medial produced part of clypeus not rounded, but angulate at antero-lateral corners (fig. 51) and much broader than in *carbonaria*; it is greater in width than the distance between one of the corners and the eye (in *carbonaria* smaller). Antennae ~~more slender~~<sup>st</sup>, not ~~as~~<sup>so</sup> strongly incrassate medially, with joints longer; joint 3 nearly twice as long as broad at apex in narrowest view, in broadest view 1.7 times as long as broad (in *carbonaria* 1.5 times and 1.2 times respectively); joints 3, 4, 5 equal in length, 6-8 slightly longer; joint 8 twice as long as broad at apex (in *carbonaria* only 1.2 times so); rhinaria (sensory area of some authors) confined to joints 5-8 (in *carbonaria* ~~confined to joints 4-13~~<sup>de confined to joints 4-13</sup>). Venation generally like in *carbonaria*, but 3rd cubital cell with transverse veins more parallel-sided and transverse radial vein closer to vertical, with the vein of the accessory cell more obtuse, even partly disappearing. Punctures on frons and vertex much finer and closer than in *carbonaria*, on the verge of upper frons not rugoso-punctate. Punctures on thorax also finer and closer; on scutellum finer and sparser than on mesonotum; on epimeral area of mesopleuron punctures are so fine and weak that the area appears almost smooth and shining. Dorsal surface of propodeum not transversely closely striate, but rather coarsely, irregularly rugoso-subreticulate; the sides of the segment obliquely, moderately sparsely rugoso-striate, not

simply punctate on dorsal and posterior parts. Abdomen much more finely and closely punctured.

♀, unknown.

*Larra carbonaria* (Smith, 1858)

*Material.* BALABAC: 1 ♂, Dalawan Bay, 12.x.1961.

*Distribution.* Singapore, Sumatra, Philippines, Formosa and Japan.

*Dicranorhina palawanensis* Williams, 1928

*Material.* PALAWAN: 1 ♀, Pinigisan, 600 m, 10.ix.1961.

*Distribution.* The Philippines.

*Description* of ♀ (hitherto unknown). Length 10.0 mm. Black, with the following portions bright ferruginous: Clypeus except the upper marginal area, antennal joint 1, mandibles except apex, lower part of sides of prothorax, tubercles, tegulae, pygidial area, fore legs except upper side of coxae and of trochanters, scattered parts of middle legs (apices of coxae and trochanters, base and apex of femora and tibiae, femora above partly, tarsi from apex of joint 1 apically) and apices of tibiae and of the tarsal joint of hind legs. Wings hyaline, pale yellowish, apical margin weakly clouded; the area covering the radial cell and 2nd and 3rd cubital cells markedly dark brown, stigma and radial vein black, other veins chestnut brown. Lower part of face and clypeus densely covered with appressed silvery hair, the hair on lower face curved outwards and on clypeus curved inwards; other parts of the body covered with indistinct short pile, which only in some light is silvery glittering; pile bands on abdomen inconspicuous, in oblique light visible on lateral portions of tergites 1–3 and on extreme sides of 4 and 5; pygidial area bare.

IOD at vertex greater than the length of antennal joint 3 (22:18), slightly smaller than 2+3 (22:24); configuration of face and clypeus as in the members of *Cratolarra*, but inner orbits are nearly straight, divergent below (in *Cratolarra* markedly curved, on lower portion subparallel, not divergent). Clypeus: fig. 52; medianly bluntly keeled, without a bevel, anterior margin slightly reflected, with a weak incision in middle; antennae without rhinaria; joint 3 somewhat laterally compressed, seen from the narrowest side suddenly enlarged at apex, about 4 times as long as wide at apex, seen from the broadest side thick, subparallel, approximately 3.5 times as long as wide at apex; occipital carina completely encircling the foramen. Pronotum thick as in *Liris* (*Cratolarra*); epicnemial and scrobal furrows also as in this subgenus (e.g., *pitamawa* Rohw.); dorsal aspect of propodeum about 1.5 times as long as posterior aspect and with a fine medial carina, not reaching apex; medial furrow on posterior aspect deep, more distinctly outlined than in *Cratolarra pitamawa*. Abdominal segments 1 and 2 characteristic (fig. 53); pygidial area comparatively broad, with lateral margins roundly convergent apically, with an angle of about 50° and gently rounded at apex; spinules at the apical margin short, numerous (medianly already dropped off), not conspicuous. Fore femur (fig. 54), middle femur (fig. 55) and hind femur (fig. 56); femora markedly different from those of the genus *Liris*.

Mesonotum and mesopleuron very finely and closely punctulate; head more finely and more closely so, the punctures hardly visible under 32+ magnification. Propodeum transversely, finely and very closely rugoso-striate, on lateral parts near base scattered with longitudinal carinulae between the transverse rugae; posterior aspect with about 5–6 transverse low striae, stronger upwards, remaining area microgranulate; sides of the segment microgranulately punctulate and further on dorsal and posterior portions obliquely, sparsely and weakly rugoso-striate. Abdomen delicately microcoriaceous, not shining; pygidial area rather closely, moderately largely punctate, with interspaces microreticulate.

*Remarks.* The present specimen agrees very well in general characters with *D. luzonensis*, but the anterior margin of clypeus in the middle is much less roundly curved and the hind femur is not dentate beneath at base but merely shallowly excavated as in the described male. In the sculpture of the propodeum, however, the specimen is rather similar to *luzonensis*.

*Liris* (*Liris*) *aurulenta* (Fabricius, 1878)

*Material.* PALAWAN: 8 ♀, 3 ♂, Uring Uring, 22.viii.–23.ix.1961. TAWI TAWI: 1 ♂, Tarawakan, 28.x.1961. MINDANAO: 2 ♀, Sapamoro, 18., 22.xii.1961.

*Distribution.* From Africa widely distributed over the Oriental region, reaching eastwards to the Marianas and northwards to the southern Ryukyus.

*Liris* (*Cratolarra*) *flavipennis* (Williams, 1928)

*Material.* PALAWAN: 18 ♀, 2 ♂, Uring Uring, 16.viii.–15.ix.1961. BALABAC: 2 ♀, Dalawan Bay, 8., 10.x.1961.

*Distribution.* Philippines.

*Remarks.* The dense pile on the face and clypeus is a more or less brassy yellow and that on the mesonotum silvery.

*Liris* (*Cratolarra*) *pitamawa* (Rohwer, 1919)

*Material.* PALAWAN: 1 ♀, 1 ♂, Uring Uring, 25.viii.1961. BALABAC: 2 ♀, Dalawan Bay, 10., 13.x.1961. TAWI TAWI: 4 ♀, 3 ♂, Tarawakan, 31.x.–16.xi.1961.

*Distribution.* Thailand, Singapore, Penang, Borneo, Philippines, Formosa.

*Liris* (*Dociliris*) *subtessellata* (Smith, 1856)

*Material.* PALAWAN: 13 ♀, Uring Uring, 15.viii.–23.ix.1961. BALABAC: 3 ♀, 6 ♂, Dalawan Bay, 1–12.x.1961. TAWI TAWI: 7 ♀, 3 ♂, Tarawakan, 25.x.–12.xi.1961. MINDANAO: 2 ♀, Sapamoro, 21.xii.1961.

*Distribution.* Widespread in the Oriental region.

*Remarks.* The old records of this species from the Philippines include the closely related, but different species, *L. docilis* (F. Smith), (see Tsuneki, 1967 b).

*Liris (Dociliris) silvicola* (Williams, 1928)

*Material.* BALABAC: 1 ♀, Dalawan Bay, 9.x.1961.

*Distribution.* Philippines and Borneo.

*Liris (Dociliris) deplanata deplanata* (Kohl, 1883)

*Material.* PALAWAN: 3 ♀, Pinigisan, 600 m, 9–19.ix.1961.

*Distribution.* India (at comparatively high altitudes), Burma, Formosa, new to the Philippines.

*Remarks.* The present material belongs to the nominate subspecies having the tibiae and tarsi ferruginous. In fore and mid legs, however, the tibiae are more or less darkened and antennal joint 1 is also ferruginous in front. The anterior bevelled part of the clypeus is finely and sparsely punctate and clearly shining, and thus distinct in this respect from ssp. *binghami* m., occurring in Formosa and the Ryukyus, in which this part of clypeus is closely punctate down to the anterior margin and the legs are wholly black. The rhinaria are found on antennal joints 6–11 and they are slightly elongate circular, small, just as in *binghami*.

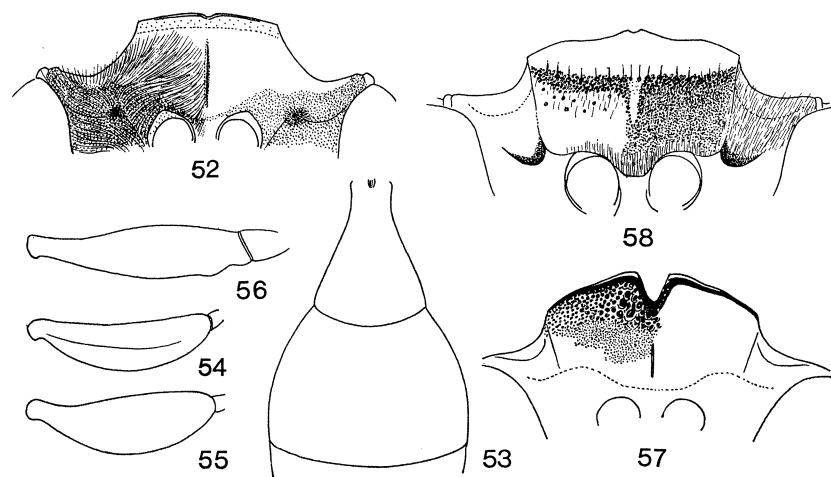
*Liris (Dociliris) peterseni* sp.n.

*Type.* TAWI TAWI: holotype ♀, Tarawakan, 27.x.1961.

*Comparative notes.* Due to the strongly dark wings and the general appearance the present species seems to be close to *ambripennis* Cameron, known from Sarawak, but the body is larger, the clypeus different in structure and punctation, the propodeum otherwise sculptured and the pygidial area without bright golden pile. The new species is also closely allied to *Liris surusumi* m., recorded from the Ryukyus and Formosa, but differs mainly in the structure of the clypeus, in characters of the antennal rhinaria, in the sculpture of the pygidial area and in the pubescence on the face, clypeus and pygidial area.

*Description.* ♀. Length 19 mm. Black and dull, with the pile band on mesonotum and abdomen inconspicuous; hairs on vertex, clypeus, thorax and propodeum fine, sparse, short and not marked, on sides of lower face fine, but dense and slightly long, silky white and in some light strongly shining; temples below also silverly shining in certain light; U-shaped pile band on mesonotum and pile bands on tergites 1–3 also in some light only rather weakly defined; bristles on pygidial area and pile on tibiae and tarsi cupreous brown. Wings strongly clouded, with a distinct purplish shade.

IOD at vertex as large as the length of antennal joint 7; joints 3–6 equal in length and slightly longer than 7 (relatively 30:27); joint 3 in dorsal view markedly enlarged on apical third, about thrice as long as wide at apex; rhinaria on joints 5–11, elongate oval, comparatively larger than in *surusumi*, on joints 7–10 slightly longer than a third of the respective joint; medial impression above the antennal base deeper than in *surusumi*; clypeus: fig. 57, medianly on basal half gently roundly raised and longitudinally bluntly



Figs. 52–56. *Dicanorhina palawanensis* Williams, female; 52) clypeus; 53) abdominal segments 1 and 2; 54) fore femur, from behind; 55) mid femur, from above; 56) hind femur, from behind. – Fig. 57. *Liris (Dociliris) peterseni* sp.n., clypeus, female. – Fig. 58. *L. (D.) palawana* sp.n., clypeus, female.

carinate on top, with the bevelling very slight, and deeply incised in middle of anterior margin with margin at the sides of the incision slightly reflected. Pronotum with top not triangularly pointed; mesonotum at base in middle broadly and moderately deeply depressed; scutellum and postscutellum medianly with a blunt impressed line; scrobal furrow distinct in front of the scrobe, but indistinct and weak behind it; propodeum with dorsal and posterior aspects equal in length, on dorsal aspect medianly gently depressed and weakly carinate in middle, posterior aspect distinctly concave and from the bottom of the depression with a deep furrow running down to the apex. Apical margin of pygidial area fairly deeply excised in middle, but the excision is hidden by the 4 thick curved bristles placed side by side. Radial vein with abscissae in the following length relationship:  $4 > 1 > 3 > 2 > 5$ , but this may be considerably variable; recurrent veins received by cubital cell 2 collectively at a fourth from base. Legs normal; longer tibial spur of hind leg about  $\frac{3}{4}$  of the following metatarsus, shorter than in *surusumi*.

Clypeus on basal  $\frac{2}{3}$  finely, closely punctured, with puncture intervals half mat; the remaining third shining and irregularly, coarsely and very strongly punctate (fig. 57). Vertex and mesonotum finely closely punctate, interspaces on the latter microshagreened; mesopleuron much more finely and closely granulate; propodeum dull and opaque, transversely, somewhat arcuately, coarsely, but not strongly striate, with interspaces more finely and closely striolate, posterior aspect transversely coarsely striate, the striae stronger upwards, sides of propodeum obliquely, anteriorly rather transversely, coarsely striate. Abdomen very closely micropunctulate, not glossy.

♂, unknown.

*Liris (Dociliris) lobusta* (Williams, 1928)

*Material.* BALABAC: 1 ♀, Dalawan Bay, 12.x.1961.

*Distribution.* Philippines, Borneo, Singapore and Thailand.

*Remarks.* The subtriangular upper medial part of the posterior aspect of propodeum, which is separated by the upwards divergent carinae, is roundly swollen and apparently furrowed along the divergent carinae which are very strong and marked and at their extensions run transversely at the verge of dorsal aspect; the dorsal and posterior aspects of propodeum are distinctly separated from the sides by a strong longitudinal carina that runs nearly straight. Pygidial area is broadly truncate at apex, with the width about a third the length of hind metatarsus, and is provided with 8 spinules at the margin.

*Liris (Dociliris) lobustoides* (Williams, 1928)

*Material.* BALABAC: 2 ♀, Dalawan Bay, 10., 13.x.1961.

*Distribution.* Philippines, Borneo and Singapore.

*Remarks.* The lateral carinae of dorsal and posterior aspects of the propodeum are complete and distinct; the transverse carinae joining them are sparser and stronger than in *lobusta*.

*Liris (Dociliris) palawana* sp.n.

*Type.* PALAWAN: holotype ♀, Tagembung, 1150 m, 16.ix.1961.

*Comparative notes.* Closely allied to *L. silvicola* (Williams), but is slightly larger, with wings much darker, the ground pile of the pygidium chestnut brownish except the lateral areas (where brassy), and the half-erected spinules much more numerous and much less erected.

*Description.* Length about 17 mm. Black; mouth parts and claws and spines of legs chestnut brown; wings brownish yellow, fairly dark and darker at apical margin. Pile on the sides of lower face and of clypeus dense, appressed and silky white, also that on temples and pile bands on tergites 1-3; U-shaped pile mark on mesonotum whitish, less dense, appearing greyish white; the notum without the brown-shining pile on central area; the tomentum at apex of propodeum brassy yellow, shining.

IOD at vertex distinctly shorter than the length of antennal joint 3 (17:29); joint 3 slightly longer than 4 and approximately 3.3 times as long as wide at apex; a small oval rhinaria present on joints 7 to 11; clypeus: fig. 58, medianly bluntly raised and with a broad bevel; median incision of the anterior margin very short and shallow, but the sides distinctly angulate. Mesonotum medio-anteriorly moderately depressed; scutellum and postscutellum also medianly depressed; scrobal furrow of mesopleuron only distinct anteriorly, coarsely crenate; propodeum medio-posteriorly narrowly flattened, with a fine carina in middle, not reaching the apex, almost without lateral carinae (only a weak intermittent line of carinulae observable on lateral margins of posterior aspect). Pygidial area with ratio of basal width to length in middle approximately 2:3, apex truncate and covered with 9 stout spinules

which are bluntly rounded at apex; the pygidial surface covered at the sides with brassy golden hair, but the hair on the disc is chestnut brown and mixed with a considerable number of the acute, half-erected spines (but less erect and more numerous than in *silvicola*). Abscissae of radial vein:  $2 \leq 5 < 3 < 1 \leq 4$ ; recurrent veins almost collectively received by cubital cell 2, at a third from base.

Head and thorax finely, very closely punctate-subreticulate, except on frons where the surface is simply microcoriaceous, with the sculpture on the raised part weak and shining; clypeus on medial raised area without punctures, the disc finely, rather sparsely punctate, with intervals microcoriaceous, the punctures larger anteriorly and arranged in a line ~~from~~ <sup>at</sup> the verge to bevel, each provided with a brownish hair; bevel smooth and polished, only laterally scattered with a few small punctules. Mesopleuron partly very finely rugoso-punctate or rugoso-striate, especially so on epimeral area. Dorsal aspect of propodeum coarsely, but not strongly, irregularly reticulate, with the main carinae of reticulation running transversely, and with intervals finely wrinkled; posterior aspect transversely, somewhat arcuately and sparsely striate, the striae upwards and sideways stronger, intervals also minutely wrinkled; sides of propodeum obliquely, finely and very closely striate. Abdominal tergites regularly microcoriaceous.

♂, unknown.

*Liris (Dociliris) williamsi* sp.n. <sup>nec Rohwer, 1919; nec Krombein, 1949</sup> → *xavieri* (Akitu, n.s. 9, p. 4, 1970)

*Types.* PALAWAN: holotype ♀, Uring Uring, 29.viii.1961; paratypes, 2 ♀, same loc., 25, 28.viii.1961.

*Comparative notes.* Closely resembles *L. docilis* (Smith), but the interocular space at vertex is relatively smaller, the hair on the pygidial area is golden and the lateral carinae of the propodeum are more complete.

*Description.* Length 13.5 mm (paratypes 12.5 mm). Black; a spot at base of outer side of fore and middle femora, apex of each joint and underside of ultimate joints of all tarsi ferruginous red; wings fairly strongly darkened and pale brownish. Pubescence on lower frons and clypeus silky white, dense except on glabrous bevel and the sparsely haired medial line; pubescence on temples, mesopleuron and end of propodeum also whitish; mesonotum almost without the U-shaped pile band, which is only visible in certain light, dark greyish; tergites 1-3 with silvery pile bands; ground hair on pygidial area pale golden, mixed with some long erect hairs; the short, clearly decumbent spinules of the disc brownish, but covered by the hairs and not conspicuous; 6 apical spinules present, thick and pointed at apex; the haired area at base broad-triangularly incised by the glabrous surface of the base.

IOD at vertex as long as antennal joint 3; clypeus: fig. 59, medianly bluntly carinate, with distinct bevel; labrum with medial incision very deep, provided with long setae, one of which is markedly long and twisted (in fig. 59). Antennal joint 3 about 2.3 times as long as broad at apex; joints 8-11 each with a small oval rhinarium. Mesonotum medio-anteriorly shortly, distinctly furrowed; scutellum without median impression; postscutellum shallowly



incised in middle; propodeum finely carinate medially, the carina short, never reaching apex, lateral carinae distinct, but not strong and sometimes partly obliterated. Pygidial area truncate at apex, laterally slightly raised and gently curved. Abscissae of radial vein:  $2 < 5 < 3 < 1 = 4$ ; joint 2 very short, about half the length of 5; recurrent veins fairly broadly separated at the top, the 2nd received by cubital cell 2 towards middle. Legs normal.

Head and thorax finely, very closely punctulate; clypeus with punctures very sparse on medial raised area and the surface shining; from the verge to the bevel a line of a few large hair-bearing punctures present as usual; bevel smooth and polished, with very few fine punctures. Propodeum rather coarsely, transversely rugoso-striate and partly rugoso-reticulate, with intervals minutely wrinkled; posterior aspect transversely, finely striate, the striae upwards and sideways stronger, the uppermost one at the verge of dorsal aspect roundly inclined below in the middle, forming a small enclosed area, somewhat as in *L. lobusta*, but very much weaker and less conspicuously so; sides of the segment nearly transversely (very slightly obliquely), very finely and closely striate. Polished area at base of last tergite scattered with a few fine punctures.

*Remarks.* In the paratypes the enclosed triangular area at the upper medial part of the posterior aspect of the propodeum is either very incomplete or almost lacking, indicating that the sculpture is quite variable and can not be of specific value.

*Liris (Dociliris) laboriosa* (Smith, 1856)

*Material.* TAWI TAWI: 5 ♀, 1 ♂, Tarawakan, 26.x., 4–16.xi.1961. MINDANAO: 1 ♀, Sapamoro, 21.xii.1961.

*Distribution.* India, Burma, Philippines, Formosa (not Ryukyus and Japan).

*Remarks.* In females the antennal joints 7–10 (11) bear very small, spotlike rhinaria; lateral carinae of propodeum are absent. In males the sides of the last tergite of the abdomen is more broadly reflected and more produced posteriorly (fig. 60, cf. figs. 61 and 62, specimens from Formosa).

*Liris (Dociliris) cupreohirta* sp.n.

*Types.* PALAWAN: holotype ♀, Pinigisan, 600 m, 22.ix.1961. MINDANAO: paratype, 1 ♀, Sapamoro, 20.xii.1961.

*Comparative notes.* The present species is similar to *L. laboriosa* in the punctation of the clypeus and to *L. liroides* in the <sup>pubescence</sup> of the head and thorax, but differs from both of them in having a deep medial incision on the anterior margin of the clypeus and only 3 pile bands on the abdomen.

*Description.* ♀. Length 13.5 mm. Black; mandibles on extreme apex and on inner margin reddish brown, apical portion of tarsi beneath and claws dark ferruginous; wings slightly clouded throughout, with a more or less yellowish tinge, apical margin darker, stigma and veins brownish black. Pubescence on head and thorax-complex very fine, sparse, erect and longer than the width of antennal scape. In addition lower frons and temples densely covered with

appressed silky white pubescence. Similar pubescence on clypeus and mesopleuron shorter, slightly sparser, so that the surface punctures are clearly visible. U-shaped band on mesonotum silky white, not so dense, appearing greyish white. Pile bands on abdomen silvery white, confined to tergites 1–3.

IOD at vertex slightly greater than the length of antennal joint 3 (6:5); configuration on vertex and frons slightly acuter than in *L. laboriosa*, with the depression deeper and the elevation higher; antennal joint 3 somewhat laterally compressed except apical portion, about 2.6 times as long as wide at apex, and as long as 4, but slightly shorter than 5; rhinaria present on joints 5–11, very large, elongate oval and about  $\frac{2}{3}$  as long as the respective joint (in this respect markedly different from *L. laboriosa*). Clypeus: fig. 63; bevel present, but weak, markedly broad, slightly reflected at apex and deeply incised in middle; the medial incision of labrum small and not deep. Mesonotum medio-anteriorly somewhat depressed, with median scutal lines finely impressed, but the interspace not furrowed; scutellum and postscutellum medianly weakly furrowed; propodeum with a comparatively deep median furrow, the furrow deeper and slightly broader posteriorly, reaching the apex of dorsal aspect and with a fine weak carina in middle; the carina is not extending to the apical margin of the depression; posterior aspect of propodeum slightly concave, with a deep medial furrow running down from the centre of the depression; lateral margins of propodeum completely lacking longitudinal carina. Pygidial area in shape and in curvature of the disc similar to *L. laboriosa*; <sup>pubescence</sup> also similar, but chestnut brown with a cupreous shade rather than golden; apical margin deeply triangularly incised, the incision is obscured by 3–4 setae. Abcissae of radial vein with relative length:  $5 = 2 < 3 < 1 < 4$ ; recurrent veins at the upper ends distinctly separated, both received by cubital cell 2 before middle. Legs normal. Punctures on head and mesonotum very fine and close, on scutellum somewhat larger and sparser. Clypeus microcoriaceous on basal half of the disc, apical half finely, somewhat sparsely punctate, with interspaces microcoriaceous, bevel finely closely punctate almost to the margin (fig. 63); a line of large, well separated punctures bearing long curved setae is present at the border between the disc and the bevel. Mesopleuron densely microshagreened, without punctures, only with very minute sparsely scattered tubercles at hairbases. Propodeum finely, irregularly reticulate, in certain light transversely (medianly somewhat obliquely) finely and closely rugoso-striate with the striae stronger towards the sides; posterior aspect transversely, sparsely and more strongly striate with the striae stronger upwards and sideways. Sternites 4 and 5 sparsely punctate with medium-sized points; sternum 5 more closely and more strongly punctate.

