

SCIENTIFIC RESULTS

OF

THE SECOND YARKAND MISSION;

BASED UPON THE COLLECTIONS AND NOTES

OF THE LATE

FERDINAND STOLICZKA, PH.D.

HYMENOPTERA.

BY

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BY FREDERICK SMITH, *Zoological Department, British Museum.*

THE collection made by Dr. Stoliczka while attached to the Second Yárkand Expedition contains sixty-three species, only nine of which appear to have been previously described; among them are species belonging to the families, *Andrenidæ*, *Apidæ*, *Formicidæ*, *Myrmicidæ*, *Scoliadæ*, *Pompilidæ*, *Sphegidæ*, *Larridæ*, *Eumenidæ*, *Vespidæ*, *Tenthredinidæ*, and *Ichneumonidæ*.

Tribe—ANTHOPHILA (Latr.)

Division 1—SOLITARIÆ.

Family—ANDRENIDÆ.

1. PROSOPIS FERVIDUS.

Femina.—*P. atra*, *fronte maculata, tibiis omnibus flavo-annulatis; abdominis segmentorum marginibus rufo-testaceis.*

Black; the head closely and finely punctured; a yellow line on each side of the face along the margin of the eyes; the flagellum of the antennæ fulvous, slightly fuscous above. Thorax punctured above and shining; the metathorax rugose in the middle of its base; the collar, tubercles, tegulæ, the anterior tibiæ and tarsi, the intermediate and posterior tibiæ at their base, and their tarsi, yellow; the wings hyaline and iridescent; their nervures towards the base pale testaceous, beyond, fuscous.

Abdomen shining, very finely and closely punctured; the apical margins of the segments rufo-testaceous. Female, length  $2\frac{3}{4}$  lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

The genus *Prosopis* has a wide geographical distribution. Species occur both in the Old and New World; in Europe not less than forty species are found. The genus also occurs in Egypt, at Natal, and in the Cape of Good Hope; in Australia it is plentiful, and

it has been found in New Zealand. In the New World it appears to be most plentiful in the United States, Mexico and California; but in tropical localities only two or three species have, to my knowledge, been discovered.

The habits of these bees, as far as those of the European species have been observed, are to form their burrows in dead sticks, in the pith of which they excavate their tunnels.

## 2. LAMPROCOLLETES PEREGRINUS, Fig. 5.

Femina.—*L. capite thoraceque nigris, abdomine chalybeo, alis fusco-hyalinis.*

Head and thorax black; the face with silvery white pubescence, as well as the thorax anteriorly and posteriorly above; the head beneath, a band between the wings, and the legs covered with black pubescence; wings fusco-hyaline, the anterior wings darkest, and having a violet iridescence; at their base they are subhyaline. Abdomen ovate and of a dark shining steel-blue; the apical segments with black pubescence. Female, length 5 to 5½ lines.

*Hab.*—Yangihissár, Eastern Turkestan. Taken in April.

All the species of this genus, previous to that here described, have been from Australia; about twenty have been described.

## 3. ANDRENA FAMILIARIS, Fig. 3.

Mas.—*A. atra, pallide villosa, abdominis segmentis tribus basalibus pallide rufo-marginatis.*

Black; the face and cheeks with a pale fulvous pubescence; the flagellum of the antennæ fusco-ferruginous beneath; the thorax has a similar pubescence; the coxæ and femora rufo-piceous; the tibiæ and tarsi pale testaceous yellow; the wings hyaline and iridescent; the nervures and the stigma pale rufo-testaceous. Abdomen oblong-ovate, with a thin short pale pubescence; the apical margins of all the segments testaceous, those of the three basal segments pale ferruginous; beneath entirely pale rufo-testaceous. Male, length 4½ lines.

*Hab.*—Neighbourhood of Yárkand. Taken in May.

## 4. ANDRENA FLORIDULA,<sup>1</sup> Fig. 4.

Mas.—*A. nigra, cinerascenti-pilosa, tibiis tarsisque posticis fulvis; abdomine nitido, segmentorum marginibus testaceis.*

Black; the head, thorax and legs with long thin cinereous pubescence; the flagellum of the antennæ fulvous beneath; the mandibles ferruginous at their apex. Thorax; the wings hyaline and iridescent; the nervures and stigma rufo-testaceous; the legs dark rufo-piceous the posterior tibiæ and tarsi fulvous, and clothed with silvery pubescence. Abdomen oblong; ovate; the apical margins of the segments testaceous, and with a thin fringe of whitish pubescence; the apex fulvo-testaceous. Male, length 4 lines.

*Hab.*—Drás, Kárgil, and Leh, all in Ladák; August to September.

This is a genus the geographical distribution of which is very extensive; the species are found in all parts of Europe, ranging north into Lapland. Numerous species have been found in

<sup>1</sup> This name is misprinted *floricula* on the plate.

the Azores, in Madeira, Cape de Verd Islands, and in Egypt; a few have occurred in Northern India, China, and Japan. In Australia and New Zealand they appear to be very rare; no species has, to my knowledge, been found in South America, but they are found in Mexico, and are plentiful in North America.

All the species appear to construct their nests in tunnels excavated in the ground.

Family—*APIDÆ*.

5. *OSMIA LABORIOSA*, Fig. 6.

Femina.—*O. nigra, pube fulva vestita; abdominis segmentis rufo-marginatis; pedibus ferrugineis.*

Black; head shining and finely punctured; the scape of the antennæ, the anterior margin of the clypeus, and the mandibles, ferruginous; the latter tridentate, the teeth black; the face and the vertex with fulvous pubescence. The thorax has a fulvous pubescence, which is usually more or less abraded above; the mesothorax closely punctured, more strongly so than the head; the legs bright ferruginous, with the coxæ black; wings fulvo-hyaline at their base, and fuscous beyond the base of the first submarginal cell; the tegulæ and nervures at the base of the wings ferruginous, becoming nigro-fuscous beyond. Abdomen closely punctured; the basal segment above, and the apical margins of the second and third segments broadly ferruginous; all the segments fringed with fulvous pubescence; beneath, densely clothed with fulvous pubescence. Female, length  $4\frac{1}{2}$  lines.

*Hab.*—Taken in May, in the neighbourhood of Yárkand.

This genus is numerous in species, but it appears only to be found, in any abundance, in temperate climates; nearly one hundred species are known, about half of these are European; several are found in North Africa, and they occur plentifully in North America.

6. *MEGACHILE RESCINDUS*.

Femina.—*M. pallide pubescens, abdomine subcordato, segmentorum marginibus pallide fulvis, subtus fulvo-villosis.*

Black; the face covered with fulvous pubescence, that on the cheeks paler; the mandibles with three ferruginous blunt teeth. Thorax; the pubescence on the disk short and thin, at the sides it is more dense, long and pale fulvous, that on the legs is very pale and glittering above; on the basal joint of the tarsi beneath it is bright fulvous; the claws of the tarsi ferruginous; wings sub-hyaline, the nervures fusco-ferruginous. Abdomen; a little pale fulvous pubescence on the apical margin of the basal segment; on the following segments it is fulvous, and very dense and bright on the segments beneath. Female, length 6 lines.

*Male.*—Black, with the anterior legs ferruginous; their coxæ armed with an acute black tooth; a dark stain on the femora and tibiæ behind, the tarsi dilated and fringed behind with very pale curled pubescence. The face covered with dense yellowish white pubescence; on the thorax above it is thinner, shorter and brighter; wings hyaline, with a faint cloud at their apical margin; the metathorax has a cinereous pubescence. Abdomen; the segments

fringed with pale fulvous pubescence; the margin of the apical segment emarginate; the emargination denticulate. Length  $6\frac{1}{2}$  lines. In this species the head is a little wider than the thorax, and narrowed behind the eyes.

