

1-1-1903

Hymenoptera

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Recommended Citation

Cameron, Peter, "Hymenoptera" (1903). *Bu*. Paper 183.
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HYMENOPTERA.

By P. CAMERON.

THE Hymenoptera taken by Mr Stanley Gardiner in the Maldives and in the Minikoi Atoll number 25, of which two are parasitic (*Ichneumonidae*), the others belonging to the Aculeate section of the order. The number of species captured on the Maldives is 20; in Minikoi 10; 5 species are common to both groups. The known species are Indian forms of wide distribution in the Oriental Zoological region; and some of them, e.g. *Ceratina viridissima*, *Xylocopa aestuans*, *Polistes stigma*, and *P. hebraeus*, extend also into Africa and the Malay Archipelago. All the species, new and old, belong to genera of universal distribution in temperate and tropical countries. The genus *Megachile*, for example, ranges from the boreal districts of Europe and America to Australia, and few of the Pacific Islands are without a representative of it.

The Minikoi species were captured from June to September during the south-west monsoon, which is usually the wet monsoon; but in 1899 during the period of Mr Gardiner's visit the weather was abnormally dry, the rain not commencing until the second week in August. The Maldive species were taken in November and December, which were very dry months; but in October heavy rain fell. Hulule Island was visited in January and February, 1900.

HYMENOPTERA PARASITICA.

Fam. *Ichneumonidae*.

1. *Zanthopimpla appendiculata*, sp. nov.

Long. 11; terebra 4 mm.

A species closely allied to the doubtful *Z. punctata* Fab.; and which is certainly different from *Z. punctata* Krieger.

Hab. Minikoi, Laccadives.

Scape of antennae pale yellow; the flagellum brownish. Head yellow, except the ocellar region, where there is a mark longer than broad, which extends to the end of the vertex and is rounded in front. The face is strongly and closely, the clypeus less strongly, punctured. The head is not much developed behind the eyes, and is roundly, obliquely narrowed there. On the base of the mesonotum are three black marks touching each other;

the central is about as wide as long, transverse at the base and apex, and with the sides bulging out roundly; the lateral marks are larger; their base is straight and slightly oblique; their outer side is rounded outwardly; on the inner they are obliquely narrowed. On the base of the median segment are two black, ovoid marks, placed transversely, the broad end on the outer side; the basal area is wider than long; it becomes gradually, but not greatly, widened towards the apex, which is transverse; the outer basal areae are wider than long; the area next to it, in front, is triangular, oblique, and longer than the width of the base, where the bounding keel bulges out. Pleurae smooth and shining. Wings clear hyaline; the nervures and stigma are black; the areolet is distinctly appendiculated. Legs coloured like the body; the hinder tibiae are black at the base. On the abdomen are twelve black marks; the pair on the petiole are broader than long, and have a short, sharp projection on the inner side at the base; the second pair are small; the third are the largest; are about as wide as long and rounded on the inner side; the fourth pair are smaller and somewhat similar in shape; the fifth distinctly wider than long; the sixth are still wider, but not so long; there are no marks on the sixth and apical segments. In the ♀ there are no marks on the second segment; that on the fourth is very small; in the middle of the last segment are two curved oblique furrows.

2. *Enicospilus reticulatus*, sp. nov.

Luteo; abdominis apice nigro; metanoto reticulato; alis hyalinis, stigmatibus fuscis. ♀.

Long. 14 mm.

Hab. Hulule, Male Atoll, Maldives.

Antennae luteous, darker towards the apex. The sides of the face and the clypeus have a yellowish tinge. The face is finely wrinkled in the middle and punctured on either side; the clypeus is smooth and indistinctly punctured at the base; the labrum wants the yellow tint of the clypeus; the vertex and the eye orbits have a distinct yellowish tint. Mandibular teeth black. Mesonotum fuscous, except at the base and sides. The scutellar keels are stout; the apex is closely, longitudinally striated. The base of the median segment is smooth, with the sides irregularly striated; the rest of it is irregularly, distinctly reticulated; on the apex the reticulations are oblique and less distinct in the middle below. Pro- and meso-pleurae closely punctured, the middle of the pro- and the lower part of the meso- closely striated. The metapleurae above shagreened; the lower apical part bears some striae. Wings clear hyaline; the stigma and nervures fuscous; the basal abscissa of the cubitus is thickened, the basal two-thirds being thicker than the apical part; there are two distinct horny points; the lower one is dilated and rounded behind; its upper part forms a somewhat triangular shape; the apical point is somewhat oval in shape. Legs coloured like the body; the hinder tarsi are shortly but distinctly longer than the tibiae; the anterior twice their length.

