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## ON SOME NEW SPECIES OF INDIAN HYMENOPTERA.

BY LIEUT.-COL. C. T. BINGHAM, F.Z.S., F.E.S.

(Vide Plate A.)

(Read before the Bombay Natural History Society on 28th Feb., 1898).

In the review in *Nature* on Volume I of my "Hymenoptera of India," issued as one of the "Fauna of India" series, the writer remarked that close on one thousand species of wasps and bees are described in that volume, and stated that probably more than two thousand species would ultimately be found within the limits treated of in my work. This forecast seems more than likely to come true. In a collection of Hymenoptera recently made at Deesa and at Simla by Captain C. Nurse, and kindly sent to me to work out, I find among the bees and wasps alone no less than 23 species new to the Indian fauna, out of which number, so far as I can make out, 22 species have not hitherto been described.

I give below a description of these as well as of a few presumably new species of *Tenthredinidæ*, *Ichneumonidæ*, and *Chrysididæ*, received some from Mr. F. Möller, of Tukvar, Darjiling, and some with the bees and wasps collected by Captain C. Nurse in Simla and Deesa. My best thanks are due to both these gentlemen for their kind loan as well as presents of collections.

## Family TENTHREDINIDÆ, Leach.

1. *Allantus incognitus*, sp. n.

♂. Head above and thorax finely and closely punctured granular; abdomen smooth and shining; clypeus smooth, emarginate at apex, the emargination rounded and ending in acute teeth one on each side. Black, the labrum, the base of the mandibles, large lateral spots on the clypeus, the posterior angles of the pronotum, the apex of the scutellum, a spot above the posterior coxæ on each side, the anterior femora and tibiæ in front, and a broad line widening laterally at the base of the abdomen, lacteous-white; the apex of the posterior femora, the posterior tibiæ, and the apical margins above of the 3rd to the 5th abdominal segments ferruginous-red; wings hyaline, the front wing anteriorly stained with dark fuscous, the tegulæ and nervures brown.

♂. Length 11; exp. 22 mm.

Hab. Simla.

Allied to *Allantus simillimus*, Smith, but is abundantly different.

## Family ICHNEUMONIDÆ, Leach.

2. *Coleocentrus m llerii*, sp. nov., pl. A, figs. 4, 4a, 4b.

♀. Head with a few shallow punctures on the vertex ; antennæ long, filiform, the scape swollen, deeply emarginate on the outer side, the joints of the flagellum oblique at their apices ; mesonotum oval, convex, transversely plicated and rugose, scutellum punctured, postscutellum very small, compressed ; median segment flat on the sides, rounded posteriorly, and obliquely sloped to the apex ; abdomen shining, the basal two segments impunctate above, the remainder finely punctured at base above ; basal segments depressed, flattened, apical segments sub-compressed ; the ovipositor long, longer than the rest of the head and body united, emitted from the apical segment, which with the next three segments, looked at from the ventral side, are ensheathed one within the other. Black, the clypeus, the face below the base of the antennæ, a spot on each side above the latter, the front of the scape, the cheeks, the pronotum in front and on its posterior lateral angles, two abbreviated parallel longitudinal lines on the disc of the mesonotum, the tegulæ, the mesopleuræ, the base of the scutellum, a spot on each side of it, the whole of the median segment, a large spot on the metapleuræ, the front of the coxæ, trochanters and femora, and the whole of the tibiæ and tarsi of the anterior legs, a spot on the coxæ, another on the basal joint of the trochanters posteriorly, a line on the outer side of and the apical one-third of the femora, and apical half of the tibiæ of the intermediate legs, a spot on the coxæ, another on the basal joint of the trochanters posteriorly, the apical half of the femora and the middle of the tibiæ of the posterior legs, and sub-apical bands on all but the apical abdominal segment above, yellow ; the bands on the 4th and 5th segments are widened laterally, while that on the 6th segment forms a transverse diamond-shaped spot ; ovipositor and tarsi reddish-brown ; wings deep brownish-yellow, nervures dark brown.

♀. *Length* 33, *of ovipositor* 51 ; *exp.* 64 mm.

*Hab.* Sikhim ; Tenasserim.

