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On the Hymenoptera collected in New Britain by Dr. Arthur Willey

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Cameron-1901

ON THE
HYMENOPTERA

COLLECTED IN

NEW BRITAIN

BY

DR. ARTHUR WILLEY.

BY

P. CAMERON.

[From the PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON,
March 19, 1901.]

W. E. LaBerge

[1]

On the Hymenoptera collected in New Britain by
Dr. Arthur Willey. By P. CAMERON¹.

The Hymenoptera brought back from New Britain by Dr. Arthur Willey are, with the exception of the *Melipona*, all large or medium-sized species. Judging from them, I should say that the islands are likely to prove rich in species. The collection is not extensive enough to enable me to form a definite opinion on the geographical relationship of the Hymenopterous fauna of the island. If it were not for the presence of a species of *Thynnus*², a typical Australian form, I should have said that the affinities of these insects were certainly with the Oriental Zoological Region rather than with the Australian, and, in the main, this is probably the case.

In view of the somewhat fragmentary character of the collection, I have not thought it worth while to draw up, at present, a list of the previously recorded species of New Britain, but have enumerated all those represented in the collection submitted to me.

The specimens were mostly collected in the Gazelle Peninsula, which is the part now known, I believe, as New Pomerania. New Britain itself is now included in the Bismarck Archipelago by German geographers.

¹ Communicated by Dr. D. SHARP, F.Z.S.

² *Thynnus serriger*, Sharp, Willey's 'Zoological Results,' part iv. p. 388.

TENTHREDINIDÆ.

SINOCLIA VIOLACEIPENNIS, sp. nov.

Cærulea, nitida; alis violaceis. ♀.

Long. 8 mm.

Antennæ of a darker blue than the body, thickly covered with short, stiff, black pubescence; the third joint is, if anything, longer than the fourth. Head smooth and shining; thickly covered with short black pubescence, which is longer and thicker on the face than on the vertex; the front is closely and minutely punctured; above it bears two oblique foveæ, the space between them being depressed; in the centre below is a smaller oval one. The sutures on the vertex are wide and deep; in the middle behind is a short deep furrow; bordering the inner side of the antennæ is a smooth curved furrow. Apex of the clypeus closely punctured. Mandibles at the base closely rugose; the apex broadly rufous. Thorax and abdomen smooth and shining; the mesonotum thickly covered with short black hair. Cenchri large, white. Wings fuscous-violaceous; the nervures and stigma black; the 2nd cubital cellule above is not quite half, below distinctly less than half, the length of the 3rd; the radial, the 2nd and 3rd transverse cubital, and the 2nd recurrent nervures at the top are largely bullated. Legs stout; the tibiæ and tarsi are thickly covered with short, stiff, black hair; the patellæ on the 4th joint are distinct; the calcaria short, curved; the claws distinctly bifid.

EVANIIDÆ.

MEGISCHUS VIOLACEIPENNIS, sp. nov.

Niger; pedibus rufis; coxis, trochanteribus, femoribus posticis basique tibiæ posticarum nigris; alis fusco-violaceis, nervis nigris. ♀.

Long. 24 mm.

Antennæ black, slender. Front rugosely punctured above; the sides above stoutly obliquely, the lower part transversely striated, the ocellar region irregularly reticulated, the keels below them mostly curved; above the reticulated upper portion are four long curved keels, the vertex behind these is irregularly rugosely striated; the ocellar region is distinctly depressed; the three tubercles form a triangle. The base of the pronotum is smooth and shining; behind on the sides are two stout curved keels; the rest of the pronotum is opaque and irregularly transversely striated. The base of the mesonotum is smooth and shining; the rest of it bears mostly large and deep punctures, except on a space on either side of the centre; on the sides and base the punctures tend to become confluent. Scutellum somewhat triangular in shape, smooth, shining, and impunctate. Median segment closely, stoutly, irregularly punctured; behind the punctures run into reticulations. Propleuræ smooth and shining; the meso- opaque, irregularly punctured, and striated; the meta- rugosely punctured.

The four front legs are rufous, with the coxæ darker; the hinder black, except the apical two-thirds of the tibiæ and the tarsi, which are rufous at the base, blackish towards the apex; the hinder coxæ are, as usual, irregularly striated; the two teeth on the hinder femora are acute; the apical one is longer and narrower than the hinder. Wings fuscous-violaceous; the nervures and stigma are black. The petiole is longer than the rest of the abdomen united; it is opaque and is closely striated. The ovipositor is annulated with white and is not quite so long as the body. The recurrent nervure in the front wings is interstitial.

BRACONIDÆ.

BRACON DIORES, sp. nov.

Niger; ore, mandibulis, thorace pedibusque anterioribus rufis; alis nigro-violaceis. ♀.

Long. 8; terebra 1.5 mm.

Antennæ stouter than usual; thickly covered with short, stiff, black pubescence. Head black, smooth and shining; the inner orbits narrowly, the apex of the clypeus, the space between the eyes and the mandibles, and the mandibles at the base rufous; the apical half of the mandibles black. The frontal furrow is wide and deep; its sides oblique, and it becomes gradually narrowed towards the apex. Except above the antennæ, the head is thickly covered with long, soft, white hair; the face bears also longer fuscous hair; the base of the mandibles thickly covered with white pubescence. Thorax smooth and shining, almost bare. Abdomen smooth, bare, and shining; the apices of the segments are narrowly lined with white; the dorsal surface is devoid of transverse or oblique furrows. The four front legs are of a paler rufous colour than the thorax; the hinder are black, except the apices of femora, which are dull rufous; their tarsi on the under surface are thickly covered with rufous pubescence; the calcaria pale. Wings large, uniformly dark violaceous; the stigma and nervures are deep black.

CRATOBRACON, gen. nov.

Apex of scape of antennæ projecting into a short sharp tooth. Head cubital, largely developed behind the eyes; the occiput roundly incised in the middle, its margin placed very low down and margined. Eyes oval, widely distant from the base of the mandibles. Oral depression large. Mandibles becoming gradually narrowed towards the apex and without a subapical tooth. In front the head is transverse. Thorax more largely developed in front than usual, so that the fore wings are placed almost in the middle. Median segment largely hollowed in the middle above. Legs stout, of moderate length; the fore tarsi twice the length of their tibiæ. The 2nd and 3rd abscissæ of the radius are almost equal in length; the first is very short, not half the length of the third transverse cubital nervure; the transverse basal nervure is interstitial; the recurrent nervure is interstitial. Hind wings

with one cubital cellule. Abdomen twice the length of the head and thorax united; the suturiform articulation is deep; it is the only transverse furrow, and there are no oblique ones. Hypopygium cultriform, large; the last segment is well developed above, being about two-thirds of the length of the penultimate.

The pterostigma is large; the radius issues from behind its middle; the sheaths of the ovipositor are slender and not pilose; the palpi are not densely pilose; the eyes on the inner side are margined; the antennal tubercles are distinct; the scape of the antennæ is not very stout; the 3rd joint is slightly longer than the 4th. The basal three segments of the abdomen are striated, the others smooth and shining; the penultimate segment is not quite so long as the preceding. Metathoracic spiracles large. Middle lobe of mesonotum distinctly separated.

The fact of there being only one—the suturiform—transverse furrow on the abdomen and no oblique ones separates this genus from *Iphiaulax*, *Odontoscopus*, *Chaolta*, and *Zaglyptogastra*, with which it appears to be most nearly allied otherwise.

