XXII. *A Revision of the Hymenopterous genera* Cleptes, Parnopes, Anthracias, Pyria *and* Stilbum, *with descriptions of new species of those genera, and also of new species of the genus* Chrysis *from North China and Australia.* By Frederick Smith.

[Read 6th July, 1874.]

Fam. CLEPTIDÆ, Dahlb.

Genus Cleptes, Latr.

1. *Cleptes semiaurata*, Latr.

Sphex semiaurata, Linn. Faun. Suec. No. 1661; Syst. Nat. i. p. 946.
Chrysis semiaurata, Fabr. Syst. Ent. p. 359.
Ichneumon semiauratus, Fabr. Ent. Syst. ii. p. 210. Panz. Faun. Germ. 51, 2.
Cleptes semiaurata, Latr. Hist. Nat. Ins. xiii. p. 236 (1804); Fabr. Syst. Piez. p. 154; St. Farg. Ann. du Muséc, vii. p. 119; Shuck. Mon. Chrys. Ent. Mag. iv. p. 159; Dahlb. Hym. Eur. ii. p. 15; Smith, Mon. Chrys. Ent. Ann. (1862), p. 82; Chevr. Chrys. du Bassin du Léman, p. 117.

Hab.—Europe.

2. *Cleptes nitidula.*

Ichneumon nitidulus, Fabr. Ent. Syst. ii. p. 184.
Cleptes nitidula, Latr. Hist. Nat. xiii. p. 236; St. Farg. Ann. du Musée, vii. p. 119; Fabr. Syst. Piez. p. 154; Panz. Faun. Germ. 106, 11; Shuck. Mon. Chrys. Ent. Mag. iv. p. 159; Dahlb. Hym. Eur. ii. p. 12; Smith, Mon. Chrys. Ent. Ann. (1862), p. 84; Chevr. Chrys. du Bassin du Léman, p. 121.

Hab.—Europe.

3. *Cleptes fasciata.*

Cleptes fasciata, Dahlb. Hym. Eur. ii. p. 12.
Hab.—Brazil.

4. *Cleptes ignita.*

Ichneumon ignitus, Fabr. Ent. Syst. ii. p. 184.
Cleptes ignita, Fabr. Syst. Piez. p. 155; Dahlb. Hym. Eur. ii. p. 18.
Hab.—Barbary; Italy; Austria.

5. *Cleptes aurata.*

Cleptes aurata, Dahlb. Hym. Eur. ii. p. 20.
Hab.—Turkey.

6. *Cleptes orientalis.*

Cleptes orientalis, Dahlb. Hym. Eur. ii. p. 20.
Hab.—Turkey.

7. *Cleptes Aurora.**

Female.—Length 4 lines. Variegated with blue, purple and green; the scutellum of a reddish-orange; the metathoracic spines, the base of the abdomen, and the basal joint of the intermediate and posterior tarsi, white; the anterior wings hyaline, brown at their base, and with a broad fascia of the same colour beyond the base of the stigma. Head and thorax very closely and strongly punctured; the scutellum smooth, shining and very convex; the post-scutellum produced into a prominent, obtuse, conical tubercle; the abdomen smooth and shining; the coxæ, trochanters, and base of the femora beneath, whitish. The vertex and mesothorax purple; the metathorax greenish, and the abdomen with purple tints in certain lights.

Hab.—Ega (Brazil).

Fam. PARNOPIDÆ, Dahlb.

Genus PARNOPES, Fabr.

1. *Parnopes carnea.*

Chrysis carnea, Fabr. Syst. Entom. p. 357 (1775); Ent. Syst. ii. p. 240; Rossi, Faun. Etrus. ii. p. 75, tab. viii. fig. 5 (1790).

Parnopes carnea, Latr. Gen. Crust. et Ins. iv. p. 47; Fabr. Syst. Piez. p. 177; Dahlb. Dispos. p. 17; Hym. Europ. ii. p. 385; Lucas, Explo. Sc. de L'Algér. iii. p. 16; Chev. Chrysid. du Bassin du Léman, p. 127.

Hab.—Europe, Algeria.

2. *Parnopes elegans.*

Parnopes elegans, Klug, Symb. Phys. Dec. v. tab. 45, fig. 1, ♀; Dahlb. Hym. Europ. ii. p. 382.

Hab.—Ambukohl, Lower Nubia.

3. *Parnopes denticulata.*

Parnopes denticulata, Spin. Ann. Soc. Ent. France, vii. p. 455, ♂; Dahlb. Hym. Europ. ii. p. 382.

Hab.—Egypt.

4. *Parnopes Fischeri.*

Parnopes Fischeri, Spin. Ann. Soc. Ent. France, vii. p. 455, ♀; Dahlb. Hym. Eur. ii. p. 383.