*Hab.*—Taken in May, in the neighbourhood of Yárkand.

#### 7. MEGACHILE FULVA.

Femina.—*M. atra, thorace abdomineque hirsutis fulvo-aureis, pedibus ferrugineis.*

Black; the mandibles, scape of antennæ, and the legs ferruginous; the coxæ, trochanters, and tips of the mandibles, black; densely covered with fulvous pubescence, sparingly so on the vertex and basal margins of the intermediate abdominal segments; the pubescence on the legs is short and thin; the anterior wings flavo-hyaline towards their base, beyond which they are fuscous; the nervures ferruginous at the base of the wings, beyond the stigma they are rufo-fuscous; the tegulæ ferruginous. Female, length  $7\frac{1}{2}$  lines.

Taken on the Yárkand Expedition; the precise locality not known.<sup>1</sup>

#### 8. MEGACHILE DENTIVENTRIS.

Mas.—*M. pallide pubescens; abdominis apice denticulato; tarsis rufis.*

Black; the face densely covered with white pubescence, that on the cheeks is also white, but shorter and less dense; on the vertex it is pale fulvous; the mandibles stout and bidentate the teeth rufo-piceous, the apical one black at the tip. The thorax and legs with white pubescence; the anterior femora and tibiæ in front, and all the tarsi bright ferruginous; the anterior coxæ armed with a stout spine; wings hyaline, the anterior pair faintly clouded at their apical margin; the nervures ferruginous; the tegulæ black. Abdomen; the apical margins of the segments fringed with very pale fulvous-white pubescence; that at the sides, and beneath, is white; the apical segment with four teeth on its margin. Male, length 5 lines.

*Hab.*—Neighbourhood of Yárkand. Taken in May.

#### 9. MEGACHILE SERRATA.

Mas.—*M. pallide pubescens, abdomine oblongo, ano inflexo, spinuloso.*

Black; the face with pale fulvous pubescence, that on the cheeks cinereous; the antennæ fulvous beneath. Thorax clothed above with pale fulvous pubescence; at the sides, beneath, and on the legs, it is cinereous; the tarsi ferruginous, with the basal joint of the intermediate and posterior pairs, black above; the anterior coxæ dentate; wings hyaline, the anterior pair slightly clouded at the apex, the nervures ferruginous, the tegulæ black. Abdomen oblong, obtuse at the apex; the two basal segments with pale fulvous pubescence; the apical margins of the segments fringed with pale pubescence; the apical segment clothed with short pale pubescence, its margin serrated; beneath, the apical segment is produced into a large triangular process, acute at its apex. Male. Length 5 lines.

*Hab.*—Neighbourhood of Yárkand. Taken in May.

<sup>1</sup> Probably, like some other specimens without labels, this may have been from the hills south of Yárkand.

## 10. MEGACHILE VIGILANS.

Femina.—*M. pallide pubescens*; abdomine subtus argenteo-villosulo, segmentorum marginibus dorsalibus pallido-fasciatis.

Black; the face clothed with dense white pubescence; the mandibles with four blunt teeth. The pubescence on the thorax and legs whitish, that on the tarsi beneath fulvous; wings hyaline, the nervures black. Abdomen subcordate, the basal segment deeply concave, the metathorax rounded and fitting into the cavity, the abdomen curving upwards, the apical margins of the segments with fasciæ of white pubescence; beneath, densely clothed with silvery-white pubescence. Female, length  $4\frac{1}{2}$  lines.

*Hab.*—Drás, Kárgil, and Leh, all in Ladák. (August and September.)

This genus is perhaps the most numerous in species of all the genera of bees; it is also the most cosmopolitan; about three hundred species are known; they occur both in temperate and tropical climates; about fifty are known to inhabit India, China, and the islands of the Eastern Archipelago; they are abundant in Australia, also in both North and South America.

A large number are, from their habit of lining their nests with pieces of leaf, popularly called leaf-cutting bees, but their habits vary; nests of Indian species prove that some species belong to the section of mason-bees, their nests being constructed of agglutinated particles of sand or mud; of the habits of the Australian species, we are at present ignorant.

## 11. ANTHIDIUM VIGILANS, Fig. 7.

Femina.—*A. atrum*, capite thoraceque flavo-variegatis; abdominis maculis lateralibus flavis. Mas.—*A. abdominis inflexi lateribus fasciculato-pilosis, ano septemdentato.*

Black; the head and thorax very closely punctured and subopaque, the abdomen shining and more finely punctured. The clypeus, base of the mandibles, and a line on the posterior margin of the vertex, interrupted in the middle, yellow. A stripe on each side of the thorax in front, and an interrupted line on the posterior margin of the scutellum yellow; the femora at their apex beneath, and the tibiæ and tarsi outside, yellow; wings sub-hyaline, the marginal cell with a fuscous stripe at its anterior margin. Abdomen; each segment with a transverse yellow lateral macula; beneath, clothed with bright pale fulvous pubescence. Female, length  $5\frac{1}{4}$  lines.

The male is considerably larger than the female and is much more pubescent, but is marked with yellow in the same manner, the yellow stripes on the abdomen being broader and forming interrupted bands; the segments have at their lateral margins a floccus of whitish glittering pubescence; the apical segment is tridentate, the lateral teeth yellow, the central one smaller and black; there is also a tooth at the lateral margins of the fifth and sixth segments. Male, length 7 lines.

*Hab.*—The locality of the male is the neighbourhood of Yárkand, and although the precise locality of the female is not ascertained, there is a sufficient general resemblance between the sexes to justify uniting them as one species.

The genus *Anthidium* has a wide geographical distribution; species are found in Europe, Arabia, Syria, Algeria, Cape of Good Hope, Sierra Leone. About six species are known from

India, but I have not seen any from China, the islands of the Eastern Archipelago, nor from Australia; the known number of species is about one hundred.

#### 12. CROCISA HISTRIO, Fabr.

- Nomada histrio*, Fabr., Ent. Syst., ii, 345.  
*Melecta histrio*, Latr., Hist. Nat. Crust. et Ins., iii.  
 ————— Fabr., Syst. Piez., 385.  
 ————— Spin., Ins. Ligur., i, 153.  
*Crocisa histrio*, Latr., Gen. Crust. et Ins. iv, 172.  
 ————— St. Farg., Hym., ii, 454.  
 ————— Eversm., Bull. Mosc., xxv, 104.

*Hab.*—Taken in the neighbourhood of Yárkand, also at Yangihissár. Found also in Southern France, Russia and Algeria.

#### 13. CROCISA INTRUDENS, Fig. 8.

*Femina.*—*C. nigra, capite, thoraceque, pedibusque albo variegatis, scutello emarginato.*

Black; the face and cheeks covered with dense snow-white pubescence, on the vertex it is shorter and thinner; the clypeus porrect, the mandibles ferruginous. The anterior margin and sides of the thorax covered with white pubescence; the mesothorax with three spots anteriorly, the central one oblong, the other two ovate; also two quadrate spots posteriorly, of white pubescence; the scutellum deeply emarginate and having a little white pubescence in the emargination; the tibiæ white outside; wings hyaline, their apical margins slightly clouded. Abdomen, a broad band of white pubescence at the base and a narrower one on the apical margin of the segments, all slightly interrupted in the middle. Female, length  $3\frac{1}{2}$  lines.

*Hab.*—Neighbourhood of Yárkand. Taken in May.

This genus of bees is not numerous in species; only about twelve are at present known, but their distribution is extensive; they have occurred in Europe, North Africa, Natal, South Africa, Ceylon, India, in various islands of the Eastern Archipelago, China, and Australia.