CRATOBRACON RUFICEPS, sp. nov.

Niger; capite flavo-rufo; pro-mesothoraceque rufis; pedibus anticis, femoribus tibiisque intermediis rufis; alis nigro-violaceis, stigmatibus nervisque nigris. ♀.

Long. 16; *terebra* 24 mm.

Scape of antennæ rufous; the flagellum covered with a stiff black microscopic down. Head smooth and shining, pale rufous-yellow; the face below sparsely covered with pale hair; the mandibular teeth black. Thorax smooth and shining; the median segment covered with black hair; its apex in the middle is largely depressed, the depression is narrowed towards the base and apex. The anterior legs bear no black; the middle pair are black, with the femora and tibiæ rufous. The petiole is keeled down the middle; the lateral furrows are wide and deep and are obscurely, irregularly, transversely striated. The second segment has the central region irregularly rugose, the sides longitudinally striated; the central keel becomes weaker towards the apex; its dilated basal part is small and is minutely striated, on either side of it is a stout oblique keel; the transverse depression is stoutly striated; the third segment is closely longitudinally striated, the striæ are irregular and run into reticulations, the apex is smooth; the basal half of the 4th is coarsely aciculated; the basal three segments are for the greater part white.

ICHNEUMONIDÆ.

OPHIONINI.

LEPTOPHION, gen. nov.

Disco-cubital nervure not broken with a stump of a vein; its middle broadly and roundly curved; the first abscissa of the radius thickened, the second roundly curved upwards; the transverse

median nervure is received in front of and not far from the transverse basal; the 2nd recurrent nervure is received at a slightly greater distance than the length of the first transverse cubital, not at double, or more than double, the distance as in *Ophion*. In the hind wings the transverse median nervure is broken shortly below the middle. Median segment reticulated, except at the base, where there is a transverse keel; its base is widely and deeply depressed. Abdomen more than three times the length of the thorax.

This genus has greater affinity with *Enicospilus* than with *Ophion*. From the former it may be known by the absence of the horny points in the fore wings and by the transverse median nervure in hind wings not being broken far below the middle; from *Ophion* it may be separated by the disco-cubital nervure not having a stump of a nervure and broadly rounded, by the apical abscissa of the radius being broadly curved upwards, and by the swollen base of the radius.

LEPTOPHION LONGIVENTRIS, sp. nov.

Luteus; segmento mediali reticulato; alis hyalinis, nervis stigmatæque nigris. ♀.

Long. 21 mm.

Antennæ dark luteous. Head pallid yellow; the face distinctly and closely punctured; on the top, in the middle below the antennæ, is a stout smooth keel or elongated tubercle. Clypeus roundly convex, smooth, and sparsely punctured. Mandibles broad, smooth; the apical teeth black and rounded at the apex, they are almost equal in length. The prothorax is paler, more yellowish in colour than the rest; the scutellum is minutely punctured; the lateral keels are prominent only at the base; the apex is finely shagreened, almost striated. The depression at the base of the median segment is wide and deep; in the middle there are some stout longitudinal striations; the central two form a V-shaped area; the space between this and the curved transverse keel is smooth; the rest of the segment is closely and coarsely reticulated, except the lower half of the metapleuræ. Pro- and mesopleuræ smooth and shining. Wings clear hyaline; the stigma and nervures black; the stigma is pale at the base; the basal abscissa of the radius is thickened; the transverse median nervure is almost interstitial. The tarsi are minutely and thickly spinose; the tibiæ are thickly covered with short pubescence. The abdomen is paler than the thorax; apical three segments are brownish black.

Mr. W. H. Ashmead (Proc. U.S. Nat. Museum, xxiii. p. 86) describes a genus *Pleuroneuophion* which has the radius swollen towards the base as it is in this genus and in *Enicospilus*; but it has a short nervure on the disco-cubital nervure and the transverse cubital nervure in hind wings is broken below the middle at the basal third, or at least far below the middle. The abdomen in our species is longer than usual compared with the length of the thorax. The eyes are very large and prominent. The subdiscoidal nervure

is received higher up than usual, in the upper fourth of the nervure.

ENICOSPILUS NIGRINERVIS, sp. nov.

Luteus; flagello antennarum abdominisque apice late nigro-fuscis; alis hyalinis, nervis stigmatæque nigris. ♀.

Long. 17–18 mm.

Scape of antennæ luteous; the rest of it blackish, lighter, more fuscous in colour towards the apex; it is longer than the body. Head pale yellow; the clypeus darker, more rufous in tint. Mandibles yellow, with black teeth. Thorax luteous, the pleuræ more yellowish, paler in tint. Scutellum strongly keeled laterally; its apical half is closely, irregularly, transversely striated, and is bordered behind by a distinct transverse keel which unites with the lateral ones. The base of the median segment behind the keel is smooth and is obscurely shagreened at the apex laterally; the rest of it is closely distinctly rugose, the rugosities in places forming almost reticulations. The lower half of the mesopleuræ is closely, longitudinally, irregularly striated; the lower part of the meta-irregularly, obliquely, and not very closely striated. Wings hyaline; the costa, nervures, and stigma black; the basal abscissa of the radius is thickened, becoming thinner on the apical third; the apical abscissa is also thickened; there is only one horny point; it is large, rounded on the lower side; the basal half above is straight and oblique, the apical half becomes gradually narrowed towards the apex. The abdomen is three times longer than the head and thorax united; the basal two segments are coloured like the thorax; the others are deep fuscous-black.

The apical abscissa of the radius is roundly and broadly curved upwards; the transverse median nervure is received distinctly in front of the transverse basal, and not behind it or interstitial as usual; the first abscissa of the radius has the basal two-thirds thickened; the middle third is curved upwards.

PIMPLINI.

RHYSSA FULVA, sp. nov.

Lutea; capite pleurisque flavis; flagello antennarum, mandibulis verticeque nigris; tarsis posticis fuscis; alis hyalinis, macula substigmatali fusca. ♂.

Long. 17 mm.

Scape of antennæ luteous, bare, smooth, and shining; the flagellum closely covered with stiff, short, blackish pubescence. Head pallid yellow; the vertex with a broad black stripe between the eyes, enclosing the ocelli. The face is punctured in the centre below the antennæ; the rest of it and the clypeus smooth and shining. The clypeus is distinctly separated from the face; the foveæ are large, deep, and are united by a narrow curved furrow; the apex of the clypeus is transverse and bears three short nipple-like teeth, the central is smaller than the lateral.

Mandibles black, brownish at the base: the apical tooth is triangular, blunt, and is clearly separated; there is a short triangular incision between it and the slightly oblique inner part. The eyes slightly converge above. The transverse striation on the mesonotum is coarse; the scutellum is transversely striated, the base not quite so strongly as the rest. The base of the median segment is obliquely depressed; its centre is broadly furrowed; the lower half of the metapleura is strongly punctured. Legs: the tarsi are closely spinose; the anterior are more than twice the length of the tibiae, which are narrowed at the base; the hinder are bent distinctly there and dilated before the apex. The cloud in the wings extends from the costa to the middle of the transverse cubital nervure; it originates at the end of the stigma; the areolet is oblique, its pedicle is not quite so long as the basal fork of the nervure.

RHYSSA TRIDENTATA, sp. nov.

Nigra, late flavo-maculata; segmento mediali flavo; alis hyalinis, macula substigmatali nigro-cerulea; pedibus rufis, tarsis fuscis. ♀.