*Liris (Dociliris) nielsenii* sp.n.

*Type.* MINDANAO: holotype ♀, Sapamoro, 21.xii.1961.

*Comparative notes.* Closely resembling *L. docilis* (Smith), but the interocular space at vertex is comparatively shorter, the wings are more strongly darkened and less yellowish and the hair on the pygidial area is closer, longer (the surface sculpture is invisible) and chestnut brown. The species is also very

similar to *L. formosana* m., especially in the colour of the wings, but the hair of the pygidial area is much longer and closer and the lateral carinae of the propodeum are completely lacking.

**Description.** Length 13 mm. Totally black; wings fairly strongly darkened. Lower frons and clypeus closely covered with appressed silvery pubescence; U-shaped pile band on mesonotum very feeble, only vaguely defined in certain light; hairs on pygidial area chestnut brown, dense, long, mixed with a small number of well appressed bristles and hiding the ground sculpture; 8 spinules at apex.

IOD at vertex distinctly less than the length of antennal joint 3 (3:4); clypeus similar in form to that of *L. docilis*, but with the medial incision deeper (fig. 64); antennal joint 3 approximately 2.7 times as long as broad at apex; joints 6–11 with rhinaria like small oval impressions, the impression on joint 6 very small, nearly evanescent. Mesonotum with medio-anterior depression very low; scutellum completely flat (constant?) as is the disc of propodeum; propodeum with the medial carina ending far before the apical margin, and without the lateral carinae, the transverse carinae are thickest at the lateral verge, each ending in a very short process, and are as a whole in certain light appearing as an incomplete longitudinal carina. Pygidial area as in *docilis* except that the latero-posterior angles are more rounded and the apex truncate. In fore wing abscissae of the radial vein:  $5 \leq 2 < 3 < 1 < 4$ ; recurrent veins as in *formosana*.

Vertex, frons and mesonotum very finely and closely punctate; clypeal bevel almost impunctate and smooth; punctures on scutellum slightly larger and sparser; puncture-intervals on head and thorax fairly well shining; mesopleuron punctate as the mesonotum, but the surface is dull and opaque; dorsal aspect of propodeum transversely, medianly arcuately, finely and moderately closely striate, with the surface dull, the striae stronger and sparser laterally; posterior aspect similarly, but more weakly striate on central area, sides obliquely, finely, closely and weakly striate, the striae partly obliterated.

♂, unknown.

*Liris (Dociliris) cameroni* sp.n.

**Types.** MINDANAO: holotype ♀, Sapamoro, 22.xii.1961. PALAWAN: paratype ♀, Uring Uring, 22.viii.1961.

**Description.** Length 10–11.5 mm. Black; spines of legs and apical portion of tarsi beneath ferruginous; wings markedly yellowish (especially under microscope); stigma and veins ferruginous yellow. Hairs on lower frons and clypeus short, dense and silvery; thorax wholly covered with silky white velvety pile and the U-shaped pile band on mesonotum is clearly visible. Silvery pile bands on tergites 1–3 are somewhat brassy. The hair on pygidial area comparatively short, silvery, very slightly yellowish, appressed bristles on the disc short, not conspicuous, apical spinules comparatively broad, 6 in number, the haired area at base roundly emarginate.

IOD at vertex as long as antennal joint 3; joints 3 and 4 subequal in length, 5 slightly longer; joints 3/ about 2.5 times as long as broad at apex

*with somewhat a brassy shade*

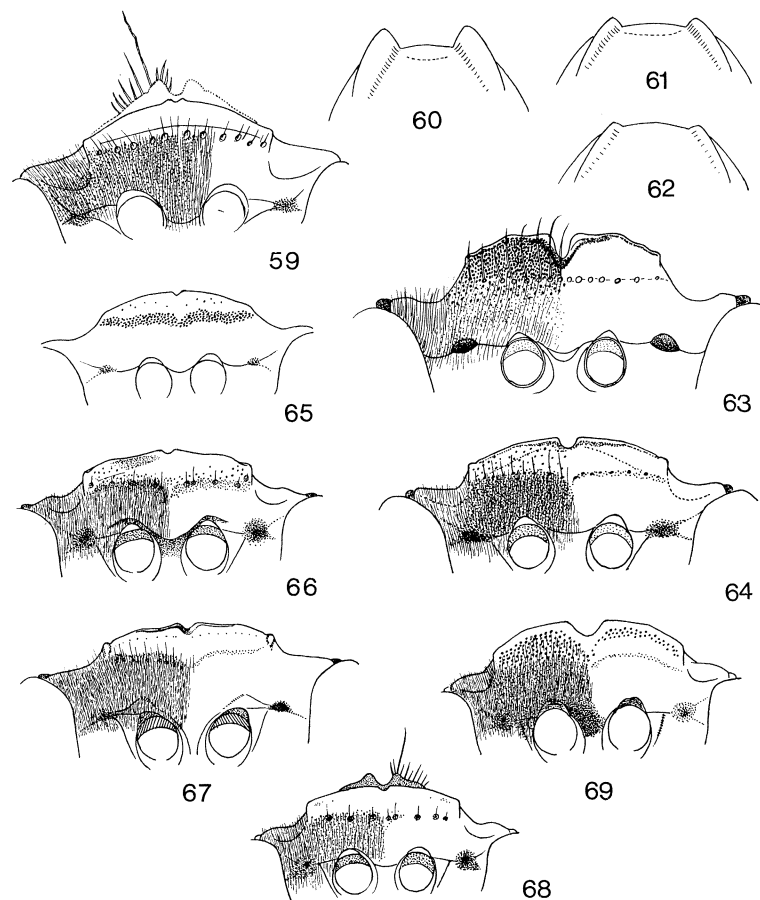


Fig. 59. *Liris (Dociliris) williamsi* sp.n., clypeus, female. – Figs. 60–62. *L. (D.) laboriosa* (Smith), female, sternite 8; 60) of specimen from Tawi Tawi; 61, 62) of specimens from Formosa. – Figs. 63–69. Clypeus in females of 63) *L. (D.) aureohirta* sp.n., 64) *L. (D.) nielsenii* sp.n., 65) *L. (D.) cameroni* sp.n., 66) *L. (D.) carinata* sp.n., 67) *L. (D.) semicarinata* sp.n., 68) *L. (D.) smithi* sp.n., 69) *L. (D.) turneri* sp.n.

and 3.1 times as long as broad at base; rhinaria on joints 8–11 very small and nearly rounded, spot-like. Clypeus: fig. 65. Mesonotum on medio-anterior part slightly depressed; scutellum without median furrow; postscutellum with a weak medial impression; propodeum with a weak medial carina, not reaching apex, lateral carina absent. Abscissae of radial vein with relative length  $5 = 2 < 3 < 4 = 1$ ; recurrent veins fairly remotely separated at the top, both received by cubital cell 2 before middle.

Head and thorax very finely and closely punctate; clypeus with bevel smooth and polished, almost impunctate, with only a few fine points scattered on lateral portions. Propodeum transversely, finely and closely striate, inter-

spaces of the striae very feebly microcoriaceous, the striae sparser and stronger laterad; on posterolateral areas of dorsal aspect the striae are longer and the one at the posterior verge is completely developed and very pronounced, becoming a bordering carina against the posterior aspect, the one anterior to it is also fairly long and strong; posterior aspect similarly transversely striate, the striae stronger laterally and upwards.

♂, unknown.

Varietas. In a female from BALABAC: Dalawan Bay, 7.x.1961, the sculpture on the propodeum is medially subreticulate, with the main striae running transverse with the median carina weaker, and the hair on the pygidial area is slightly more yellowish.

Remarks. The present species may be a synonym of *Larrada tristis* Smith, 1856, from Borneo. However, the description is insufficient and as there are several similar species an identification of *tristis* is impossible for the moment.

*Liris (Dociliris) carinata* sp.n.

Types. PALAWAN: holotype ♀, Pinigisan, 600 m, 11.ix.1961; paratypes 2 ♀, Uring Uring, 15.viii.1961.

Comparative notes. Closely allied to *L. formosana* m., but the flagellar joints of the antennae are relatively shorter, the bevel of the clypeus is not so closely punctate, the fine hairs and the bristles on the disc of the pygidial area are somewhat longer and the hairs are more abundant and with a stronger shade of golden. This species may be a synonym of *Larrada tristis* Smith, but for the same reason given for *L. cameroni*, the identification is impossible.

Description. ♀. Length 12.0 mm. Black; mandibles except the basal third dark red, a small spot at base behind of all femora ferruginous red and tarsal joints beneath ferruginous apically; wings fairly strongly darkened, with a strong yellowish shade seen under microscope, stigma and veins dark brown. Pilosity of lower frons and clypeus silvery as in *formosana*, but on thorax and propodeum comparatively less dense (due to somewhat larger punctures); U-shaped pile band on mesonotum only discernible in certain light; pile bands on abdomen present on tergites 1-3; haired area of pygidium at base roundly emarginate, bristles on the disc well appressed, dark brown and the fine hair in between and at the sides strongly golden in certain light.

IOD at vertex as long as antennal joint 3, which is very slightly longer than 4 or 5 combined, the latter two equal in length; joint 3 in the narrowest view 2.2 times as long as broad at apex and approximately thrice as long as wide at base; rhinaria oval, very small, present on joints 7-11, smallest on 7; clypeus: fig. 66. Mesonotum medio-anteriorly and scutellum medio-posteriorly slightly depressed; postscutellum medianly weakly notched; lateral carinae of propodeum complete and fairly strong (as in *formosana*), medial fine carina not reaching apex, posterior aspect medianly deeply furrowed, with the furrow not widely divergent upwards as in *L. lobusta*. In fore wing radial vein with abscissae in the following length relation:  $5=2<3<1<4$ ; recurrent veins fairly remotely separated at the top and vein 2 received by cubital cell 2 slightly before middle.

Clypeus finely closely punctulate, with a line of large hair-bearing punctures just behind the bevelled area; bevel smooth and polished on upper part and laterally with a few scattered fine punctules. Head above and thorax finely and closely punctulate, the punctules somewhat larger than in *cameroni* sp.n. above, but on epimeral area of mesopleuron they are very fine. Dorsal aspect of propodeum transversely, moderately sparsely, distinctly rugoso-striate, with irregular longitudinal carinulae in between, in certain light appearing irregularly, moderately coarsely reticulate; the transverse striae sparser and stronger laterally; posterior aspect similarly transversely rugoso-striate, the striae stronger sideways and upwards, the uppermost one uniformly strong; sides transversely, somewhat obliquely, more closely and finely striate, the striae on central area weaker and less distinct.

♂, unknown.

*Liris (Dociliris) semicarinata* sp.n.

Type. TAWI TAWI: holotype ♀, Tarawakan, 31.x.1961.

Comparative notes and description. Very closely resembling *L. cameroni* described above and it is doubtful whether it is a distinct species or a variation of *cameroni*. In this paper it is dealt with provisionally as distinct.

It differs from *cameroni* in the following respects: Slightly larger, 13.5 mm; clypeus with a ridge-shaped tubercle on each side of the medio-anterior produced part and shortly notched at its inside (fig. 67); propodeum at the lateral margins with a low incomplete carinula between the transverse carinae that are highly raised there and the area appears to be weakly longitudinally carinate; disc of dorsal aspect transversely, more coarsely striate (see the variety), with the intervals finely, but fairly strongly, irregularly wrinkled. Other main characters: IOD at vertex as long as antennal joint 3; rhinaria small, present in the right antenna on joints 7-11 and in the left on 6-12 (on 6 minute); clypeus with the bevel almost smooth and polished, bearing a line of sparse fine punctures across middle; antennal joint 3 about 2.6 times as long as wide at apex and 3.5 times so at base (dorsal view). In fore wing abscissae of radial vein as  $5=2<3<4\approx 1$ ; recurrent veins distinctly separated at the top and vein 2 received before middle of cubital cell 2.

Varietas. In a female from MINDANAO: Sapamoro, 21.xii.1961, the lateral carinae of the propodeum are much weaker and indistinct, the propodeal disc more weakly and closely sculptured and the bevel of the clypeus finely, sparsely but not uniformly punctate.

*Liris (Dociliris) smithi* sp.n.

Type. TAWI TAWI: holotype ♀, Tarawakan, 12.xi.1961.

Comparative notes. In the key to the Philippine Larridae (Williams, 1928) the present species runs to *subtessellata* (in reality *docilis* Smith) but differs from *docilis* in that the wings are much less yellowish, the pilosity of the thorax sparser and the hairs on the pygidial area much longer and closer.

Description. ♀. Length 10.5 mm. Black; mandibles except basal third dark red, fore and middle femora at base behind and apical portion of tarsi beneath

ferruginous red. Wings not strongly, but broadly and nearly uniformly clouded and paler towards the base. Pilosity on lower frons and clypeus silky white, on thorax not so close as to be called velvety; U-shaped pile mark on mesonotum discernible only when seen from behind, with the lateral band short and the posterior one very narrow; pile bands on abdomen on tergites 1-3, silvery; pygidial area with the basal smooth part fairly deeply and roundly produced into the haired area, but not reaching the middle; punctures on the disc comparatively large and close; the hair long, well appressed and pale golden, bristles unobservable; apical spinules slightly dilated and 5 in number.

IOD at vertex as long as antennal joint 3, the latter as long as joint 4 or 5 ~~combined~~ (in some cases appearing very slightly longer) and 2.2 times as long as wide at apex; rhinaria on antennal joints 7-11 are oval and small, on 7 and 8 very small, point-like. Clypeus: fig. 68; antero-lateral angles of medial produced part slightly swollen at the end of the short, weak lateral edge; clypeal disc medianly bluntly raised. Mesonotum anteriorly in middle moderately depressed; scutellum without furrow in middle; postscutellum feebly notched in middle; propodeum with the lateral carinae almost complete, but not strong, far lower than the transverse carinae laterally and weaker anteriorly; the median carina on dorsal aspect very feeble, hardly reaching the middle of propodeum; the disc flattened and slightly depressed posteriorly; posterior aspect with the bordering carina near the upper edge medianly interrupted, but the interruption is not so broadly and distinctly marked off as ~~the~~ the triangular area by the upwards divergent carinae in *L. robusta* and only a very small triangular area is defined; medial furrow fine, deep, being deeper and lenticularly enlarged upwards. In fore wing abscissae of radial vein:  $5=2<3<1<4$ , legs as in *docilis*.

Head and thorax very finely and very closely punctulate (as in *docilis*); dorsal aspect of propodeum transversely, finely, rather closely rugoso-striate, the striae very weak but at the sides strong and high; on the propodeal disc weak longitudinal carinulae are irregularly scattered and the surface appears minutely subreticulate from certain directions; posterior aspect transversely, weakly, finely and closely striate, the striae stronger and sparser sideways and upwards; sides of propodeum obliquely, moderate coarsely, rather distinctly striate.

♂, unknown.

*Liris (Dociliris) turneri* sp.n.

Type. PALAWAN: holotype ♀, Pinigisan, 600 m, 6.ix.1961.

Comparative notes. This species is closely allied to *L. rohweri* (Williams) with clypeus punctate till near the anterior margin and broadly incised in the middle of apical margin, but *turneri* carries only 3 pile bands on the abdomen. The form of the pygidial area is similar to that of the also allied *L. docilis* (Smith), but the wings are much less yellowish and the lateral carinae of the propodeum are more complete.

Description. ♀. Length 13 mm. Black; apical  $\frac{2}{3}$  of mandibles dark red, fore and middle femora at base behind reddish ferruginous, tarsi apically beneath brownish. Wings weakly clouded, on apical margin narrowly darkened. Pubescence on lower face and clypeus silvery, on thorax not as dense as in *L. laboriosa*; U-shaped pile band on mesonotum as in *L. smithi* sp.n. Hairs and bristles on pygidial area brownish black, rather short; haired area at base of pygidium roundly emarginate; apical spinules 7 in number.

IOD at vertex as long as antennal joint 3; joints 3, 4, 5 equal in length; 3 about 2.5 times as long as wide at apex; rhinaria on joints 7-12, comparatively large and oval, on 11 largest and slightly more than one third the length of the joint; clypeus: fig. 69. Medio-basal depression of mesonotum of moderate size; scutellum at apex in middle and postscutellum medially impressed; propodeum with the lateral carinae from apex till about middle of the dorsal aspect distinct, not strong, median carina also distinct, but not reaching apex. Wings with abscissae of radial vein:  $2<5<3<1<4$ , the difference between 2, 5, 3 and 1 not large.

Head and thorax finely, closely punctulate; bevel of clypeus except the narrow apical margin comparatively largely, moderate closely, rather uniformly punctate (fig. 69). Dorsal aspect of propodeum transversely, rather strongly and closely striate, intervals minutely shagreened, the ~~lateral striae~~ <sup>laterally</sup> are somewhat stronger and longer posteriorly; posterior aspect similarly, but on central area obliquely striate, the striae are somewhat stronger upwards with the pronounced part longer; without a particularly strong and high carina bordering the dorsal and posterior aspect of propodeum.

♂, unknown.

*Liris (Nigliris) japonica manilae* (Ashmead, 1904), comb.n.

Material. BALABAC: 1 ♀, Dalawan Bay, 11.x.1961. TAWI TAWI: 67 ♀, 19 ♂, Tarawakan, 24.x.-16.xi.1961. MINDANAO: 1 ♀, 1 ♂, Sapamoro, 17, 22.xii.1961.

Distribution. Penang, Singapore, Philippines, Borneo, Amboina, Pacific Islands, Australia. Nominate race: Formosa, Japan, Ryukyus, Korea, N. China, S. Europe.

Remarks. The Philippine specimens examined differ from *j. japonica* of the type locality (Japan) only in that the body is much smaller (♀, 6.5-8.5; ♂, 5-6.5 mm). The oval antennal rhinaria in females are located on joints 6-12 and are slightly less than half the length of the respective segments; in males they vary slightly in distribution: in 13 specimens on joints 6-10 occupying the full length of the joint except the apicalmost part, in 2 specimens on 5-9, but the rhinaria are small on joint 6 and even absent in one antenna in one of the specimens. In most of the specimens examined the apical abdominal sternites are provided with curved pubescence mixed with a few long scattered setae; in only 3 out of 18 specimens the setae are lacking.

In the Philippines this taxon has been known as *Motes manilae* (Ashmead).

in one of which only in one of the antennae joint 5 carries a rhinaria which is small and rounded and located before middle of the joint. in the other specimen joint 5 of both antennae carries a rhinaria in one of which it is rounded and located before middle and in other it is renicellitic and located at the end of the joint.

Insertion of the present new species of *Liris* (♀) into couplets 3, 6 and 11 of the key of Williams, 1928 (on *Notogonidea*):