#### 14. ANTHOPHORA VIGILANS.

*Mas.*—*A. nigra, pallide villosa, thorace flavescente, abdominis segmentis pallido-marginatis.*

Black; the mandibles, labrum, anterior margin of the clypeus, and a central line uniting with it, white; the tips of the mandibles rufo-piceous, and two minute black spots at the base of the labrum; the pubescence on the face yellowish white, the thorax with similar pubescence above; the posterior tibiæ and tarsi with white pubescence. Abdomen; the apical margins of the segments pale testaceous and having fasciæ of white pubescence. The wings clear hyaline. Male, length 5 lines.

*Hab.*—Drás, Kárgil, and Leh, all in Ladák.



## 15. ANTHOPHORA SENEX.

Mas.—*A. atra, pallide villosa, facie antice labroque flavis; pedibus intermediis elongatis.*

Black; the face as high as the insertion of the antennæ, the labrum, and scape of the antennæ in front, yellow; the pubescence on the head pale fulvous, whitish on the clypeus. Thorax pubescent; the pubescence faintly yellowish, that on the legs long and ragged; the tarsi testaceous, except the basal joint; the intermediate legs elongate, the fifth joint densely fringed with black pubescence, forming a thick brush; the apical joint of the tarsi rufo-piceous. Abdomen thinly covered with pale pubescence; the margins of the segments pale testaceous. Male, length  $5\frac{1}{2}$  lines.

*Hab.*—Neighbourhood of Yárkand and Yangihissár. Taken in April.

This genus is cosmopolitan, not less than one hundred and fifty species are known; of these twelve are from India.

16. XYLOCOPA NITDIVENTRIS,<sup>1</sup> Fig. 10.

Femina.—*X. nigra, thorace supra pube flava decorata, tibiarum posticarum apicibus tarsisque omnibus pube ferruginea vestitis, alis nigro-fuscis iridescentibus.*

Black; the pubescence on the head black; very closely punctured and opaque. Thorax, clothed above with bright pale yellowish pubescence; on the sides, beneath, and on the femora and tibiæ, it is black; that at the apex of the posterior tibiæ and on all the tarsi, bright fulvo-ferruginous; that on the anterior tarsi mixed with a little black on the first joint; wings fuscous, palest towards their base, and having a violet iridescence in certain lights. Abdomen very smooth and shining, and also very convex, being subglobose; beneath, the apical margins of the segments are narrowly ferruginous, the two sub-apical ones being fringed with bright ferruginous hairs. Female, length  $7\frac{1}{2}$  lines.

*Hab.*—Taken in May, in the neighbourhood of Yárkand.

## 17. XYLOCOPA DUBIOSA, Fig. 9.

Mas.—*X. nigra, fulvo-pubescente; facie antice labioque flavis; abdomine ovato, convexiusculo, segmentorum marginibus fulvo fasciatis.*

Black; the head, thorax, and the base of the abdomen densely clothed with fulvous pubescence; the face below the insertion of the antennæ and the labrum, yellow; the anterior margin of the latter black; the tarsi ferruginous; wings fulvo-hyaline, slightly fuscous towards their apical margins; the nervures ferruginous, the costal nervure blackish. Abdomen ovate, truncate at the base, convex, shining and finely punctured; the apical margins of the segments with a narrow fringe of fulvous pubescence, more or less interrupted in the middle; the sixth and seventh segments covered with fulvous pubescence. Male, length  $7\frac{1}{2}$  lines. Probably the male of *X. nitidiventris*.

Taken in April, at Yangihissár, Eastern Turkestan.

<sup>1</sup> Represented on the plate as *X. dubiosa*. ♀

## 18. XYLOCOPA CONVEXA.

Femina.—*X. nitida, nigra; alis nigro-fuscis violaceo splendide micantibus; abdomine convexo.*

Black and shining; the head not closely but rather finely punctured; the front with short dense black pubescence; the margins of the clypeus raised and shining, and with a central shining carina; the flagellum, except the basal joint, obscurely fulvous beneath. The disk of the mesothorax and the base of the scutellum smooth, shining, and impunctate; the sides, beneath, and the legs, with black pubescence; wings with a beautiful blue, violet and green iridescence. Abdomen very convex, with fine distant punctures; the sides and apex with black pubescence. Female, length 9 to 10 lines.

*Hab.*—Kugiar, 90 miles south of Yárkand. Taken in May and June.

*Xylocopa* has an universal distribution; in my monograph of the genus, published in 1874, one hundred and twenty-three species are registered; the number has been slightly increased since that time. In India twenty species have been found.

## Division 2—SOCIALES.

## 19. BOMBUS VALLESTRIS.

Operaria.—*B. hirsutus, ater, thorace supra abdominisque fascia basali flavis, segmento secundo et apice ferrugineo-fulvis.*

Black; the head sub-rotundate, with black pubescence; the thorax above, the sides, and beneath the wings, densely clothed with pale yellowish-white pubescence; beneath and on the legs it is black; the four apical joints of the tarsi ferruginous; wings fuscous, the nervures black. Abdomen; at the extreme base a fringe of pale yellowish white pubescence, on the second segment and also on the three apical ones it is ferruginous. Worker, length  $6\frac{1}{2}$  lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

The male exactly resembles the worker, having also black pubescence on the face.

## 20. BOMBUS LONGICEPS.

Operaria.—*B. hirsutus, ater, thorace dorso pallide fulvo; abdominis segmentis analibus tribus rufo-fulvis.*

Black; the head elongate, the clypeus smooth and shining; the tips of the mandibles rufo-piceous; the flagellum of the antennæ obscurely fulvous beneath. Thorax above, and at the sides beneath the wings, densely clothed with bright fulvous pubescence; beneath, and on the legs, it is black; the four apical joints of the tarsi ferruginous; the wings hyaline. Abdomen; the three basal segments with black pubescence, usually more or less abraded towards the base, which is smooth and shining; the apical segments fulvo-ferruginous. Worker, length 9 lines.

*Hab.*—Drás, Kárgil, and Leh, Ladák. (August and September.)

The male of this species is clothed exactly the same as the female, the face having also black pubescence.

## 21. BOMBUS ALTAICUS.

*Bombus altaicus*, Eversm. Bull, Mosc., xix, 436, tab. 4, fig. 1.

*Hab.*—Tankse, Pangkong valley, Ladák; also in Asiatic Russia.

## 22. BOMBUS BIZONATUS.

*Femina.*—*B. hirsutus, ater; thorace antice, scutello, abdomineque basi flavis, medio nigro-fasciato, apice pallido.*

The head clothed with black pubescence, the labrum fringed with fulvous; the clypeus naked, smooth and shining. Thorax clothed with pale fulvous pubescence and having a black pubescent band between the wings; the pubescence on the legs and on the body beneath, black; the apical joints of the tarsi with short pale pubescence, that on the basal joint beneath rich fulvous; wings sub-hyaline, the nervures black. The first and second segments of the abdomen with pale fulvous pubescence, the third with black, and the three apical ones with very pale fulvous. Female, length  $7\frac{1}{2}$  lines.

*Hab.*—No locality indicated.

## 23. BOMBUS OPPOSITUS, Fig. 11.

*Femina.*—*B. hirsutus, ater; thorace abdomineque supra fulvis.*

Black; the head clothed with black pubescence; the clypeus naked, smooth and shining. Thorax, clothed above with rather short, rich fulvous pubescence, that on the sides, beneath, and on the legs is black; the pubescence on the apical joints of the tarsi is pale fulvous, on their basal joint within it is bright fulvous, outside it is black; wings subhyaline, their nervures black. Abdomen, clothed above with rich fulvous, beneath with black pubescence. Female, length 9 lines.

*Hab.*—No precise locality indicated.