3. *Xylonomus elizabethæ*, sp. nov., pl. A, figs. 5, 5a.

♀. Head smooth, polished and shining ; antennæ filiform ; thorax rugose, the mesonotum long and oval, the parapsidal grooves deeply marked ; median segment rounded posteriorly, rugose, with four irregularly-waved longitudinal carinæ, the inner two of these reaching the

apex of the segment and ending in a well-marked tooth ; tibiæ of the anterior and intermediate legs constricted at base ; basal abdominal segments sub-depressed, the 2nd and 3rd marked above with V-shaped depressions, apical segment sub-compressed. Dark shining blue, a broad stripe on each side of the face, interrupted by the scape of the antennæ, white ; the anterior four legs, the base of the coxæ, the trochanters, femora, tibiæ and tarsi, except at their apex, the base and a band across the 1st abdominal segment, a band across the 2nd, and the apical margins above narrowly of the 3-5 segments, honey-yellow ; antennæ black, the 10-16 and the apical four joints of the flagellum white ; the apex of the posterior coxæ, femora and tibiæ, and the claw-joint of the tarsi of all the legs black ; ovipositor black, the side sheaths with a broad sub-apical ring white ; wings hyaline, a fuscous spot on the forewing at the junction of the radial with the cubital cells, tegulæ and nervures testaceous.

♀. Length 17, of ovipositor 13 ; exp. 27 mm.

Hab. Sikhim, 1,000 to 4,000 feet.

Family CHRYSIDÆ, Leach.

4. *Chrysis cupreiventris*, sp. nov.

♀. Head, thorax, and abdomen densely and rather coarsely punctured, granular ; eyes slightly convergent below, front broad, with a fine T-shaped carina between the eyes ; abdomen with a medial longitudinal carina on the 2nd and 3rd segments above, 3rd segment ending in four well-marked dentations with a row of six sub-apical fovea above the dentations ; head and thorax brilliant steel-blue, the face below the base of the antennæ, the posterior margin of the pronotum, the tegulæ, borders of the thorax above, the sides beneath the wings, the pectus and the coxæ, femora and tibiæ of the leg, golden-green ; the antennæ and the tarsi black, the scape of the former golden-green above ; the clypeus, front cheeks, and sides of the thorax covered with somewhat long, soft, white pubescence ; abdomen coppery-red, the 2nd segment above in the middle steel-blue, abdomen beneath blue-green, the 2nd segment with a large lateral rounded spot at base ; wings hyaline, slightly fuscous on the disc of the forewing, nervures dark brown.

♀. Length 10 ; exp. 21 mm.

Hab. Simla.

Nearest to *C. zobeida*, Du Buyss, of which it may be an extreme variety; but it is apparently distinct from a specimen of *C. zobeida* from Aden given me by Colonel Yerbury.

Family MUTILIDÆ, Leach.

5. *Mutilla fumipennis*, sp. nov., pl. A.f. 6.

♂. Head and thorax somewhat coarsely punctured, the clypeus, front sides of the face, cheeks, sides of the pronotum and median segment above with dense matted pubescence, the front above the base of the antennæ raised, tuberculate, giving to the face close to the lower portion of the inner orbits and the sides of the clypeus an appearance of being hollowed out, a short vertical carina from the anterior ocellus not reaching the base of the antennæ; mesonotum with two medial longitudinal furrows, scutellum excavate at base, produced posteriorly into a cone, the apex tuberculate, shining; median segment strongly depressed, with the sides somewhat flat, above meeting along the medial line of the segment at an angle and forming a well-marked longitudinal carina; legs and abdomen thinly pubescent, the 2nd segment of the latter finely and evenly punctured above, the remaining segments obsoletely punctured towards their apical margins, apical segment with a faintly defined medial longitudinal carina, 1st ventral segment with a highly raised longitudinal carina forming a thin sub-triangular plate the anterior edge of which is deeply emarginate. Black, the pubescence silvery, forming a broad medially interrupted band on the apical margin of the 2nd abdominal segment, the 1st and basal four-fifths of the 2nd segment of the abdomen red; wings, basal half of forewing deep yellow, of hind wing clear hyaline, apical portions of both wings deep fuscous, tegulæ black, very large, smooth and shining, nervures yellow on the yellow or hyaline and fuscous on the dark portions of the wings.