The transverse median nervure is received shortly behind the transverse basal; the recurrent nervure is bullated on the top; the disco-cubital nervure more widely in front of it.

HYMENOPTERA ACULEATA.

FOSSORIA.

Fam. Crabronidae.

3. *Crabro idrieus*, sp. nov.

Niger, mandibulis, scapo antennarum, linea pronoti, basi scutelli, apice femorum, tibiis tarsisque flavis; alis hyalinis, stigmatibus fuscis. ♀

Long. 7 mm.

Hab. Goidu, Goifurfehendu Atoll, Maldives.

The scape of the antennae bright yellow; the flagellum is black, fuscous towards the apex; it is covered with a white pile and is distinctly thickened towards the apex. Mandibles bright yellow; the teeth black, with a piceous band behind them. Front and vertex opaque, the front is strongly, but not very closely, punctured; the vertex is less strongly and not so closely punctured. The frontal depression, the face and the clypeus, are thickly covered with silvery pubescence; the face is distinctly keeled in the centre; at the apex this keel slightly projects and is smooth and shining.

Pro- and mesothorax opaque, the mesonotum and scutellum are sparsely punctured; the mesopleurae less distinctly punctured. Propleurae shining; on the basal half are three or four irregular keels; on the apex two longish oblique keels, with two shorter ones behind them. The middle of the metapleurae is depressed and is, especially in the middle, obliquely striated. The following are yellow: an interrupted line on the pronotum, the tubercles, the scutellar keels, two large marks, rounded behind on the base of the scutellum. Abdomen black, except for an oblique, yellow mark on the sides of the second and third segments. The petiole is as long as the second and third segments united; the base above is flat, shining, and furrowed in the middle at the base; this part becomes acutely narrowed at the apex.

The tubercles are fringed behind with white hair; the part behind them is keeled; from the top of this keel an oblique smooth furrow runs; the keel behind the middle is obscurely striated. The "enclosed space" on the base of the median segment is stoutly, obliquely striated; in the middle at the apex reticulated; the apical slope on either side of the furrow is transversely striated, the striae becoming weaker towards the apex; the four anterior tibiae are lined with black behind, the anterior in front.

Comes nearest to *Crabro orientalis* Cam.

4. *Crabro musaeus*, sp. nov.

Long. 9—10 mm. ♀

Hab. Mahlos Atoll, Maldives.

Similar in coloration to the preceding species, except that the third and fourth segments are lined with black laterally above and with a mark on the sides behind; it is easily known from it by being longer, by the "enclosed area" on the median segment not being stoutly striated, and by the upper abscissa of the transverse cubital nervure

being almost in a line with the lower, and of almost equal length to it: in *idrieus* the lower is longer than the upper, which is on a different angle with it, it being only slightly oblique.

The lower part of the head, inside and out, is thickly covered with silvery pubescence; the clypeus is stoutly keeled. The scape of the antennae, the mandibles, except at the apex, an interrupted line on the pronotum, the sides of the scutellum, the scutellar keels, the tubercles, a mark on the upper side of the mesopleurae, between the two furrows, a longish line on the sides of the third segment at the base, an oval mark on its sides at the apex, and a shorter line on the sides of the fourth segment at the base, yellow. The furrow bordering the scutellum is crenulated; the post-scutellum is closely, longitudinally striated. The area on the metanotum is furrowed down the middle and is finely and closely, obliquely striated. The propleurae bear curved, not very stout striae. The narrowed basal part of the petiole is shining and obscurely striated; the nodose (and larger) apical part is opaque. The stigma and alar nervures are fuscous; the apical abscissa of the radius has a sharp, straight, oblique slope. The four anterior femora are for the greater part, the hinder are entirely, black; the four front tibiae are yellow, lined with black behind; the posterior yellow, black at the base behind, the tarsi are yellow.