The genus *Bombus* is widely distributed; its number of species amounting to little short of one hundred. *Bombi* are found both in the Old and New World, a few species occurring in the Tropics; the genus has not been observed to penetrate Africa beyond Algeria, and it has not been found either in Madagascar, Australia or New Zealand. In the Old World it has been found in Lapland, Siberia, Kamtschatka, China, Japan, India and Java. In great Britain twenty species occur. In the New World, it has been found in Greenland, Boothia Felix, and at the Great Bear Lake, within the Arctic Circle. Mexico has produced some of the most beautiful species of the genus; North America is rich in species; in South America several fine ones occur.

## Tribe—HETEROGYNA.

## Family—FORMICIDÆ.

## 24. CAMPONOTUS BASALIS, Fig. 1.

*Femina.*—*C. niger, thorace subtus, pedibus abdominisque basi castaneo-rufis.*

Shining black; the anterior margin of the clypeus and the mandibles rufo-piceous; the flagellum of the antennæ ferruginous. Thorax ovate; the mesothorax and scutellum dark

rufo-fuscous; beneath, the pro-and metathorax and also the legs castaneo-rufous. Abdomen, subglobose; the scale and petiole, and the two basal segments castaneo-rufous, their apical margins black, the second most broadly so; beneath, these segments are entirely castaneous. Female, length 5 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

#### 25. CAMPONOTUS BACCHUS.

Femina.—*C. capite abdomineque nigris, metathorace pedibusque pallide ferrugineis.*

*Formica Bacchus*, Smith, Cat. Hym. Ins., Pt. VI, Formicidæ, p. 21. ♀

*Componotus Bacchus*, Mayr, Novaræ Voy., Form., p. 27.

———*fervens*, Mayr, lib. cit., nec Smith, Cat. Hym. Ins., p. 241.

In the same bottle in spirit a male ant accompanied the female; its size and general appearance justify me in considering it to be the male of *C. Bacchus*; it is  $4\frac{1}{2}$  lines long, black, with the antennæ and legs pale ferruginous, the scape being darker than the flagellum; the mandibles, palpi and post-scutellum are also pale ferruginous; the wings flavo-hyaline; the nervures pale rufo-testaceous; the stigma fuscous.

*Hab.*—Jhilam Valley, Punjab Hills. Ceylon, Calcutta, and Islands of the Eastern Archipelago.

This genus is cosmopolitan; its species are numerous, new kinds occurring in almost every collection made in little frequented places; any attempt to calculate the number of species would be an impossibility; until each species has been collected from its nest, and all the different kinds of sexes carefully ascertained, the number of specific forms cannot be ascertained; workers of several sizes and forms occur in nests of many species, and if captured at large, are doubtless described as distinct; the number of species doubtless amounts to hundreds.

#### 26. FORMICA SIMULATA.

Operaria.—*F. rufo-ferruginea, lævissime cinereo-micans; fronte vertice et abdomine nigrofuscis; squama subtriangulariter rotundata, margine supero rotundato; area frontali opaca.*

The head red, with the vertex and the front, as far as the insertion of the antennæ, more or less rufo-fuscous; the clypeus with a longitudinal sharp carina in the middle; its anterior margin rounded and entire; mandibles ferruginous, with their teeth black; the antennæ ferruginous, with the flagellum, beyond the third joint, fuscous. Thorax and legs bright blood-red. Abdomen covered with fine cinereous pile; in some examples fusco-ferruginous at the base; with a few scattered pale setæ; the scale of the peduncle red, its superior margin rounded. Worker, length 3 lines.

*Hab.*—On the road across the Pámir, from Sirikol to Panja; also at Yárkand; April and May.

This species closely resembles the *Formica sanguinea* of Europe, particularly small workers of that species; the specimens were collected in spirit; therefore it is probable the entire insect would, when living, be covered with a fine pile.

## 27. FORMICA FRATERNA.

Operaria.—*F. rufo-fusca*, sparse pilosula; mandibulis, antennarum scapis, flagellorum basi, pedibusque pallide rufescentibus; area frontali opaca.

The insect covered with a fine grey pile; the anterior part of the head rufo-testaceous, the mandibles ferruginous; the scape of the antennæ and a few of the basal joints of the flagellum pale ferruginous; the legs and scale of the peduncle entirely of that colour; the scale rounded above. The base of the abdomen in some examples more or less tinged with ferruginous; the abdomen with a few scattered pale setæ. Worker, length  $2\frac{3}{4}$  to 3 lines.

*Hab.*—No precise locality indicated.

This species very closely resembles the *Formica cunicularia* of Europe, but its pale legs give it a different aspect.

## 28. FORMICA DEFENSOR.

Operaria.—*F. rufo-ferruginea*, lævissime cinereo-micans; fronte abdomineque fusco-nigris; squama subtriangulariter, margine supero rotundato.

Head, thorax, legs, antennæ, and squama rufo-ferruginous; the apical half of the flagellum and the front above the insertion of the antennæ, fuscous; an impressed line from the anterior ocellus to the clypeus, the latter with a sharp central carina; the frontal area opaque; the teeth of the mandibles black; the head and the flagellum with fine cinereous pile.

The abdomen fusco-ferruginous at the base, and the extreme apex pale ferruginous; the abdomen covered with a fine cinereous pile; beneath fusco-ferruginous. Worker, length  $2\frac{3}{4}$  lines.

*Hab.*—On the road across the Pámir, from Sarikol to Panja. (April and May.)

## 29. FORMICA CANDIDA.

Femina.—*F. nigra nitidissima*; mandibulis, antennis, pedibusque rufescentibus; squama lata, subtriangulariter, margine supra rotundato.

Shining black; the mandibles, antennæ, and legs ferruginous; the latter slightly fuscous above, as are also a few of the apical joints of the flagellum above. The head, the width of the thorax; the clypeus with a sharp central carina; the frontal area semiopaque; the mandibles stout, and with longitudinal punctures. The metathorax semiopaque, and with a fine cinereous pile, which also covers the squama, legs, and thorax on the sides and beneath. Abdomen oblong-ovate, very smooth and shining, and with a sprinkling of pale hairs at the apex; the extreme apex pale testaceous. Female, length  $3\frac{1}{2}$  lines.

*Hab.*—On the road across the Pámir, from Sarikol to Panja. (April and May.)

Family—MYRMICIDÆ, (Sm.)

## 30. MYRMICA CURSOR.

Femina.—*M. sordide rubra*; capite thoraceque longitudinaliter striatis; abdomine fusco-nigro, nitido; mandibulis, antennis, pedibusque pallide ferrugineis.

Obscure ferruginous, with the head sometimes nearly black, or with the sides more or less ferruginous; the antennæ with the scape and a few of the basal joints of the flagellum

pale ferruginous, the rest fusco-ferruginous; the head longitudinally but irregularly striated, the striæ at its sides formed of confluent punctures. Thorax longitudinally striated, oblong-ovate, and having a longitudinal ferruginous space above, enclosed by a black margin; the sides and beneath ferruginous; the metathorax with two short, stout, acute, compressed spines; the legs pale ferruginous. Abdomen globose, smooth and shining; the first node of the petiole wedge-shaped when viewed sideways, and coarsely rugose, the second node globose and sub-rugose. The scape of the antennæ in this species is bent and slender at the base as in the *M. ruginodis* of Europe, which it closely resembles; it is, however, a rather smaller insect. Female, length  $2\frac{3}{4}$  lines.

*Hab.*—No precise locality indicated.

### 31. MYRMICA LUCTUOSA.

*Mas.*—*M. niger, nitidiusculus; mandibulis, antennis, pedibusque, necnon capite thoraceque, sordide pallescentibus; alis hyalinis, nervis rufo-pallidis.*

Black; head and thorax longitudinally striated; the metathorax with transverse curved striæ, and with two stout compressed spines, its apex obscurely rufo-piceous; the club of the antennæ paler than the rest of the antennæ. The wings pale fulvo-hyaline and iridescent; the stigma and nervures pale ferruginous; the legs long and slender, with the apical joints of the tarsi pale testaceous. Abdomen smooth and shining, and with a few scattered pale hairs; the nodes of the abdomen rugose, the first oblong, the second globose. Male, length  $2\frac{3}{4}$  lines.