3. Bevel of clypeus closely and coarsely punctate almost to the fore margin; (hairs on pygidial area thin, close and long, surface sculpture invisible) ..... 3 A
- Bevel of clypeus sparsely or not punctate ..... 4
- 3 A. Four pile bands on abdomen; (medial notch of clypeal margin weak; hairs of pygidium golden; pubescence on head and thorax short, velvety; disc of propodeum without medial furrow; rhinaria on antennal joints very small, spot-like); 11-16 mm ..... *laboriosa* Smith
- Three pile bands on abdomen (medial notch of clypeal margin markedly deep; hairs on pygidium dark coppery; pubescence on head and thorax sparse and long as in *L. liroides*) ..... 3 B
- 3 B. Length about 18 mm; wings markedly dark brownish, without apical clouding; U-shaped band on mesonotum not conspicuous; (disc of propodeum weakly furrowed medially; rhinaria on antennal joints <sup>comparatively small</sup>, nearly half the length of the respective joint) ..... *peterseni* sp.n. <sup>melucre m. size</sup>
- Length about 13 mm; wings pale yellowish brown, with apical margin darker; U-shaped pile band of mesonotum conspicuous; (disc of propodeum medially distinctly, fairly deeply and broadly furrowed; rhinaria on antennal joints large, distinctly more than half the length of the respective segment) .... *cupreohirta* sp.n.
6. Half-erected bristles or spines among the recumbent hairs on the disc of pygidium long and stout ..... 6 A
- Half-erected bristles on pygidium delicate ..... 8
- 6 A. Bristles on the disc of pygidium pale yellow; pile of body golden; (mesopleura finely wrinkled-punctate), 11 mm or more ..... *mindanaoensis* (Williams)
- Bristles on the disc of pygidium dark brown or blackish; pile of body silvery; (IOD at vertex shorter than antennal joint 3, lateral carinae of propodeum weak and incomplete) ..... 6 B
- 6 B. Antennal joint 3 as long as joint 4, wings slightly infuscated, more or less yellowish and broadly darkened apically; (U-shaped pile band on mesonotum and pile bands of abdomen comparatively distinct; mesopleura minutely rugoso-punctate), 13-14 mm ..... *silvicola* (Williams)
- Antennal joint 3 longer than 4, wings yellowish brown, more strongly infuscated; (pile bands on mesonotum and abdomen less distinct; mesopleuron finely punctulate), 16 mm ..... *palawanensis* sp.n.
11. Four pile bands on abdomen (clypeus with strong, though not at all densely placed punctures on the bevel until near to the margin; IOD at vertex slightly shorter than the length of antennal joint 3 or 4 <sup>combined</sup>; pubescence on pygidium golden), about 12 mm ..... *rohweri* (Williams)
- Three pile bands on abdomen ..... 11 A
- 11 A. Hairs on head and thorax and pile bands on abdomen golden (bristles and hairs on pygidium dark cupreous; rhinaria on antennal joints 6-11, small, at the largest a third as long as the respective joint), 12-16 mm ..... *deplanata* (Kohl)
- Hairs on head and thorax and pile bands on abdomen silvery ..... 11 B
- 11 B. Hind femora red (IOD at vertex slightly shorter than antennal joint 3; clypeus with bevel almost impunctate; rhinaria on antennal joints 7-11, small and oval), 11-14 mm ..... *subtessellata* (Smith)
- Hind femora black ..... 11 C
- 11 C. IOD at vertex distinctly shorter than antennal joint 3, as 3:4 (joint 3 in dorsal view three times as long as wide at apex; rhinaria on joints 7-11, small, clypeus: fig. 64; pygidium densely covered with long, appressed coppery bristles and brown hairs, the hairs on sides pale golden; lateral carinae of propodeum weak and incomplete;
- disc of propodeum posteriorly broadly flattened), about 13 mm ..... *nielsenii* sp.n.
- IOD at vertex equal to or very slightly shorter than antennal joint 3 ..... 11 D
- 11 D. Lateral carina of propodeum completely lacking; (antennal joint 3 in dorsal view about 2.3 times as long as wide at apex; rhinaria on joints 7-11, very small; clypeus: fig. 65, bevel with very minute points very sparsely scattered, recumbent bristles and hairs of pygidium short, silvery, with a shade of pale golden), 10-11.5 mm ..... *cameroni* sp.n.
- Lateral carinae of propodeum present, but sometimes incomplete and weak .. 11 E
- 11 E. Wings markedly yellowish and apically conspicuously darkened; (bevel of clypeus with a small weak incision at apex in middle, clearly shining, with a few small points scattered across middle; antennal joint 3 about 2.6 times as long as broad at apex; rhinaria small, present on joints 7-11; U-shaped pile band on mesonotum distinct; propodeum transversely rather coarsely rugoso-striate, partly subreticulate, median carina lacking, lateral carinae weak and incomplete; recumbent hairs and bristles on pygidium short, brownish black or black, in certain light pale golden), 10-15 mm ..... *docilis* (Smith)
- Wings less yellowish, more or less dusky, apical clouding less conspicuous ... 11 F
- 11 F. Lateral carinae of propodeum strong and complete; (bevel of clypeus with a few small punctures on lateral areas; rhinaria of antenna as in *docilis*; pilosity of mesonotum less conspicuous than in this species; sculpture of propodeum also similar, but medial carina distinct; pygidium with bristles and hairs less dense, coarse punctures partly observable, the hairs long, pale golden, bristles dark brown; wings strongly dusky, with a yellowish shade), 12 mm ..... *carinata* sp.n.
- Lateral carinae of propodeum incomplete, intermittent and weak ..... 11 G
- 11 G. Clypeal bevel except apical margin somewhat largely, moderate closely and nearly uniformly punctate, with a large incision at apex (fig. 69); (antennal joint 3 in dorsal view 2.6 times as long as wide at apex; rhinaria of antenna as in *docilis* and *carinata*; lateral carinae of propodeum fairly distinct, but partly intermittent, low and anteriorly indistinct, median carina well-defined, not reaching apex; hairs and bristles on pygidium dark brown, the hairs comparatively long, but not dense on the disc, punctures partly observable; wings rather pale in clouding, apical darkening conspicuous), 13 mm ..... *turneri* sp.n.
- Clypeal bevel not so closely and distinctly punctate, apical incision not so large; (rhinaria on antennal joints 7-11, small) ..... 11 H
- 11 H. IOD at vertex as long as antennal joint 3; joint 3 short, 2.2 times as long as wide at apex; (clypeus: fig. 68, bevel almost impunctate, polished; propodeum transversely rugoso-striate and subreticulate, lateral carinae incomplete and low, medial carina very weak, pygidial hairs and bristles comparatively long, but sparse, pale brassy, surface punctures clearly visible), 10.5 mm ..... *smithi* sp.n.
- IOD at vertex shorter than antennal joint 3; joint 3 comparatively long, more than 2.3 times as long as wide at apex; (clypeus with a minute notch on anterior margin just inside the lateral corners; median carina of propodeum fine but distinct, not reaching apex, disc comparatively coarsely, transversely rugoso-striate, in certain light rugoso-subreticulate) ..... 11 I
- 11 I. Antennal joint 3 in dorsal view 2.3 times as long as wide at apex; ultimate joint in lateral view slightly longer than penultimate joint; wings fairly strongly darkened, with a yellowish tinge; (clypeus: fig. 59, on disc just behind the verge to the bevel with a row of very coarse punctures; mesonotum medio-anteriorly strongly depressed; pile bands on mesonotum and abdomen indistinct; lateral carinae of propodeum at the posterior aspect fairly well defined, but dorsally indistinct; hairs and bristles of pygidium comparatively long, in all directions pale golden), 13 mm ..... *williamsi* sp.n.
- Antennal joint 3 about 2.6 times as long as wide at apex; ultimate joint as long as the penultimate joint; wings hyaline, with a slight tint of yellowish, apical margin

slightly clouded; (clypeus: fig. 67, with the punctures on the disc just behind the verge to the bevel much smaller; medio-anterior depression of mesonotum very slight; pile bands on mesonotum and abdomen distinct, clearly shining; lateral carinae of propodeum weak, intermittent, dorsally indistinct; hairs and bristles of pygidium sparse, pale golden in oblique light, but with the bristles appearing cupreous or dark brown in vertical view), 12–14 mm . . . . . *semicarinata* sp.n.

*Lyroda formosa* (Smith, 1859)

*Material.* PALAWAN: 1 ♀, Uring Uring, 15.ix.1961. TAWI TAWI: 10 ♀, Tarawakan, 27.x.–21.xi.1961.

*Distribution.* Celebes, India, Philippines.

*Nitela luzonensis* Williams, 1928

*Material.* TAWI TAWI: 5 ♀, Tarawakan, 24.x.–12.xi.1961.

*Distribution.* Philippines and Borneo.

*Remarks.* Supplementary notes to the original description: The border between the upper and lower frons not angulate, but bluntly rounded, the area anterior to the border microgranulate, upper frons posterior to the border longitudinally finely rugoso-reticulate. Mesonotum medially impressed, the surface transversely, finely and closely rugoso-striate with the striae stronger laterally, posterior margin strongly foveolate; scuto-scutellar furrow also coarsely foveolate; scutellum not transversely, but longitudinally, delicately and closely striate with intervals punctulate; postscutellum very coarsely longitudinally (not transversely) striate. Propodeum on dorsal aspect coarsely reticulate with the main framing consisting of 7 longitudinal, posteriorly converging striae, the outermost of which form the lateral carinae of the dorsal aspect; posterior aspect enclosed dorsally and laterally by a strong zigzagged carina, with a distinct tooth at the middle of the lateral carina; the posterior aspect distinctly furrowed in the middle with the top of the furrow enlarged, shallowed and flattened into a small triangular area, the surface transversely finely and closely striolate, but in some cases smooth and polished.

As described above the specimens examined are markedly differing from the original description with regard to the sculpture of the scutellum and postscutellum. From the knowledge of the related species, however, I doubt the correctness of the description saying that scutellum and postscutellum are transversely striate or wrinkled and I treat the specimens as *N. luzonensis*.

#### TRYPOXYLONINAE

*Trypoxylon schmiedeknechti* Kohl, 1906

*Material.* PALAWAN: 1 ♂, Uring Uring, 18.viii.1961.

*Distribution.* Java, Thailand, new to the Philippines.

*Remarks.* The present specimen differs in appearance from those of Thailand only in the lack of the plumbeous shine on the mesothorax. In this respect it may represent a local race. Further, though the genitalia of males from the two areas (figs. 71–73) are very much alike, small differences are noticed,

viz. the hairs on the stick-like apical branch of the paramere are minutely tuberculate at base in the Palawan specimen (fig. 70), but not so in Thailand males (fig. 73) and the apical protuberances of the 8th sternite are narrower and more widely separated from each other in the Palawan specimen (fig. 70) than in an example from Thailand (fig. 74).

The genitalia of *schmiedeknechti* are characteristic in the presence of a membranous septum stretched across the parameral tube; the volsella is short, thin, plate-like and hollowed on the outer side and the paramere is deeply bifid at apex with one of the branches lamellate and the other stick-like.

*Trypoxylon thaianum* Tsuneki, 1961

*Material.* PALAWAN: 1 ♀, Uring Uring, 15.viii.1961. BALABAC: 1 ♀, Dala-wan Bay, 13.x.1961. TAWI TAWI: 2 ♀, 1 ♂, Tarawakan, 25.x.–14.xi.1961.

*Distribution.* Thailand, new to the Philippines.

*Description.* ♂ (hitherto unknown). Length 8 mm. Very similar to males of *T. schmiedeknechti* but differing in the following characters: Ultimate antennal joint markedly shorter, viz. slightly shorter than the two preceding joints taken together (in *schmiedeknechti* as long as the three preceding joints united), frontal shield (fig. 75) with the upper rounded carina longer (as in female) and with the lower carinae straight and clypeus with the disc more strongly rounded.

Black, but palpi and tibial spurs pale ferruginous white, all metatarsi beneath pale ferruginous, antennae and legs dark brown and posterior part of pronotal collar discoloured, amber yellowish. Pubescence on clypeus silvery.

IOD at vertex and at base of clypeus with relative lengths 15:11; frontal shield: fig. 75; clypeus: fig. 76, with the disc markedly roundly convex; antennal joint 3 in the broadest view 1.7 times, in the narrowest view amply twice as long as wide at apex. 1st segment of abdomen as in *T. subpileatum*, fairly long, about as long as the two following segments united, with the almost parallel-sided petiolated area gradually and very slightly widened posteriorly; apex slightly constricted; relative length and width at base (minimum), in middle and before apex (maximum) approximately as 47, 4, 5.5 and 10. Genitalia quite similar to those of *schmiedeknechti*, but apical branches of paramere are slightly shorter (i.e., slightly less bifid apically) and hairs on paramere are more abundant. 8th sternite (fig. 77) slightly broader and shorter than in *schmiedeknechti*, with the apical protuberances more widely separated and much narrower. Punctures on the frontal shield laterally as large as in female, but more abundant and somewhat rugose upwards (in *schmiedeknechti* punctures finer, slightly sparser and uniformly distributed); punctures on mesonotum also slightly stronger, more distinct and closer than in *schmiedeknechti*.

*Trypoxylon obsonator tropicale* Tsuneki, 1961

*Material.* TAWI TAWI: 1 ♀, 1 ♂, Tarawakan, 14.xi.1961; 1 ♂, Lapid Lapid, 22.xi.1961.

*Distribution.* India, Malaya and Thailand, newly confirmed in the Philippines.

*Remarks.* As far as described, *Trypoxylon elongatum* Ashmead (1905:961, nec Smith) = *T. ashmeadi* Baltazar (1966:336, n.name) completely coincides with *T. obsonator*, but the description does not give the information necessary for a present-day classification. In the female examined the antennal flagellum is dark brown beneath, not ferruginous, but this is possibly due to a post-mortem change. Basal two joints of fore and mid tarsi are pale yellowish white and the three apical joints pale brown.

As to the subspecific relationships, the specimens of both sexes completely agree with *T. o. tropicale*, namely the female with relative IOD at the vertex and at base of clypeus as 19:14 (head width relatively 73) and the male with the ultimate antennal joint approximately as long as the 4 preceding joints combined.

*Trypoxylon bicolor marginatum* ssp. n.

*nee Cameron, 1912*

→ *dorsale* (Akita, ns. 9.p.4)

*Type.* BALABAC: holotype ♀, Dalawan Bay, 12.x.1961.

*Description.* ♀. Differs from the nominate subspecies (Ashmead, 1904) in that the body is much larger (18 mm, constant?) and the area dorsalis of propodeum is more distinctly marked off on its posterior half.

The characters of *bicolor* have not been described in detail. Some comments: OOD:POD = 2:3; POD  $\frac{2}{3}$  of the width of postocellus; IOD at vertex and at base of clypeus relatively 21 and 17; antennal joints 3, 4, 5 with relative length 21, 17, 16; joint 3 slightly more than 5 times, joint 4 about 3.5 times, as long as broad at apex; eye incision narrow; clypeus roundly produced anteriorly, but medianly broadly subtruncate (in this respect differing from *T. obsonator*); supraantennal tubercle slightly higher than in *obsonator*, with the carina on top much higher and more conspicuous. Pronotal collar before the transverse furrow raised towards the middle and weakly tuberculate at the centre; propleural projection broad triangular, comparatively small and thick, with apex subpointed; its relative length compared with maximum and minimum width of abdominal segment 1 approximately 160, 26 and 9. Antennal flagellum in the present specimen dark brownish beneath, not ferruginous, but this is possibly due to a post-mortem change.

*Remarks.* In the present specimen the supraantennal elevation is rather roundly tuberculate as in *obsonator*, not nose-shaped, (but only slightly higher); it is provided with a much higher and longer carina on top which reaches, after a weak interruption, nearly halfway of the distance to the anterior ocellus. Bingham (1897) separated *T. bicolor* from *obsonator* by the form of the supraantennal elevation only. In *bicolor*, however, the elevation is not markedly nose-shaped, only slightly higher, and with a higher carina on top. In *obsonator* the degree of development of the carina is considerably variable, and separation of the two species on the shape of the supraantennal elevation is therefore rather difficult.

According to the original description the abdomen of *bicolor* is ferruginous red from apex of segment 1 to whole of segment 4, while in *obsonator* it is,

as a rule reddish from apex of segment 1 to segment 3. This difference was neglected by Bingham.

In the specimen examined the colour of abdomen agrees well with the original description (in reality the apical half of the 4th segment appears blackish, but this is due to the insertion of the following black segment). Further, as to the size of the body, Bingham's interpretation is somewhat different from Smith's description. As far as I can see the two species can easily be separated from each other by the difference in the shape of the anterior margin of the clypeus, as stated above.

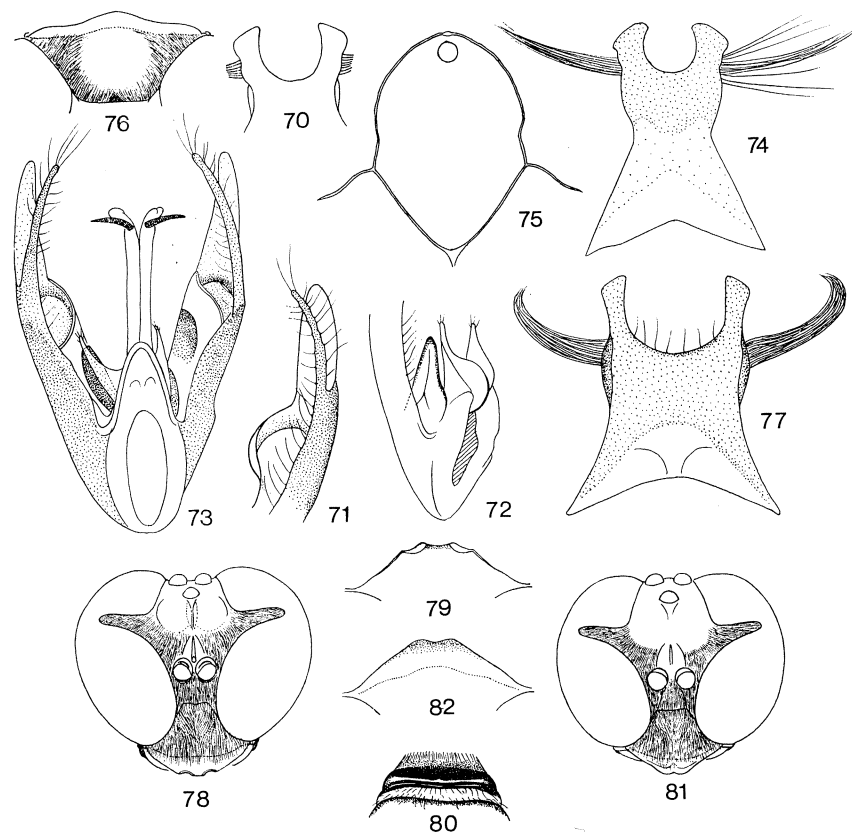
*Trypoxylon aureohirtum* sp. n.

*Type.* PALAWAN: holotype ♀, Pinigisan, 600 m, 23.ix.1961.

*Comparative notes.* Three species of *Trypoxylon* with golden vestiture have been known from the Oriental region, namely, *coloratum* Smith, 1858, from Borneo and Tenasserim, *varipilosum* Cameron, 1901, from Singapore and *annulipes* Cameron, 1903, from Borneo. According to the literature, *varipilosum* seems to be close to the present specimen, but *varipilosum* seems to differ at least in the details of the configuration of the frons, the structure of the area dorsalis of the propodeum, in the colour of the abdomen and further, it seems to me, that the clypeus is also different.

*Description.* ♀. Length 17 mm. Black, with the following portions ferruginous yellow or amber yellow: Clypeus on broad impunctate anterior margin, mandibles except the reddish lower margin, palpi, antennal joints 1, 2 and basal part of 3, collar of pronotum behind the transverse furrow, tubercles, all coxae on apical half, all trochanters wholly, fore legs except a black streak on femora, middle legs except two streaks on femora and apical portion of tarsi, hind femora at base and at apex, basal ring of hind tibiae and all tibial spurs; of these, palpi and the pronotal parts much paler, somewhat whitish. Wings hyaline; stigma and veins brown to dark brown. Pubescence on head, dorsum of thorax and of propodeum glittering golden; that on rounded tubercles of prosternum, fore coxae and mesopleuron much paler and long; clypeus with a considerable number of long, erect, somewhat whitish hairs mixed. Abdomen covered with short silky white pile; the hair sparser on segment 1.

Ocelli in a slightly higher than equilateral triangle, with anterior ocellus very slightly smaller than postocelli, OOD nearly as long as POD and equal to half the diameter of postocellus. Head seen in front: fig. 78; vertex markedly depressed before the level of upper margins of eyes; frontal furrow broad and deep, on both sides, with frons markedly roundly elevated; supraantennal elevation somewhat nose-shaped with a glittering carina not reaching halfway to anterior ocellus, on lower end it is obliquely truncate, showing an oviform flattened plain between the upper margins of the antennal sockets; marginal ring of the sockets highly raised on inner dorsal corner, forming a marked overhang there; eye incision narrow and deep, with apical part of the upper margin slightly raised in frontal view. IOD at vertex and at base of clypeus relatively 19:14. Clypeus at base strongly roundly elevated and



Figs. 70-74. *Trypoxylon schmiedeknechti* Kohl, male; 70) apex of sternite 8, Palawan specimen; 71) apical part of paramere, Palawan specimen; 72) basal portion of genitalia, seen obliquely from inside, showing appendiculite horns and volsella; 73) genitalia, Thailand specimen; 74) sternite 8, Thailand specimen. - Figs. 75-77. *T. thaianum* Tsuneki, male; 75) frontal shield; 76) clypeus; 77) sternite 8. - Figs. 78-80. *T. aureohirtum* sp.n., female; 78) head; 79) clypeus; 80) collar of pronotum. - Figs. 81, 82. *T. aureopilosum* sp.n., female; 81) head; 82) clypeus.

suddenly lowered anteriorad, anterior marginal area markedly broad, reflected, the extreme margin rounded and with two minute round notches (fig. 79), the notched parts slanting obliquely. Mandible acutely pointed at apex. Occipital carina nearly complete, only lowered and evanescent behind the hypostomial carina. Antennae slender and long; relative length of joints 3, 4, 5, 8 and 12: 26, 16, 15, 10 and 16; joint 3 approximately 6.5 times, joint 8 about twice as long as broad at apex. Collar of pronotum: fig. 80, with the anterior side obliquely flattened, the sides slightly roundly swollen and deeply furrowed across middle, without a notch, but with a gentle tubercle in middle, the area behind the furrow completely discoloured. Propleural marginal pro-

jection thin and lamellate, broad triangular, with the apex very obtuse. Propodeum with dorsal disc much shorter than posterior inclination (26:36); median depression gradually, roundly broadened and somewhat deepened posteriorly; area dorsalis not marked off, and carinae separating the dorsal area from the sides are replaced by a longitudinal row of short transverse carinulae on each side; posterior inclination with a deep medial furrow, V-shaped in cross section and narrowed anteriorly. Petiole of abdomen nearly as long as head and thorax-complex united or the rest of the abdomen; relative length to maximum and minimum width about 40, 2 and 11; the slender petiolated part occupying the basal  $\frac{3}{4}$  of the total length; the stigmata are placed at a fifth of the total length from the base. Tergite 2 less than twice as long as broad at apex. Last tergite laterally strongly compressed, with the median line more acutely carinate than in most species, e.g. *T. obsinator*. Radial cell of fore wing very long, reaching near the apical margin as in *T. malaisei* and longer than hind tibia.

Swellings on upper frons finely, rather sparsely punctate, with interspaces strongly microcoriaceous or microgranulate, with the surface mat; vertex impunctate and more weakly microcoriaceous. Mesonotum finely (more finely than on frons) sparsely punctulate with hair-bearing points, with interspaces smooth and shining; mesopleuron similarly punctate, but the punctures slightly larger below; propodeum at extreme base very shortly crenate, on medial depression of the disc smooth and shining, and outside the depression sparsely punctate with the punctures posteriorly small and anteriorly slightly larger, on apical oblique aspect including the medial furrow somewhat more distinctly, sparsely punctate, and on posterior and lateral parts transversely rugoso-punctate with the punctures on the side fine and fairly close mixed with transverse striae posteriorly. Abdomen very finely and closely punctulate with pile-bearing points, on tergite 1 punctules sparser.

♂, unknown.

*Trypoxylon aureopilosum* sp.n.

Type. TAWI TAWI: holotype ♀, Tarawakan, 31.x.1961.

Comparative notes. Closely resembles *T. annulipes* Cameron, 1903, known from Borneo (Mt. Matang), but differs from this, however, at least in that the area dorsalis is distinctly enclosed by the furrow and its medial impression is deep and distinct. The species also resembles *T. aureohirtum* sp.n., but is much smaller, more blackish, ~~has~~ with a different clypeus and the area dorsalis is much more distinctly marked off.

Description. ♀. Length 13 mm. Black; apical impunctate margin of clypeus reddish brown, mandibles ferruginous brown, palpi pale ferruginous; basal half of tergites 2 and 3 and sternites 2 and 3 totally ferruginous red; petiole seen from the side ferruginous except the upper and lower margins, seen from above the narrow cylindrical part appears dark reddish; apices of antennal joints, posterior discoloured area of pronotal collar, tubercles posteriorly, tegulae, tibiae and tarsi of fore and middle legs except a vague streak on tibiae and terminal joint of tarsi, basal ring of hind tibiae and all tibial



spurs ferruginous; articulations of legs also slightly brownish; wings hyaline, apical margin slightly clouded, stigma and veins dark brown. Pubescence on head and thorax-complex saturated golden, on dorsal side rather sparse; on clypeus mixed with longer erect hairs. Pubescence on fore and middle femora similarly longer and golden, but hind femora almost glabrous; pile on abdomen shorter, slightly ferruginous white.

Vertex not <sup>as</sup> depressed as in *T. aureohirtum* sp.n.; ocelli in an equilateral triangle, the anterior one very slightly smaller, OOD very small, only a third of POD, POD much smaller than the width of postocellus. Head seen in front (fig. 81) more rounded than in *T. aureohirtum*, with eye incisions narrow and deep; ratio of IOD at vertex and at base of clypeus approximately 7:6; frontal furrow weak, with the lateral swellings also very feeble; supra-antennal tubercle low, not sharply nose-shaped, but with a glittering carina on top, the carina not reaching halfway to the anterior ocellus and not truncate at the lower end; interantennal space distinctly present, as wide as OAD; marginal ring of antennal socket raised on inner-dorsal corner, but not as strong and marked as in *T. aureohirtum*; clypeus: fig. 82, with medio-apical bilobed area somewhat incrassate and slightly reflected; relative length of antennal joints 3, 4, 5, 8 and 12 about as 16, 11, 10, 8 and 11; joint 3 about 5 times as long as wide at apex, joint 8 about 1.5 times so. Collar of pronotum as in *aureohirtum* sp.n., but with the lateral corners somewhat more strongly swollen; also provided with a medial tuberculate elevation; propleural marginal process thin and lamellate, triangular, bluntly rounded at apex; mesopleural scrobe very large and deep; propodeum with weak longitudinal carinae along lateral margins; area dorsalis distinctly marked off by the furrow, nearly circular in form (the furrow is partly covered by the golden hairs and appears indistinct sometimes), with the medial longitudinal impression broad and considerably deep, with a short carina at base in middle (constant?); posterior slope of propodeum also with a deep medial furrow, deeper than that of the dorsal aspect, with a glittering longitudinal line in middle, without a medial carina on posterior portion. Petiole of abdomen very slender and long, with length, minimum and maximum width relatively as 34, 3.5 and 11; stigmata at about  $\frac{1}{4}$  from base and the segment begins to swell at about  $\frac{3}{4}$  from base; tergite 2 about 1.7 times as long as wide at apex, apical tergite strongly compressed dorsally and the medial line fairly acutely carinate. Radial cell of fore wing long, with its apex reaching near the apical margin, as in *T. obsonator*.