5. *Trypoxylon erythrozonatum*, sp. nov.

Nigrum, abdominis medio rufo; tarsis anterioribus albis; alis hyalinis; nervis stigmatique nigris. ♀.

Long: 15—16 mm.

Hab. Hulule, Male Atoll, Maldives.

Scape of antennae brownish beneath. Face, clypeus, and the lower part of the eye incision densely covered with silvery pubescence. Mandibles for the greater part ferruginous. The upper part of the front bears a narrow longitudinal keel; the lower is raised, the raised part becoming gradually wider towards the apex. Thorax thickly covered with rather longish white hair; the furrow below the tubercles is smooth; there is a shallow central furrow on the basal region of the median segment, which becomes gradually wider and deeper towards the apex; the apical furrow is wide: the sides have an oblique slope. Legs black; the basal two joints of the four anterior tarsi and the calcaria are white; there is a narrow pale band near the base of the hinder tibiae. The wings are slightly infuscated at the apex. The apex of the petiole and the second and third segments are rufous.

6. *Trypoxylon melanurum*, sp. nov.

Nigrum, tarsis, tegulisque fuscis, alis hyalinis, stigmatе fusco. ♂.

Long: 10 mm.

Hab. Mamaduware, Mahlos Atoll, Maldives; Minikoi, Laccadives.

Antennae black, fuscous towards the apex; the last joint is as long as the preceding three united; on the underside it is dilated at the base, narrowed towards the apex; the middle joints are slightly dilated beneath. Front and vertex closely punctured; on them is a large area; its upper part is rounded and encloses the lower ocellus; its lower is

more narrowed towards the apex; the part occupied by it is raised and reaches near to the antennae, where it is prolonged as a short, stout keel; from the junction of the two parts a curved keel runs to the eye incision. The lower part of the eye incision, the face and clypeus are covered with silvery pubescence. Pro- and mesothorax smooth and shining. The base of the median segment bears stout, longitudinal keels, the two central of which are more widely separated; the rest of the segment is stoutly, irregularly, transversely striated; the basal half has two longitudinal keels which form a central area, rounded at the apex; there are two longitudinal keels on the apical slope, which unite near the apex of the segment, this second area being more sharply pointed at the apex than the basal one. On the base of the mesopleurae is a wide, deep, crenulated furrow, bisected above by a smooth, curved one. Legs black, the tarsi testaceous, darker at the base. Wings hyaline, the nervures fuscous. Abdomen entirely black.

Fam. **Scoliidae.**

7. *Elis thoracica* Fab.

This family is represented only by the above, a common Eastern species. Its ♂ has not yet been described with any degree of certainty (cf. Saussure, *Catalogus Specierum generis Scolia*, p. 188, and Bingham, *Fauna of Brit. India, Hymen*, p. 99) but, in the collection, there are some males which can only be connected with *thoracica*. They are densely covered with longish cinereous pubescence: the sides of the clypeus broadly from top to bottom, the apex of the pronotum, the yellow extending laterally to near the tegulae, two broad marks on the base of the scutellum and a mark on the centre of the post-scutellum, yellow. The hair on the median segment is denser than on the rest of the thorax; the oblique furrow on the flat apical half of the mesopleurae is distinct. The wings are hyaline, violaceous in tint at the apex; the radial cellules smoky. Legs black; the apex of all the femora, the outer side of the tibiae and of the base of the front tarsi yellow. Abdomen violaceous-black; the basal three segments above have the apices broadly yellow; the black dorsal parts are dilated in the middle and laterally, the basal projections being narrowed at the apex; the fourth segment is more narrowly yellow at the apex; the black band there is also dilated, but only slightly in the middle.

Hab. Common in Minikoi, Laccadives; one ♂ from Goidu, Maldives.

Fam. **Sphegidae.**

8. *Sceliphron madraspatanum* Fab.