*Hab.*—Murree (Mari), Punjab hills.

### 32. MYRMICA BREVICEPS.

*Femina.*—*M. sordide rubida; mandibulis, antennis, pedibusque pallide ferrugineis; capite thoraceque longitudinaliter profunde striatis; abdomine rufo-nigro, nitido.*

Rufo-ferruginous; the head strongly longitudinally striated; a small smooth shining space at the base of the clypeus, which is deeply longitudinally grooved; the mandibles striated. Thorax above with a black patch on each side of the mesothorax, and another at the anterior portion; the metathoracic spines short, stout and acute. The first node of the abdomen longitudinally rugose, the second transversely so; the abdomen smooth and shining, ferruginous at the base; the rest dark rufo-fuscous, nearly black, and with scattered erect pubescence. Female, length  $2\frac{1}{2}$  lines.

*Hab.*—No locality or date.

This insect very closely resembles two or three of the British species, particularly *Myrmica sulcinodis*; its head is, however, shorter than that of the British insect.

### 33. CREMATOGASTER APICALIS.

*Femina.*—*C. pallide castaneo-rufus, lævis, nitidus; abdomine apicem versus nigrescente; alis hyalinis.*

Rufo-castaneous, smooth, shining and impunctate; the eyes, margins of the mandibles, and the anterior margin of the clypeus narrowly black; the clypeus finely longitudinally

striated. The mesothorax with a few longitudinal dark lines; the scutellum convex, and rounded behind; the metathorax truncate, not spined, and paler than the mesothorax; wings clear hyaline, the nervures and stigma pale rufo-testaceous. Abdomen oblong-ovate, the base castaneo-rufous, from thence becoming gradually darker to the apex. Female, length  $3\frac{1}{2}$  lines.

*Hab.*—Jhilar valley, Punjab hills. Taken in July.

#### 34. DORYLUS (TYPHLOPONE) LÆVICEPS, Fig. 2.

*Operaria.*—*T. rufo-testaceus, capite castaneo, mandibulis nigris.*

Head oblong, subquadrate, rather wider anteriorly, the flagellum slightly fuscous; very smooth and shining, and with a very faintly impressed central longitudinal line, and also a few delicate scattered punctures. Thorax oblong, divided in the middle by a transverse suture, flattened above and having a few fine punctures. Abdomen, the node of the peduncle incrassate, subquadrate above; oblong-ovate. Worker, length  $3\frac{1}{2}$  lines.

*Hab.*—Jhilar valley. Taken in July.

The insects described under the generic name *Typhlopone* of Westwood are now discovered to be the workers of *Dorylus*; the late Dr. Jerdon observed them issuing from the nests, in company with males of *Dorylus*; Dr. Gerstaecker has described the female of *Dorylus* in the Stett. Ent. Zeits. for 1863, under the generic name *Dichthadia*, pointing out its affinities of structure with those of the male, upon which the genus was founded; and proving demonstratively the affinities of the genera.

#### 35. MUTILLA SUSPICIOSA.

*Mutilla suspiciosa*, Smith, Journ. Proc. Linn. Soc., II, 84 ♂ (1857).

*Hab.*—Jhilar valley. Taken in July.

This species resembles the male of *M. sexmaculata*, but it differs from it by having the wings entirely dark brownish-black; the abdomen is red, with the base and apex black; it has been found in Borneo, Batchian, Celebes, Amboyna, and Bouru.

#### 36. MUTILLA SEXMACULATA, Swederus.

*Femina.*—*M. nigra, thorace supra rufo, abdomine utrinque serie trium macularum albidarum.*

*Mas.*—*M. nigra, thorace antice cinereo, abdomine rufo, basi nigro, alis fuscis basi hyalinis.*

The male of this species was discovered by Sir John Hearsay, who captured the sexes *in coitu*; it, as well as the female, varies greatly in size. I suspect it is the *Mutilla rufogastra* of St. Fargeau.

M. Radoszkovsky, in his Monograph of the *Mutillidæ* of the Old World, says that the insect I have named *M. sexmaculata* of Swederus is not that species; I have carefully compared the insect with the descriptions given both by Swederus and by M. Radoszkovsky, and am quite satisfied that my quotation is correct, although it is said by

the above author to be synonymous with a species described by him under the name *M. tretraops*, with the description of which it in no way agrees.

Tribe—**FOSSORES**, (Latr.)

Family—*SCOLIADÆ*, (Leach).

### 37. SCOLIA HAEMORRHOIDALIS.

<i>Scolia haemorrhoidalis</i> , Fabr., Ent. Syst. ii, 230, Syst. Piez., 240.	
”	Klug, Weber & Mohr, Beitr. i, 24.
”	Spin., Ins. Ligur., i, 74.
”	Latr., Gen. Crust. et Ins., iv, 105.
”	Vand., Lind. Hym., Eur., 18.
”	Brullé, Exped. Sc. de Morée, iii, 370.
”	St. Farg., Hym., iii, 522.
”	Burm., Mon. Scolia, 18.
”	Smith, Cat. Hym. Ins., Pt. iii, 110.
”	Sauss. et Sich., Cat. des Espèc. Scol., 50.

*Hab.*—France, Spain, Albania, Hungary, Russia, Siberia, Asia Minor, India. The locality of Dr. Stoliczka's specimens has not been recorded.

This insect belongs to the division of the genus in which the anterior wings have three submarginal cells and one recurrent nervure, and is a “*Triscolia*” of Saussure.

Family—*POMPILIDÆ*.

### 38. POMPILUS ARROGANS.

*Femina.*—*P. ater, abdominis basi rufo-ferruginea, alis anticis fuscis.*

Black; the head subopaque and finely longitudinally rugulose; the anterior margin of the clypeus slightly rounded, the mandibles rufo-piceous at their apex. Thorax slightly shining above, and having a thin grey sericeous pile; the metathorax concave in the middle posteriorly; the anterior wings fuscous, palest at their base; the posterior pair hyaline, with their apex slightly clouded; the second submarginal cell subquadrate, the third longer than the second and slightly narrowed towards the marginal cell; the tarsi thickly spinose, the tibiæ with a few scattered spines; the tips of the claws of the tarsi ferruginous. Abdomen; the three basal segments ferruginous, the apical margin of the third and the following segments black. Female, length 6 lines.

*Hab.*—Drás, Kárgil, and Leh, in Ladák. Taken in August and September.

### 39. POMPILUS ATRIPES.

*Femina.*—*P. niger; abdomine ferrugineo, apice nigro; alis fuscis; antennis crassis.*

Black; the head smooth and shining, very finely punctured; the antennæ much thicker in the middle than is usual in the genus. Thorax finely pilose, shining and finely punctured



above; the posterior margin of the prothorax angulated; the metathorax smooth and shining, with a central impressed line not quite extending to the apex; wings fuscous, clearer towards their base; legs entirely black, as are also the spines and calcaria that arm the tibiæ at their apex; tibiæ only very slightly spinose. Abdomen smooth and shining; the three basal segments ferruginous. Female, length  $3\frac{1}{4}$  lines.

*Hab.*—Murree, Punjab hills.

## 40. POMPILUS DIVISUS.

*Mas.*—*P. niger*, abdominis segmento secundo tertioque ferrugineis; alis subhyalinis.