Head and thorax punctate as in *T. aureohirtum* sp.n. Propodeum with disc of area dorsalis finely and sparsely punctate, punctures posteriorly larger; the medial furrow impunctate on the central line, only anteriorly weakly crenulate, posteriorly on both sides of the central line transversely, not strongly rugoso-punctate; outside the area dorsalis and along the lateral carinae transversely, shortly striate, with the striae extending on to the lateral margins of the posterior aspect; broad central area of this aspect almost smooth and shining, with scattered minute hair-bearing points, but on posterior portion transversely, somewhat arcuately rugoso-striate, with two strong arcuate

⊗ } abdomen except the obscure blackish band before the widest part of

carinae near the extreme apex; sides of propodeum finely and fairly closely punctate, posteriorly subrugoso-punctate.

♂, unknown.

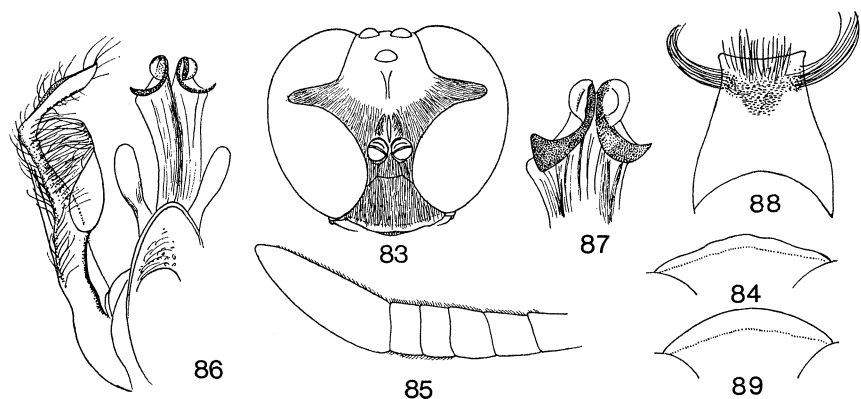
*Trypoxylon rufiventre* sp.n.

Types. TAWI TAWI: holotype ♂, Tarawakan, 12.xi.1961: paratypes, 1♀, 1 ♂, same loc., 9.xi.1961.

*Comparative notes.* The present species apparently resembles *T. coloratum* Smith, known from Borneo and Tenasserim, but the characters of this species are quite uncertain and it is also doubtful whether *coloratum* Smith (♂) and *coloratum* of Bingham (♀) correctly represent both sexes of the same species. However, the male of the present species differs from *coloratum* Smith at least in the body size and in the colour of the abdomen and the female differs from *coloratum* of Bingham also in the body size and in the shape of the area dorsalis on the propodeum. The present specimens are therefore dealt with as an undescribed species.

*Description.* ♂. Length 9 mm. Black, with the following portions bright ferruginous or amber coloured: Broad anterior margin of clypeus (extreme apex brown), mandibles except reddish brown apex, palpi (paler), antennal joints 1, 2 and greater part of 3, posterior margin of pronotal collar, tubercles, petiole (apical 4 segments slightly brownish), legs except the greater part of coxae, and arolia of terminal tarsal joints (hind femora medianly broadly and tibiae externally brownish). Rest of the antennae, postero-lateral carinae of scutellum and postscutellum, and greater part of coxae dark brown. Wings hyaline, almost without apical clouding, costa and subcosta dark brown, stigma and rest of veins ferruginous. Head and thorax-complex covered with golden-brassy pubescence which is sparser dorsally; pubescence on clypeus and mesopleuron somewhat whitish; the longer hairs on clypeus only half-erect; pubescence on fore and middle femora beneath sparser, half as long as the maximum width of the segment and shorter apically.

Vertex slightly more depressed than in *T. auropilosum*, but not <sup>as</sup> much as in *T. aureohirtum*; ocelli in an equilateral triangle, the anterior one slightly smaller, OOD:POD = 3:4; frontal furrow shallow, with the lateral rounded elevations only gentle. Head seen in front: fig. 83, very similar in outline to *T. auropilosum*, but the eye incisions broader, with the upper margin not raised outwards; ratio of IOD at vertex and at base of clypeus smaller (approximately 3:2) and the clypeus different in form; supraantennal elevation a very low rounded tubercle, with a weak glittering carina on top, the carina not reaching half way to anterior ocellus; clypeus: fig. 84, not roundly raised at base, but broadly, weakly and roundly elevated along the median line, the impunctate anterior margin narrower than in the two preceding species; antennae normally gradually widening apically, without excavation or protuberance on any joint beneath; joints 3, 4, 5 and 13 with relative length 9, 6.5, 6, 5 and 17; joint 3 about thrice, 5 about twice as long as broad at apex, ultimate joint approximately as long as the 4 preceding joints



Figs. 83–89. *Trypoxylon rufiventre* sp.n., male: 83) head; 84) clypeus; 85) apical part of antenna; 86) genitalia, ventral view; 87) apex of penis; 88) sternite 8; 89) clypeus, female.

united and not curved at apex (fig. 85). Pronotum transversely furrowed as usual, the anterior subcarinate part narrower than the discoloured posterior part, with antero-lateral corners much less roundly swollen than in the preceding species, with the median tuberculate elevation also much weaker; propleural marginal projection triangular, fairly acutely pointed at apex; propodeum with area dorsalis roundly encircled by a furrow, the furrow posteriorly rather deep and distinct, but anteriorly gradually weaker and indistinct, with the median longitudinal impression shallow, but gradually deeper and broader posteriorly; median furrow of posterior inclination wedge-shaped, deep, triangular in cross section, with a glittering line on bottom; lateral carinae fine, but well-defined up to near the spiracles. Segment 1 of abdomen slender and petiolate, longer than tergites 2 and 3 combined, but shorter than tergites 2–4, with length, maximum and minimum width relatively as 70, 16 and 5.5; stigmata located slightly before  $\frac{1}{4}$  from base, apical swelling not strongly constricted at the end; tergite 2 only slightly longer than wide at apex. Genitalia: fig. 86; paramere with the main body rolled and suddenly narrowed into a simple apical lobe; basiparamere narrow, rather stalk-shaped; penis quite exceptional in structure (apical portion: fig. 87); 8th sternite: fig. 88. Radial cell of fore wing longer than hind tibia (60:48), reaching near the apical margin. Legs normal.

Upper frons and mesonotum moderately finely punctate, with puncture-intervals on an average as large as punctures and on frons distinctly, on mesonotum feebly and indistinctly microcoriaceous, half mat; punctures on scutellum posteriorly slightly larger, on mesopleuron as on mesonotum, but the punctures slightly sparser; area dorsalis on medio-apical enlarged impression very weakly microstriate, fairly shining, the rest of the area moderately sparsely covered with hair-bearing points, which do not appear to be punctures, but minute tubercles; propodeum outside the area dorsalis and on the lateral areas of posterior inclination similarly, but slightly more closely covered with points, the hind portion of posterior aspect transversely rugoso-

punctate, sides of propodeum somewhat largely, sparsely punctate on upper portion, punctures on posterior portion finer and closer. Abdomen including petiole half mat owing to pile-bearing fine points fairly closely distributed.

♀. Length 10 mm. Similar to male, except that the abdomen is slightly darker apically and hind tarsi partly brownish. Eye incisions slightly narrower, with upper margins in a nearly straight line; clypeus slightly more produced, with apical margin broadly rounded (fig. 89); antennae longer, with ultimate joint normal, relative length of joints 3, 4, 5, 8 and 12 about 15, 11, 10, 8 and 12; joint 3 about 4.2 times, 5 about 2.7 times as long as broad at apex; IOD at vertex and at base of clypeus 16:11. Propodeum similar. Petiole slightly longer, nearly as long as the 3 following tergites united, with relative length to maximum and minimum width 85, 19 and 5.5, in form similar; last tergite as in the preceding species; tergite 2 also similar.

*Trypoxylon laeviceps* sp.n.

Type. TAWI TAWI: holotype ♂, Tarawakan, 24.x.1961.

Comparative notes. The form of the head rather similar to *T. crassifrons* m., known from Thailand, but IOD at vertex is relatively smaller, the punctation on head and the sculpture of the area dorsalis are strikingly different and the legs are not as much whitish.

Description. ♂. Length about 5.5 mm, with very slender abdomen. Black, except mandibles ferruginous and legs more or less brownish. Pubescence on face and clypeus silvery, on eye incisions completely lacking.

Head from above thick (fig. 90); ocelli in an equilateral triangle, the anterior ocellus slightly smaller, OOD:POD as 1:2; frontal furrow distinct, anteriorly narrower and deeper, running down to the apex of supraantennal elevation which is narrow triangular and acutely compressed dorsally because of the deep excavation on both sides. Head seen in front: fig. 91; IOD at vertex and at base of clypeus relatively 8.5:5; eye incision comparatively narrow, with upper margins markedly raised outwards; upper inner margin of antennal socket highly raised into a thick, specially formed process (fig. 93, A, seen obliquely from the side; S, scape) having a small pit in front; seen from above the process appears to stand on the frontal excavation (fig. 90); antennal joints 3, 4 and 5 with relative length 4, 3.2 and 3 (right antennae from joint 4 and the left from joint 8 lacking). Head seen in profile: fig. 92; eye very thick and upper frons well developed. Clypeus as in fig. 91. Pronotum: fig. 94, with a gentle tubercle in middle; mesonotum not longitudinally impressed; propleural projection rounded, thick; anterior oblique furrow on mesopleuron deep and distinct, roundly encircling the lower margin of prepectus; propodeum with area dorsalis not distinctly marked off, only in certain light a fine shallow groove appears to be partly present on each side, but the medial depression is broad and considerably deep, not distinctly separated by a ridge from the medial furrow on the posterior inclination; the medial furrow is deeper and distinguished from the depression of the dorsal side only by a difference in sculpture, the furrow stops far before it reaches the apex where it is margined by a strong transverse carina from

the middle of which a longitudinal carina runs down to the apex of propodeum; lateral carinae of propodeum strong, well-defined from the spiracle to the lateral end of the transverse carina of the posterior inclination. Petiole of abdomen shorter than thorax-complex, slightly more than as long as the two following segments united (43:40), parallel-sided, with only apical portion dilated, length, maximum and minimum width relatively as 43, 8 and 4.5; spiracles at about  $\frac{1}{8}$  from base; tergite 2 with relative length to width at apex 23:9:5; 8th sternite: fig. 95; genitalia seen from beneath: fig. 96, paramere bifid at apex, with the separated pieces lobiform and markedly blackened, a pair of triangular processes of the basal ring covers the small volsellae, penis valve without the preapical lateral processes. Radial cell of fore wings ends far before reaching the apical margin; transverse cubital vein curved inwards. Legs normal.

Vertex smooth and polished, only on anterior portion sparsely scattered with fine punctules; frons upwards and eye incisions on basal portion finely and sparsely punctulate, lower part of frons finely and closely punctate, apical or outer part of eye incision smooth and polished; lateral excavation of the face closely punctulate above, impunctate and polished below. Punctures on mesonotum fine, but slightly larger than on frons, fairly close, with interspaces weakly microcoriaceous and the surface fairly shining; mesopleuron similarly, but more sparsely and weakly sculptured; area dorsalis at base obliquely and on disc transversely, coarsely striate; surface of the medial furrow of the posterior inclination impunctate and smooth; lateral parts of propodeum along and inside the lateral carinae transversely and coarsely striate; sides transversely, finely, closely and very weakly striate, the striae oblique and slightly stronger anteriorly.

♀, unknown.

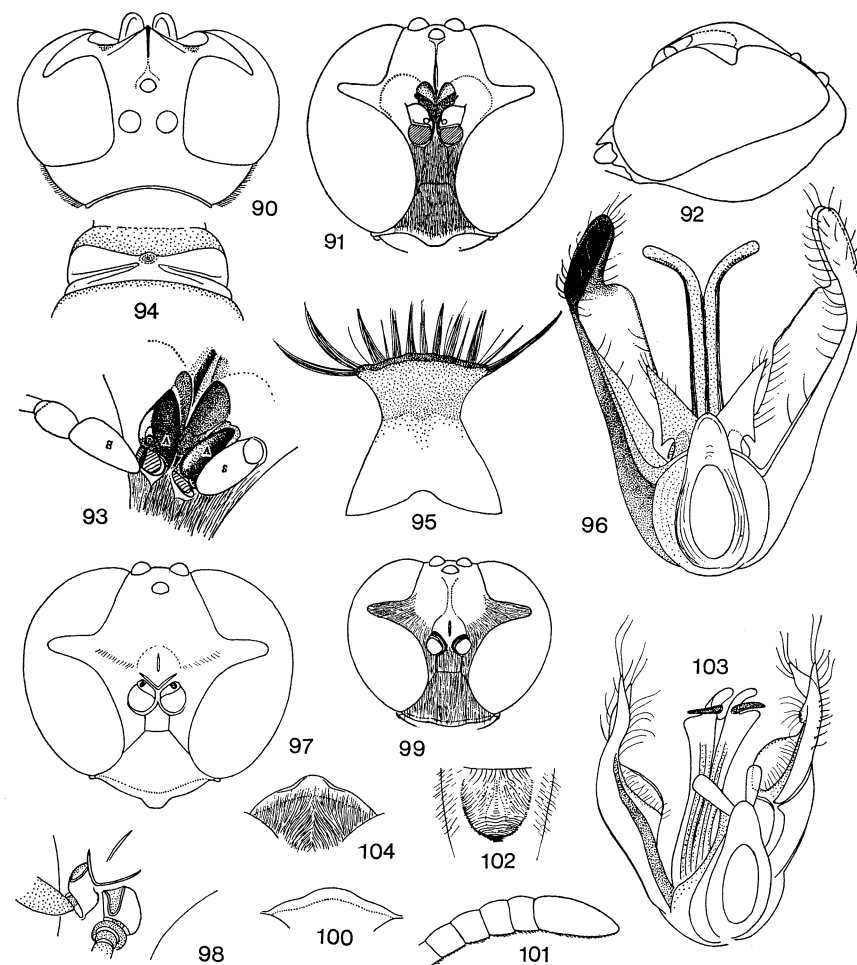
*Trypoxylon mindanaonis* sp.n.

Type. MINDANAO: holotype ♀, Sapamoro, 20.xii.1961.

*Comparative notes.* The specimen seems somewhat resembling *T. rejector* Smith but except for the mandibles the body and appendages lack reddish or ferruginous colour, interantennal elevation is not nose-shaped and the area dorsalis is weakly margined by the furrow.

*Description.* ♀. Length about 8.5 mm. Black; mandibles ferruginous, palpi and fore tarsi apically pale brown; legs partly and abdominal segments 2 and 3 more or less brownish (postmortem?). Pubescence silvery, normal.

Ocelli in an equilateral triangle, the anterior ocellus slightly smaller; OOD:POD = 1:2, OOD about a third as large as the diameter of postocellus; frons only gently raised, with the surface broadly flattened; frontal furrow broad and weak. Head seen in front: fig. 97; relative width of IOD at vertex and at base of clypeus 13:12; eye incisions comparatively broad with upper margins in a straight line; supraantennal elevation broad and low and on anterior margin bordered by a broad wedge-shaped carina (fig. 98) and medianly weakly carinate on top; clypeus gently roundly raised at base, with median part of the anterior margin rather broadly produced (fig. 97); antennal



Figs. 90-96. *Trypoxylon laeviceps* sp.n., male; 90) head, dorsal view; 91) head, lateral view; 92) head, lateral view; 93) area at base of antennae, (A) special process, (S) scape; 94) pronotum; 95) sternite 8; 96) genitalia, ventral view. - Figs. 97, 98. *T. mindanaonis* sp.n., female; 97) head; 98) process at base of antenna and supraantennal tubercle. - Figs. 99-104. *T. tawitawiense* sp.n., male; 99) head; 100) clypeus; 101) apical part of antenna; 102) propodeum; 103) genitalia; 104) clypeus, female.

joints 3, 4, 5 with relative length 11, 8 and 8; joint 3 about 3.7 times, joint 4 about 2.7 times as long as broad at apex and ultimate joint nearly thrice as long as wide at base; the brim of antennal socket highly raised above and incrassate, enclosing a large hollow on top (fig. 98). Collar with anterior inclination obliquely flattened; anterior part of pronotum medianly narrowed (narrower than in posterior half) and laterally roundly dilated, gently raised

towards middle, but not tuberculate in middle; posterior part not completely discoloured, brownish; propleural projection broad triangular, with apex obtuse; mesonotum not impressed medianly; mesopleuron with anterior oblique furrow narrow, deep, and not strongly extended to the acetabular furrow; area dorsalis on propodeum very weakly marked off by lateral furrows, with the median depression comparatively deep and gradually broadened posteriorly; medial furrow on posterior inclination deeper and broader, but narrowed and shallower posteriorly, not reaching apex; lateral carinae distinct on dorsal part, but indistinct and represented by a series of short transverse rugae on posterior part. Abdominal segment 1 long, petiolate, nearly as long as head and thorax-complex united, or the rest of the abdomen; length to maximum and minimum width relatively 90, 16 and 5; spiracles at about  $\frac{1}{5}$  and the minimum width at about  $\frac{2}{5}$  from base; tergite 2 about 1.2 times as long as broad at apex. Radial cell of fore wing not reaching near the apical margin; transverse cubital vein gently curved inwards as long as 2nd abscissa of cubital vein and meeting the latter at a right angle. Legs normal.

Vertex and frons finely sparsely punctate, with interspaces microcoriaceous, half mat. Mesonotum and mesopleuron similar, but with the microsculpture weaker and the surface more shining; on propodeum area dorsalis with the raised parts smooth and shining, with lateral furrows and median line of medial depression transversely, finely and closely striate; area along the lateral carinae and its posterior extension transversely more coarsely striate, sides of propodeum smooth and polished and scattered sparsely with hair-bearing fine points, only on extreme posterior part transversely, very weakly striate.

♂, unknown.

*Trypoxylon tawitawiense* sp.n.

*Types.* TAWI TAWI: holotype ♂, Tarawakan, 3.xi.1961; paratypes, 1 ♀, 1 ♂, same loc., 8, 12.xi.1961.

*Comparative notes.* Nearest to *T. tanoi* m. (a close relative of *T. intrudens* Smith) known from Formosa and Thailand, but differs from it mainly in the structure of the ultimate antennal joints of the male and in the form of the clypeus of the female.

*Description.* ♂. Length 9–10 mm. Black, with aeneous shine on thorax; apical margins of abdominal tergites 1 and 2, bases of tergites 2 and 3, and sides and undersides of segments 2 and 3 pale ferruginous; pale yellowish white are palpi, fore tibiae except brownish inside, fore tarsi, basal rings of mid and hind tibiae, tibial spurs of fore and mid legs and mid metatarsi; mandibles ferruginous except black base and brownish apex; antennae wholly black; posterior part of pronotal collar discoloured, pale amber yellow; posterior margin of tubercles and tegulae pale ferruginous; wings hyaline, stigma and veins dark brown. Hairs on head silvery, on thorax fairly long, silvery or silky white.

Ocelli in a slightly lower than equilateral triangle, anterior ocellus slightly smaller, OOD:POD = 1:2; frontal furrow weak, its lateral elevation not

strong; head seen in front markedly wider than long (fig. 99), with the outline rounded (not so narrowly rounded as in *T. obsonator*); eye incisions comparatively broad and with the upper margins not raised outwards; IOD at vertex and at base of clypeus relatively 15:12; antennal joints 2, 3, 4, 5 and 8 with the relative length 4, 10, 6.5, 6 and 5.5, joint 3 approximately thrice, 8 about 1.3 times as long as broad at apex, ultimate joint not curved at apex and about as long as 3 preceding joints united (fig. 101); socket of antennae highly raised on inner-dorsal area; supraantennal elevation roundly tuberculate; clypeus: fig. 100, with disc medianly obtusely raised. Pronotum as in the preceding species, but medianly weakly tuberculate; propleural projection in a broad triangle, with apex obtuse; mesonotum without the medial impression, parapsidal sutures in glittering impressed lines; transverse furrow on mesopleuron weakly crenate; area dorsalis: fig. 102; median furrow of posterior inclination deep, broad, narrower and shallower posteriorly, with a glittering impressed line in middle; lateral carinae present, not strong, extending forwards to near the stigmata. Abdominal petiole distinctly shorter than the thorax-complex, parallel-sided, with only apical portion dilated; relative length of petiole to maximum and minimum width approximately 80, 16 and 6 (in paratype 70, 17, 7); spiracles at about  $\frac{1}{5}$  from base; tergite 2 about 1.5 times as long as broad at apex. Genitalia: fig. 103; paramere pot-shaped, with mouth widely open, at apex deeply bifid; penis normal for the genus, with a pair of sickle-shaped appendages before apex.

Upper frons covered with medium-sized punctures, with interspaces as large as punctures and distinctly microcoriaceous. Mesonotum and mesopleuron sparsely scattered with hair-bearing fine points, shining; metapleuron smooth and polished, without rugae; sculpture of area dorsalis: fig. 102 (in paratype the oblique striae weaker but the scattered punctures more distinct); lateral parts of propodeum including the posterior inclination just inside the longitudinal carinae transversely closely striate, sides on upper part very delicately, closely striate, on anterior part smooth and polished and on posterior part finely sparsely punctate, punctures closer posteriorly.

♀. Length about 9 mm. Similar to male, but head seen in front much longer, relative width to length 58:53 (in ♂ 58:47), eye incision narrower, antennal joints longer (relative length of joints 3, 4, 5 about 14, 10, 9; joint 3 about 3.7 times as long as wide at apex) with the apical joint not modified, frons slightly more highly raised, but with the median furrow not deep, clypeus more strongly produced anteriorly (fig. 104) and last tergite of abdomen medianly carinate above. IOD at vertex and at base of clypeus 14:11; ocelli in an equilateral triangle, OOD:POD = 1:2; anterior inclination of pronotum with a rounded impressed area medio-anteriorly; propleural projection with apex subpointed; area dorsalis shorter, more rounded in form, with the marginal furrow more broadly indistinct anteriorly, sides of propodeum sparsely covered with punctures that are somewhat larger than in male and sparser below and closer posteriorly, with the antero-ventral part impunctate and polished (possibly the sculpture variable). Petiole similar, relative length to maximum and minimum width 80, 20, 6.5. Upper frons much more sparsely

punctured, with interspaces larger than punctures and somewhat more weakly microcoriaceous and with the surface appearing much smoother. Punctures on mesonotum and mesopleuron slightly stronger and more distinct; striae on area dorsalis slightly closer and weaker except on posterior part, on the central impressed part intervals of the striae microshagreened.

*Tropoxylon insulare* sp.n.

*Types.* TAWI TAWI: holotype ♀, Tarawakan, 10.xi.1961; paratype, 1 ♀, same loc., 9.xi.1961.