Hab. Goidu, Goifurfehendu Atoll, and Fainu, Mahlos Atoll, Maldives.

9. *Sceliphron violaceum* Fab.

Hab. Hulule, Male Atoll, and Mamaduware, Mahlos Atoll, Maldives. Minikoi, Laccadives. Both these species of *Sceliphron* are of universal distribution in the Oriental region.

10. *Bembex maldivensis*, sp. nov.

Long. 17 mm.

Hab. Goidu, Goifurfehendu Atoll, Hedufuri, Mahlos Atoll, and Hulule, Male Atoll, Maldives.

Belongs to Bingham's Section A, and comes near *orientalis* and *borreri*. ♀. Antennae entirely black. Head densely covered with long, white hair, the clypeus also with silvery pubescence, the edge of the pronotum narrowly, the labrum and the mandibles to the teeth, pale yellow. Thorax densely covered with silvery pubescence; the prothorax, except behind, two narrow lines on the centre of the mesonotum, two broader, shorter, almost united, transverse ones near the apex, the apex and sides of the scutellum, the apex of the post-scutellum; a broad curved line on the centre of the median segment; the sides broadly from near the middle, the base of the mesopleurae, the mark dilated at the top so as to enclose the tubercles, a large vertical mark in the centre, which becomes gradually wider from the top to the bottom, a smaller, more irregular mark on the apex behind, a crescent-shaped mark on the metapleurae behind the spiracles and the apex broadly—the mark below extending backwards beyond the middle—sulphur-yellow; legs yellow; all the coxae and trochanters; all the femora broadly in front and behind; a line on the fore tibiae behind and a shorter one in front, black; the spines on the fore tarsi are long, stout, and, except the basal one, black. The basal joint of the fore tarsi is not very broad, and becomes gradually narrowed, but not much, towards the apex; the second becomes gradually narrowed, on the outer side from the base to the apex, which is transverse and three times the width of the base; the two following are smaller and are not so broad at the apex compared with the base. The basal abdominal segment is broadly black at the base and apex; the two bands are united in the centre by two black marks which become gradually narrowed towards the apex; the apices of the second, third, and fourth are broadly black; the black bands dilated backwards in the middle, and have, at their base, two black marks, which are broader than long; the fifth segment is black, with the sides broadly yellow; the sixth is entirely black, with its sides straight. The ventral segments are black, except the first and second at the sides of the apex; the yellow marks there are obliquely narrowed towards the apex.

The ♂ is similarly coloured; the clypeus is pale yellow, black at the base and with a broad band on the apex; the seventh joint of the antennae is slightly dilated near the apex; the eighth has a stout tooth, which becomes gradually raised from the base to the apex; at the apex is a small one; there is a blunt basal and a smaller, sharper apical one on the ninth; the tenth is broadly dilated behind, as is also, to a less extent, the eleventh. The middle femora are serrate beneath; the joints of the fore tarsi are not so much dilated, especially towards the apex; the spine on the second ventral segment is larger than usual; its downward length is distinctly greater than its length at the base and it is curved and slightly hooked at the apex. The pygidium is sparsely and distinctly punctured on the sides; the epipygium becomes gradually raised in the middle to shortly beyond the centre of the segment, there curves downwards, the top slightly projecting. The last joint of the hinder tarsi is thickly fringed at the base with stiff longish spines, which being longer at the base and apex of the fringed part give it an incised appearance.

11. *Bembex handlirschi*, sp. nov.

Long. 11 mm. ♂.

Hab. Hulule, Male Atoll, Maldives.

This is one of the smallest of the Oriental species. It belongs to the group of *Orientalis*.