Long. 18; *terebra* 23 mm.

Antennæ black; the scape and base of the flagellum rufous; there is a narrow white ring shortly beyond the middle of the flagellum. The face, the inner orbits to the lower ocellus, the outer orbits entirely, and the clypeus are pale yellow; the face below the antennæ is punctured and has a shallow longitudinal furrow there; over the clypeus is a distinct furrow ending on either side in a fovea; the apex of the clypeus is transverse and ends in three short blunt teeth. Mandibles black; the two apical teeth short, subequal. Occiput yellowish, suffused with rufous. Prothorax yellow, rufous on the lower side. Mesonotum black; the sides next the tegulæ rufous, in the centre are two yellow lines. Scutellum and scutellar keels yellow; the apex of the scutellum rufous and finely transversely striated; the scutellum distinctly punctured. Postscutellum smooth, yellow. The base of the median segment black, of its pleuræ dark rufous; the mesopleuræ yellowish below the fore wings, rufous yellow below the hinder wings and at the apex below. Metapleuræ closely punctured, most strongly on the lower half. Legs rufous; the anterior pallid yellowish in front, especially the tibiae; all the tarsi are darker towards the apex, they are minutely spinose and are longer than usual, the basal joint of the anterior is as long as the tibiae. Wings hyaline, except for the cloud, which extends from the costa to the end of the recurrent nervure, it becoming narrower as it does so, but not extending beyond its outer side; the stigma is fulvous; the costa and nervures black; the cloud has a distinct bluish tinge; the areolet is distinctly appendiculated and oblique; the pedicle is two-thirds of the length of the branches; the areolet is oblique, narrowed above, somewhat triangular in shape, and receives the recurrent nervure at the apex.

Abdomen rufous; the basal five segments black above, the sides of all the segments black at the base; the basal two segments have a large mark, narrowed towards the base, on their apices above; the 3rd, 4th, and 5th have yellowish marks on their sides, and the 6th and 7th indistinct ones.

The fore tarsi appear to be longer than usual compared to the tibiae, and the areolet has the pedicle much longer.

XANTHOPIMPLA INSULARIS, sp. nov.

Lutea; *facie, orbitis oculorum, pleuris coarisque flavis*; *alis hyalinis, apice fumatis*. ♂.

Long. 14 mm.

Scape of antennæ yellow; the flagellum black, brownish at the base. Face closely and distinctly punctured and thickly covered with short pubescence. Clypeus smooth, its upper part convex; labrum triangular. Mandibles yellow, black at the apex. Thorax smooth and shining; the middle lobe of the mesonotum with a triangular band of punctures on the base. Scutellum smooth, the keels distinct on the sides and apex. On the base of the median segment are two curved keels, which form large areas, wider than long, which are indistinctly joined to the apical transverse keel by two oblique ones; the outer side of the latter is straight and oblique and is united to the upper outer keel, which is more distinct than the inner one. The lower half of the mesopleuræ closely and distinctly punctured, the upper half has the middle depressed and less distinctly and more irregularly punctured. The metapleuræ behind the spiracles are minutely punctured. The areolet is shortly appendiculated above. The abdomen has the apices of the basal five segments yellowish; the petiole has on the basal half two curved stout keels; the oblique apical furrow is smooth, the furrows on the apices of the 2nd, 3rd, and 4th are striated, the oblique lateral ones on them are wide and smooth. The ventral surface is pallid yellow. The ocellar region is deep black; the tibiae have no spines; the top of the scutellum is rounded and is clearly raised above and separated from the lateral keels; the raised apex of the petiole is depressed, the apex of the depression being narrowed; there is a short wide depression on the base of the second segment in the middle; the petiole is distinctly longer than the width of its apex and is as long as the second segment; the face is distinctly longer than broad; the tarsi bear short spines.

Comes near to *X. nicholitsi*, Kreiger, from New Guinea. The metanotal areas are somewhat similar to those of *X. octonotata*, as figured by Kreiger, Sitzung. d. naturf. Ges. Leipzig, 1898.

CRYPTINI.

EURYCRYPTUS, gen. nov.

Head large, wider than the thorax. Eyes large, largely projecting beyond the temples, which are only slightly developed; on

the inner side they are almost parallel and extend below the top of the clypeus; the malar space is small. Apex of clypeus transverse. Antennæ slightly thickened beyond the middle, where there is a large white ring. Areolet wide, the nervures almost parallel; the second transverse cubital is faint; the transverse median nervure is placed considerably behind the transverse basal. In the hind wings the transverse median nervure is broken near the middle. Parapsidal furrows narrow. Median segment smooth and bearing two transverse keels; its spiracles small, oval. Fore tibiæ narrowed at the base, shorter than the tarsi. Petiole rather broad; all the abdominal segments are banded with white; the last segment is entirely white. Ovipositor exerted. The last segment longer than the preceding, its upper third projects over the lower part.

A genus easily known by the large wide head, very little developed behind. The scutellum is roundly convex; the mesopleural furrow is wide; the oblique furrow on the metapleuræ is wide and crenulated; the radial cellule is long and lanceolate at the apex; there is no nervule on the disco-cubital nervure, nor on the recurrent nervure; the stigma is linear.

EURYCRYPTUS LATICEPS, sp. nov.

Niger, flavo-maculatus; alis hyalinis, stigmatibus nervisque nigris. ♀.

Long. 10; terebra 5 mm.

Antennæ with the 9th to 15th joints white; the tubercles white. The face and clypeus, the inner orbits—the lower white part obliquely narrowed,—the outer entirely, and the base of the mandibles white. The face is sparsely punctured, on it are two narrow furrows which end in the clypeal foveæ. Front and vertex smooth and shining; the lower ocelli are bordered by a furrow; there is an indistinct furrow down the middle of the front. Thorax shining, bare; a line on the pronotum, the apex of the middle lobe of the pronotum, the scutellum, the median segment behind the second transverse furrow, except for a conical black mark in the centre of the apex, the tubercles, a pyriform mark under the hind wings, and the greater part of the metapleuræ—the top and base are black—white. The mesopleural furrow is deep and crenulated, except at the apex; the base of the meta- and the apex of the mesopleuræ are foveated; the metapleuræ obscurely punctured; the apex is depressed, and has on the lower side four short stout keels. The front legs are white, with the tarsi black; the middle coxæ white, their trochanters black; the hinder coxæ black, broadly white behind; the trochanters are black; the rest of the four hinder legs are broken off. Wings clear hyaline; the nervures and stigma black. Abdomen black; the apices of the segments bordered with white, the last is entirely white; the 2nd and 3rd segments are closely and distinctly punctured; the 2nd segment at the base is raised, the raised part roundly narrowed towards the apex and bordered by a shallow depression.

XANTHOCRYPTUS, gen. nov.

Areolet minute, square; the second transverse cubital nervure faint; the transverse median nervure is placed distinctly behind the transverse basal; the stigma is linear. Apex of clypeus depressed obliquely, the middle with a short tubercle. Clypeus distinctly separated behind. Labrum large, its apex rounded. Temples not much developed behind: the occiput transverse, with the edges rounded. Eyes large, parallel, reaching to the middle of the clypeus. Mandibles short, stout, the upper tooth projecting. Parapsidal furrows distinct to shortly beyond the middle of the mesonotum. Scutellum convex, but not much raised. Base of the median segment smooth, the rest of it closely, stoutly, transversely striated; there are no teeth; the spiracles are oval. Petiole rather broad, the basal third only narrowed; the spiracles are placed almost in the middle, only a very little behind it. Abdomen smooth and shining; the last segment is largely developed above and below; ovipositor as long as the abdomen. Hinder legs long; the tarsi spinose; the fore tibiæ not much longer than the basal joint of the tarsi, they are distinctly narrowed at the base.