*Comparative notes.* This species is similar in many characters to the members of the group of *T. varipes* Pérez, but the first abdominal segment is long petiolated, the colour of the legs and abdomen and the form of the clypeus and the supra-antennal elevation are also more or less different.

*Description.* ♀. Length 10.5–12.0 mm. Black, without reddish mark on abdomen; clypeus on anterior margin broadly, antennal joints 1 and 2 largely and tegulae ferruginous; rest of the antennae basally dark brown and apically piceous; pale yellowish white are mandibles except the brownish apical third, palpi, fore tibiae except inside, fore tarsi, mid tibiae except inside and obscure medial mark, mid tarsi except apical half, and basal ring of hind tibiae; apices of hind tarsal joints brownish; wings hyaline, stigma and veins brownish black.

Ocelli in an equilateral triangle, anterior ocellus slightly smaller, OOD:POD = 1:2; head seen in front: fig. 105, frontal furrow broad and fairly deep, with lateral areas gently roundly raised, supraantennal elevation nose-formed and carinate on top, with the sides roundly inclined, seen in profile the carina is curved and reaches upwards about  $\frac{2}{3}$  of the distance to the anterior ocellus; eye incision narrow; IOD at vertex and at base of clypeus relatively 17 and 9; length of antennal joints 3, 4, 5 relatively 19, 12, 10; joint 3 about 4.5 times and joint 4 about thrice as long as broad at apex; sockets of antennae with the brim strongly raised on inner dorsal area and the raised part strongly furrowed across middle, the lower end of the top carina of the supraantennal elevation is inserted between the raised areas of the socket; clypeus as shown in fig. 105, apical margin broad and slightly reflected, in certain light a blunt carina is seen in the middle. Pronotum with anterior part in front of transverse furrow raised towards middle, but not tuberculate; propleural projection weak, comparatively thick, rounded triangular, with apex obtuse. Area dorsalis weakly marked off by the furrow, medial longitudinal impression broad, fairly deep, with the posterior margin not strongly bordered by the ridge, with a small tubercle near the apex; medial furrow of posterior inclination of propodeum broader and deeper, medianly with an impressed line; lateral carinae very weak, hardly defined. Abdominal segment 1 petiolate, as long as the thorax-complex, swollen on posterior  $\frac{1}{3}$ , length to maximum and minimum width relatively 110, 22, 7.7; tergite 2 about 1.2 times as long as broad at apex; last tergite normally keeled above. Radical cell of fore wing long with its apex, reaching near the apical margin. Legs normal.

Frons covered with medium-sized, weak, rather indistinct punctures, with interspaces microshagreened; vertex more weakly, simply microshagreened, fairly well shining. Mesonotum and mesopleuron sparsely punctate, punctures as large as those on frons, but more distinct, with interspaces very feebly microcoriaceous, half mat; basal part of area dorsalis, finely and closely striate, on disc, medial impression and posterior part transversely, finely and closely striate, with the striae stronger in the lateral furrows; rest of the dorsal and posterior aspects of propodeum transversely, finely and closely striate; sides of the segment transversely, very finely and closely striate and mixed with very fine punctures, the striae and punctures anteriorly weaker and finally the surface is largely smooth and polished.

♂, unknown. *broadly*

*Trypoxylon balabacense* sp.n.

*Type.* BALABAC: holotype ♀, Dalawan Bay, 12.x.1961.

*Comparative notes.* This species seems to be close to *T. trochanteratum* Cameron, but differs at least in the form of clypeus, the sculpture of propodeum and the colour of abdomen and legs.

*Description.* ♀. Length about 9 mm. Black, with plumbeous shine on dorsum of mesothorax and propodeum, especially marked on area dorsalis; ferruginous are clypeus on anterior  $\frac{2}{5}$ , including a part of the punctured disc, and antennal joints 1 and 2, on 2 brownish above; pale ferruginous white are palpi, posterior part of pronotal collar, posterior margin of tubercles, apex of coxae, trochanters, extreme base of femora, fore tibiae except inside, fore tarsi except arolia, basal ring of mid and hind tibiae and basal half of mid tarsi; tegulae brown; abdomen on tergites 2 and 3 beneath somewhat ferruginous. Pubescence silvery or silky white, distribution normal.

Ocelli in a slightly lower than equilateral triangle, the anterior ocellus slightly smaller, OOD:POD = 1:3, POD about  $\frac{2}{3}$  the diameter of postocellus; head seen in front: fig. 106; IOD at vertex and at base of clypeus relatively 13 and 6; relative length of antennal joints 3, 4, 5 about 14, 9 and 8; joint 3 about 6 times, 4 about 3.3 times as long as broad at apex (dorsal view); eye incisions narrow and deep, with upper margins slightly raised outwards; frontal furrow considerably deep and broad, with the lateral rounded elevations also markedly high; supraantennal tubercle nose-formed, with a short carina on top, the carina reaching upwards one third of the distance to anterior ocellus and at the lower end it is obliquely truncate forming a round uneven plane (fig. 107); brim of antennal socket highly raised on inner dorsal area, the posterior part of it shortly projecting upwards as a specialized appendage (fig. 108), but not <sup>as</sup> large as in *T. appendiculata* m.; clypeus with anterior margin weakly ~~curved~~ <sup>waved</sup> in middle as shown in fig. 106. Anterior ridge of pronotal collar before the transverse furrow raised in an obtuse triangle in middle and roundly dilated towards the sides, posterior part discoloured; propleural projection comparatively thick, broadly triangular, with apex narrowly rounded; mesonotum without medial depression; area dorsalis distinctly marked off by a fine smooth furrow (fig. 108), median depression

slightly elongate oviform, fairly deep, with a smooth line in middle; median furrow on posterior inclination very deep, V-shaped in cross section, with the lateral edges rounded; lateral carinae of the dorsal propodeal aspect very weak and only defined on middle part of the area. Abdominal segment 1 petiolate, only apical fourth dilated, as long as the 3 following tergites taken together, or as long as the thorax-complex, with length to maximum and minimum width relatively 80, 16, 5.5; tergite 2 about 1.3 times as long as broad at apex; last tergite weakly compressed laterally and carinate above in middle. Radial cell of fore wing much longer than hind tibia (55:45), reaching near the apical margin of the wing. Legs normal.

Frons covered with medium-sized punctures which are close anteriorly, but somewhat sparser and weaker on the rounded elevation; punctures on vertex finer and closer; on mesonotum medium-sized, very sparse and weak; on mesopleuron somewhat finer and sparser, the surface shining; metapleuron impunctate and polished; area dorsalis without punctures or striae, smooth and shining; propodeum outside the area finely, closely, but very weakly punctate; lateral walls of the medial furrow of the posterior inclination and the areas just inside the lateral carinae transversely, closely and finely striolate, the striae of the latter extending posteriorly beyond the carinae to the apex of propodeum; sides of propodeum smooth and polished, posteriorly and upwards finely sparsely punctate, punctures posteriorly closer, mixing with fine striae.

♂, unknown.

*Trypoxylon palawanum* sp.n.

Type. PALAWAN: holotype ♀, Pinigisan, 600 m, 8.ix.1961.

Comparative notes. The present species belongs to the group of *T. varipes* Pérez, occurring in Japan, and is very close to this species, but easily distinguished from it by the markedly flattened disc of the clypeus and the different form of its anterior margin. The new species is very similar in colour to *T. philippinense* Ashmead, 1904 (♂) and the structure of the area dorsalis seems also the same. It is therefore possible that the present specimen represents the female sex of *philippinense*. However, there is a considerable number of the closely allied species in this genus.

Description. ♀. Length about 7 mm. Black; mandibles except the apical reddish brown area, anterior margin of clypeus, antennal joints 1 and 2 beneath (brown above), tegulae and bases of wings ferruginous; palpi, apex of coxae, all trochanters, fore tibiae in front, basal rings of fore and middle tibiae pale ferruginous white; rest of the legs dark brown, but mid tibiae in front and mid tarsi beneath paler. Antennal flagella slightly dark brownish and the abdominal sternites 1–3 somewhat ferruginous.

Ocelli in an equilateral triangle, the anterior ocellus very slightly smaller; OOD:POD = 1:3, POD about  $\frac{2}{3}$  the diameter of postocellus; frontal elevation weak, broadly flattened or rather slightly concave, with frontal furrow very weak and indistinct; head seen in front (fig. 109) more rounded than in the preceding species; IOD at vertex and at base of clypeus relatively 13

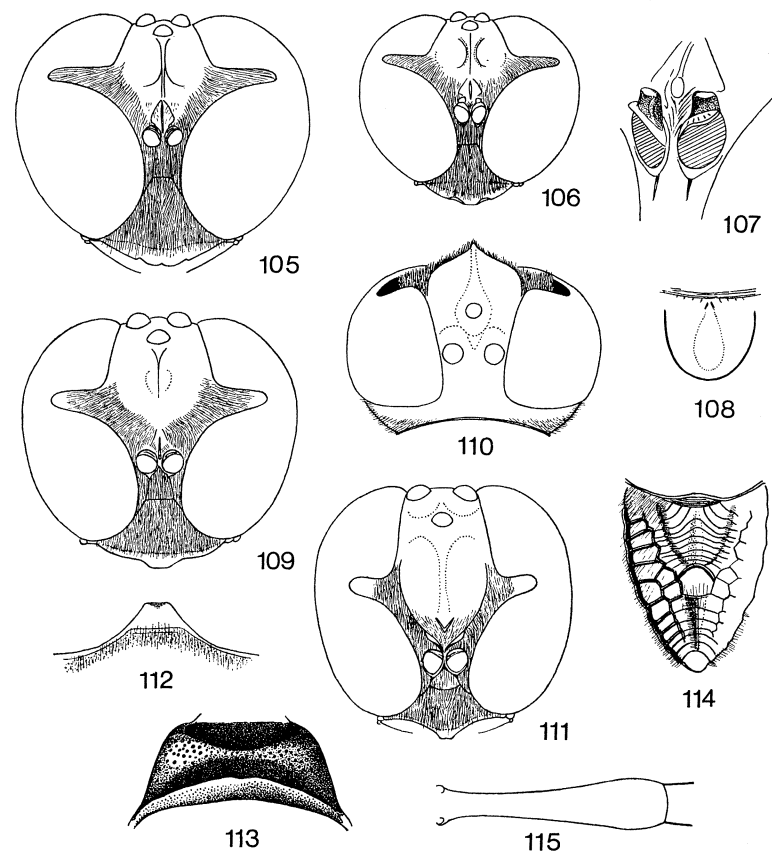


Fig. 105. *Trypoxylon insulare* sp.n., female, head. — Figs. 106–108. *T. balabacense* sp.n., female; 106) head; 107) supra-antennal elevation and process on the edge of the antennal sockets; 108) propodeum, area dorsalis. — Fig. 109. *T. palawanum* sp.n., female, head. — Figs. 110–115. *T. buddhae tarawakanum* ssp.n., female; 110) head, dorsal view; 111) head; 112) clypeus; 113) pronotum; 114) propodeum; 115) abdominal petiole.

and 7; antennal joints 3, 4, 5 with relative length about 8, 6.5 and 6; joint 3 about thrice as long as wide at apex; eye incision comparatively broad and shallow; ommatidia of eyes markedly large on lower inner portions; supra-antennal elevation nose-shaped, but rather low, with a carina on top, the carina reaching upwards one third of the distance to the anterior ocellus and it is truncate at lower end, forming a small rounded plane; clypeus with anterior margin narrowly produced in middle (fig. 109), with the disc nearly flattened. Collar of pronotum with the part in front of the transverse furrow narrowly ridged and laterally roundly and weakly dilated, without medial elevation, posterior part discoloured; propleural projection rounded, comparatively thick; mesonotum without medial impression; area dorsalis distinctly

marginated by the furrow, with the medial depression rather obsolete at base, but comparatively deep and broad on disc; the furrow on posterior inclination deeper, rather lenticular in form; lateral carinae bordering the sides and the dorsal aspects of propodeum weak, but well-defined. Abdominal segment 1 not typically petiolate, slightly shorter than the 2 following tergites united, gradually broadened and finally dilated posteriorly, length to maximum and minimum width relatively 42, 17 and 6.5; tergite 2 nearly as long as wide at apex; last tergite not laterally compressed, without medial keel, only bluntly and roundly edged dorsally. Wing venation as in *T. varipes*. Legs normal.

Punctures on frons rather fine, close, with average intervals as large as the punctures, the surface microcoriaceous, half mat. Mesonotum closely and more finely punctate, posteriorly rugoso-punctate in part, intervals with microreticulation; punctures on mesopleuron much sparser and finer, with microsculpture very feeble, fairly shining; propodeum at base radiately striate, the outermost striae longer, curved, forming the basal part of the border of area dorsalis, which is transversely, very finely and closely striolate, the striae closer on the central depression and slightly more spaced on the disc where a few punctules are intermixed; posterior slope of propodeum covered with close hair-bearing points, the narrow area ~~long~~ and inside the lateral longitudinal carinae transversely, shortly but fairly strongly striolate; sides smooth and polished, only on dorso-posterior portion very finely and closely striate. Punctuation of abdomen normal, tergite 1 almost impunctate on the swollen part.

*Trypoxylon buddhae tarawakanum* ssp.n.

Type. TAWI TAWI: holotype ♀, Tarawakan, 29.x.1961.

*Comparative notes.* The present subspecies differs from the nominate species (*buddhae* Cameron, 1889, from India) mainly in the form of the clypeus. Further, the glabrous and shining apices of the eye incisions are considered characteristic.

*Description.* ♀. Length 8.5 mm. Black; legs and antennae slightly brownish; mandibles except base ferruginous and apex brownish red. Articulations of tarsi pale ferruginous, anterior tarsi apically also pale beneath. Wings hyaline, iridescent, veins dark brown. Pubescence silvery, comparatively long on head and thorax; remarkable are the glabrous and strongly shining ~~inner~~ portions of eye incisions.

Head from above: fig. 110; ocelli in <sup>an</sup> exact equilateral triangle, the anterior ocellus much smaller than the posterior ones; OOD ~~very short~~, <sup>almost none</sup> POD as large as the diameter of postocellus; frons strongly raised from ocellar area <sup>tall</sup> to between bases of antennae and clearly furrowed in middle, the furrow bordered at the anterior end by a wedge-shaped ridge a little above the triangular end of the frontal elevation (fig. 111). Head seen in front comparatively long, subquadrate; ratio of IOD at vertex and at base of clypeus 11:8; clypeus: fig. 112, the medial protruded part with a excavation in middle leaving a small tubercle on each side; antennae comparatively thick, gradually thicker apically; joint 3 about 2.5 times as long as wide at apex; joints 3, 4

and 5 with relative length 6, 6 and 5; ultimate joint slightly shorter than the two preceding joints combined; sockets of antennae with the upper margin of the brim simply raised. Pronotum thick (fig. 113), the part in front of the transverse furrow raised towards middle, but without the median tubercle; propleural projection unobservable; mesonotum without medial furrow; scutellum medially longitudinally impressed, anterior oblique furrow on mesopleuron roundly curved, encircling the lower part of prepectus and distinctly continuing to the acetabular furrow at the anterior margin of mesosternum; propodeum (fig. 114) with area dorsalis indistinctly marginated by a furrow on each side, medially broadly, shallowly depressed; medial furrow of posterior inclination deep; lateral carinae complete and very strong. Abdominal segment 1: fig. 115, with spiracles unusually placed at the extreme base, length slightly shorter than tergites 2 and 3 combined; tergite 2 about three times, tergite 3 about 2.3 times as long as wide at apex, both bearing a small fovea (on 2 elongate) <sup>laterally</sup> medially before apex as in the typical race; last tergite not acutely compressed <sup>above</sup> and not longitudinally keeled or ridged above. In fore wing apex of radial cell not reaching near the apical margin; transverse cubital vein similar to and as long as 2nd abscissa of the cubital vein. Legs normal.

Punctuation on vertex fine and sparse, on raised part of frons rather gross, anteriorly moderately close (with intervals as large as punctures). Punctures on pronotum rather fine, on mesonotum and scutellum as large as on frons, with interspaces larger than punctures, but on mesonotum anteriorly slightly closer; on mesopleuron very fine and sparse, sparser below, on prepectus however, larger; surface everywhere without microsculpture and well shining; propodeum transversely, very coarsely striate (fig. 114). Abdomen very closely covered with pile-bearing micropoints; on tergite 1 the points sparser and the surface somewhat shining.

♂, unknown.

Key to females of *Trypoxylon* of the present paper:

1. Frons with shield-shaped enclosure ..... 2
- Frons without shield-shaped enclosure ..... 3
2. Antero-lateral branches of frontal shield sinuate, 8-10 mm .... *schmiedeknechti* Kohl
- Antero-lateral branches of frontal shield straight, 8-10 mm ..... *thaiantum* sp. n.
3. Abdominal petiole shorter than the two following tergites united ..... 4
- Abdominal petiole longer than the two following tergites united (parallel-sided except apical swelling) ..... 5
4. Frons on both sides of the medial furrow longitudinally swollen, the swelling polished and sparsely, grossly punctate, clypeus: fig. 112, about 9 mm ..... *buddhae tarawakanum* ssp. n.
- Frons nearly flattened, microcoriaceous, finely and closely punctate, clypeus: fig. 109, 6.5 mm ..... *palawanum* sp. n.
5. Pubescence on head and thorax golden ..... 6
- Pubescence on head and thorax silvery or silky white ..... 8
6. Most of abdomen, fore and middle legs except coxae bright ferruginous, 9-10 mm. .... *rufiventre* sp. n.
- Only middle portion of abdomen ferruginous, fore and middle femora at least with a blackish streak ..... 7

7. Frontal furrow deep and distinct, antennae <sup>till</sup> middle of joint 3 ferruginous, clypeus: fig. 78, 18 mm ..... *aureohirtum* sp.n.  
 - Frontal furrow shallow and obsolete, antennal joints brownish black, clypeus: fig. 82, 13 mm ..... *auropilosum* sp.n.
8. Fore tibiae largely or wholly black or dark brown ..... 9  
 - Fore tibiae largely or wholly ferruginous ..... 10
9. About 10 mm; frontal furrow almost lacking, median part of clypeus narrowly produced (and supraantennal tubercle very low (Fig. 97), abdomen wholly black) 8.5 mm ..... *mindanaonis* sp.n.  
 - More than 12 mm; frontal furrow distinct, clypeus rounded anteriorly (abdomen usually with a reddish area towards middle, area dorsalis almost without enclosing furrow) ..... *obsonator* Smith
10. Area dorsalis at least <sup>with</sup> ~~with~~ median part <sup>broadly</sup> without sculpture, smooth and shining ..... 11  
 - Area dorsalis finely sculptured, not smooth and shining ..... 12
11. Length ratio of IOD at vertex and at base of clypeus about 3:2, antennal joint 1 and clypeus anteriorly black or brown, area dorsalis indistinctly enclosed by a broad furrow, disc laterally sparsely punctured, 18 mm ..... *bicolor marginatum* ssp.n.  
 - Length ratio of IOD at vertex and at base of clypeus about 2:1, antennal joint 1 and clypeus anteriorly ferruginous, area dorsalis distinctly enclosed by a fine groove, disc wholly smooth and polished, with aeneous shine ..... *balabacense* sp.n.
12. IOD at vertex and at base of clypeus relatively 3:2 (abdomen medially reddish, supra-antennal elevation roundly tuberculate, brim of antennal socket on upper margin moderately raised), about 10 mm ..... *tawitawiense* sp.n.  
 - IOD at vertex and at base of clypeus relatively 2:1 (abdomen wholly black, at most partly brownish, supraantennal tubercle nearly nose-shaped, brim of antennal socket highly raised above), 10-12 mm ..... *insulare* sp.n.

*Pison punctifrons* Shuckard, 1837

*Material.* PALAWAN: 1 ♂, Pinigisan, 600 m, 24.ix.1961. TAWI TAWI: 9 ♀, 2 ♂, Tarawakan, 26.x.-13.xi.1961.

*Distribution.* Common in the Oriental region, Japan and the Pacific islands.

*Pison irridipenne* Smith, 1879

*Material.* PALAWAN: 1 ♀, Pinigisan, 600 m, 22.ix.1961.

*Distribution.* Philippines, Australia and Pacific Islands.

*Remarks.* The specimen agrees fairly well with the characters of *irridipenne* given by Krombein (1949), except that the superimposed punctures on the frons are somewhat closer (with interspaces microgranulate). As there is some doubt as to the identification, some comments are given below.

Frons rather suddenly and deeply inclined above antennal sockets, with the short silvery hairs on the inclination directed upwards, forming a line of erect hairs at the ridge where they meet the downwards directed hairs of the frons; middle of anterior margin of clypeus comparatively broadly, trapezoidally produced. Area dorsalis vaguely marked off by a shallow and rather obscure furrow, medially longitudinally, fairly deeply and somewhat broadly impressed, with a distinct fine carina in the middle; from the carina short oblique carinulae branch off on both sides, but do not extend beyond the impression; the area at the base is shortly, obliquely striate, on the disc finely, more or less sparsely punctate (interspaces slightly larger than punctures);

outside the area propodeum is more closely, partly transversely rugosopunctate.

*Pison ignavum* Turner, 1908

*Material.* TAWI TAWI: 1 ♂, Tarawakan, 8.xi.1961.

*Distribution.* Australia, Pacific islands, Formosa, new to the Philippines.

PEMPHREDONINAE

*Passaloecus (Polemistus) luzonensis* (Rohwer, 1919)

*Material.* PALAWAN: 3 ♀, Pinigisan, 600 m, 1-10.ix.1961. BALABAC: 4 ♀, Dalawan Bay, 7-12.x.1961. TAWI TAWI: 1 ♀, Tarawakan, 27.x.1961.

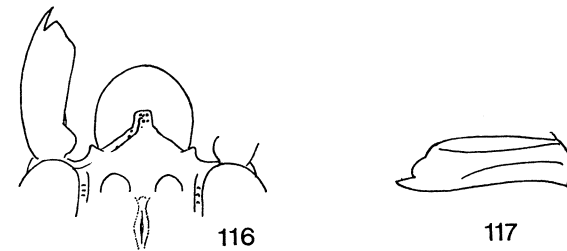
*Distribution.* Philippines.

*Remarks.* If we take the original description of *luzonensis* literally the specimens listed above differ somewhat in the coloration and considerably in the punctation and sculpture. However, as this may well be a matter of abbreviation and expression, I have referred the specimens to *luzonensis*.

Coloration. Black, with a slight tint of green on head and thorax; mandibles at apex reddish ferruginous, labrum piceous, sometimes pitchy black; antennal joint 1 sometimes wholly, sometimes only on both ends (dark brown in middle) and joint 2 nearly wholly ferruginous; basal part of flagellum beneath brown, apically darker; tubercles on posterior half white, sometimes more or less yellowish; tegulae pale brown; basal plates of wings chestnut brown; articulations of legs, bases and apices of fore and mid femora and of hind tibiae, fore and mid tibiae wholly and all tarsi, except brownish apical joints, ferruginous. Wings hyaline, costa and subcosta nearly black, stigma brown and marked with a large darker patch, remaining veins brown.

Structure. Mandible, labrum and clypeus: fig. 116; compared with the closely allied *P. (P) barabbas* Pagden, mandibles apically slightly enlarged (fig. 117) (in *barabbas* nearly parallel-sided), labrum more rounded (in *barabbas* medianly at apex bluntly pointed) and clypeus with median tooth more or less constricted near apex (in *barabbas* more smoothly pointed).