Antennae entirely black; the seventh and eighth segments are dilated towards the apex on the underside; the ninth has a small sharp spine; the tenth and eleventh are hollowed; the tenth is narrowed at the base. Head black, thickly covered with white hair; the clypeus, except at the base, and the apex in the centre, the outer orbits, the labrum, the mandibles, except at the apex, two small central and a longer, pyriform mark outside below the ocelli, pallid yellow. Thorax thickly covered with white pubescence; two narrow lines on the centre of the mesonotum and probably a transverse apical one, a narrow line on the pronotum, the base and apex of the propleurae, a curved line on the upper half of the mesopleurae in the centre; this line becoming dilated gradually, but not very much, towards the centre, a small mark on the base of the metapleurae, a large oblique one, narrowed at the base, on the apex and extending on to the apical slope of the segment; the apex of the scutellum and postscutellum and a broad curved interrupted line on the apex of the basal slope of the median segment, pale yellow. Legs coloured like the body; the coxae, trochanters, the base of the femora narrowly and the upper part broadly and the lower parts of the anterior pair and the hinder knees, black; the middle femora are serrate, but not strongly; the joints of the fore tarsi are slender and not much dilated towards the apex; the spines are long and pale. The basal black band on the first abdominal segment is broadly and roundly dilated in the middle at the apex; there are two black marks, broader than long, on the base of the second, two less distinct ones on the third; the apical bands are dilated backwards in the middle; the band on the fifth is united by a narrow line to the base; the 6th and 7th segments are entirely black. There is no spine on the second ventral segment; the last is broadly depressed on the either side of the middle; the outer edge is curved and narrowed towards the apex. Wings clear hyaline; the costa and stigma testaceous; the nervures darker. Tegulae black, lined with black on the inner side.

Fam. Vespidae.

12. *Polistes hebraeus* Fab.

Hab. Hedufuri, Mahlos Atoll, Maldives.

The Maldives form is *macaensis* Fab.

13. *Polistes stigma* Fab.

Hab. Minikoi, Laccadives. The common Indian variety.

14. *Rhynchium Maldivense*, sp. nov.

Long. 11—13 mm.

Hab. Hulule, Male Atoll, Goidu, Goifurfehendu Atoll, Maldives. Minikoi, Laccadives.

G.

This species agrees so very closely with *R. argentatum* Fab., *sec.* Saussure, *Stett. Ent. Zeit.* XXIII. p. 187 (cf. Cameron, *Ann. and Mag. Nat. Hist.*, Dec. 1900, p. 531), that it might readily be mistaken for it. It may be known from it by the pronotum behind being sharply keeled, by the propleurae being bordered before and behind by flat, shining keels; the third cubital cellule at the bottom is broader, being as wide there as the space bounded by the first recurrent and the second transverse cubital nervures, whereas in *argentatum* it is not half the length.

♂. Antennae covered with a pale down; the hook is brownish, stout, slightly curved; with its pedicle it is fully longer than the joint. The front, the eye incision, and the lower half of the outer orbits are thickly covered with silvery pubescence; the vertex with griseous hair. The front and vertex are closely and strongly punctured; the space between the antennae bears a narrow, but distinct, keel. The clypeus at its greatest width is nearly as long as its length; above it is transverse and bordered with a yellow band; the upper half is distinctly punctured; the lower is alutaceous and impunctate; the apex is broadly and roundly incised; its sides have an oblique slope. Thorax strongly and closely punctured, except on the apex of the meso- and on the basal half of the metapleurae. The prothorax at the base all round is bordered by a sharp keel; the furrow above the middle of the mesopleurae is distinct; the base below is smooth. The sides of the median segment are broadly rounded and bear neither teeth nor spines; its apex has an almost perpendicular slope and is almost transverse; above in the middle it is very slightly developed; it is smooth, except round the edges; the central furrow is deep and distinct on the upper half. Legs densely pruinose, as is also the abdomen. The basal segment of the abdomen is clearly separated from the second.

The ♀ has the clypeus punctured all over and it wants the white line on the top; it is more convex above and is more broadly and, not quite so deeply, incised at the apex; the median segment is more fully developed, and in the centre it is finely, transversely striated. The wings in both sexes are deeply violaceous.

ANTHOPHILA.

Fam. Apidae.

15. *Halictus minikoiensis*, sp. nov.

Niger, dense griseo piloso; tarsis longe fulvo pilosis; alis hyalinis; stigmatibus testaceo, nervis fuscis. ♀ et ♂.

Long. 8 mm.

Hab. Minikoi, Laccadives.