There is no little vein on the discoidal or recurrent nervures; the last joint of the tarsi is long, with its claw long, curved, and simple; on the front legs the basal joint of the tarsus is longer than all the others united; the antennæ are long and ringed with white; the occiput is not very sharply margined; in the hind wings the transverse median nervure issues from shortly below the middle. The hinder tibiæ are longer than the femora and the tarsi.

This genus may be referred to the *Mesostenini*, but it has hardly the *facies* of that group or of the *Cryptini*. The fore tibiæ remind one of the *Xoridini*, e. g. *Xylonomus*; but the totality of its characters agrees with the *Mesostenini*. The minute areolet, anterior tibiæ contracted at the base, transversely striated median segment, depressed apex of clypeus, and projecting labrum enable it to be easily recognized.

XANTHOCRYPTUS ROBUSTUS, sp. nov.

Luteus; facie orbitisque oculorum flavis; antennis nigris, albo annulatis; alis fulvo-hyalinis, nervis stigmatæque nigris. ♀.

Long. 18 mm.

Antennæ not quite so long as the body; black, a short white ring before the middle of the flagellum, the scape yellow. Head smooth and shining, the vertex broadly black. Pro- and mesothorax smooth and shining, and tinged slightly with yellow. The lower half of the metapleuræ is closely and distinctly punctured, the upper stoutly obliquely striated. The apices of the four front tarsi and almost the whole of the hinder are black. The apical halves of the mandibles are black. The median segment behind the keel is closely transversely striated, the striae extending to the

metapleural keel; the lower part of the metapleuræ closely punctured. The hinder tarsi are for the greater part black.

CHRYSIDIDÆ.

STILBUM SPLENDIDUM Fab.

A species common in the Indian and Australian Regions.

CHRYSIS (HEXACHRYSIS) NOVO-BRITANNICA, sp. nov.

Viridis, aureo cæruleoque variegata; flagello antennarum nigris; alis fusco-violaceis. ♀.


Long. 10 mm.

Scope of antennæ brassy blue; the 2nd and 3rd joints metallic bright green, the remaining joints are black; the 1st joint is sparsely covered with white hair, the 2nd and 3rd with a pale down; the 3rd joint is twice the length of the 2nd, and about one-third longer than the 4th. The vertex is deeply and closely punctured; the ocellar region is broadly blue; the top of the front has a distinct margin; its middle is roundly incised; the sides roundly project; the central depression is smooth; the lateral projections bear some large, deep punctures; the front is covered thickly with long white hair. The lower outer orbits bear a stout keel between the centre and the eyes; the base of the mandibles punctured, but not strongly or closely. Thorax emerald-green largely mixed with blue; the pro- and metapleuræ are largely brassy. The thorax, including the scutellum, is closely, deeply, and uniformly punctured; the thorax is not clearly separated above; below there are two large, deep, smooth foveæ, somewhat oval in shape and separated by a narrow keel which does not reach the top; on either side of their basal half is a large, shallower oblique depression, which is rounded behind and transverse and oblique in front; in the middle of the central fovea are two stout curved keels. The upper half of the propleuræ is largely excavated, the lower bears two large foveæ. Mesopleuræ rugosely punctured, except on the lower part, which is depressed, smooth, and irregularly punctured round the edges; the upper part roundly projects in the middle. Metapleuræ for the greater part closely and minutely striated; the edges, except below, are deeply and largely irregularly punctured. Wings uniformly dark fuscous violaceous; the costa, stigma, and nervures deep black. The basal two segments of the abdomen are uniformly, but not very deeply punctured; the basal segment has a deep rounded depression in the centre above at the base; the 3rd segment is more closely punctured, especially towards the apex; the 6 teeth are not large or acute; the divisions are shallow and waved; the outer teeth are smaller, there are 7 foveæ on either side, the inner ones are broad; the dorsal surface is for the main part blue mixed with brassy tints; the ventral surface is green mixed with golden; the sides of the median segments project largely and are gradually narrowed towards the outer side.

Closely allied to the foregoing is the following from New Guinea:—

CHRYSIS (HEXACHRYSIS) DEMOCRATICUS, sp. nov.

Long. 12 mm. ♀.

The basal three joints of the antennæ are green, the rest black; the third is fully twice the length of the fourth. The upper part of the head is deeply, closely rugosely punctured; the centre is of a darker bluer tinge, the sides are more brassy; the lower edge is -shaped and deeply excavated in the centre below the keel; the raised sides have large deep foveæ. The front is much more golden in tint than the vertex; it is closely and minutely punctured with some minute striæ; the orbits are deeply, irregularly punctured. Thorax above strongly, closely, and uniformly punctured; the punctures on the post-scutellum are larger and deeper; its sides, above, project; the middle fovea is large, and wider than long; the lateral are smaller, shallower, oval, and are placed obliquely. The apex of the median segment has an almost perpendicular slope; the projecting sides are sharply pointed. The upper part of the propleuræ is coarsely punctured, the lower part of it is deeply excavated, above it is rounded; the base is straight, the lower part has a straight, oblique slope, the centre of the depression is closely, obliquely striated. The base of the mesopleuræ is golden, closely and minutely punctured, and is distinctly bordered on the outer side; the rest is coarsely and deeply punctured; the lower part projects; this lower part is separated from the upper by an oblique row of more elongated irregular punctures; the posterior lower part is finely and closely striated. Metapleuræ closely and minutely striated, they are golden in tint. The coxæ and femora are golden; the tibiæ are also tinged with golden; the tarsi are for the greater part black; the hair is thick and white. Wings fuscous-violaceous; the nervures are deep black, with a slight violaceous tinge. Abdomen green, blue in the centre; the sides largely tinged with golden; the basal two segments are uniformly punctured, but not very closely or deeply; the third is more closely and deeply punctured; the punctures become deeper and closer towards the apex; there are 6 teeth; the foveæ are deep and irregular; the ventral surface is largely brassy; the last is broadly black round the edges.

MUTILLIDÆ.

MUTILLA NOVO-BRITANNICA, sp. nov.

Nigra, dense albo pilosa, abdominis basi late rufa; alis violaceis, basi hyalinis. ♂.

Long. 12 mm.

Scape of antennæ closely punctured, sparsely covered with white stiff hair; the scape opaque, covered with a pale down. Head: the face thickly covered with long glistening white hair; the front and vertex closely and strongly punctured, and covered with white glistening hair; the antennal tubercles on the outer

side are rounded, smooth, shining, and bare; the eye-incision is punctured. Mandibles black, with a dull rufous band before the middle; the base and lower side thickly covered with long white hair; the apical tooth is long and rounded at the apex. Thorax covered with white hair, except on the mesonotum, where it is shorter, stiffer, and black; the median segment is reticulated, more closely on the apical slope than on the base; the central area is long, contracted in the middle, and extends to the top of the apical slope. Legs thickly covered with stiff white hair; the calcaria and spines are pale. Wings dark violaceous; the base to the transverse basal nervure hyaline; the 2nd cubital cellule at the top and bottom is about one half the length of the 1st; the 1st recurrent nervure is received near the base of the apical third of the cellule. The base of the petiole is black; the rest of it, the 2nd segment, and the basal half of the 3rd are bright ferruginous; the ventral keel of the petiole has a slight, rounded curve, its base is more dilated than the apex; the keel on the epipygium becomes gradually dilated towards the apex, the space between it and the outer edge is punctured; the sides are smooth, shining, and impunctate; the pygidium is closely and rather strongly punctured, except in the middle, where it is smooth and shining; this smooth central part becomes gradually wider towards the apex, which is depressed.