Punctation. The original description states "frons and vertex shining with small poorly defined punctures" and "scutum with small, close distinct punc-



Figs. 116, 117. *Passaloecus (Polemistus) luzonensis* (Rohwer), female; 116) clypeus, labrum and left mandible, frontal view; 117) mandible, lateral view.



*microcoriaceous or microshagreened and on vertex largely, densely,*

tures". Such punctures are not seen in the present specimens in which the ground sculpture is microgranulate. In *barabbas* a few large rounded punctures are scattered on the anterior half of mesonotum and on scutellum, but in the present specimens no such punctures are present except in the furrows of mesonotum. In both mesonotum and scutellum the anterior third is transversely, very coarsely, more or less intermittently striate, with some large punctures intermixed. The number of punctures is larger on antero-lateral portions and more marked in *barabbas*.

The punctation of the mesonotum is slightly different in specimens from the three islands. In the specimens from Palawan punctures in the furrows and on the anterior part of mesonotum are weaker, less distinct and less numerous than in those from Balabac. In the single specimen from Tawi Tawi the punctures on the disc are as in those from Balabac, but on the antero-lateral portions punctures are sparser and the surface is very coarsely carinate and furrowed. The lateral scutal furrows (the complete extension of the prescutal furrows, or notauli) in the Tawi Tawi specimen are much narrower than in others, but as only one specimen is known it is uncertain whether such characters are constant. In one small specimen (4 mm) from Balabac the flagellar joints of the antennae are relatively slightly shorter, the microsculpture on vertex, upper frons and mesopleuron far weaker with the surface much more strongly shining than in others, and the ferruginous colour of the legs is brighter and more broadly extended. Length ♀ 4–6 mm.

*Stigmus (Carinostigmus) balabacensis* sp.n.

*Types.* BALABAC: holotype ♀, Dalawan Bay, 10.x.1961; paratypes, 8 ♀, same loc., 7–13.x.1961.

*Comparative notes.* The present species is most closely allied to *S. iwatai* m. (= *S. thailandinus* m.), but differs from it mainly in the form of the head and in the sculpture of the mesopleuron and upper frons.

*Description.* ♀. Length 5–6 mm. Coloration as in *S. iwatai* m. Head seen from above: fig. 118, with temples better developed, roundly swollen, while in *iwatai* straighter and slightly convergent posteriorly (fig. 120); frontal carina present from anterior ocellus to base of antennae, but on upper part very feeble; frontal spine rather short; lateral small marks on vertex are located along the top of the eyes and are rounded impressions rather than a small collection of fine striae. Head seen in profile (fig. 119) distinctly longer and with upper line more flattened than in *iwatai* (fig. 121); ratio of width of occipital carina to width of head seen from above 0.57 ( $\pm 0.02$ ), while in *iwatai* 0.51 ( $\pm 0.04$ ); ratio of length in middle to width of head 0.68 ( $\pm 0.01$ ), in *iwatai* 0.64 ( $\pm 0.03$ ); clypeus almost as in *iwatai*, but in *iwatai* the anterior part is more acutely inclined and the apical margin slightly reflected. Humeral tubercles (pure white in colour) corn-shaped, much longer and more markedly attenuate apically than in *iwatai*; mesonotum with sculpture coarser and the punctures larger; subalar epimeral area of mesopleuron distinctly longitudinally, very closely and finely striolate, in *iwatai* almost without sculpture and almost smooth and shining; triangular area below this, except for anterior

portion, longitudinally, sparsely striate and with scattered punctures, in *iwatai* almost smooth, only with a few obsolete striae on posterior part; rest of the episternum longitudinally, finely and closely striate, the striae stronger and covered with microgranulation posteriorly, in *iwatai* greater part smooth and polished, only on posterior portion narrowly longitudinally striate. Sculpture of propodeum as in *iwatai*, namely, the meshes of the coarse reticulation obliquely lengthened on both sides of the medial furrow and at the rounded verge the striae of the meshes very much weaker and sparser, almost evanescent, resulting in a broad, nearly smooth space on each side of the medial line.

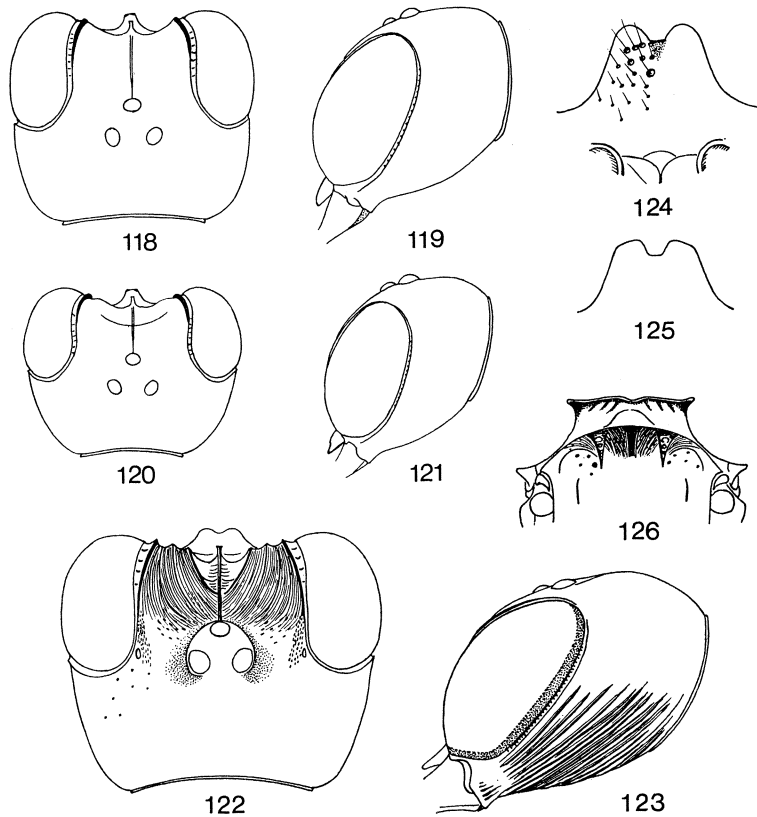
*Stigmus (Carinostigmus) palawanensis* sp.n.

*Types.* PALAWAN: holotype ♀, Pinigisan, 600 m, 22.ix.1961; paratypes, 1 ♂, 4 ♀, same loc., 1–22.ix.1961.

*Comparative notes.* Characteristic in the form of the clypeus and easily distinguishable from other congeners.

*Description.* ♀. Length 6.5 mm. Black; mandibles towards apex reddish; labrum transparent ferruginous: antennal joint 1 wholly, joint 2 above ferruginous, rest of the antennae dark brown. Humeral tubercles pure white or largely translucent; tegulae posteriorly chestnut brown; articulations of legs and fore tibiae and tarsi and tibial spurs slightly darkened ferruginous, other parts of legs slightly brownish. Wings hyaline, stigma and veins brownish black.

Head seen from above: fig. 122; lateral marks of vertex in a small impression on each side of the ocellular area along the top of the eyes, oval in form and distinct; frontal median carina from the anterior ocellus strong and distinct; frontal spine not robust, very short, sometimes slightly enlarged at apex; clypeus: figs. 124, 125, with the disc transversely gently rounded and depressed above the sinus of the anterior medial incision; antennal joints 3, 4, 5 subequal in length (4 very slightly longer), 3 about 3.7 times as long as broad at apex; head seen in profile: fig. 123. Pronotum seen from above: fig. 126; tubercles cone-shaped, fairly acutely pointed at apex; mesonotum with prescutal sutures deeply excavated, reaching slightly beyond a third of the scutum, the furrows crenate and accompanied by a carina, posterior margin with 11–13 longitudinal, short and coarse striae; scuto-scutellar furrow also coarsely foveolate; scutellum medianly feebly impressed; anterior transverse furrow and the median oblique furrow of mesopleuron broad and strong, the former markedly enlarged above and very coarsely, irregularly reticulate and the latter simply coarsely crenate; propodeum with a broad triangular impressed area at base, distinctly margined by fine carinae and extended and attenuate posteriorly. Petiole of abdomen as long as hind tibia, 4-carinated and further bluntly carinated beneath in middle. In fore wing recurrent vein received by cubital cell 1 slightly beyond middle; cubital vein slightly longer than transverse cubital vein 1. Fore femora with 3 slightly distorted flattened surfaces, except on apical portion, forming 3 acute ridges, but the anterior ridge is slightly obtuse; middle femora rather similar, but the ridges much



Figs. 118, 119. *Stigmus (Carinostigmus) balabacensis* sp.n., female, head in dorsal and lateral view. — Figs. 120, 121. *S. (C.) iwatai* Tsuneki, female; the same. — Figs. 122–126. *S. (C.) palawanensis* sp.n., female; 122) head, dorsal view; 123) head, lateral view; 124) clypeus; 125) variation of clypeal outline; 126) pronotum and anterior part of mesothorax.

more obtuse; hind tibia suddenly narrowed towards base, as in most congeners.

Vertex very finely, sparsely punctate, smooth and polished, from upper frons to sides of the face somewhat arcuately, very coarsely striate, the innermost striae forming lateral bordering carinae of the scapal hollow, the latter microcoriaceous and with incomplete ribs arising from the median carina; inner-orbital furrows margined by a strong carina and coarsely crenate; median lobe of clypeus finely, sparsely punctate, punctures anteriorly larger; temples below finely and closely striate. Thorax polished; pronotum medially gently roundly raised, with a few weak oblique striae anteriorly, sometimes the striae fairly long and distinct, lateral surface longitudinally strongly and coarsely striate; mesonotum sparsely punctate and medio-anteriorly with delicate longitudinal striae, the striae divergent anteriorly, punctures on the swol-

len parts outside the prescutal furrows larger; scutellum posteriorly finely, sparsely punctate; postscutellum longitudinally coarsely striate; mesopleuron above on epimeral area longitudinally, closely microstriolate and microcoriaceous; triangular area below (upper furrow lacking) and episternum posteriorly longitudinally, finely and closely striate or rugoso-striate, on the latter intervals microshagreened; rest of episternum and mesosternum finely, moderately closely punctate; metapleuron anteriorly irregularly microcoriaceous and on the remaining area longitudinally coarsely striate. Propodeum on basal transverse depression longitudinally very coarsely striate; rest of the dorsal and posterior surface very coarsely, comparatively regularly reticulate, the meshes not obliquely elongate, sometimes at the upper part of posterior aspect the meshes larger, showing a tendency towards the smooth area, sides of propodeum dorsally and posteriorly covered with reticulation extended from the dorsal side, and anteriorly obliquely, coarsely and less strongly striate, with interspaces weakly microsculptured. Petiole of abdomen at base microshagreened, then except on apical half or third longitudinally and finely striate, lateral surface also similarly striate; rest of abdomen smooth and polished, except on apical portion very finely and sparsely punctate; pygidial area in a small oval impression, with surface delicately microcoriaceous.

♂. Very similar to female, with slight differences: labrum glittering black, mid and hind tarsi also brown, antennal joints slightly slenderer, upper frons besides the striae with surface strongly microgranulate and mat, on sides of face between the deep scapal hollow and the inner-orbital furrow transversely rugoso-striolate, frontal median carina strong as in female, but the costae arising from it closer, shorter above, reaching near the anterior ocellus, pronotum with anterior carina more strongly sinuate.

*Stigmus (Carinostigmus) angusticeps* sp.n.

*Type.* PALAWAN: holotype ♀, Pinigisan, 600 m, 8.ix.1961.

*Comparative notes.* The present species very closely resembles *S. iwatai* m., but differs in the shape of clypeus, in that the frontal median carina is absent on upper frons, vertex and face are much narrower, head in dorsal view has sides behind eyes more straightly convergent posteriorly, collar of pronotum is much shorter, mesopleural sculpture is not the same and the propodeum has a dissimilar ground microsculpture. In the structure of the clypeus and in the sculpture of the mesopleuron the new species is similar to *S. palawanensis* sp.n., but in the structure and sculpture of the head and thorax it is easily distinguishable.

*Description.* ♀. Length 4.5 mm. Black; antennal joints 1–3 dirty ferruginous (1 in some light dusky above), 4–7 gradually darker apically, finally brownish black; mandibles brown, slightly darkened; pronotal tubercles white, tegulae brown; trochanters slightly dusky ferruginous, darker above; femora, except paler base, and hind tibiae dark brown; fore tibiae and tarsi pale brown to lustreless ferruginous; middle tibiae basally brown and apically broadly semi-transparent white, the following metatarsi of the same colour, remaining tarsal

joints of mid legs lustreless ferruginous; hind tarsi pale brown. Wings hyaline, stigma and veins dark brown.

Head seen from above: fig. 127; OOD:POD = 12:5; temples more acutely convergent posteriorly than in *iwatai* (fig. 120), lateral marks in a small oval impression along top of each eye; frontal median carina almost lacking on the upper frons, but well-defined on scapal hollow, which is broad, shallow and not acutely margined by a ridge on both sides (as in *palawanensis*), but gradually shallowed to inner-orbital carinae; head seen in front with face narrower than in *iwatai*, ratio of minimum IOD to the width of head 0.4 (in *iwatai* 0.57) and to that at vertex 12:17; clypeus: fig. 128 with the disc roundly swollen (in *iwatai* the anterior margin nearly truncate). Pronotum shorter than in *iwatai*, ratio of the length in middle to the width at anterior margin (between apices of lateral spines) 0.18 (in *iwatai* nearly 0.3). Petiole of abdomen as in *iwatai*, slightly shorter than hind tibiae; pygidial area an oval impression, small. Wing venation as in *iwatai*.

Vertex and upper frons almost impunctate; scapal hollow microgranulate, without costal carinae. Pronotum sparsely, obliquely carinate; epimeral area with longitudinally arranged microsculpture appearing to be finely longitudinally and very closely striolate, triangular area sparsely longitudinally striate (in *iwatai* epimeral area very feebly rugoso-striate and the triangular area almost smooth and shining); propodeum with the basal triangular impressed area longitudinally coarsely striate, disc obliquely, rather coarsely striate, the striae on apical (lateral) portion turned into reticulation, interspaces distinctly microgranulate, not shining. Petiole with dorsal and lateral surfaces closely microstriolate, half mat (in *iwatai* dorsal surface nearly smooth and polished); rest of the abdomen smooth and shining.

♂, unknown.

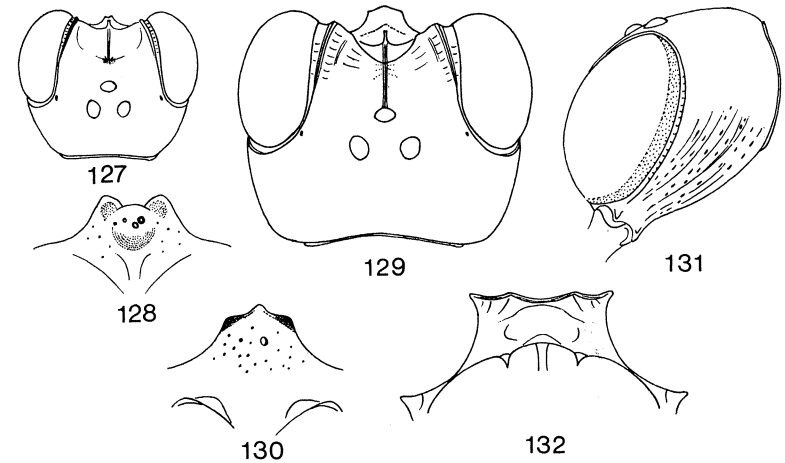
*Stigmus (Carinostigmus) tawitawiensis* sp.n.

Types. TAWI TAWI: holotype ♀, Tarawakan, 25.x.1961; paratype, 1 ♀, same loc., 23.x.1961.

*Comparative notes.* In the form of the clypeus as well as in the general appearance the present species somewhat resembles *S. filippovi* Gussakovskij, occurring in Japan, but in this species the clypeus is more acutely tridentate and the pronotum is much shorter.

*Description.* ♀. Length 6.5 mm. Black and shining; mandibles medially broadly dark brown; labrum, palpi and antennal joints 1 and 2 wholly and 3 except the dark brown upper side ferruginous; rest of antennae dark brown; humeral tubercles pure white, tegulae brown; legs with the following portions ferruginous: apices of coxae, trochanters, base of femora, fore and middle tibiae and tarsi (hind legs from femora apically black); hind coxae beneath, fore and mid trochanters above and all of hind trochanters somewhat dark red; mid tibiae apically broadly paler; wings hyaline, veins and stigma dark brownish, but the latter paler on posterior portion.

Head seen from above: fig. 129; OOD:POD = 2:1; vertical impression small, located along top of the eye; frontal median carina distinct, highly



Figs. 127-128. *Stigmus (Carinostigmus) angusticeps* sp.n., female, head in dorsal view and clypeus. - Figs. 129-132. *S. (C.) tawitawiensis* sp.n., female; 129) head, dorsal view; 130) clypeus; 131) head, lateral view; 132) pronotum.

raised before anterior ocellus and at the frontal spine; the latter about half the length of antennal joint 3 and, seen from above, enlarged and flattened at the top; clypeus: fig. 130; ratio of IOD at the anterior margin of anterior ocellus and at base of clypeus 25:19; head seen in profile: fig. 131. Pronotum: fig. 132; humeral tubercles corn-shaped, bluntly pointed at apex; mesonotum with prescutal furrows not deep, hardly ~~as long as~~ <sup>reaching posteriorly</sup> one third of the scutum, the posterior margin of scutum distinctly crenate, crenae about 11-12 in number; scutellum except base finely impressed in middle; on mesopleuron epicnemial furrow strongly enlarged above, very coarsely foveolate, oblique furrow comparatively narrow and strongly crenate, but posteriorly obsolete, which is also <sup>the</sup> case with the subepimeral furrow, hence the triangular area is not distinctly marked off; propodeum at base transversely impressed and in middle broadly furrowed, the furrow is narrower posteriorly, distinctly margined with fine carinae and not reaching the apex of the segment. Petiole of abdomen slightly longer than hind femur, but slightly shorter than hind trochanter and femur combined, nearly rounded in cross section, slightly wider than high, without acute edge; pygidial area a well-defined elliptical impression, nearly as large as postocellus (slightly longer), with posterior portion slightly raised or reflected. In fore wing recurrent vein received by cubital cell 1 slightly beyond middle. Fore and middle femora except the apical portions flattened in front and behind, with a fairly acute ridge in between, underside rounded, but in cross section subtriangular.

Vertex very finely, upper frons somewhat largely, both very sparsely punctate, with surface smooth and polished; no oblique striae above scapal hollow and on sides of face; the hollow deep and acutely margined, with the surface microcoriaceous, the sculpture arranged transversely and in some light appearing finely transversely striolate. the surface feebly obliquely rugoso-striolate,

on sides of spines with a few short obsolete carinae; clypeus scattered with a few comparatively large punctures on anterior portion; inner-orbital furrow not distinctly crenate; temples below rather coarsely striate and scattered with medium-sized punctures (fig. 131). Pronotum largely smooth and polished with a few weak striae on latero-anterior portion, sides longitudinally striate, the striae fine and close upwards and stronger and sparser posteriorly; mesonotum medio-anteriorly without longitudinal striae, sparsely scattered with fine punctures, the punctures posteriorly larger; scutellum laterally with a few punctures; postscutellum largely smooth, only weakly crenate on posterior margin; propodeum with basal impression very coarsely longitudinally, medial furrow transversely striate and disc medianly sparsely, transversely, somewhat obliquely and arcuately striate; propodeum laterally coarsely foveolate, the foveae subquadrate, arranged longitudinally along the lateral carinae; posterior aspect transversely, coarsely, irregularly striate; sides with a series of quadrate foveae along the upper longitudinal carina (the lateral carina of dorsal aspect); rest of the surface coarsely, obliquely striate, the striae anteriorly finer and closer, with the intervals microgranulate. Petiole and the following tergites smooth and polished, except last tergite, sparsely punctate and pygidial area very delicately shagreened.

Remarks. 3 lines cut.

*Spilomena palawanensis* sp.n.

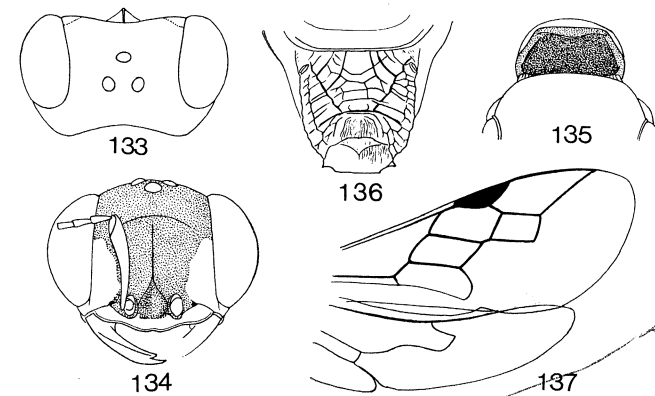
Type. PALAWAN: holotype ♀, Pinigisan, 600 m, 24.ix.1961.

Description. ♀. Length about 3.5 mm. Black, with the following portions white: anterior margin of clypeus, large lateral marks on lower frons reaching upwards to the middle of the eyes, antennal joint 1 in front, humeral tubercles, marks on tegulae and fore femora apically beneath, indistinctly; pale yellow or yellowish white are mandibles except apex and narrow upper margin, palpi, rest of antennae (flagellum largely light ferruginous), anterior margin of the nape region of pronotum, rest of tegulae and all legs from coxae; mouth parts pale brown; propodeal stigmata and small area pygidialis ferruginous; wings hyaline, stigma pale brown and veins pale ferruginous. Pubescence on body short, sparse, greyish; clypeus without covering dense appressed hairs.

Head seen from above: fig. 133; ocelli in an equilateral triangle; OOD:POD = 2:1; no carina nor furrow in front of anterior ocellus. Head seen in front: fig. 134, OAD = IAD; clypeus on anterior margin rather gently and upwards more strongly raised, between antennal sockets with a rounded tubercle bluntly keeled on top, the keel is upwards transformed into a fine carina reaching near the verge of upper frons; mandible bidentate at apex, with the lower tooth longer; eyes not reaching below the base of mandibles, oculo-mandibular distance nearly as long as the penultimate joint of antenna; antenna distinctly 12-jointed, joint 2 slightly longer than 3 which is about 1.7 times as long as broad at apex, 4 subequal to 3, following joints gradually shorter towards apex, joints 9, 10, 11 as long as wide, ultimate joint slightly less than as long as two preceding joints taken together. Pronotum transversely carinate a short distance behind the lamellate anterior margin, but without

alone

wholly



Figs. 133-137. *Spilomena palawanensis* sp.n., female; 133, 134) head, dorsal and frontal view; 135) pronotum; 136) propodeum; 137) wing venation.

the so-called collar (fig. 135), the notum depressed far below the level of mesonotum; mesonotum with ratio 23:14 for maximum width (lateral reflected margins excluded) to length in middle (seen vertically from above, because anterior margin is roundly but steeply sloped), posterior margin and scuto-scutellar furrow not crenate; scutellum gently raised; on mesopleuron epicnemial carina distinct on upper  $\frac{2}{3}$  accompanied by a furrow, which is crenulate, and at the lower end marked with a large puncture (constant?), scrobe deep, but scrobal furrow indistinct; propodeum: fig. 136; area dorsalis distinctly marked off by fine carinae, nearly equilateral triangular, large, with the apex truncate at the verge of dorsal aspect; a minutely zigzagged lateral carina present on each side of dorsal and posterior aspects, on dorsal aspect partly indistinct and on posterior aspect distinct and from about the middle produced laterally into a short tooth. Abdomen distinctly 6-segmented; tergite 6 with a short longitudinal carina ~~present~~ at the apex, the anterior portion of the carina appears to be slightly divergently enlarged, but this cannot be seen clearly because of the comparatively long whitish pubescence on both sides of the carina. Venation of the wings: fig. 137. Legs normal, tarsi slender and long.