Black; the head and thorax slightly pubescent, shining and punctured; the antennæ obscurely fulvous beneath beyond the third or fourth joints. The posterior margin of the prothorax rounded; the metathorax, with four longitudinal carinæ, two lateral and two approximating in the middle, strongly punctured; wings fulvo-hyaline, the nervures ferruginous; the tibiæ and tarsi ferruginous, the former slightly fuscous above, as are also the apical joints of the posterior tarsi. Abdomen shining, the second and third segments ferruginous, and more distinctly punctured than the following ones, which are very smooth and shining; the apex rufo-fuscous. Male, length 4 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

## 41. PRIOCNEMIS RUFO-FEMORATUS.

*Femina.*—*P. niger*, abdominis basi rufo; femoribus posticis rubris; alis apicibus fuscis, puncto albo ornatis.

Black; the head slightly shining, and, as well as the mesothorax, very finely and very closely punctured; the metathorax with a central longitudinal impressed line not quite extending to the apex, and having a fine transverse striation; the wings fusco-hyaline, darkest in the middle of the anterior wings, which have beyond the third submarginal cell a large hyaline spot; the posterior margin of the prothorax angular; the posterior femora bright ferruginous, the tibiæ serrated exteriorly. Abdomen bright ferruginous to the apex of the third segment; the rest black. Female, length 4 lines.

*Hab.*—Drás, Kárgil, and Leh, in Ladák.

This species in general aspect exactly resembles *Priocnemis agilis* of Europe, but its transversely striated metathorax distinguishes it from that species.

## 42. MYGNIMIA ALECTO.

*Femina.*—*M. nigra*, alis nigro-fuscis violaceoque splendide micantibus.

Black; the abdomen shining, covered with a changeable violet and purple pile observable in certain lights; the clypeus emarginate; the mandibles shining, their apex rufo-piceous. Thorax; the posterior margin of the prothorax arched; the sides of the metathorax rounded,

its apex obliquely truncate; the coxæ greatly enlarged; wings dark blackish-brown, with a purple gloss. Abdomen smooth and shining. Female, length 10 lines.

*Hab.*—Yangihissár, Eastern Turkestan. Taken in April.

The *Pompilidæ* are found in all parts of the globe; little short of five hundred species belonging to the various genera of which the family is composed have been enumerated.

Family—*SPHEGIDÆ*.

43. *AMMOPHILA SPINIPES*.

*Femina.*—*A. nigra, alis fulvo-hyalinis, metathorace rugoso, abdomine antice rufo.*

Black; the head wider than the thorax, shining and strongly punctured; the mandibles with a ferruginous spot in the middle, the palpi rufo-piceous. Thorax; the pro and mesothorax shining and strongly punctured, as well as the scutellum; the mesothorax with a deeply impressed line in the middle anteriorly, extending to the middle of the disk; the metathorax opaque and rugulose; wings fulvo-hyaline, the apical margins with a slight fuscous cloud; the nervures and stigma ferruginous; the tegulæ rufo-piceous; the tibiæ and tarsi thickly spinose, the claws of the tarsi ferruginous. Abdomen; the first, second, third and base of the fourth segment of the abdomen ferruginous; the petiole not quite as long as the first segment. Female, length 8 lines.

*Hab.*—Drás, Kárgil, and Leh, in Ladák. Taken in August and September.

This genus is one of universal distribution; about eighty species are described; some twenty species are found in Europe, and about the same number are at present known from Africa; twelve are described from India; North and South America both possess numerous species, but only three or four have been brought from Australia.

Family—*LARRIDÆ*.

44. *LARRADA AURULENTA*.

*Sphex aurulentus*, Fabr., Ent. Syst., ii, 213, ♀.

*Pompilus auratus*, Fabr., Ent. Syst. Supp., 250.

*Liris aurata*, Fabr., Syst. Piez., 228.

„ „ Dahlb., Hym. Europ., i, 135.

*Tachytes opulenta*, St. Farg., Hym., iii, 246.

*Lyraps auratus*, Guer., Icon. Reg. Anim., iii, 440.

*Larrada aurulenta*, Smith, Cat. Hym. Ins., pt. iv; Sphegidæ, Larridæ and Crabronidæ, p. 276.

*Hab.*—Yangihissár, in Eastern Turkestan; also Madras, Bombay (India); China; Philippines; Sumatra; Borneo; Java; Celebes; Bachian; Bouru.

This genus is widely distributed; Europe has five species at present known; others are found in India, China, Borneo, in most of the islands of the Eastern Archipelago, New Guinea and Australia; species also occur in Africa; others are found both in North and South America.

Tribe—DIPLOPTERA.

Family—EUMENIDÆ.

## 45. PTEROCHILUS ALBO-FASCIATUS, Fig. 12.

Femina.—*P. niger, capite thoraceque albo-variegatis; abdominis segmentis albo-marginatis.*

Black; head as wide as the thorax, strongly and closely punctured; the clypeus porrect and rugosely punctate, its anterior margin truncate; the mandibles tridentate, the teeth obscurely rufo-piceous; a small subovate white spot above the eyes on the vertex. The prothorax white above; the mesothorax and scutellum coarsely punctured; a white line crosses the post-scutellum and curves up towards the insertion of the posterior wings, which are fusco-hyaline and darkest along the foreborder of the anterior pair; legs black. Abdomen subovate; the basal segment campanulate and having a broad white fascia on its apical margin, which is slightly notched in the middle; the second segment has also a broad fascia, which is curved up laterally towards the base of the segment; the three following segments have each a similar broad white fascia. Female, length  $5\frac{1}{2}$  lines.

*Hab.*—Yangihissár, Eastern Turkestan. Taken in April.

This is a genus of small extent; about twenty species are described; it occurs in Europe, a single species being found in Russia, another in Germany, and one in Switzerland; species have been found in Algeria, the Cape of Good Hope, Chili, and the United States.

Family—VESPIDÆ.

## 46. POLISTES CHINENSIS, Fabr.

*Polistes chinensis*, Fabr., Syst. Piez., 270.

„ „ Sauss., Mon. Guépes Soc., 56, tab. 7, fig. 2.

*Hab.*—Neighbourhood of Yárkand. Taken in May. Hong-Kong; Shanghai.

Specimens from Yárkand are frequently more marked with yellow spots than any I have seen from China, whilst others exactly resemble Chinese ones, which do not appear ever to have any yellow spots on the mesothorax, which the Indian examples usually have. The genus *Polistes* is cosmopolitan, but no species has been found in the United Kingdom; species occur in South Europe, in India, China, Borneo, in the Islands of the Eastern Archipelago, in Africa, Australia and Tasmania, Brazil, Central America, Mexico, and North America; from seventy to eighty species are known

## 47. VESPA GERMANICA.

*Vespa germanica*, Fabr., Syst. Piez., 256.

„ „ Paus., Faun. Germ., 49, 20, ♀.

„ „ St. Farg., Hym., i, 515.

„ „ Ratz., Forst. Ins., Bd. iii, 51.

„ „ Smith, Zool., ix., Append. clxxvii.

„ „ Sauss., Mon. Guépes Soc., 116, pt. xiv, fig. 4.

*Hab.*—Europe. Found at Sanju, and in its neighbourhood; also at Yangihissár, Eastern Turkestan.

No specific difference can be found that will separate this insect from the European species; the sexual organs of the male are precisely the same as those of *V. germanica*. About fifty species of this genus are known; they are widely distributed, and are insects that are almost universally known. Twelve species inhabit Europe; twenty are Asiatic, and ten are found in Mexico and North America.

Family—*TENTHREDINIDÆ*.

48. *HYLOTOMA FUMIPENNIS*.

Femina.—*A. corpore flavo; capite, antennis, tarsisque nigris; alis fuscis.*

Head shining black, antennæ pubescent; abdomen paler than the thorax; wings fuscous and iridescent, nervures and stigma blackish-brown; the legs pubescent, the coxæ and femora reddish-yellow, the tibiæ fuscous, the tarsi black. Female, length  $3\frac{1}{2}$  lines.