SCOLIIDÆ.

DISCOLIA FOVEIFRONS, sp. nov.

Nigra, capite thoraceque nigro pilosis; alis fusco-violaceis. ♂ ♀.
Long. 30 mm.

Head only slightly shining on the vertex, the rest of it opaque; behind it is thickly covered with longish black hair. The sides of the clypeus bear deep, distinctly separated punctures; its apex is depressed, smooth, closely punctured behind; the central part is opaque, somewhat bell-shaped, the narrow part being at the top, above the centre it is depressed. The space immediately between the antennæ is opaque and impunctate; above this, on either side, is a large and strongly punctured depression; the depressions are oblique and narrowest above. The vertex, in the centre and behind, bears scattered, deep punctures. The central part of the mesonotum is impunctate, as is also the apical in the middle; the sides and base bear scattered punctures. Scutellum and post-scutellum closely and uniformly punctured, except the apex of the former and the centre of the latter towards the apex. Median segment closely and strongly punctured; the longitudinal furrows are wide and deep. Pleuræ closely and distinctly punctured, except for a large irregular space in the centre of the pro- and mesopleuræ. The spines and hairs on the legs are black; the fore calcaria are dark rufous. The abdominal segments are sparsely, slightly, and irregularly punctured; the hypopygium is coarsely punctured, except at the apex. The wings are deep violaceous, very highly iridescent, and with greenish tints towards the apex.

The abdomen does not shine much and has hardly a trace of blue or violet tints.

DISCOLIA PULCHRIENNIS, sp. nov.

Nigra; *alis violaceis, basi late flavo-hyalinis*.

Long. ♂ 21–22 mm., ♀ 25 mm.

Antennæ black; the scape covered with very long black hair; the flagellum opaque, covered with a pale microscopic down. Head rather narrow; except on the front it is thickly covered with long black hair. The vertex is not very shining and is sparsely punctured; the front below the ocelli is smooth and shining; the lower part obliquely projects, is closely and distinctly punctured and with a furrow down the centre; this oblique lower part is distinctly separated from the upper. Clypeus strongly punctured, except in the centre. Thorax thickly covered with black hair; it is closely and strongly punctured all over, except on the upper half of the mesopleuræ behind. Wings fuscous-violaceous; the base to shortly beyond the transverse basal nervure and the first radial cellule fulvous-yellowish. Abdomen black, distinctly violaceous on the back, closely punctured and thickly covered with black hair.

The ♀ has the mesonotum in the centre impunctate; its antennæ are fuscous beneath; the punctuation of the thorax is stronger, closer, and more uniform; the hypopygium is strongly punctured except at the apex: the wings are of a brighter violaceous tinge; the front is not excavated and there is a broad impunctate band below the ocelli; its fore spurs are rufous; the tarsal spines are of a brighter rufous colour.

POMPIDÆ.

SALIUS INSULARIS, sp. nov.

Flavus; *abdomine nigro*; *metanoto nigro, fulvo bimaculato*; *alis flavis*. ♀.

Long. 27 mm.

Antennæ reddish yellow, paler beneath and towards the apex. Head rufous, thickly covered with depressed golden pubescence; the eyes slightly converge above and are there separated by a little more than the length of the fourth antennal joint, which is not much longer than the scape and distinctly shorter than the third. The ocelli are almost in a triangle and are close together; the hinder are separated from the anterior by nearly the same distance they are from each other; from the eyes they are separated by a perceptibly greater distance than they are from each other. The apex of the clypeus is bluntly rounded; the mandibles have the teeth black; the apical one is bluntly rounded; the subapical is transverse at the apex, and is not separated behind. Pro- and mesothorax thickly covered with golden depressed pubescence, and more sparsely with fuscous hairs. The scutellum is not much raised above the mesonotum, and is rather flat; the post-scutellum

is more prominent, and is obliquely sloped on the sides and apex; the part between it and the wings is black. Metanotum black, thickly covered with pale down and more sparsely with longish fuscous hair; the striation is as usual; in the middle are two large, somewhat oval fulvous marks, which, on the outer side of their apex, are prolonged to near the end of the segment. The mesosternum and the basal half of the mesopleuræ are black; the black on the latter is roundly incised on the apex above. Metapleuræ black, except on the apical third. Legs coloured like the antennæ; the tarsi have a yellowish, paler tint; the claws have one stout tooth at the base. Wings yellowish hyaline with a violaceous tinge; the space bounded by the tips of the 1st and 2nd transverse cubital nervures is almost equal in length to that bounded by the 2nd and 3rd; the apices of both wings are very narrowly bounded by a fuscous cloud. Abdomen entirely black; the ventral surface sparsely, the hypopygium and epipygium more thickly covered with long black hairs.

The 3rd transverse cubital nervure is roundly and broadly curved; the 2nd transverse cubital nervure is received at the apex of the basal third of the cellule; the 2nd recurrent nervure has the lower part straight and obliquely bent backwards; the 2nd submedian nervure in the fore wings is received distinctly behind the middle of the discoidal cellule; the 1st recurrent nervure is not quite interstitial, as it is in some of the species of the *Mygnumia* section, it being received shortly, but distinctly, behind the transverse cubital; the apical tooth of the mandibles is blunter, broader, and more rounded than in most of the species, than in, *e. g.*, *S. ceylonicus* and *S. flavus*; and the apex of the clypeus is more rounded, not so broadly transverse in the middle, than it is in the two species just mentioned; the sides of the pronotum do not bulge out roundly as in *S. flavus*; the metanotal tubercles are large and prominent, on the base they have a longer and more oblique slope than on the apex, where the slope is much more abrupt; the furrow on the mesopleuræ is straight and oblique and ends behind in a distinct fovea.

SALIUS BASIMACULA, sp. nov.

Flavus; abdomine nigro, petiolo late flavo balteato, femoribus posticis supra late nigro-lineatis; alis flavo-hyalinis. ♂.

Long. 17 mm.

Antennæ pale yellow; the third joint is shortly but distinctly longer than the fourth, which is not quite so long as the vertex between the eyes. The ocelli are in a triangle, the hinder are separated from each other by half the distance they are from the eyes, which converge only very slightly on the lower side. The vertex across the ocellar region is black, the black line enclosing all the ocelli. The whole head is covered with depressed golden pubescence, and more sparsely with long pale hairs; the apex of the clypeus is transverse, with the sides broadly rounded; the apical tooth of the mandibles is triangular, the subapical is short

and blunt. Thorax thickly covered with depressed golden pubescence; the sternum, the base of the meso- and metapleuræ, the space between the scutellums and the wings, and the base of the median segment are black. The sides of the pronotum are broadly rounded behind; the post-scutellum is raised above the level of the scutellum, and is clearly separated from it by a wide, rounded depression; its top is smooth and shining. The metanotal tubercles are large, prominent, bluntly rounded above; the basal and apical slopes are about equal in length. The wings have a slight violaceous tinge; the first and second transverse cubital nervures above are separated by a slightly greater distance than the second is from the third; the third transverse cubital nervure has a rounded slope; the first recurrent nervure is distinctly separated from the transverse cubital; the second is received shortly behind the apex of the basal third of the cellule. Except for black marks on the four posterior coxæ behind and a broad black line on the hinder femora, the legs are coloured like the body; the single tooth on the claws is large, stout, and curved. Abdomen black, with a plumbeous hue; the petiole luteous, black at the base and apex; the penultimate ventral segment is thickly covered with long black hairs.