♂. Length 12; exp. 21 mm.

Hab. Deesa.

Family POMPILIDÆ, Leach.

6. *Pseudagenia glabra*, sp. nov.

♀ ♂ Head, thorax, and abdomen smooth, brilliantly polished and shining, entirely impunctate; clypeus transverse, slightly convex, its anterior margin straight; mesonotum wide, convex; median segment rounded posteriorly with a gentle slope to the apex, which is emargin-

ate; abdomen narrow, about the length of the head and thorax united. Jet black, the clypeus and sides of the face with dense, the sides of the thorax and of the median segment with short, thin, silvery pubescence; wings hyaline, tegulae and nervures black.

♀. Length 9; exp. 18 mm.

♂. Length 5-9; exp. 11-20 mm.

Hab. Simla, Sikhim.

7. *Pompilus deperditus*, sp. nov.

♀. Head, thorax, and abdomen smooth, shining, and entirely impunctate in certain lights, with a fine silky pruinose look, head not quite so wide as the thorax; clypeus convex, transversely truncate anteriorly, labrum extended, well marked; eyes with the inner orbits slightly arched outwards in the middle, front and vertex broad, rounded, steeply sloping back to the occiput, this latter emarginate posteriorly; pronotum somewhat long, anteriorly rounded, posteriorly emarginate; median segment with the sides slightly bulging, flattened, above rounded, the apex depressed, gently emarginate; abdomen massive, slightly longer than the head and thorax united. Black, the clypeus, sides of the face, cheeks, sides of the thorax and of the median segment and the base of the segments of the abdomen in certain lights covered with a thin plumbeous bloom; wings hyaline with light fuscous clouds along the basal nervure, in the radial, 2nd cubital and 2nd discoidal cells of the forewing, and along the apical margins broadly of both wings, nervures and tegulae black.

♀. Length 11-12; exp. 22 mm.

Hab. Simla.

Somewhat resembles *P. limbatus*, Smith, but apart from the colour of the wings, it differs from the latter in the much more massive and longer prothorax, in the median segment not bearing a medial longitudinally impressed line, and in the inner calcar of the hind tibiae being short, only about half the length of the metatarsus. In *P. limbatus* this calcar very nearly equals the metatarsus in length.

Family SPHEGIDÆ, Leach.

8. *Tachytes hospes*, sp. nov., pl. A, f. 7.

♀. Head and thorax anteriorly smooth, median segment rounded above, truncate posteriorly, not so long as the thorax, bearing a medial slightly marked longitudinal furrow from which fine divergent striae radiate obliquely backwards, curving over the sides; abdomen massive,

smooth, dull and opaque, with only a few fine scattered punctures; pygidial area densely pubescent; head, thorax, the coxæ and trochanters of the legs, and the median segment, black; the femora, tibiæ and tarsi, and the abdomen dull deep red; the clypeus, the face in front as high nearly as the vertex, the cheeks, the pronotum, the mesonotum, except on the disc, the sides of the thorax and pectus, the back of the anterior femora and the front of the coxæ, the sides of the scutellum, the postscutellum, and the sides and apex of the median segment, covered with a dense matting of fine short silvery pile, the pygidial area with golden pile; wings fusco-hyaline, their apical margins darker, tegulæ and nervures red.

♀. Length 20; exp. 32 mm.

Hab. Deesa.

9. *Cerceris himalayensis*, sp. nov.

♂. Head, except the clypeus and the region immediately round the ocelli, thorax and abdomen closely and somewhat coarsely punctured and granular; clypeus smooth, shining, highly polished, convex almost circular, its anterior margin not dentate, cordate, space at the base of the median segment longitudinally striate, remainder of segment coarsely punctured, the punctures running into irregular striæ on the sides; abdomen long, longer than the head and thorax, basal segment narrowed, 2-4 segments strongly, 5th segment slightly, constricted at base, 5th and 6th ventral segments with prominent well-marked lateral teeth on their apical margins. Black, the mandibles except at apex, the clypeus and face to a little above the base of the antennæ, the scape of the latter in front, a large spot on each side on the posterior margin of the pronotum, the postscutellum, the greater part of the legs, and transverse bands emarginate in the middle above on the apical margins of 1-6 abdominal segments, yellow, the basal three joints of the flagellum of the antennæ, the apical three joints of the tarsi of the intermediate legs, the apex of the femora, the tibiæ and tarsi of the posterior legs, and the lateral dentate processes on the 6th abdominal segment, ferruginous, the apex of the mandibles and a mark on the femora of all the legs posteriorly black; wings hyaline, fuscous at apex and along the outer margin, the costal margin of the forewing stained deep yellow, tegulæ and nervures yellow.