Antennae black; the flagellum tending to brownish near the apex and covered with a pale pile. The ocellar region is smooth and shining; the rest of the vertex and front closely and distinctly punctured. The face is roundly convex in the middle and is clearly separated from the clypeus; and is there almost impunctate. Clypeus rather strongly, but not very closely punctured, except at the apex, which is transverse; the extreme apex is depressed, brownish in tint and slightly projects at the ends. The hair is griseous, long and moderately thick on the front and face; sparser and shorter on the other parts. Mandibles brownish in the

middle. Mesonotum shining, minutely punctured; in the centre of the basal half is a shallow, narrow furrow. Scutellum punctured on the sides and apex. Post-scutellum thickly covered with long griseous pubescence. The striae on the basal area of the median segment are irregular; at the base they are stouter and longitudinal; at the apex finer, closer and transverse; on the sides they are narrow, close together and longitudinal. The hair on the pleurae is longer and thicker than it is on the upper surface. The hair on the legs is long and white; on the outer side of the tibiae it is shorter and darker, almost black; on the tarsi it is long and bright fulvous; the claws are pale testaceous. Wings clear hyaline, iridescent; the stigma is testaceous; the nervures are blackish; the first recurrent nervure is interstitial. Abdomen shining, impunctate; the segments are edged with white pubescence; there is a narrow transverse furrow on the second and third segments; the anal rima is brownish.

The eyes distinctly converge above; the head is not very elongate in front; the lower half of the front bears a distinct keel; the apex of the median segment has a semi-perpendicular slope, is smooth and shining and deeply furrowed on the lower part; the tegulae are piceous.

16. *Ceratina viridissima* (Dalla Torre) (*viridis* Guer.).

Many of the specimens are golden above.

Hab. Common in the Maldives.

17. *Ceratina appendiculata*, sp. nov.

Nigra, capite thoraceque supra viridis; abdomine late flavo-lineato; clypeo flavo, nigro bilineato; alis hyalinis, nervis stigmatique testaceis. ♀.

Long. 4 mm.

Hab. Mamaduwari, Mahlos Atoll, Maldives.

Scape of antennae broadly yellow beneath; the flagellum brownish. Head dark green, smooth, thickly covered with white pubescence; the clypeus and an oblique, somewhat conical, spot close to its lower side, yellow; in the centre of the clypeus are two large marks, longer than broad and rounded above. Mandibles yellow, black at the apex. The mesonotum and scutellum are green; there is a broad yellow line on the pronotum, extending to the tubercles, which are similarly coloured, as are also the post-scutellum and a curved line at the side of the scutellum. The median segment is black and is, at the base, closely obliquely striated. Wings clear hyaline; the stigma and nervures are pale testaceous; the second and first transverse cubital nervures are united at the top. Legs thickly covered with long, white hair; the knees, tibiae and tarsi are bright yellow; the middle tibiae are lined behind with black in the middle; the hinder are black, except at the base and apex. Abdomen smooth and shining; there is a short yellow line on the first segment on either side; on the second and third the yellow lines extend nearly to the middle; on the fourth they are almost united; on the fifth and sixth they are continuous.

Characteristic is the union of the first and second cubital nervures at the top; the third is straight and oblique to near the bottom, where it curves sharply backwards, thus forming a sharp angle, from the apex of which a short nervure issues; the second recurrent nervure is received at the base of this angle.

A distinct species.

18. *Allodape picitarsis*, sp. nov.

Niger, nitidus, facie, clypeo, maculaque inter antennis flavis; alis hyalinis, stigmatibus fuscis. ♀.

Long. 5—6 mm.

Hab. Minikoi, Laccadives.

Antennae black; the flagellum with a brownish tinge towards the apex. Head smooth and shining; the vertex is obscurely punctured. The front ocellus is surrounded by a wide, deep furrow; the front is broadly dilated in the middle; the dilated part becomes gradually wider towards the apex. The yellow mark on the face is slightly and roundly incised on the top; the sides curve slightly outwardly; the yellow mark is continued to the end of the clypeus, on which it is narrower and slightly longer. On the apex of the pronotum is a broad, white band, narrowed at the sides; the tubercles and the greater part of the tegulae are yellow. Mesonotum and scutellum aciculated; the basal area of the median segment is strongly and closely punctured; the rest of it is smooth and shining. Legs thickly covered with long, white hair; the hair on the tarsi is more testaceous in colour, and their apices are testaceous. Abdomen shining, smooth; the apices of the segments are testaceous; the basal segment at the base is hollowed, but not deeply. Wings clear hyaline; the stigma fuscous; the nervures slightly darker.