This species is only represented by males. It is certainly not the male of *S. insularis*, as apart from the marked difference in coloration, the two differ in important structural characters not of a sexual nature, *e. g.* in *S. basimacula* the post-scutellum is raised above the level of the scutellum, which is not the case with *insularis*.

SALIUS WILLEI, sp. nov.

Luteus, abdomine nigro; alis violaceis; antennis nigris, basi luteis. ♂.

Long. 12 mm.

Antennæ black, the scape clear, the base of the flagellum dark luteous; the third joint is shortly, but distinctly, longer than the fourth. On the head the vertex, the occiput, and the front, except at the sides, are black. Eyes distinctly curved on the inner side; the ocelli form a triangle, the hinder are separated from each other by a distinctly less distance than they are from the eyes. Apex of clypeus broadly rounded. The apical tooth of the mandibles is large, triangular; the lower oblique, not projecting. Prothorax broadly rounded at the base. The thorax has the following parts black:—the mesonotum except in the middle behind, the space at the sides of the scutellums, the median segment broadly on the basal half, the apex slightly in the middle, the mesosternum, the lower half of the mesopleuræ at the base, and the metapleuræ except at the apex. Post-scutellum and scutellum roundly convex; the former is large and is on a level with the scutellum. The median segment is not transversely striated; the tubercles are large and rounded. Wings uniformly fuscous violaceous, strongly iridescent; the cubital cellules are equal

in length above; the 1st recurrent nervure is received near the base of the apical fourth, the 2nd near the apex of the basal third. The hinder tibiae are sparsely, the tarsi are more thickly spinose; claws bifid, the inner tooth stout. The apex of the abdomen is thickly covered with black hairs; the last segment is roundly and broadly incised below; above, the incision is not so wide, but is equally distinct.

It is not clear if this is a *Salix* or a *Pompilus*; there seems to be a transverse furrow on the second ventral segment. It is not unlike a *Pompilus* of the *peregrinus*-group.

SPHEGIDÆ.

SPHEX CONFRATER Kohl.

Sphex confrater Kohl, Ann. k.-k. Hofmus. Wien, v. pp. 414, 106.

Described from New Britain. A handsome species, easily known by its shining black abdomen, with the apical three segments bright red.

SPHEX UMBROSUS Christ.

A single male, which I am disposed to consider identical with this variable and widely spread species. The hair on the thorax is dense and pale golden.

SPHEX (ISODONTA) INSULARIS, sp. nov.

Niger, dense nigro-pilosus; mandibulis rufo-piceis; alis fusco-violaceis. ♂.

Long. 10 mm.

Antennæ black; the flagellum covered with a pale down; the 3rd joint is fully longer than the basal two joints united and distinctly longer than the 4th. The eyes distinctly converge at the top; the hinder ocelli are separated from each other by a distinctly less distance than they are from the eyes. The hair is long, black, and thick; the front and vertex are also covered with depressed silvery pubescence; the clypeus is keeled down the centre. Mandibles tridentate; the apical tooth is somewhat triangular, broad at the base, becoming narrowed towards the apex; the other two teeth are short, of equal size, and do not project much. The thorax is thickly covered with long black hair; the mesonotum is smooth and shining, as is also the scutellum; the post-scutellum is more opaque; neither is furrowed down the centre. Median segment opaque, minutely, obscurely transversely striated in the middle; it can hardly be said to be furrowed down the centre, but there is an obscure fovea on the apex of the basal part. Wings highly iridescent; dark fuscous-violaceous, the costa, stigma, and nervures black; the space bounded by the 3rd and 2nd transverse cubital nervures is one-third of the length of that bounded by the 2nd and 1st and not quite one-half more than that bounded by the 2nd and the 3rd recurrent nervures; the 1st recurrent nervure is received about the same distance from the 2nd transverse cubital

nervure; the 3rd transverse cubital nervure is roundly curved on the lower side. Legs black, pruinose; the tibiæ and tarsi are sparsely spined. Abdomen black, shining; the petiole long, curved, clearly longer than the fore tibiæ, it is rather thickly covered with long black hair; the apical ventral segments are thickly covered with long black hair.

This species cannot well be confounded with the other New Britain *Isodonta* (*egens* Kohl), which is easily known from it by the difference in the colour of the body and wings, and by the very different form of the antennæ. (Cf. Kohl, Terméz. Füzetek, xxi. 1898, p. 335, pl. xv. f. 23.)

VESPIDÆ.

VESPA AFFINIS Fab.

This is probably only a variety of *Vespa cincta* Fab. The New Britain queens do not differ materially from the normal forms; but the workers are much darker than usual, not only on the thorax but on the abdomen; the brownish colour is either very obscure, much darker than usual, or completely obliterated.

POLISTES MACULIPENNIS Sauss. (*stigma*).

The abdomen is richly coloured; the black is deeper and the yellow and rufous brighter than in most of the examples I have seen.

POLISTES ARTHURI, sp. nov.

Ferrugineus; scutello, mesopleuris metathoraceque nigris; pedibus rufis, coarxis, femoribus tibiisque posticis nigris; alis fulvo-hyalinis, nervis stigmatæque fulvis. ♀.

Long. 20–21 mm.

Antennæ rufous, covered with a pale microscopic down. On the head, the occiput, the vertex from shortly behind the ocelli to the end of the upper part of the eye-incision, the space between the antennæ and above the top of the clypeus are black. The part below the eyes of the clypeus is distinctly longer than the part above it; it becomes narrowed towards the apex, which is broadly rounded, not sharply pointed as with most of the species of the genus; it is fringed there with fulvous hair. The vertex is closely and rather strongly punctured; the clypeus bears scattered punctures. On the thorax the pronotum and the mesonotum are rufous; the edges of the latter, a line down the middle, and the apex broadly are black; it is covered with a white down; the pleuræ and scutellum are punctured, but not closely or deeply; the furrow on the median segment is wide and deep; the post-scutellum has a rather sharp oblique slope. Tegulæ black. Legs black; the four anterior tibiæ and tarsi are rufous, with the middle tarsi paler towards the apex; the hinder tarsi are pale yellow, except at the base, where they are more rufous in tint. The basal segment of the abdomen is entirely black; the 2nd and 3rd segments may be black at the base; below they may be entirely black.

The ♂ is coloured like the ♀; its fore legs may be entirely without black in front and the coxæ there pale yellow; the antennæ only differ from those of the ♀ in being thinner towards the apex: the clypeus is flat, with the sides slightly raised; the lateral suture at the top is not so widely oblique, the space between it and the eyes being much less; its apex in the middle broadly and roundly projects, and is clearly separated from the lateral portions, which are narrower than it: the epipygium is armed at the apex with two stout teeth; their basal slope is longer and more rounded than their apical, which is straight and only slightly oblique.

Comes nearest apparently to the Australian *P. lepidus* Fab., but, among other differences, that may be known from it by the clypeus ending in a sharp angle.

POLISTES LYCUS, sp. nov.