Vertex and upper frons finely and sparsely punctate, with a very delicate, rather shiny ground sculpture pattern as in fig. 22 of my 1971 paper on the Japanese *Spilomena*, but very much feebler; on scapal hollow upper and medial areas longitudinally, remaining areas transversely or arcuately, very finely and closely microstriate, the striae very delicate and surface fairly shining. Sculpture on mesonotum as on upper frons, but the scattered punctures slightly closer and the microstriae slightly stronger; scutellum more finely microcoriaceous, with the punctures much finer, rather indistinct; mesopleuron on epimeral area very finely microreticulate, almost without punctures, on episternum the microsculpture as on upper frons, but slightly weaker, sparser and the surface more shining. Sculpture of propodeum: fig. 136,

the dotted  
in the fig.  
the entire  
inclination  
posterior-lateral  
small hairs  
may be the  
ends of the  
short collar  
whole

whether it represents a partial gynandromorph or an usual form of the exceptional species is uncertain, since the specimen is but a single. To solve the problem further investigation is necessary.

posterior aspect with crossed carinulae in middle and the surface longitudinally somewhat coriaceous, weakly striate; sides longitudinally, fairly closely, distinctly striate. Abdomen smooth and polished, with a few small punctures on posterior segments.

♂, unknown.

*Remarks.* The present species is the first addition to the *Spilomena* fauna of Southeast Asia and Australia since the counting by Maidl (1925). It is also the first record of this genus from the Philippines.

On the basis of the general characters of the genus the present specimen is abnormal, or quite exceptional, because the characters of the antennal and abdominal segments and the pygidial area are clearly feminine while the shape of clypeus and the maculation of the face are masculine. ☼

The species is also remarkable by its very short, almost lacking, pronotal collar which is closely attached to the mesonotum and not visible from above.

*Remarks* 3 lines cut.

#### CRABRONINAE

*Ectemnius (Metacrabro) irridifrons* (Pérez, 1905)

*Material.* BALABAC: 1 ♂, Dalawan Bay, 9.x.1961.

*Distribution.* Japan and Korea, new to the Philippines.

*Ectemnius (Cameronitius) bogorensis tarawakanus* ssp.n. <sup>sect. *Iwataia*</sup>

*Type.* TAWI TAWI: holotype ♀, Tarawakan, 16.xi.1961.

*Comparative notes.* Differs from the nominate race, *bogorensis* Leclercq (1958), described from Java and Singapore and later recorded from the Philippines (Mindanao, Sibuyan, Negros) and India, in that (1) the maculae are white (actually dirty brown in part, no doubt a postmortem change), (2) mesonotum on broad median area and on posterior portion longitudinally, distinctly, finely and closely striate, on lateral areas rugoso-punctate, (3) fore femora with a white mark behind at apex and (4) all tarsi except brownish apical half whitish.

*Description.* ♀. Length about 8.5 mm. Black; white are: mandibles except apex, antennal joint 1, collar, tubercles, a large mark on prepectus of mesopleuron, axillae, two large marks on scutellum, postscutellum, lateral marks on tergites 1-5, fore femora behind at apex, a large apical mark on middle femora, outside of all tibiae and all tarsi except brownish apical halves; tegulae ferruginous. Clypeus: fig. 138, sides of the median produced part thickened, forming an excavated underside; antennal joint 1 flattened on the outer side, the area acutely edged on both sides, nearly bicarinate; joint 3 about 1.7 times as long as broad at apex. Mesopleuron comparatively largely, fairly closely punctate, punctures upwards finer and sparser and downwards longitudinally rugosely arranged, antero-ventrally markedly strongly and closely rugoso-punctate; propodeal area dorsalis margined posteriorly by a medianly subinterrupted carina, with disc finely, sparsely punctate. Abdominal tergites very finely and sparsely punctate with hair-bearing points; apical part

of tergite 5 and sides of pygidial area densely covered with long ferruginous hairs.

♂, unknown.

*Remarks.* According to the diagnosis the present species does not belong to the subgenus *Cameronitius*, but to *Iwataia*, because the median part of the mesonotum is broadly longitudinally striate. It is irrational, however, that the local races of one and the same species belong to different subgenera and I propose *Iwataia* be included in *Cameronitius* as a section. The latter subgenus is thus expanded to include species in which the mesonotum is medially broadly rugoso-punctate, rugoso-striate, or simply striate, though laterally simply punctate.

*Ectemnius (Cameronitius) peterseni* sp.n.

*Types.* PALAWAN: holotype ♀ and paratype ♀, Uring Uring, 18.xii.1961.

*Comparative notes.* This species closely resembles *E. (C.) flavohirtus* m., but differs in the structure of the 1st abdominal segment and in the maculation and vestiture of the body.

*Description.* ♀. Length 7.5-8.5 mm. Black, maculated with lemon yellow and ferruginous orange. Yellow are antennal joint 1 except a brownish patch behind at apex, collar and tubercles of pronotum, axillae, a large medial mark on area dorsalis of propodeum, a mark ~~in full length~~ <sup>from apex to</sup> of fore femora and middle femora behind; mandibles except apical third and beneath pale yellowish white; basal half of abdominal segment 1 amber-yellow; ferruginous orange are tegulae, scutellum, postscutellum, a large and a small mark on each side of tergite 2 (fig. 141), a broad band across middle of tergite 3, narrow transverse lateral marks on tergite 4 (sometimes very small and occasionally lemon yellow), all tibiae and fore tarsi; apical margins of tergites 4 and 5 vaguely, and last tergite apically, distinctly, ferruginous. Wings fuscohyaline, darker along anterior margin. Pubescence on clypeus, sides of lower face and temples brassy yellow, in certain light appearing silvery, hairs on dorsal side of head and thorax-complex and on abdomen pale ferruginous, on mesopleuron silky white, and bristles on each side of pygidial area long, abundant and ferruginous.

OOD = POD; frontal marks along inner orbits near the verge of upper frons seen as an indistinctly outlined and not particularly glossy impression, slightly longer than antennal joint 3; sockets of antennae contiguous to the eyes and nearly so to each other; clypeus: fig. 139, seen in profile: fig. 140; carina on antennal scape very weak, antennal joint 3 twice as long as wide at apex, joint 5 nearly as long as wide. Pronotal collar roundly highly raised, with antero-lateral corners broadly rounded and with a narrow groove in middle; mesonotum not impressed medio-anteriorly; scutellum comparatively low, broadly rounded; area dorsalis not distinctly marked off, only defined by the differences in sculpture. Abdominal segment 1 subpetiolate (fig. 141). Radial cell of fore wing obliquely broadly truncate at apex, apical vein as long as transverse cubital vein. Femora of fore and mid legs markedly thick as in *flavohirtus* m.

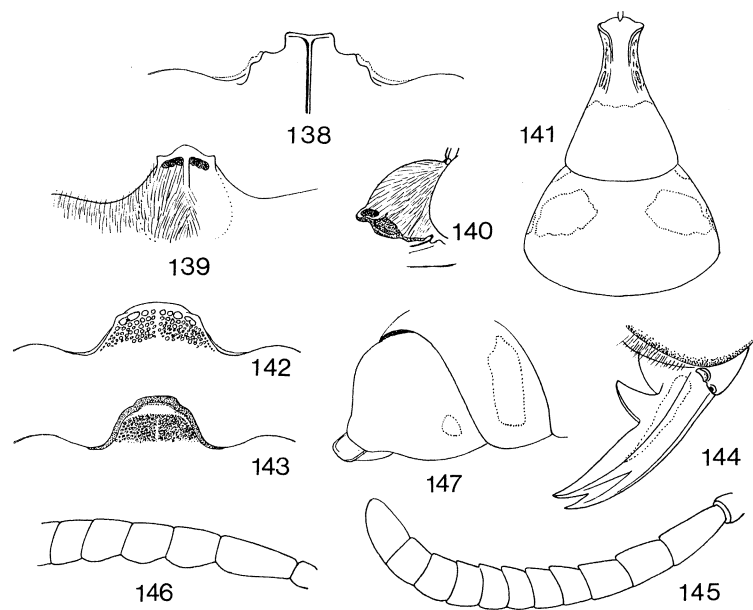


Fig. 138. *Ectemnius (Cameronitus) bogorensis tarawakanus* ssp.n., female, clypeus. — Figs. 139–141. *E. (C.) peterseni* sp.n., female; 139) clypeus; 140) same, lateral view; 141) abdominal segments 1 and 2. — Figs. 142–147. *E. (Apoctemnius) philippinensis* sp.n., female; 142) clypeus; 143) same, variation; 144) mandible; 145) antenna, dorsal view; 146) some antennal joints, lateral view; 147) tergites 5–7.

Head above very finely and closely punctulate, half mat. Mesonotum finely, more closely punctulate and mat; scutellum also mat, but the punctures somewhat sparser; mesopleuron on upper area longitudinally, finely and closely striate, on lower broad episternum sparsely, slightly largely punctate, without plumbeous shine; area dorsalis longitudinally, slightly obliquely, finely and closely striate, the striae at base stronger and sparser, and the medial one long, reaching near apex of the area; outside the area the surface minutely, irregularly rugoso-reticulate, posterior slope of propodeum very minutely, closely rugoso-reticulate, in some light appearing rugoso-striate, the striae sometimes longitudinally, sometimes transversely arcuately running. Tergite 1 finely and sparsely punctate, punctures anteriorly slightly larger; the following tergite finely and densely punctulate, on tergite 5 punctures slightly larger and sparser; sternites smooth and shining, with delicate, transverse, close striae and with a line of punctures before each apical margin, sternites 2, 5 and 6, further, scattered with small punctures.

♂, unknown.

*Ectemnius (Apoctemnius) philippinensis* sp.n.

*Types.* PALAWAN: holotype ♂ and paratype ♂, Pinigisan, 600 m, 22.ix.1961.

*Description.* ♂. Length 6–7 mm. Black, with the following portions yellow:

Medially interrupted band on collar, tubercles, axillae, a band on anterior part of scutellum and postscutellum. Yellowish white: Antennal joint 1 except a spot at apex, a mark from apex to posterior underside on fore and middle femora, a large apical mark on outer side of all tibiae, large lateral marks on abdominal tergites 2–6, diminishing in size posteriorly; marks on legs sometimes more saturated yellow; clypeus sometimes anteriorly brownish and with a transverse yellowish patch medianly behind apical margin; mandibles chestnut brown at base and black at apex, in the paratype pale ferruginous and adorned with a yellowish white mark near base. Palpi, tegulae, sometimes fore femora in part, rest of tibiae and tarsi ferruginous brown. Wings weakly fusco-hyaline, basally paler. Pubescence on clypeus silvery, not dense and appressed, on head and thorax-complex above pale ferruginous, long and erect, and on sides of thorax silky white, not abundant.

OOD = POD; frontal impressions as long as antennal joint 3, but narrower, polished, located near the verge of upper frons and along eyes; sockets of antennae contiguous to the eyes but slightly apart from each other; clypeus: fig. 142, totally black (in the paratype: fig. 143, only black on basal portion, anteriorly paler, with the anterior and lateral margins rather broadly brown and with a transverse yellowish patch behind the apical margin); mandible: fig. 144; antennae: fig. 145, joint 3 about 1.7 times (in the narrowest view) or twice (in the broadest) as long as wide at apex, relative length of joints 3, 4, 5 approximately 8, 5, 4, joint 5 as long as wide, joints 3, 4, 5 roundly swollen beneath, 6 slightly thickened towards apex, but not excavated beneath (fig. 146); head seen in profile with temple as broad as eye, with occipital carina strongly raised and running parallel to outer orbit and reaching down near the hypostomal carina. Precoxal carina of mesopleuron strong and high, turned anteriorly at the lower end and stretched to the acetabular carina, gradually being slightly lower; area dorsalis not distinctly marked off; whole dorsal aspect of propodeum very coarsely, irregularly reticulate, with the meshes elongate, radiating, but the medial furrows is well defined, crenate; sides of propodeum separated from the dorsal and posterior aspects by an irregularly zigzagged carina; posterior aspect medianly deeply furrowed. Tergite 1 longer than wide (in holotype 40:30, in paratype 43:35); tergites roundly swollen and abdomen, seen in profile, is constricted where the tergites meet; tergite 6 and the distinctly margined pygidial area of tergite 7 seen obliquely from above as in fig. 147. Fore and middle femora somewhat incrassate; middle tibia with a fairly long apical spur.

Punctures on vertex fine and close, on upper frons slightly larger, dense, subreticulate. Mesonotum anteriorly transversely, posteriorly longitudinally, strongly punctate-rugoso-striate, on postero-lateral areas, simply subreticulate; scutellum longitudinally closely rugoso-punctate; mesopleuron on prepectus longitudinally, very coarsely striate, on epimeral area moderately finely and closely punctate-striate, the rest of episternum slightly more largely and sparsely rugoso-punctate; metapleuron and side of propodeum longitudinally, rather finely and closely striate; posterior aspect of propodeum irregularly reticulate, the meshes smaller than on dorsal aspect and unevenly shagreened

within. Tergite 1 finely and very sparsely punctulate, the following tergites comparatively more closely (but interspaces larger than punctures) punctate; punctures on tergite 6 closer, slightly larger, partly longitudinally rugoso-subreticulate; pygidial area finely, closely, irregularly punctulate; sternite 1 medianly longitudinally furrowed, half mat, sternite 2 smooth and polished, scattered very sparsely with fine punctules, 3-7 with transverse, close, delicate microrugae, not strongly shining and sternites 3 and 4, apically, and following sternites more broadly, fairly closely punctate.

♀, unknown.

*Remarks.* Members of the subgenus *Apoctemnius* Leclercq, 1950, <sup>partly from</sup> are known from the Neotropical region and the southern parts of the Nearctic. The discovery of the present species in the Philippines is, therefore, worthy of special attention. *Apoctemnius* is similar to *Hypocrabro* in general appearance, but the mesopleuron of that subgenus is separated from the mesosternum by a longitudinal carina which extends from the precoxal carina of the mes-episternum to the acetabular carina. <sup>has been</sup>

Slight differences between the types are observed. The paratype is slightly larger, with the clypeus somewhat narrower, brighter in colour and adorned with a yellowish patch, the mandible is pale with a vaguely outlined, long yellowish mark near the base along the upper-outer edge and the fore and middle femora are much more markedly incrassate. <sup>2 lines cut.</sup>

*Vechtia rugosa palawana* ssp. n.

*Type.* PALAWAN: holotype ♀, Uring Uring, 25.viii.1961.

*Description.* Differs from the nominate subspecies in that the punctures on the head are much finer and more delicate and the colour of the maculae is more whitish. Leclercq (1963:80) already pointed out that "les exemplaires des Philippines ont les marques ptériniques plus claires que les autres".

*Piyuma prosopoides makilingi* (Williams, 1928)

*Material.* TAWI TAWI: 2 ♀, 1 ♂, Tarawakan, 24.x.-16.xi.1961; 1 ♀, Lapid Lapid, 22.xi.1961.

*Distribution.* Philippines. <sup>wholly.</sup>

*Remarks.* The Philippine subspecies, *makilingi*, is more brightly coloured than the Formosan subspecies, *iwatai* Yasumatsu. In females the following parts are yellow: Antennal scape, collar, tubercles, scutellum, a spot at apex of fore and middle femora, outer side of all tibiae except apical area (which in hind legs is broader and black, in the other legs narrower and brown) and basal two joints of tarsi. Antennal flagellum, rest of fore and middle tibiae and rest of all tarsi ferruginous. Formosan females: antennae dark brown (scape paler), collar and scutellum posteriorly black, legs brownish black or black, only a spot at base of all tibiae and metatarsi of mid and hind tibiae yellow. The male is generally darker; in *makilingi* from Palawan the following parts are yellow: Antennal scape except the brown innerside, collar, tubercles and scutellum, a spot at apex of fore femora, a narrow streak on outer side of

tibiae, not reaching apex, and metatarsi of mid and hind legs. In the Formosan specimens, except for the maculae on the thorax (as in female), only a spot at the base of each tibia is yellow. The punctures on the head and thorax appear in general slightly closer in *makilingi* than in the Formosan *iwatai*. Otherwise, there are no noteworthy differences between the two taxa.

*Crossocerus* (*Paroxybelus*) <sup>crabro,</sup> *megacephalus* sp. n. <sup>nee Rossi, 1790,</sup>

*Type.* TAWI TAWI: holotype ♀, Tarawakan, 5.xi.1961. <sup>→ magniceps (Akita)</sup>

*Comparative notes.* Closely allied to *C. (P.) sotirus* Leclercq, differs from it in the general colouration of the thorax and the structure of the clypeus and propodeum.

*Description.* ♀. Length 4.0-4.5 mm. Black, with the following portions yellow: Mandibles except brownish apical third, antennal joint 1, collar and tubercles of pronotum, a spot on tegulae, basal plates of fore wings, nearly all of scutellum, apex of all femora, all tibiae except inside of mid and hind ones and all tarsi except brownish ultimate joints. Apex of antennal joint 2, articulations of legs till femora pale yellowish brown. Wings hyaline, veins and stigma black. Pubescence on clypeus dense, appressed and silvery; on thorax short, silky white, that on mesopleuron rather close; tergites 2-4 broadly covered with short whitish pile.

Head large, seen from above: fig. 148, subquadrate, with ocelli in a nearly equilateral triangle, OOD:POD = 6:4; frontal median furrow deep and distinct; frontal impressions beside the ocellar area along eyes are comparatively large, smooth and not distinctly edged on outline; head seen in front with sockets of antennae contiguous to eyes and to each other; clypeus: fig. 149 (in paratype fig. 150), with anterior margin narrowly incrassate, with disc gently raised and slightly depressed medio-anteriorly (in paratype broadly depressed behind apical margin); mandibles bidentate at apex; occipital carina not highly raised above, but gradually higher and stronger below and rather suddenly but roundly terminated at the ends, not reaching the buccal carina; a marked tooth is present on the area between the ends of the occipital carina and behind the buccal carina. Antennal joint 1 carinate, joints 3 and 4 each slightly longer than the succeeding joint, 3 about 1.5 times as long as wide at apex, ultimate joint normally attenuate apically. Collar of pronotum as in fig. 148, with lateral corners transversely shortly carinate in front and minutely incised in middle posteriorly; prosternum with a stout tooth on each posterolateral corner; mesonotum with median scutal line and prescutal sutures distinctly impressed, the impressed lines reaching a third of the scutum, apical margin of mesonotum not crenate, scuto-scutellar furrow is minutely crenate; mesopleuron with precoxal tooth stout and long, very marked, at the ventro-posterior corner above the mesocoxa with a short raised and reflected carina; propodeum with area dorsalis marked off by a fine impressed line, which is weaker anteriorly, and not reaching the base, but at the base the area is well defined by differences in sculpture; median furrow lacking; posterior aspect with a deep median furrow and separated from the sides by a distinct carina. Abdominal tergites each slightly constricted at the posterior margin; segment 1

slightly longer than wide at apex; pygidial area weakly excavated and smooth on apical half. Radial cell of fore wing broadly truncate at apex; appendiculate cell broadly open at apex; recurrent vein received by cubital cell slightly before middle.

Vertex very finely, fairly closely punctulate, with intervals as large as the points; without punctures on ocellular area adjacent to the frontal mark, shining; punctures on upper frons somewhat sparser, with intervals feebly microcoriaceous. Mesonotum finely, closely punctate, punctures slightly larger than on head, with intervals as large as punctures; mesopleuron punctate as on mesonotum, but the punctures slightly larger; metapleuron smooth and polished, very feebly longitudinally striate; area dorsalis also smooth and shining, outside the area the surface is obliquely finely and closely striate; posterior aspect transversely, finely and weakly striate, mixed with a few scattered punctures, sides impunctate and polished. Tergite 1 smooth, impunctate; following tergites weakly micropunctulate with pile-bearing points; sternites without punctures, shining.

♂, unknown.

*Crossocerus (Ablepharipus) noonadanus* sp.n.

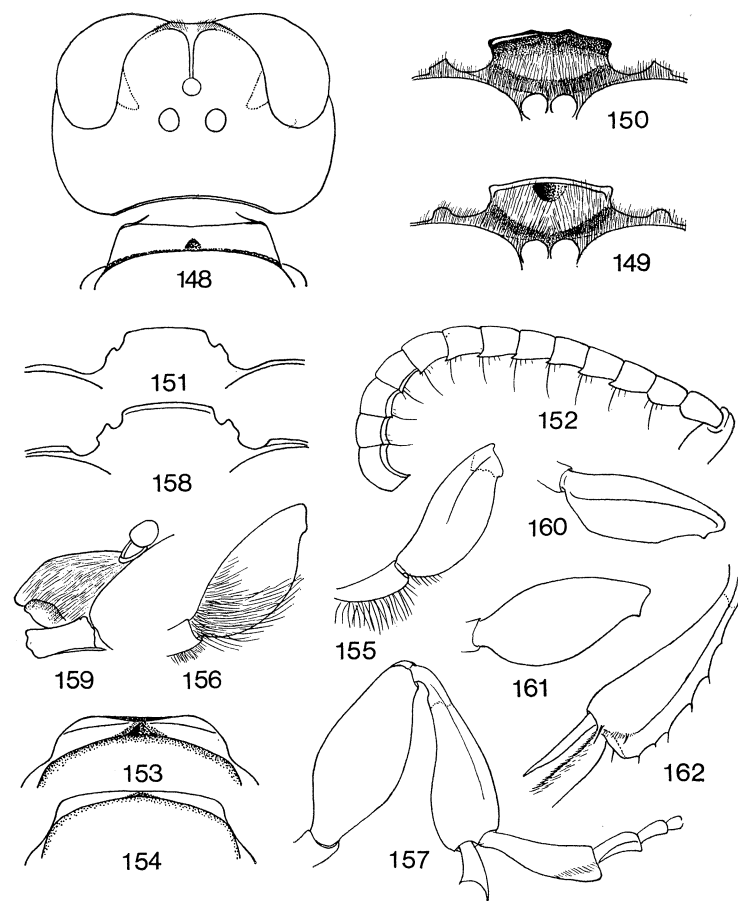
*Types.* PALAWAN: holotype ♂, Pinigisan, 600 m, 22.ix.1961; paratype ♀, same loc., 21.ix.1961.

*Comparative notes.* The male of the new species is considered closest to *C. (A.) larutae* Leclercq, 1961, known from Malaya, but differs from it in details of the vestiture and the structure of the hind legs. The maculation is also somewhat different.

*Description.* ♂. Length 4.5 mm. Black, with an aeneous shine on head; yellow are antennal joint 1 except inner apical brownish mark, two transverse marks on collar (interspace slightly narrower than the mark), tubercles, apex of all femora, fore femora beneath, fore and middle tibiae except inside, base of hind tibiae and fore and middle tarsi except one or two apical joints; mandibles on apical third ferruginous red; antennal joint 2, flagellum beneath, tegulae, basal plates of fore wings, rest of fore femora and hind legs in part ferruginous. Wings hyaline. stigma and veins brown.