♂. Length 11; exp. 20 mm.

Hab. Simla.

10. *Crabro grassator*, sp. nov.

♂. Head broad, broader than the thorax front, vertex, pro- and mesonotum finely and very closely punctured, with an opaque and somewhat granular appearance, scutellum, postscutellum, and median segment more coarsely punctured, the last with a medial deep transversely striate and somewhat broad furrow, meeting in T-fashion a furrow running between the postscutellum and median segment; abdomen smooth, polished, elongate, oval in shape, the basal segment gradually broadening from base to apex. Black, the base of the mandibles, the scape of the antennæ in front, a medially interrupted line on the posterior margin of the pronotum, the tubercles, the greater part of the legs, and ovate spots at the base of the 2nd, 4th, and 5th abdominal segments above yellow, the spots on the latter two segments having a greenish tinge; the clypeus, which is sub-porrect, and front of the face covered with dense silvery pile, the coxæ and greater part of the femora of the legs black, the tarsi stained ferruginous; wings hyaline, lightly sub-fuscous, nervures and tegulae dark brown.

♂. Length 9; exp. 16 mm.

*Hab.* Simla.

Closely allied to *C. odontophorus*, Cam., and *C. ardens*, Cam., but differing from both in markings, and very conspicuously in structure and sculpture.

## Family EUMENIDÆ, Westw.

11. *Eumenes antennata*, sp. nov., pl. A, f. 8.

♂. Vertex of the head, the mesonotum, the petiole of the abdomen, and 2nd abdominal segment above coarsely punctured, remainder of the head, thorax, and abdomen smooth but dull and opaque in appearance; clypeus elongate scutiform, deeply emarginate at apex; scape of the antennæ very thick and massive; petiole of abdomen narrowed at base, sub-tuberculate on the middle laterally. Black, the mandibles, clypeus, face in front, the emargination of the eyes, a line behind them, the scape of the antennæ, the pronotum, two crescentic spots anteriorly on the mesonotum, two smaller quadrate spots on the same in the middle, the scutellum, a line posteriorly on the postscutellum, the whole of the median segment, except a small triangular spot at its base, the mesopleuræ, the legs, two spots at the base, two laterally on the middle and the apex broadly of the petiole, and the greater part of the rest of the



abdomen yellow; the back of the femora, apex of the tibiae, and the tarsi of the posterior legs reddish-brown, the base narrowly, and a transversely elongate diamond-shaped spot on the 2nd abdominal segment above, with the bases of the 3-6 segment and the whole of the apical segment black; the apical three joints of the flagellum of the antennae reddish-yellow; wings hyaline, tegulae yellow, nervures testaceous, the clypeus covered with silvery pile, very bright and glistening in certain lights.

♂. Length 10; exp. 18 mm.

Hab. Deesa.

12. *Odynerus nursei*, sp. nov., pl. A, f. 9.

♀. Head and front above the base of the antennae very finely and closely punctured; clypeus nearly circular, very convex, smooth and dull, with only a few scattered fine punctures, the anterior margin bent downwards and produced slightly into two teeth; thorax oval above, on the sides somewhat finely and distantly, and on the postscutellum and median segment above very densely and coarsely punctured; disc of mesonotum with two parallel longitudinally impressed lines; median segment posteriorly truncate, the face of the truncation smooth; legs smooth, shining, slightly pruinose in certain lights; abdomen highly polished and shining, the basal segment and base of the 2nd coarsely and cribrately punctured and rugose, the former narrowed at base, anteriorly abruptly truncate, with a transversely impressed furrow along the margin of the truncation, remaining abdominal segments lightly punctured; the 1st ventral segment coarsely reticulate, the margin smooth; base of the 2nd ventral segment depressed, bearing coarse longitudinal striae with deep furrows between, the remainder of this and the following ventral segments highly polished, smooth, and shining. Black, a crescentic spot at the base of the clypeus, a spot on each side on the pronotum, a spot beneath the base of the wings, the apical margins of the 1st narrowly, of the 2nd broadly above and on the sides, and of the 3rd and 4th abdominal segments narrowly in the middle above, yellow, legs black; the apex of the femora, the tibiae and tarsi testaceous-brown, the tibiae of the intermediate and posterior legs with a black stain on the underside; wings light fusco-hyaline, nervures and tegulae reddish-brown.