Flavus, abdominis basi nigro maculata; alis fulvo-hyalinis; nervis stigmatæque fulvis. ♀.

Long. 20 mm.

Antennæ rufous, covered with a white pubescence. The ocellar region is deep black; the front ocellus is separated from the posterior pair by a distinctly greater distance than these are from each other. Clypeus smooth and sparsely covered with rufous hairs; it is longer than broad; above it is roundly and broadly incised downwards: the foveæ are not widely separated from the eyes; the keel issuing from them to the eyes is not widely separated from the eyes; the space bounded by them and the latter being narrow, distinctly longer than broad, and not forming a triangle as in *P. hebræus*. The part between the antennæ distinctly projects. Thorax smooth and shining and covered with a white microscopic down. The sides of the mesonotum at the tegulæ, its base more broadly, and an oblique line over the hinder coxæ are black. The suture on the mesopleuræ below the tegulæ is roundly curved on the lower part and bulges backwards below the middle; there is no suture running to the base. Legs coloured like the body. Wings hyaline, with a distinct fulvous tinge, which is deeper and more distinctly visible along the apical margin; the costa and stigma are fulvous, as are also the nervures. On the abdomen the bases of the basal three segments are black; the amount of the black colour probably varies.

This species looks at first sight like one of the pale yellow forms of *P. hebræus*, but it wants the black, or at least dark-coloured, waved lines found always on the abdomen of the latter. The two may be readily separated by the difference in the form of the clypeus: in *hebræus* its breadth in the middle is not perceptibly greater than its length; in the present species its length is distinctly greater than its greatest breadth; in *hebræus*, too, the suture at the top is much more oblique, so that its top is much more widely separated from the eyes.

POLISTES ASTEROPE, sp. nov.

Rufus, late pallide flavo maculatus; pedibus pallide rufis, basi late pallide flava; alis hyalinis, apice fere violaceis, nervis, costa stigmatique fuscis. ♀.

Long. 14 mm.

Antennæ rufous, covered with a white microscopic pile. Head pale yellow, rufous on the vertex; the vertex and the upper part of the front sparsely, but distinctly punctured; there is a distinct, rather wide furrow on the lower part of the front. Clypeus longer than wide; its apex roundly projects in the middle; the furrow on its top is broadly curved downwards in the middle; the lateral one is oblique and is angled in the middle where it unites in the fovea. Mandibles pallid yellow, rufous round the edges; the teeth are black. Occiput for the greater part black. Thorax pallid yellow; the upper part of the pronotum and the centre of the mesonotum rufous; the sides, the base and apex of the mesonotum are black; the inner side of the black lateral and apical parts are lined with pale yellow. Scutellums pale yellow; the post-scutellum is lined with black behind. The furrow on the median segment is black, wide and narrowed at the top. The upper part of the mesopleura at the apex, the lower two-thirds of the metapleuræ at the base, and a mark placed between the basal suture and the spiracles, and two irregular marks on the mesosternum, black. The nervures, costa, and stigma have a violaceous tinge; along the costa the colour is tinged with fulvous, along the radial cellule with violaceous. Abdomen rufo-fulvous; all the segments are pale yellow at their apices all round; the apex of the petiole is much more broadly marked with yellow.

RYNCHIUM BRUNNEUM Fab.

One example. The black colour on the basal three segments extends to near the apex of the segments, which have only a narrow band of the rufous colour. The wings, if anything, are more richly coloured than usual.

ANTHOPHILA.

MELIPONA (TRIGONA).

A single species of this genus, which I have not been able to identify. In view of the present very unsatisfactory state of this genus, I have not ventured to describe it.

XYLOCOPA PERKINSI, sp. nov.

Long. 24 mm.

In Willey's 'Zoological Results' (p. 388), Dr. Sharp has written the following remarks:—"Mr. R. C. L. Perkins has (E. M. M., Feb. 1899, p. 38) called attention to the very extraordinary symbiosis of the female bees of the genus *Koptorthosoma* (*Xylocopa*) and certain Acarids; the bee being provided with a special chamber in the abdomen which is tenanted by the Acari. The males do not

possess this structure. Mr. Perkins mentions the remarkable fact that in this species from New Britain the female is destitute of the special chamber, though it exists in the closely allied *K. æstuans*."

The New Britain bee is closely allied to the last mentioned species, from which it differs in not having the whole of the upper part of the thorax covered with yellowish hair. The species may be a form of *X. provida* Smith, from Mysol and Waigiou; but I cannot make out this with any degree of certainty, either from the original description (Journ. Linn. Soc. vii. p. 48) or from that given in his Monograph of *Xylocopa* in Trans. Ent. Soc. 1874, p. 274.

♀. Black; the hairs black, except on the thorax behind the tegulæ, where they are orange-yellow. The basal three joints of the antennæ are bare, smooth, and shining; the rest are opaque and thickly covered with a pale microscopic down; the 3rd joint is narrow and longer than the 4th and 5th united. The hair on the head (including the face) is long, dense, and deep black. The clypeus is closely and deeply punctured; its top, centre, and a curved line on the sides are smooth and shining; its apex is distinctly raised and separated. The mandibular teeth are bluntly rounded; the upper is rounded and not much shorter than the lower. The wings are fuscous black, with a dull greenish iridescence; the 2nd transverse cubital nervure has on the upper two-thirds a straight, oblique slope; the lower third is not, or only very slightly, oblique; the upper and lower halves of the 2nd recurrent nervures are oblique, straight, and form an angle at their junction and are not roundly curved as in *X. æstuans*.

ANTHOPHORA ZONATA Fab.

A common Oriental species.

MEGACHILE MEGISTIA, sp. nov.

Nigra, dense nigro hirsuta; fronte, facie clypeoque longe allopilosis; alis nigro-violaceis. ♂.

Long. 13 mm.

Scape of antennæ almost bare; the flagellum covered with a pale microscopic down. Front and vertex closely and distinctly punctured and covered with black hair; the lower part of the front, the face, and clypeus thickly covered with long pale fulvous hair; the clypeus is rugosely punctured. The basal half of the mandibles closely punctured; there is a large, not very sharply pointed apical tooth, and a broad, bluntly pointed subapical one. Thorax closely and distinctly punctured and thickly covered with black hair; the pronotum and the parts above and below the tegulæ with longer white hair. The upper part of the median segment is opaque and shagreened; the lower irregularly punctured. Legs black, thickly covered with black hair; the base of the anterior with longer white hair; the anterior femora in front and the middle joints of the front tarsi are rufo-testaceous; the coxæ are not toothed. Abdomen black; the 4th and 5th segments edged

towards the apex with rufous; the apex of the last segment has a wide rounded incision in the middle; the sides of the incision project into a blunt tooth; outside there are two shorter, blunter teeth; the central part is roundly raised and surrounded by a wide depression; the apical half in the centre is distinctly keeled. The ventral surface is more or less brownish; the epipygium is obliquely raised and obliquely narrowed towards the apex, which is acutely pointed. The wings are uniformly fuscous-violaceous, with black stigma and nervures.

Comes nearest to *M. alecto* Smith, from New Guinea: that species may easily be known from it by the central keel on the last segment of the abdomen extending backwards to the base of the segment, it being also much broader; the apex of the abdomen too is not toothed, only incised in the middle, and the apical tooth of the mandibles is much longer and stouter, and the apex of the clypeus and the space between the antennæ only are covered with pale hair.

MEGACHILE OTHONA, sp. nov.