*Hab.*—Jhilar valley, Punjab hills. Taken in August.

49. *ALLANTUS PROVIDUS*.

Femina.—*A. niger, capite thoraceque opacis, abdomine nitido; tibiis, femoribus posticis ferrugineis.*

Head and thorax opaque, and covered with strong confluent punctures; wings subhyaline, and having a fuscous cloud on the anterior pair that occupies the two marginal and four submarginal cells; the stigma and nervures black; the posterior femora and tibiæ pale ferruginous; the anterior femora towards their apex, and the tibiæ in front, pale; abdomen glossy black. Female, length 6 lines.

*Hab.*—Murree, Punjab hills.

50. *ALLANTUS MULTICOLOR*.

Femina.—*A. capite thoraceque cupreo-nigris, abdomine purpureo, corpore flavo-maculato.*

Head and thorax obscure brassy-black; abdomen dark purple above; the entire body yellow beneath, the legs black with yellow markings. Head semiopaque, the cheeks, clypeus, and mandibles testaceous-yellow; the teeth of the latter acute and black. Thorax semiopaque; the scutellum, tegulæ, and costal nervure, and the cell, yellow; the wings hyaline and iridescent; the stigma and nervures blackish-brown; the anterior and intermediate coxæ and femora yellow beneath; the tibiæ and tarsi yellow, the former with a dark stain at or near their apex; the posterior coxæ beneath and the basal half of the tibiæ yellow. Abdomen; the lateral margins of the second segment, the apical, as well as the lateral margins of the third segment, yellow; the sixth, seventh and eighth segments narrowly yellow. Female, length 6 lines.

*Hab.*—Murree, Punjab hills.

This species resembles *Allantus flavomaculatus* of Cameron, described in the "Transactions of the Entomological Society of London" for 1876, but it is rather smaller; the femora are black, and the abdomen has a purple tinge.

## 51. ALLANTUS SIMILLIMUS.

Femina.—*A. niger, abdominis cingulo basali flavo, tibiis tarsisque pallide ferrugineis, alis flavo-hyalinis, antice fuscis.*

The scape of the antennæ, the following joint, the labrum, mandibles, and palpi pale yellow. Thorax; the posterior margin of the prothorax slightly interrupted in the middle, pale yellow; the wings pale fulvo-hyaline, a slight fuscous cloud occupying the marginal cell and extending a little beyond into the submarginal cells; the costa and stigma fulvous, the nervures ferruginous; the coxæ black, the legs pale ferruginous, with the femora black above. Abdomen with a whitish fascia at the base; the fourth and fifth segments with their apical margins narrowly whitish; the two apical segments with their margins more broadly yellowish white. Female, length  $4\frac{3}{4}$  lines.

*Hab.*—Murree, Punjab hills.

The species resembles *Allantus trochanterinus* of Cameron, described in the "Transactions of the Entomological Society" for 1876, but it differs from it in having the scape pale, independently of other differences.

## 52. ALLANTUS TERMINALIS.

Mas.—*A. capite thoraceque nigris, abdomine purpureo nitido.*

Head emarginate behind, covered with confluent punctures and subopaque; the mandibles, labrum, and clypeus, also a triangular space above it, and a narrow line round the lower margins of the eyes, white; the antennæ fulvous beneath. Thorax black above and at the sides; beneath, the anterior and intermediate legs beneath and also the posterior coxæ beneath, white; wings hyaline, their nervures black. Abdomen purple above; the margins of the segments beneath white laterally. Male, length 4 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

## 53. MACROPHYA OPPOSITA.

Femina.—*M. nigra, capite thoraceque opacis, abdomine nitido, pedibus anticis pallidis.*

Black; the head wider than the thorax, covered with confluent punctures and opaque; the clypeus, mandibles, and labrum white; the palpi testaceous; the antennæ fulvous beneath. Thorax opaque and punctured, the same as the head; wings fuscous, with a violet iridescence, the nervures and stigma black; the anterior and intermediate tibiæ rufo-testaceous beneath. Abdomen shining black. Female, length 5 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

## 54. TENTHREDO SIMULATA.

Femina.—*T. nigra, abdominis medio, et tibiis tarsisque pallide ferrugineis; alis hyalinis, nervuris stigmatibusque nigris.*

Black; the clypeus, labrum, and mandibles pale reddish-yellow; the teeth of the latter black; the antennæ obscurely fulvous beneath. Thorax; the wings hyaline and

iridescent, the nervures and stigma black; the tibiæ and tarsi reddish-yellow, the coxæ spotted with yellow. Abdomen; the three basal segments black above; the four following segments reddish-yellow, the rest black. Female, length 5 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

#### 55. TENTHREDO FALLAX.

*Femina.*—*T. luteo-testacea*; *vertice, antennarumque basi maculis nigris*; *alis hyalinis*.

Pale ochraceous-yellow; the abdomen with a slight silky gloss; a minute black spot on the scape, another on the basal joint of the flagellum, and an oblong black macula on each side of the ocelli on the vertex; the wings hyaline and iridescent; the nervures fuscous, the stigma and costal nervure testaceous. Female, length 5 lines.

*Hab.*—Sind valley, Káshmir, and Murree, Punjab hills. Taken in August.

#### 56. TENTHREDO NIGRO-MACULATUS.

*Femina.*—*T. lutea*; *capitis vertice thoracisque maculis dorsalibus, necnon abdominis linea interrupta nigris*; *alis hyalinis*.

The insect pale luteous; the antennæ black above, with the apex of the joints, the scape beneath, and the flagellum beneath beyond the third joint, luteous; the inner margin of the eyes near their summit, and a large spot on the vertex, enclosing the eyes, black. Thorax; a triangular black spot anteriorly, an oblong one on each side opposite the tegulæ, and an oblique one on each side behind them; the wings hyaline with the nervures fuscous; the costal nervures and the stigma pale testaceous; the legs with a narrow black line above. The longitudinal black line on the abdomen above is slightly interrupted by a very narrow pale margin on each segment; the entire insect pale luteous and immaculate beneath. Female, length 4 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

This insect closely resembles the *Tenthredo scalaris* of Europe, and probably, when living, is green marked with black; the European insect changes, more or less, from green to pale yellow, particularly when collected in spirit.

#### Family.—*ICHNEUMONIDÆ*.

#### 57. ICHNEUMON BIMACULATUS.

*Femina.*—*I. niger*; *pedibus, abdominis segmentis tribus basalibus ferrugineis*; *metathorace bimaculato ferrugineo*.

Black; the basal half of the antennæ pale ferruginous; a line on the face close to the inner margin of the eyes, which is narrow above the insertion of the antennæ, and which expands into a large macula below it, a transverse line on the clypeus, and the mandibles, ferruginous. Thorax; two oblong spots on the mesothorax, a minute one on the scutellum, the tibiæ and tarsi, ferruginous; the posterior tibiæ fuscous at their apex;

wings subhyaline and iridescent; the nervures and stigma black. The three basal segments of the abdomen ferruginous, the rest shining black. Female, length 5 lines.

*Hab.*—Murree, Punjab hills.