♀. Length 12; exp. 30 mm.

Hab. Simla.

## Family APIDÆ, Auct.

13. *Sphcodes indicus*, sp. nov., pl. A, f. 10.

♂. Head closely and finely punctured; antennæ elongate; somewhat moniliform; thorax anteriorly shining sparsely; the median segment densely and very coarsely punctured, the punctures running into reticulations, the segment rounded above, the apex truncate, and margined and bearing a medial longitudinal carina; legs and abdomen smooth, polished and shining, rather finely and delicately punctured, a constriction between the 1st and 2nd segments of the latter, with the margin of the 2nd segment depressed. Jet black, the front, the clypeus, cheeks, sides of the thorax beneath wings, and the legs covered with a thin silvery-white pubescence, most dense on the clypeus and front of the head below the base of the antennæ, very sparse on the legs, where on the tarsi it turns into a ferruginous-brown colour; wings hyaline at base, sub-fuscous on their apical two-thirds, nervures and tegulæ black.

♂. Length 7; exp. 15 mm.

14. *Halictus asperatus*, sp. nov.

♀. Head above, thorax and abdomen very minutely and densely punctured; the face on each side of the clypeus and along the inner orbits to as high as the base of the antennæ rugosely striate, the striae irregular and obliquely divergent; clypeus finely and somewhat sparsely punctured, anteriorly transverse; median segment short, abruptly truncate posteriorly; the cordate space at base broad, concave, and with fine oblique divergent striae; abdomen massive, longer than the head and thorax united. Black, the apical margins of the basal three abdominal segments reddish-brown; the head, thorax, legs and transverse narrow bands, on the apical margins of the 1-4 segments of the abdomen, with hoary-white pubescence; the pubescence inclines to fuscous on the head and face in front, is very bright and glittering with a yellow tinge on the legs, and is snow-white on the abdomen; anal rima reddish-brown, with a fringe on each side of fuscous hairs; wings hyaline, very faintly fuscous on their apical margins, the tegulæ and nervures brown.

♀. Length 11; exp. 23 mm.

*Hab.* Simla.

This large and handsome species can be easily distinguished by its remarkably rugose face.

15. *Halictus dynastes*, sp. nov.

♀. Head above and in front to the base of the antennæ very finely punctured, the punctures seeming to run into striæ in certain lights; clypeus and median segment more distantly and coarsely punctured; abdomen above finely aciculate; median segment rounded posteriorly, with the cordate space at base concave, and with fine divergent striæ. Black, the pubescence on the head and thorax fuscous, on the legs pale and glittering, and on the abdomen hoary-white, forming a narrow transverse band at the base of the 2nd and 6th segments, and a very broad and conspicuous one at the base of the 3rd segment, anal rima reddish-brown, fringed with fuscous hairs on each side; wings very broad and ample, hyaline, tegulæ black, nervures brown.

♀. Length 10; *exp.* 2½ mm.

*Hab.* Simla.

Resembles *H. ducalis*, Bingham, but the median segment is rounded, not truncate posteriorly, the cordate space at its base being striated, not punctured, and the broad band of pubescence is at the base of the 3rd, not the 2nd abdominal segment.

16. *Halictus nireus*, sp. nov.