19. *Megachile otriades*, sp. nov.

Long. 13 mm. ♀.

Hab. Hitadu, Mahlos Atoll, Maldives.

Has the hair coloration of *M. lanata*, with which it is closely related; it is smaller; the mandibles are differently formed, their second tooth is longer compared to the first and not so widely separated from it; the middle part is broadly and distinctly dilated, the posterior part being also dilated and separated; it is more rounded than the middle portion, which has the base and apex straight and oblique.

Scape of antennae black, opaque, closely punctured and covered with pale hair; the flagellum is brownish. Head as wide as the thorax, closely, almost rugosely, punctured except for a T-shaped mark on the clypeus and face, the end of which extends to the apex of the clypeus. The front is thickly covered with long, dark, rufous hair; the vertex with shorter, dark, fuscous hair; the face and clypeus with long, dark hair. The mandibles are furrowed along the edge to near the base; on the inner part they bear long, curved punctures; the outer tooth is sharply pointed, becoming gradually narrowed to the apex, which is rounded; the second tooth is triangular; the inner is broadly rounded; the middle and the second are bordered behind by a smooth, flat part, which is clearly separated. Thorax closely and distinctly punctured and thickly covered with dark, rufous hair; the sides and breast with shorter pale hair. Legs thickly covered with pale hair; the hair on the hinder tarsi on the inner side is dark rufous. The basal segments of the abdomen are covered with dark rufous, the other segments are fringed with pale, fulvous hair; the scopa is pale, almost white, except on the last segment, where it is black.

20. *Megachile cinyras*, sp. nov.

Long. 15—16 mm.

Hab. Minikoi, Laccadives.

Belongs to Bingham's Section "F. Abdomen with transverse bands on all segments above of white pubescence" (*Hym. of India*, p. 472), in which it would form a new section: Pollen-brush white, black at the apex.

Head closely and rather coarsely punctured; the lower part of the face and the middle of the clypeus broadly and irregularly smooth and shining. Mandibles closely and strongly punctured; the apical tooth is bluntly rounded; the second shorter and more triangular in shape, but not sharply pointed at the apex; next to it is a rounded depression, followed by a longer, straighter one. Thorax closely and strongly punctured and without any striations; the hair above is rufous, on the upper part of the pleurae fulvous; on the lower white. The hair on outer side of the legs is white, on the inner rufous. The basal half of the wings is fulvous; the apical smoky, with a violaceous tinge. The abdominal segments are fringed with pale pubescence; the pollen-brush white, slightly tinged with fulvous; on the apical two segments it is black. The back is shining and has a distinct violet and blue iridescence.

What I consider to be the ♂ has the apical tooth of the mandibles narrower and more sharply pointed; and it is followed by two shorter triangular ones; the hair on the front and vertex is white; the clypeus is fringed with bright, rufous hair; the antennae are long and slender; the apex of the last joint is obliquely narrowed and smooth and shining on the lower side; the last segment is broadly incised, the sides of the incision are straight and oblique; the last ventral segment is irregularly, coarsely, rugosely punctured; its hinder edge is raised and is irregularly toothed.

21. *Xylocopa tenuiscapa* West.

Hab. Goidu, Goifurfehendu Atoll, Maldives. One example.

22. *Xylocopa esica*, sp. nov.

Nigra, nigro pilosa; alis violaceis ♀.

Long. 23 mm.

Hab. Mamaduwari, Mahlos Atoll, Maldives.