## 58. CRYPTUS INSIDIATOR.

*Femina.*—*C. niger, abdominis basi femoribusque rufis, alis fusco-hyalinis.*

Head, antennæ, thorax, coxæ, trochanters, tibiæ and tarsi black; the femora and three basal segments of the abdomen ferruginous; the apical segments black, with a purple gloss; the wings fusco-hyaline, the anterior pair darkest; the metathorax truncate posteriorly, the margin of the truncation somewhat arched inwardly; the lateral angles acute, or subdentate. Female, length  $7\frac{1}{2}$  lines; of the ovipositor, 4 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

## 59. CAMPOPLEX LONGIPES.

*Femina.*—*C. niger, abdomine pedibusque ferrugineis, scutello albo.*

Black; a line at the inner orbits of the eyes below the insertion of the antennæ; the clypeus and mandibles yellowish-white, the latter ferruginous at their apex; the antennæ ferruginous. The thorax opaque, with the scutellum white; wings hyaline and iridescent; the nervures and tegulæ ferruginous; the costal nervure fuscous; the legs ferruginous with the coxæ, and trochanters black; the apex of the posterior tibiæ fuscous. Abdomen ferruginous, curved downwards, and petiolated; a black spot on the petiolated segment near its apex; the ovipositor ferruginous. Female, length 5 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

## 60. PANISCUS UNICOLOR.

*Femina.*—*P. ferrugineus, antennarum apicibus fuscis.*

Ferruginous; the eyes, ocelli, and apical portion of the antennæ fuscous; the claws of the tarsi black; wings hyaline and iridescent; the costal nervure and stigma pale ferruginous, the other nervures ferruginous. Abdomen falcate, smooth, and shining. The areolet of anterior wings oblique and triangular. Female, length 5 lines.

*Hab.*—Murree, Punjab hills.

## 61. PANISCUS QUADRILINEATUS.

*Femina.*—*P. rufus, capite thorace dorso quadrilineato.*

Antennæ, thorax, and legs rufo-fulvous; the abdomen rufo-ferruginous. The head yellow, fulvous behind; eyes and ocelli black. Thorax smooth and shining, two longitudinal lines on the disk of the mesothorax and a line at the lateral margins, yellowish; the scutellum triangular, with its margins raised; wings hyaline and iridescent, the nervures

ferruginous, the stigma yellow. Abdomen darker than the thorax, becoming fusco-ferruginous towards the apex. Female, length 7 lines.

*Hab.*—Neighbourhood of Yárkand. Taken in May.

The yellow markings are much brighter in some examples than in others, and the abdomen also varies in brightness.

#### 62. OPHION DENTATUS.

*Femina.*—*O. rufus, metathorace lineis elevatis transversis, lateribusque unidentatis.*

Pale ferruginous; eyes, ocelli, and tips of the mandibles black; wings hyaline and iridescent; the mesothorax smooth and shining, the metathorax with two arcuate transverse carinæ, the second being at the margin of the posterior truncation and terminating laterally in an acute angle or tooth. Abdomen falcate, smooth, shining, and with a fine short sericeous pubescence, or pile. Female, length 8 lines.

*Hab.*—Sind valley, Káshmir. Taken in August.

#### 63. OPHION ALBOPICTUS.

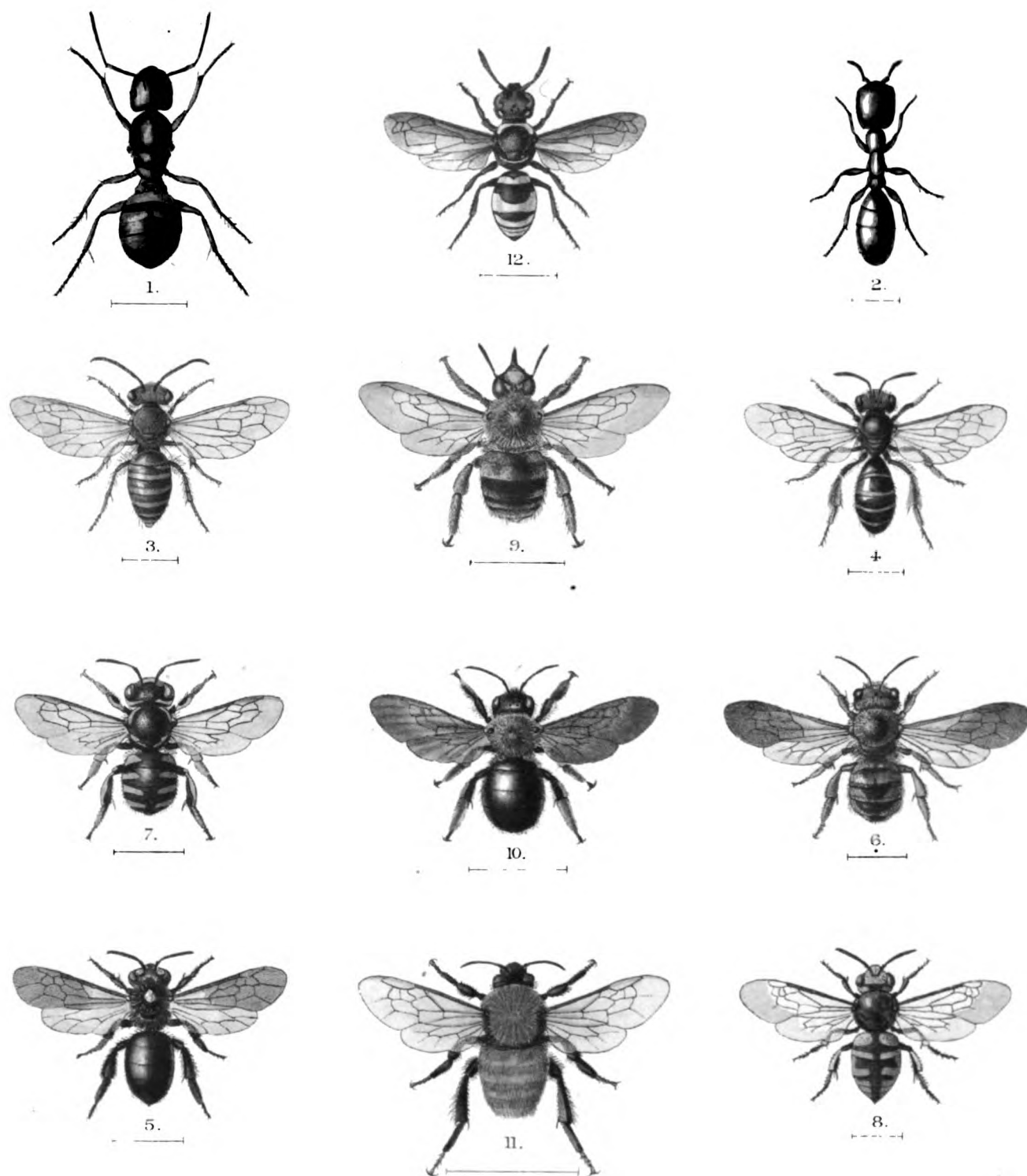
*Femina.*—*O. rufus, capite, scutello, lineis 4 dorsalibus maculisque lateralibus albis.*

Head white; eyes and ocelli black, the antennæ and mandibles, rufous. Thorax rufous; two central longitudinal lines, the lateral margins, the scutellum and numerous spots on the sides beneath the wings, white; the wings hyaline and iridescent, the nervures ferruginous, the stigma pale rufous. Abdomen rufous, with some pale whitish spots at the sides towards the apex; the two basal segments beneath white. Female, length 6 lines.

*Hab.*—Neighbourhood of Yárkand. Taken in May.



HYMENOPTERA.



E. A. Smith, del. et sculpsit.

Mus. Brit. Mus.

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| 1. <i>Camponotus basalis.</i> (Smith)    | 7. <i>Anthidium vigilans.</i> (Smith)      |
| 2. <i>Dorylus læviceps.</i> " "          | 8. <i>Crocisa intrucens.</i> " "           |
| 3. <i>Andrena familiaris.</i> " "        | 9. <i>Xylocopa dubiosa.</i> " "            |
| 4. " <i>floricula.</i> " "               | 10. " " " " " "                            |
| 5. <i>Lamprocolletes peregrinus.</i> " " | 11. <i>Bombus oppositus.</i> " "           |
| 6. <i>Cerina laboriosa</i> " "           | 12. <i>Pterochilus albo-fasciatus.</i> " " |