♂. Head, thorax, and abdomen polished and shining, extremely minutely punctured, the punctures on the face in front seeming, in certain lights, to run into very fine longitudinal striæ; median segment roundly truncate posteriorly, the cordate space at base reticulate; abdomen with the apical margins of the basal two segments distinctly depressed. Jet black, thinly covered with a short pale pubescence all over, most dense on the femora, tibiæ, and tarsi of the legs; the apical margins of all the abdominal segments, and the tibiæ and tarsi of the legs, testaceous; wings hyaline, nervures and tegulæ pale testaceous.

♂. Length 8-9; *exp.* 17 mm.

*Hab.* Simla.

17. *Halictus himalayensis*, sp. nov., pl. A, f. 11.

♀. Head and thorax in front closely and very finely punctured; median segment rounded, slightly truncate posteriorly, the cordate space at its base depressed, bearing divergent fine oblique striæ; abdomen massive, smooth, and shining; head and thorax black; the greater part of the abdomen blood-red; the face in front, the sides of the thorax, the sides and apex of the median segment, and the legs covered

with somewhat dense glittering pale yellow pubescence, forming a tuft on the tubercles, and specially dense on the femora and inside of the tibiæ of the posterior legs; the base of the 1st and the apical two segments of the abdomen blackish, the anal rima pale testaceous; wings hyaline, tegulæ and nervures testaceous.

♀. Length 7; exp. 14 mm.

Hab. Simla, Mussoorie, Sikkim.

18. *Nomia tegulata*, Smith.

*Nomia tegulata*, Smith, Trans. Ent. Soc. 1875, p. 69.

An Arabian and African species not previously recorded from India. Specimens vary somewhat in size and in the colour of the tegulæ, but can be easily distinguished from all others by the remarkably large development of the latter. I give Smith's original description:—

“Female.—Length  $2\frac{1}{2}$  to  $3\frac{1}{4}$  lines. Black and thinly covered with short cinereous pubescence, that on the tarsi and posterior tibiæ pale fulvous. Head: the flagellum fulvous beneath towards the apex; the clypeus rather strongly and closely punctured. Thorax: the metathorax smooth with the sides punctured. Wings hyaline with their apical margins clouded, the nervures testaceous, the tegulæ large and pale testaceous, having anteriorly a rufo-fuscous spot; the posterior tibiæ and all the tarsi pale ferruginous; abdomen, at the basal margins of the segments a fascia of pale pubescence, over which is a thin fringe of pale fulvous hairs on the apical margins.”

Hab. Sierra Leone, Aden, Deesa.

Specimens vary in length from  $2\frac{1}{2}$ — $4\frac{1}{4}$  lines (6—9 mm.) and in the colour of the tegulæ from white to dark testaceous-yellow.

19. *Megachile creusa*, sp. nov.

♀. Head, thorax, and the bases of the abdominal segments strongly but finely punctured; head very large and massive, broader than the thorax, emarginate posteriorly; clypeus slightly convex, broader than high, its anterior margin transverse; median segment very short, smooth, and impunctate at base; abdomen about as long as the head and thorax united; the apical margins of segments 2—5 strongly depressed, the anterior border of the depressed bands bisinuate. Black, the flagellum of the antennæ, and the femora, tibiæ, and tarsi of all the legs dark blood-red; the front and clypeus, sides of the thorax and of the median segment, covered with long, the margins of the abdominal

segments 1-5 with short, white pubescence; pollen brush fuscous-white, wings hyaline, shaded with fuscous on the apical half of the forewing, nervures and tegulae brownish-red.

♀. Length 12; exp. 23 mm.

Hab. Deesa.

20. *Megachile calioxysides*, sp. nov.

♀. Head, thorax, and abdomen extremely, minutely, and closely punctured and densely pubescent, the pubescence soft and short on the abdomen, forming apical bands on segments 1-5; head about as broad as the thorax; clypeus broad, convex, its anterior margin transverse, notched in the middle; abdomen tapering sharply from base to apex, as in the genus *Calioxys*. Black, the pubescence snow-white, ferruginous on the inside of the metatarsus of the posterior legs, antennae castaneous, claws pale testaceous; pollen brush snow-white; wings hyaline, nervures and tegulae testaceous.

♀. Length 10; exp. 17 mm.

Hab. Deesa.

21. *Megachile studiosa*, sp. nov.