Scape of antennae narrow, not dilated at the apex; the flagellum covered with a fuscous down. Eyes parallel, only very slightly converging above. Head shortly, but perceptibly, narrower than the thorax; densely covered with black pubescence; closely and rather strongly punctured. The anterior ocellus is surrounded by a smooth furrow, which is widest below, where it is produced downwards for a short distance; the space below it is smooth and shining and ends in a smooth tubercle, which has a small fovea above it. The face and clypeus are closely punctured, are flat, and, at the apex, the clypeus is smooth and shining and almost transverse with the sides rounded; a deep, oblique furrow runs from the base of each antenna, downwards. Mandibles smooth and shining; the base in the middle bears some deep, irregular punctures, below which is a distinct fovea, which is oblique,

straight on the inner side, rounded on the outer, and narrowed beneath; the lower tooth is broadly rounded; the lower somewhat triangular. The labrum in the middle is smooth and shining, bare and broadly keeled, the keel being broadest on the top. The sides and base of the mesonotum are closely punctured, as is also the scutellum, except at the base. The median segment is more closely and strongly punctured; the basal area is clearly defined; its base is longer than the sides; it is aciculated and obscurely furrowed down the middle. The hair on the legs is long, dense and deep black. Wings uniformly deep violaceous, with some blue tints at the base and apex; the third transverse cubital nervure is obliquely sloped at the top and bottom; the two parts are of equal length and form a sharp angle in the middle; the lower part has a more sharply oblique slope. Abdomen smooth and shining; sparsely punctured, except at the base where the punctuation is closer and stronger; there is a smooth furrow down the middle of the apical segment; the middle of the last apical segment is smooth and keeled towards the apex.

This species comes near *X. gardineri*, but is not, I feel sure, its ♀; as, apart from the difference in the coloration of the base of the wings, it differs from it in some structural points; the area on the median segment is longer, much broader compared to its length and it is glabrous and impunctate; the thorax wants the white pubescence; it is smaller and the abdomen at the base is not hollowed: it is distinctly longer than the head and thorax united. The spine on the outer side of the four hinder tibiae is broad at the base, bluntly pointed at the apex; that on the front pair is smaller, more curved and more sharply pointed.

23. *Xylocopa aestuans* Lin.

Hab. Common in the Maldives.

24. *Xylocopa latipes* Drury.

Hab. Mamaduwari, Mahlos Atoll, Maldives.

A common Oriental species.

25. *Xylocopa gardineri*, sp. nov.

Nigra, nigro pilosa, alis violaceis, basi hyalinis. ♂.

Long. fere 25 mm.

Hab. Mamaduwari, Mahlos Atoll, Maldives.

Scape of antennae not dilated towards the apex, slender. Head opaque, thickly covered with short black hair and closely and distinctly punctured, except at the sides of the hinder ocelli and the apex of the clypeus. Eyes not converging on the top, parallel. The front ocellus is surrounded by a deep furrow. Clypeus flat; the oblique lateral furrows are not clearly indicated. The base of the mandibles is sparsely punctured; the apical tooth is broadly rounded at the apex; it is short, not much longer than broad. Labrum obliquely depressed, closely and rather strongly punctured and with a smooth furrow down the centre, which is broadest at the top. The sides and base of the mesonotum are covered with pale hair; the centre is bare. Except in the middle the mesonotum is closely and minutely punctured. The scutellum is sparsely punctured at the base, closely and more strongly

towards the apex. Pleurae and sternum closely punctured and thickly covered with black hair. Wings deep violaceous, except at the base, where they are narrowly hyaline. Legs thickly covered with black hair; the outer side of the hinder tibiae is smooth and projects in the middle into a triangular tooth; the inner spur is broadly, triangularly dilated at the base. Abdomen shining; above sparsely punctured at the base, much more closely at the apex. The last ventral segment is bare and smooth and bears a stout tooth on either side, these teeth are straight on the inner side, rounded and narrowed towards the top on the inner; below it is smooth and depressed at the apex. The cubitus beyond the second recurrent nervure is straight, it then turns up straight and obliquely towards the apex of the cellule; it then turns obliquely backwards, this upper abscissa being shorter and having a more rounded curve; the second recurrent nervure has the upper abscissa slightly, the lower (and longer) one is more sharply, oblique. The basal area on the median segment is small, opaque, sparsely punctured; its length is as long as its width at the base.