Pubesence on clypeus silvery; flagellar joints beneath with a long curved hair at apex in addition to the short pile, as in *larutae* (fig. 152); head beneath without tuft of hairs; dense tuft of long soft hairs is present on fore coxae beneath, on all trochanters beneath, on basal half behind of middle femora (markedly long) and on mesosternum; the hair on mesosternum dense and appressed and particularly long where the haired area is sharply margined laterally.

Head seen from above with ratio of width to length in middle 3:2; OOD:POD = 5:4; frontal impressions subtriangular, comparatively large at the sides of anterior ocellus and along eyes; frontal furrow fine and deep; a short longitudinal impressed line also present behind anterior ocellus; sockets of antennae contiguous to eyes and to each other; clypeus: fig. 151, with disc roundly elevated; mandibles bidentate at apex, inner margin eden-



Figs. 148-150. *Crossocerus (Paroxybelus) megacephalus* sp.n., female; 148) head and pronotum, dorsal view; 149) clypeus; 150) same, variation. - Figs. 151-162. *C. (Ablepharipus) noonadanus* sp.n., male; 151) clypeus; 152) antenna; 153, 154) pronotum, different dorsal views; 155) fore femur; 156) mid femur; 157) hind leg; female: 158) clypeus; 159) same, lateral view; 160, 161) fore and mid femora, posterior view; 162) hind tibia.

tate, but slightly angulate towards middle; antenna: fig. 152, joint 3 approximately 1.2 times as long as broad at apex, joints 3-8 gently roundly produced beneath, 9-12 beneath basally slightly excavated and apically slightly thickened and pointed, ultimate joint curved, with apex truncate. Collar of pronotum with anterior margin rounded, not produced on lateral corners, but carinate across middle (fig. 153), but in posterior view slightly roundly angulate (fig. 154); prescutellar sutures of mesonotum are weak impressed lines; posterior margin of mesonotum not crenate and scuto-scutellar furrow not foveolate; mesopleuron with anterior oblique furrow minutely crenate, without scrobal furrow, with a very strong precoxal tooth. Area dorsalis of



propodeum not marked off by a furrow, but defined by its more shining surface, with the median furrow very weak; posterior aspect of propodeum deeply furrowed above in the middle and separated from the sides by a carina which is not reaching the dorsal side. Tergite 1 of abdomen slightly longer than wide at apex. Fore and middle femora: figs. 155, 156; hind leg: fig. 157, with femur relatively longer than in *larutae*, with tibia not spined on outer side and with apical spur also different in form. Wing venation normal.

Vertex and upper frons impunctate, microcoriaceous, but considerably shining. Mesonotum, scutellum and postscutellum also impunctate, but more strongly microcoriaceous, dull and opaque; mesopleuron apparently smooth and fairly polished, with very fine punctures sparsely scattered, but with the surface longitudinally closely, very feebly microstriolate, the striae on upper portion slightly stronger and distinct and surface almost dull; metapleuron and side of propodeum longitudinally, very finely and very closely striate; area dorsalis at base somewhat strongly, remaining parts very delicately, closely, both longitudinally striate, but the surface fairly shining; rest of the dorsal and posterior aspects weakly microgranulate, mat. Abdomen practically impunctate, polished.

♀. Length 4.7 mm; colour, punctuation and sculpture as in the male. Head from above more quadrate, with ratio of width to length about 4:3, with temples much better developed, otherwise similar; clypeus: fig. 158, with disc strongly roundly elevated (fig. 159); antennae not modified, joints short, joint 3 about 1.2 times as long as wide at apex, joint 8 shorter than wide. Collar as in male (figs. 153, 154). Pygidial area deeply excavated. Fore and middle femora: figs. 160, 161; hind tibia strongly spined on outer side (fig. 162).

*Dasyproctus cevirus* Leclercq, 1963

*Material.* PALAWAN: 1 ♀, Uring Uring, 15.viii.1961. MINDANAO: 1 ♀, 1 ♂, Sapamoro, 22.xii.1961.

*Distribution.* Widely distributed in the Philippine Islands.

*Remarks.* The anterior margin of the clypeus of female and male is shown in figs. 163 and 164, respectively.

*Dasyproctus ceylonicus* de Saussure, 1867

*Material.* PALAWAN: 3 ♀, Uring Uring, 15–25.viii.1961; 1 ♂, 1 ♀, Pinigisan, 600 m, 1. and 6.ix.1961. MINDANAO: 2 ♀, Sapamoro, 16. and 20.xii.1961.

*Remarks.* The shape of the anterior margin of the clypeus in the present females (fig. 165) is distinctly different from that of the typical form (Leclercq, 1958, fig. 23) in that the lateral protuberances of the medial teeth are well developed. Such females are conventionally referred to f. *impetuosus* Cameron. According to my examination of ten females from Thailand the size of the lateral protuberances is considerably variable; sometimes they are small and hardly protruding, but in other cases they are well developed as in the present specimens.

The present male is referred to f. *infantulus* Kohl, 1894. The mandibles, scutellum and tergites 1 and 2 are completely black, the hind tibiae are marked

with two small yellow spots and the sculpture on the outside of the area dorsalis of propodeum is distinctly more finely reticulate than in males of f. *impetuosus* from Formosa. Moreover, the fine meshes on the propodeum are markedly obliquely elongate. Additional material will show if these features are constant in *infantulus*.

*Dasyproctus sculpturatus* sp.n.

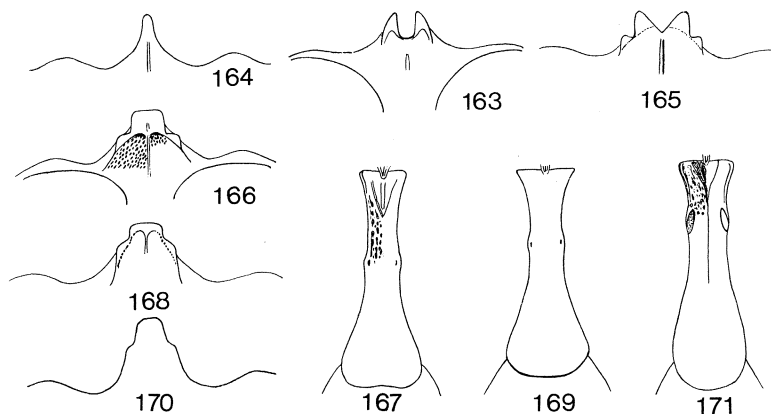
*Types.* TAWI TAWI: holotype ♂, Tarawakan, 27.x.1961; paratypes, 3 ♂, same loc., 27.x. and 12, 14.xi.1961.

*Remarks.* The new species is characteristic in having the head and thorax strongly and markedly largely punctate or rugoso-punctate. The immaculate scutellum and abdomen also characterize the species.

*Description.* ♂. Length 6.5–7.5 mm. Black; yellow are antennal joint 1 in front, an elongate mark along upper edge of mandible, a medially interrupted band on collar not reaching the posterior margin, humeral tubercles, an apical spot on fore and middle femora and the outer side of all tibiae (in hind tibiae interrupted or narrowed near base). Palpi and tarsi ferruginous to dark brown. Wings slightly fuscous, radial cell particularly darkened in a narrow area along anterior margin, stigma and veins black.

Head seen from above with ratio of width to length in middle about 3:2, with anterior margin strongly emarginate and highly keeled, the keel with both sides reaching the eyes; OOD = POD; frontal marks oval, smaller than post-ocellus and less distinguishable than usual among the present similar punctures, but well shining. Head seen in front with sockets of antennae contiguous to eyes, but not to each other; clypeus: fig. 161, anterior margin of the median protuberance slightly narrower than the minimum IOD at base of clypeus; antennal joint 3 about 2.3 times as long as broad at apex. Pronotum with anterior carina straight and more highly raised than in *D. ceylonicus*, with antero-lateral corners more angulate and medial incision broader; mesonotum with posterior margin crenate. Abdominal segment 1: fig. 167.

Head and thorax except posterior margin of mesopleuron and metapleuron dull and opaque; head above markedly large and closely punctate, punctures nearly as large as the frontal impressed marks and partly irregularly confluent, anteriorly closer and subreticulate; temples also largely and closely punctate with punctures partly transversely confluent, but not striate or rugoso-striate; punctures on mesonotum similarly large, close and irregularly confluent, but less strong, indistinct in outline, on posterior margin longitudinally lengthened and close, appearing crenate; scutellum similarly, but much more largely punctate; postscutellum longitudinally, strongly and closely striate; mesopleuron punctate as on mesonotum, in some specimens punctures not confluent, but weak and indistinct in outline; the glittering area of mesopleuron and metapleuron longitudinally, coarsely striate all over; on propodeum area dorsalis very largely, coarsely, irregularly reticulate, outside the area the surface also coarsely reticulate, the meshes obliquely elongate, arranged roughly in two rows; posterior slope slightly more finely, irregularly reticulate; sides obliquely, moderately closely striate. Abdomen mat, except shining basal half



Figs. 163, 164. *Dasyproctus cevirus* Leclercq, clypeus in female and male. - Fig. 165) *D. ceylonicus* (Cameron), clypeus, Philippine female. - Figs. 166-171. Clypeus and abdominal petiole, respectively, in males of 166, 167) *D. sculpturatus* sp.n.; 168, 169) *D. palawanensis* sp.n.; and 170, 171) *D. albomaculatus* sp.n.

of petiole and ventral side, with the tergites sparsely scattered with hair-bearing micropoints and sternite 2 very sparsely, finely but distinctly punctate.

♀, unknown.

*Dasyproctus palawanensis* sp.n.

Type. PALAWAN: holotype ♂, Uring Uring, 16.viii.1961. *apparently*

Description. ♂. Very close to *D. sculpturatus* sp.n. and ~~might be~~ only a variation of it, but the punctures on the head and thorax are distinctly smaller (but larger than usual, about three times as large as those of *ceylonicus*), less rugosely confluent and separated from each other except at the anterior portion of vertex (where subreticulate). Clypeus (fig. 168), more strongly produced anteriorly; abdominal segment 1 (fig. 169) relatively shorter, 2.5 times as long as wide at the maximum. Sculpture of propodeum much less reticulate, rather rugose (on area dorsalis longitudinal and on the outer areas oblique), with a small number of incomplete septa intermixed.

♀, unknown.

*Dasyproctus albomaculatus* sp.n.

Type. PALAWAN: holotype ♂, Pinigisan, 600 m, 6.ix.1961.

Remarks. In the key of Leclercq (1958) this species runs to a dead rock at couplet 43, because the maculae are white, and the mandibles, scutellum and abdomen, except tergite 2, immaculate.

Description. ♂. Length 5.5 mm. Black; white are antennal joint 1 in front, collar and tubercles of pronotum, a transverse small mark on each side of tergite 2, fore and middle tibiae in front and hind tibiae at base on outer side.

Tibial spurs pale brownish white; antennal flagella and remaining parts of legs dark brown; antennal joint 1 above, all of joint 2 and fore tarsi pale brown. Wings hyaline and pale yellowish, costa, subcosta and stigma dark brown, rest of veins pale ferruginous.

OOD = POD; transverse carina low, roundly emarginate; frontal impressions oval, small, smaller than anterior ocellus, shining; clypeus: fig. 170. Posterior margin of mesonotum crenate. Abdominal segment 1: fig. 171, approximately three times as long as wide at the widest place, posterior swollen part comparatively long and the stigmata situated at about one fourth from base and thus much closer to the base than in the preceding species.

Punctures on head above and temples comparatively larger than in *ceylonicus* (f. *impetuosus*), much sparser on vertex and anteriorly close, but not reticulate. Mesonotum, mesopleuron and scutellum practically impunctate, dull and opaque except for the area behind the mesopleural carina; post-scutellum and metapleuron longitudinally closely striate; propodeum at base foveolate, enclosed area very coarsely, irregularly reticulate with the surface finely irregularly uneven, not polished; sides obliquely, finely and closely striate. Abdomen impunctate, dull and opaque except for anterior  $\frac{2}{3}$  of tergite 1, only sternite 2 finely and sparsely punctate.

♀, unknown.

*Isorhopalum palawanensis* sp.n.

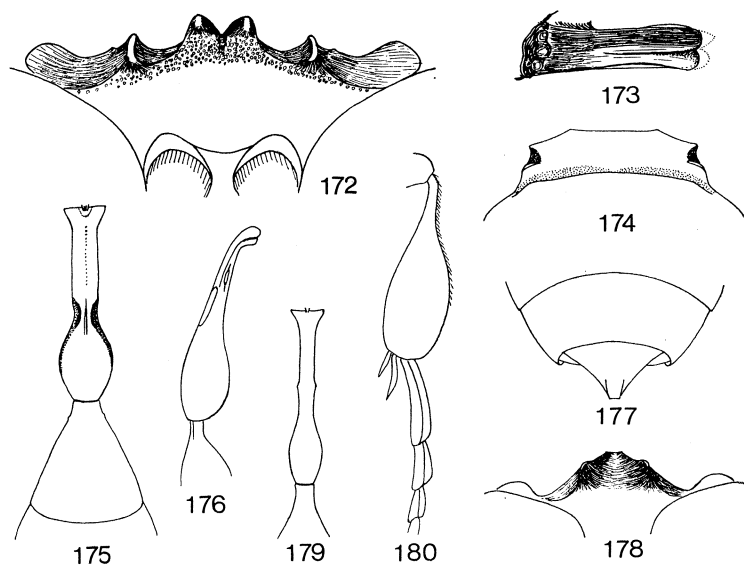
Types. PALAWAN: holotype ♀ and paratype ♂, Pinigisan, 600 m, 22.ix.1961.

Comparative notes. The new species is considered close to *I. mayoni* Leclercq, also known from the Philippines, but it differs in characters of clypeus, supra-antennal denticle, occipital carina, pronotum, antennal joints and somewhat in colour.

Description. ♀. Length 6.0 mm. Black; yellow are antennal joint 1 in front, (narrow in the middle), humeral tubercles and fore tibiae in front; antennal joint 1 above, flagellum beneath, apex of caudal segment of abdomen, apex of fore femora, rest of fore tibiae, fore tarsi and middle metatarsi ferruginous; tegulae and middle tibiae dark brown. Wings hyaline, apically slightly clouded, veins and stigma dark brown.

Hairs on clypeus long, appressed, silvery, mixed with a few particularly longer ones that are markedly produced anteriorly; hairs on other parts of body short, soft, not conspicuous, on mesopleuron and posterior aspect of propodeum rather close.

Head seen from above subquadrate (ratio of width to maximum length 41:34); ocelli in a slightly low equilateral triangle; anterior ocellus slightly smaller; OOD:POD:OCD = 7:5:11; frontal marks fairly deep and distinct, long, narrow and slightly curved, with the posterior ends ~~on~~ level with the anterior ocellus; frontal furrow narrow but distinct; clypeus: fig. 172, lateral lobes broadly excavated; mandible: fig. 173; supraantennal denticle absent. Head seen in profile with temple slightly narrower than eye and markedly narrowed below; occipital carina not reaching hypostomal carina, with a short tooth at each end; antennal joint 3 very slightly longer than wide at



Figs. 172–180. *Isorhopalum palawanensis* sp.n., female: 172) clypeus; 173) right mandible, 174) pronotum; 175) abdominal segments 1 and 2; 176) same, lateral view; 177) tergites 5 and 6; male: 178) clypeus; 179) petiole; 180) hind tibia and tarsus.

apex, joint 5 as long as wide, subsequent joints till penultimate joint distinctly shorter than wide. Collar of pronotum: fig. 174; prosternal precoxal tooth very strong; mesonotum not depressed medio-anteriorly, with median scutal lines in two close short impressed lines; scuto-scutellar furrow not foveolate; mesopleuron without precoxal tooth; mesosternum with the median longitudinal carina distinct; metapleuron flattened and at the posterior margin separated from propodeum by an obliquely raised line like a bank; propodeum roundly inclined as a whole, without clear distinction between dorsal and posterior aspects; area dorsalis not marked off by a furrow, but medianly deeply and finely grooved, with the groove running down and reaching near the end of the segment; the surface separated from the sides of propodeum by a longitudinal carina only on posterior portion. Abdominal segments 1 and 2: fig. 175, segment 1: fig. 176; pygidial area very small (fig. 177), slightly concave, margined by carinae, shining. Legs with femora markedly incrassate; hind tibia clavate, with sparse short spines on outer side, each spine accompanied by a comparatively large rounded impression beneath, hence very conspicuous. In fore wing transverse radial vein long, perpendicular to costa; accessory cell comparatively large, nearly closed at apex; recurrent vein received by cubital cell slightly behind middle.

Head above, temples, collar of pronotum and mesopleuron finely and closely punctate; punctures connected with each other by very fine, delicate impressed lines, with the surface half mat. Mesonotum, similarly, but posteriorly more sparsely punctate, with interspaces somewhat more strongly,

more closely and complicated <sup>ly</sup> microcoriaceous or microgranulate; scutellum and postscutellum similarly sculptured; metapleuron and sides of propodeum somewhat more largely, more weakly microcoriaceous; basal median part of propodeum very finely punctulate, fairly shining; rest of the surface somewhat more grossly, fairly closely, longitudinally subrugosely punctate. Abdominal tergites practically impunctate, but not polished.

♂. Length 5.5 mm. Similar to, but much slenderer than female. Yellow on legs more developed: A large apical mark on fore and middle femora behind, tibiae except brownish inside and fore and middle tarsi except apical 1 or 2 joints; hind tibiae at base dark brown.

Head seen from above less quadrate, with temples less developed and short; OOD:POD:OCD = 5.5:4.5:6.5 (the same scale as in ♀), frontal impressed marks similar, but comparatively slightly shorter. clypeus: fig. 178, antennae not modified, similar to ♀, joint 3 and 4 as long as wide at apex respectively, occipital carina abruptly ended at apices, but not produced into a tooth. Collar of pronotum and prosternal tooth similar; propodeum also similar. Petiole slenderer and relatively much longer (fig. 179). Hind tibia more strongly clavate than in ♀ (fig. 180), with spinules on outer side much lower in number (only a few), with the impression beneath much smaller. In fore wing recurrent vein received by the cubital cell in the middle.

*Rhopalum (Rhopalum) s. succineicollare* (Tsuneki, 1952)

*Material.* PALAWAN: 1 ♀, Tagembung, 1150 m, 17.ix.1961.

*Distribution.* Japan and Formosa (ssp. *taiwanum*), new to the Philippines.

*Remarks.* The specimen from Palawan is rather similar in coloration to the nominate subspecies occurring in Japan. It differs only in that the abdomen is more broadly reddish and the legs are more broadly whitish.

*R. (R.) yercaudi* Leclercq, 1963, from India seems to be close to the present species.

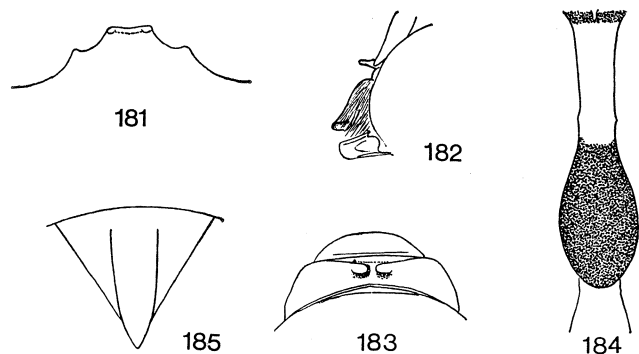
*Rhopalum (Rhopalum) peterseni* sp.n.

*Type.* TAWI TAWI: holotype ♀, Tarawakan, 29.x.1961.

*Comparative notes.* The present species is very close to *R. (R.) parcimonium* Leclercq, 1963, known in the male sex from Luzon, but it is considered to be distinct and not to represent the unknown female sex of *parcimonium* because; (1) the clypeus is similar in form (in this genus the clypeus is usually different in the two sexes of the same species) and (2) the inter-antennal tooth is very strongly developed in the present specimen, which is not the case in *parcimonium* (this is not a sexual character). Further, the colour of the legs is also somewhat different, but this is not important.

The present species is also close to *R. (R.) domestica* (Williams, 1928), but the anterior margin of clypeus is not bidentate or bilobed in the middle as in *domestica*.

*Description.* ♀. Length 5.5 mm. Black; the following portions amber yellow: mandibles except brownish apices, antennal joint 1 wholly, joint 2 largely,



Figs. 181–185. *Rhopalum (Rhopalum) peterseni* sp.n., female; 181) clypeus; 182) clypeus and interantennal tooth, lateral view; 183) pronotum; 184) petiole; 185) pygidial area.

tubercles, tegulae, basal half of abdominal petiole except extreme base, apices of all coxae, apices of fore and middle trochanters, greater part of femora and tibiae of fore and middle legs and broad basal ring of hind tibiae; antennal flagellum beneath, fore trochanters and hind tibial spurs ferruginous. Wing hyaline, stigma and veins brown.

Head with ocelli in a slightly low, subequilateral triangle, anterior ocellus somewhat smaller; OOD:POD = 2:1; frontal mark not defined; frontal furrow broad and weak, but anteriorly stronger; interantennal tooth strong and high (fig. 182); clypeus: figs. 181 and 182; occipital carina low, but complete *by encircling the foramen*. Collar of pronotum (fig. 183) medianly slightly raised and finely canaliculate in middle; mesonotum without medio-anterior depression; scuto-scutellar furrow not foveolate; area dorsalis of propodeum not marked off, with the median furrow very feeble, visible only in oblique light; posterior inclination medianly with a longitudinal, broad and deep impression, laterally with a longitudinal carina separating it from the side of propodeum. Petiole of abdomen: fig. 184; pygidial area: fig. 185, with surface gently swollen. In fore wing transverse radial vein oblique, slightly curved; accessory cell weakly marked, but with apex completely closed. Hind tibia strongly clavate, with a considerable number of spinules on the outer surface and with the longer of the apical spurs about  $\frac{2}{3}$  the length of the metatarsus.

Vertex and upper frons very finely and closely punctate. Mesonotum somewhat more largely and more closely punctate, with intervals smaller than the punctures; mesopleuron anteriorly finely, rather closely punctate with hair-bearing points, posteriorly broadly polished; area dorsalis of propodeum smooth and shining; rest of the dorsal and posterior surface of propodeum covered with hair-bearing points. Abdominal tergites, except tergite 1, covered with short, soft hair, not shining; pygidial area microcoriaceous.

♂, unknown.

*Oxybelus lamellatus banksi* (Ashmead, 1905), *comb.n.*

*Material.* PALAWAN: 5 ♀, 1 ♂, Uring Uring, 16.viii.–20.ix.1961.

*Remarks.* Pate (1938) already suggested that *banksi* Ashmead, 1905:960 (♀, in reality ♂, described in *Notoglossa*) and *Oxybelus philippinense* Pate, 1938: 377, might represent the two sexes of one and the same taxon. Both forms, including Pate's *banksi divaricatum* ♂ and *philippinense* ♀, are common, abundant and sympatric and I regard them as synonyms (*syn.n.*), although the two sexes are considerably different in the structure of the mucro.

The present male is rather melanic, having the antennal scape dark brown, the scutellum and postsutellum without maculae and the abdominal maculae smaller than usual. In the present females the maculae are well developed, and ~~most of~~ mandibles and antennal scapes, pronotal collar and tubercles, two large marks on scutellum and postsutellum (rarely melted into a complete band) and large lateral marks on tergites 1–4 are yellow. In a single female (20.ix.) the maculae are nearly completely white.

The Philippine subspecies, *banksi*, differs from the very similar other races of *lamellatus* mainly in the venation of the lamellate mucro of the female.

*Greater part omitted.*

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