♀. Head, thorax, and abdomen finely, evenly, and somewhat closely punctured; the clypeus and front, the cheeks, sides of the thorax, sides of the median segment and legs clothed with long soft pubescence; clypeus much broader than high, slightly convex, its anterior margin transverse or even slightly emarginate; abdomen strongly convex above the 3rd and 4th segments, with a conspicuous transversely-impressed line above, posterior to which on the 4th segment the surface is smooth, shining, impunctate. Black, the pubescence snow-white, ferruginous on the inside of the posterior tarsi; pollen brush snow-white; wings hyaline, nervures and tegulae black.

♀. Length 9; exp. 17 mm.

Hab. Simla.

The latter two species somewhat resemble each other at first sight; but apart from the difference of the puncturing, the remarkable shape of the abdomen of *M. calioxysides* distinguishes it at once from *M. studiosa*, and in fact from any species of *Megachile* known to me.

22. *Anthidium desidiosum*, sp. nov., pl. A, f. 12.

♀. Head and thorax dull opaque, looking densely and very finely punctured, and covered with somewhat long sparse pubescence;

abdomen more finely but not quite so densely punctured, non-pubescent and slightly shining; all the abdominal segments with their apical margins very narrowly smooth and polished. Black, the clypeus, the sides of the face, a transverse line on the occiput broadened at each end, the margins of the tegulae, the posterior margins very narrowly of the scutellum, the tibiae anteriorly, and the tarsi of the legs, and elongate spots on each side at the base of all the abdominal segments above yellow, the pubescence fuscous, the pollen-brush yellowish-white; wings hyaline, broadly fuscous along their apical margins.

♀. Length 10; exp. 21 mm.

Hab. Deesa.

23. *Ceratina incognita*, sp. nov.

♂. Head and thorax finely and closely, abdomen more coarsely, punctured, shining; the clypeus, the disc of the mesonotum and of the scutellum nearly impunctate, polished; median segment rounded posteriorly; the lunate space at base concave, coarsely punctured and rugose. Black, the clypeus, the tubercles, the knees and the tibiae anteriorly of all the legs; elongate lateral spots on abdominal segments 2—4, smaller lateral spots on segments 1 and 5, and two spots medially above on the apical margin of the 1st segment above, reddish-yellow or orange; tarsi testaceous-yellow; wings hyaline; nervures and tegulae dark brown.

♂. Length 8; exp. 16 mm.

Hab. Simla.

24. *Anthophora liriopae*, sp. nov.

♂. Head, thorax, and abdomen covered with dense long pubescence, forming on the last broad transverse bands on the apical margins of segments 1—5; clypeus sub-parallel, with a deep square emargination anteriorly, the vertex of the head and the base of all the segments of the abdomen densely punctured. Black, the base of the mandibles, the labrum, and the clypeus whitish-yellow; the margins of the labrum and of the clypeus, and the apex of the mandibles, testaceous-brown, the sides of the clypeus towards the base black, the antennae castaneous, the pubescence on the vertex, on the thorax above, and on the posterior lateral angles above, of the median segment, ochraceous, that on the clypeus, cheeks, thorax beneath, on the

outside of the anterior legs, on the outside of the coxæ, femoræ, tibiæ, and metatarsi of the intermediate and posterior legs, and the transverse bands on the abdomen, snow-white ; on the inside of the legs and on the apical joints of the intermediate and posterior tarsi is jet black in conspicuous contrast ; wings hyaline, with an exceedingly pelucid glassy look, nervures and tegulæ testaceous.

♂. Length 10 ; exp. 19 mm.

Hab. Deesa.

25. *Anthophora iole*, sp. nov.

♂. Allied to and closely resembling the last but structurally different ; head on the vertex above and the bases of all the abdominal segments extremely, minutely, and closely punctured, the puncturing much finer than in the preceding species ; clypeus convex, sub-porrect, its anterior margin transverse not emarginate. Black, the labrum, clypeus, the face on either side and above below the base of the antennæ, and the scape of the last in front, pearly-white ; two spots at the base of the labrum ; a broad oblique line on each side of the clypeus, and the margins narrowly both of the clypeus and labrum, black ; the back of the scape and the flagellum of the antennæ dark castaneous ; the head above the base of the antennæ, the thorax above the median segment, and the basal abdominal segments clothed with dense long ochraceous pubescence, with the tips of the hairs fuscous-black ; the cheeks, pectus, sides of the thorax, legs on the outside, and abdomen with dirty fuscous-white pubescence, which on the abdomen forms somewhat thin but broad transverse bands on the apical margins of segments 2—5, the inside of the legs, especially the inside of the posterior metatarsi, clothed with dense black pubescence ; wings hyaline, nervures and tegulæ brown.