Nigra; abdomine late rufo-vestito; pedibus anticis rufis; alis fusco-violaceis. ♂.

Long. 12 mm.

The lower part of the front, the face, and clypeus are thickly covered with pale fulvous hair; the front and vertex are strongly punctured. The mandibles are closely punctured, except at the apex; the apical tooth is sharply triangular; separated from this by a short space is a shorter triangular tooth, followed by a much larger, more projecting, rounded one. Thorax closely and distinctly punctured. Legs black; the anterior femora, tibiæ, and tarsi in front rufous; the femora are also rufous above and the tarsi dark testaceous; the tooth on the front coxæ is stout; the tarsi are thickly covered with pale hair. Wings fuscous-violaceous; the nervures and stigma deep black; the 2nd transverse cubital nervure has the lower part slightly oblique; the upper is sharply oblique, with the top on a different angle from the rest. Abdomen above densely covered with brick-red depressed pubescence, except on the basal and on the greater part of the 2nd, 3rd, and 4th segments; the apex in the middle has a shallow incision; the part behind this is depressed; the part on either side is irregularly, slightly toothed. The apical segment roundly, broadly projects in the centre above; below it is broadly curved inwardly.

This may be *M. placida* Smith, from Gilolo (Proc. Linn. Soc. 1861, p. 60), but as no mention is made of the form of the mandibles or of the anal segment, this is a mere guess.

Allied to this species is the following from New Guinea:—

MEGACHILE MALAYANA, sp. nov.

Nigra; capite thoraceque dense nigro-pilosis; abdominis dorso rufo-vestito; alis fusco-violaceis. ♂.

Long. 11-12 mm.

Antennæ black; the last joint straight and oblique on the lower side. Head black; closely and distinctly punctured; the apex of the clypeus and the part between the antennæ thickly covered with long white hair; the front bears also longish hair, and the vertex is covered with short pale hair. The base of the mandibles is closely and distinctly punctured; the apical tooth is long, becomes gradually narrower towards the apex which is rounded, it is widely grooved in the middle. Thorax closely and uniformly punctured; the pubescence is short, stiff, dense, and black above; on the sides it is longer and not quite so deeply black in colour. Legs black, the apical three joints of the fore tarsi brownish, and they are covered with pale hair; the hair on the middle pair is more rufous in tint; the posterior on the underside are thickly covered with stiff rufous pubescence. Wings uniformly fuscous-violaceous, the nervures black. The upper surface of the abdomen is covered, from the apex of the first segment, with depressed rufous pubescence; the ventral segments are fringed at the apex with pale fulvous hair. The apex of the last abdominal segment is entire; in the middle is a deep, somewhat triangular, depression. The apex of the clypeus is transverse, it is not furrowed in the middle.

Allied to *M. bicolor* Fabr.

CRICOSA EMARGINATA Lep.

This species is found in the Himalayas, China, India, and South Africa.

NOMIA FULVIVENTRIS, sp. nov.

Fulva; *mesonoto*, *scutello abdominisque dorso late nigris*; *pedibus fulvis*; *tibiis posticis late nigris*; *alis hyalinis, costa stigmatæque nigris, nervis fuscis*. ♂.

Long. 10 mm.

Scape of antennæ and pedicle fulvous, sparsely covered with long pale fulvous hair; the scape densely covered with a pale down, which gives it a whitish look. The front, face, and clypeus densely covered with fulvous pubescence, smooth and shining; the clypeus is almost square, its apex is raised and transverse, in its centre is a narrow carina which does not reach to the apex. Mandibles pale fulvous, becoming gradually narrowed towards the apex, which is black. Thorax smooth and shining; on the mesonotum is an indistinct central line, and a larger one on either side. Scutellum large, slightly but distinctly depressed in the centre; the post-scutellum furrowed in the middle. The metanotal area is clearly defined behind by a stout, curved keel; the edge behind it is also raised; inside it is irregularly longitudinally striated, almost reticulated; the centre is distinctly furrowed; the lower half of the sides is bounded by a stout keel. Behind the middle of the mesopleuræ is a narrow, but distinct, oblique, slightly curved keel; the central furrow is wide but shallow and ends in a fovea in the middle. Wings almost hyaline; the costa and stigma are black.

Abdomen smooth; the basal two thirds of the basal segment, the greater part of the fifth, the apex and the ventral surface are reddish fulvous.

NOMIA (PARANOMIA) PULCHRIBALTEATA, sp. nov.

Nigra; capite, thorace pedibusque dense griseo-hirsutis; abdominis segmentis virido-marginatis; alis fere hyalinis, stigmatibus nervisque nigris; post-scutello spinis duabus armatis. ♂ et ♀.

Long. 8-9 mm.

♀. Scape of antennæ sparsely covered with pale hair. The vertex and the sides of the face are thickly covered with griseous pubescence; the pubescence on the other parts is much sparser. The lower part of the vertex, the face, and the clypeus have a distinct keel down the middle; the face is punctured, except in the centre; the clypeus is closely, irregularly, longitudinally striated; its sides and apex are bordered by distinct keels. The base of the mandibles in the centre is rugose, and bordered above and below with keels; the apex of the mandibles is oblique. Mesonotum and scutellum closely punctured; the scutellum is slightly depressed in the middle; the post-scutellum is armed with two spines, which are stout, straight on the inner side, rounded above on the outer. The basal area of the median segment is longitudinally striated; the striæ are more widely separated in the centre than at the sides. The legs are thickly covered with griseous pubescence; the calcaria are dark rufous; the scopa has white, mixed with longer, black hairs. Abdomen shining; the basal four segments banded with green, mixed with yellow on their apices; the basal band is narrower than the others; the segments are closely punctured except at the apex; the basal is covered with white, the apical segments with longer, black hair; the ventral segments are thickly covered with white hair. Median segment at apex closely punctured, except for a triangular smooth space at the top.

The ♂ is similarly coloured; the scutellum has the sides obliquely narrowed, and ends laterally in a short tooth; the scutellar spines are longer and narrower than in the ♀; the hinder femora are greatly swollen; on the basal part above are two curves, the basal being the shorter and straighter; the tibiæ are thickened, and broadly rounded on the outer side, the apex on the inner side is oblique; the greater part of the tibiæ behind, their apex, and the base of the tarsi are fulvous; the tarsal spines are rufous.

NOMIA METALLICA, sp. nov.

♂. *Long. 7 mm.*

A species easily known from *N. pulchribalteata* by its smaller size, by the head and thorax having brassy metallic tints, by the head in front not being keeled, and by the abdomen not being banded with greenish yellow.

Antennæ black; the flagellum brownish beneath. Head black, with distinct brassy tints; thickly covered with griseous pubescence; closely and distinctly punctured, except in the centre of

the face above; the apex of the clypeus is broadly pallid yellow and is sparsely punctured and almost bare. Mesonotum and scutellum distinctly brassy, closely punctured; the scutellum is broadly depressed in the middle. Post-scutellum unarmed and thickly covered with white pubescence. Basal area of median segment bare, shining and irregularly reticulated. Wings clear hyaline; the stigma and nervures black. Legs black, thickly covered with white hair; the hinder femora are dilated, above they have a rounded curve from the base to the apex; the tibiae are not much narrower than the femora and become gradually wider from the base to the apex, which is straight and oblique, their upper side is rounded, their lower straight; the calcaria and spines are pale. The abdomen at the base has bluish tints; the segments are ringed with white hair at the apices.