♂. Length 10 ; exp. 20 mm.

Hab. Simla.

26. *Anthophora antiöpe*, sp. nov.

♀. Head, thorax, and abdomen finely and closely punctured, pubescent ; clypeus convex, subporrect, anteriorly roundly emarginate, front below the ocelli depressed, a conspicuous medial vertical carina from the anterior ocellus to the apex of the clypeus ; anal segment of the abdomen raised and flat above, compressed at the sides. Black, the pubescence on the front, the sides of the thorax, the median

segment, and base of 1st abdominal segment, fuscous-white, on the cheeks, pectus, legs in front, and abdomen it is snow-white, forming on the last narrow transverse bands above and below on segments 1—5, pubescence on the tarsi, and the tibial calcaria and apical joints of the tarsi, castaneous; wings hyaline, tegulae testaceous, nervures dark brown.

♀. Length 16; exp. 28 mm.

Hab. Simla.

27. *Apis testacea*, sp. nov.

♀. Head, thorax, and abdomen smooth, dull, impunctate, covered on the head and thorax with a very thin sparse pubescence; clypeus very slightly convex, its anterior margin truncate, front with a conspicuous medial furrow from the base of the antennae to below the anterior ocellus, where it forks and passes in Y-fashion to behind the posterior ocelli; median segment rounded posteriorly, with a medial longitudinal furrow; abdomen massive, longer than the head and thorax united; head, flagellum of the antennae, except the basal joint, and the whole of the thorax and median segment, castaneous brown; the scape and basal joint of the flagellum of the antennae, the legs and the abdomen, pale honey-yellow, the whole insect having a pelucid semi-transparent appearance, pubescence snow-white; wings hyaline, vitreous, tegulae and nervures honey-yellow.

♀. Length 9; exp. 8 mm.

Hab. Deesa.

Knowing the extreme variability of the three common species of honey bees found in India, it is with no little hesitation I describe and figure this remarkable form sent me by Captain Nurse. It is so different from any specimen of *Apis indica* or of *A. florea* that I have ever come across that I venture to describe it as new. It is to be hoped that Captain Nurse will be able to find a comb of the species, and procure the queen and the drones.



EXPLANATION OF PLATE A.

(a) ADEN HYMENOPTERA.

<i>Trachypus subconcolor</i> , sp. nov.	...	...	...	Fig. 1, p. 107.
<i>Philanthus yerburyi</i> , sp. nov.	...	...	...	" 2, p. 106.
<i>Trachypus nursei</i> , sp. nov.	...	...	...	" 3, p. 108.

(b) INDIAN HYMENOPTERA.

<i>Coleocentrus möllerii</i> , sp. nov.	...	...	...	" 4, p. 116.
" "	view underside of last four abdominal segments	...	...	" 4a, p. 116.
" "	basal 4 or 5 joints of the antenna	...	...	" 4b, p. 116.
<i>Xylonomus elizabethæ</i> , sp. nov.	...	...	...	" 5, p. 116.
" "	foreleg showing attenuated base	...	...	" 5a, p. 116.
<i>Mutilla fumipennis</i> , sp. nov.	...	...	...	" 6, p. 118.
<i>Tachytes hospes</i> , sp. nov....	...	...	...	" 7, p. 119.
<i>Eumenes antennata</i> , sp. nov.	...	...	...	" 8, p. 121.
<i>Odynerus nursei</i> , sp. nov.	...	...	...	" 9, p. 122.
<i>Sphecodes indicus</i> , sp. nov.	...	...	...	" 10, p. 123.
<i>Halictus himalayensis</i> , sp. nov.	...	...	...	" 11, p. 124.
<i>Anthidium desidiosum</i> , sp. nov....	...	...	...	" 12, p. 126.

Journ

B.L.S.