Hab.—Egypt.

5. *Parnopes viridis.*

Parnopes viridis, Brullé, Hist. Nat. des Ins. (St. Farg.) iv. p. 13, ♂.

Hab.—Pondicherry.

6. *Parnopes smaragdina.**

Female.—Length 4½ lines. Head and thorax green, abdomen green, with tints of blue in certain lights. Head, thorax and tegulæ of the wings strongly punctured, the scutellum most coarsely so; the scape of the antennæ green, the flagellum black, with one or two of the basal joints obscurely rufo-piceous. Thorax: the posterior margin of the post-scutellum trilobate, the central lobe small and rounded; wings fusco-hyaline, darkest towards their base; legs green, with the tarsi and tibiæ within rufo-testaceous. Abdomen: finely and closely punctured; on the basal segment the punctures are distant at its base,

and very fine and close at its apical margin; the apical margin of the third segment finely denticulate; the base and apex of the segment violet.

The male, in colour and punctuation, exactly resembles the female, the apical margin of the fourth segment being similarly denticulated.

Hab.—The Gambia, Senegambia.

7. *Parnopes sinensis.**

Male.—Length $5\frac{1}{4}$ lines. Head and thorax green, with blue and purple tints; abdomen purple at the base and apex, the intermediate portion flesh-coloured; wings pale fusco-hyaline. Head and thorax with coarse, deep, confluent punctures, the tegulæ also coarsely punctured. Abdomen: the basal and apical segments coarsely punctured, the intermediate segments rather more finely punctured. The clypeus with the anterior margin truncate, the lateral angles being rounded. The face covered with silvery-white pubescence; the antennæ have a short silvery pubescence and are of an obscure rufo-piceous colour; behind the eyes and the posterior margin of the vertex blue. Thorax: the posterior margin of the prothorax blue; the scutellum blue; a broad stripe down the middle of the mesothorax, and the post-scutellum blue-black; the tegulæ large, very wide posteriorly, and of an obscure blue-black, with the outer margin pale testaceous. Abdomen: the flesh-colour of the two intermediate segments extends over the margin of the basal segment at its middle portion; the tibiæ and tarsi flesh-coloured.

Hab.—Shanghai, North China.

In an important structural character this species differs from the European one, *Parnopes carnea;* the tegulæ of the wings are larger and of a different form, their posterior margin is very slightly rounded, subtruncate; in *P. carnea* they are of a pointed oval shape.

8. *Parnopes chrysoprasina.*

Male.—Length $4\frac{1}{4}$ lines. Green, with the basal margin of the second, third and fourth segments blue. Head, thorax and abdomen closely and strongly punctured, the thorax rather more strongly so than the head or abdomen; the antennæ rufo-testaceous, one or two of the basal joints tinged with green. The legs rufo-testaceous, the femora darkest, and, as well as the tibiæ, tinged with green; the

tegulæ strongly punctured, tinged with green and having their outer margin pale testaceous; wings pale fulvo-hyaline; the post-scutellum nearly quadrate, a little longer than broad, deeply notched in the middle of the posterior margin. The apical segment with two large deep foveæ near its apical margin, which is denticulated.

Hab.—North Carolina.

Genus Anthracias.

Anthracias, Klug, Berichte über die Verhand. der Akad. Berlin, 1839, p. 2.

Of this genus I have only seen a single imperfect specimen; it is destitute of wings and has only one posterior tarsus. Klug, in the "Berichte," has not given detailed generic characters, but he mentions the essential one, that of the abdomen being composed above of only two segments; beneath, four are distinctly visible, exclusive of its retractile ovipositor; the claws of the tarsi have a single tooth beneath; the antennæ resemble those of *Chrysis*, the second joint being only half the length of the third, the fourth joint about equal to the second, as are all the following joints. The insect has the exact resemblance of *Parnopes*, to which it is closely allied. In the specimen examined there is not a projecting rostrum as in *Parnopes*, but, the insect being in a mutilated condition, it may possibly be broken off.

1. *Anthracias Capensis.*

Female.—Length 5 lines. Head, thorax and apex of the abdomen black, the rest ferruginous; strongly punctured. Head and thorax very coarsely, closely and deeply punctured; the eyes large and ovate; the head narrowed and rounded behind the eyes; mandibles rufo-piceous in the middle. Thorax: the prothorax oblong, flattened above and slightly concave in front; its anterior margin transverse, the lateral margins parallel anteriorly to nearly half its length, from thence obliquely inclined outwardly to the tegulæ of the wings; the metathorax truncate posteriorly, the margin of the truncation raised and acute; the tibiæ and tarsi ferruginous. Abdomen: the first segment scarcely half the length of the second, the latter with a central longitudinal carina, which becomes most elevated towards the apical margin of the segment, which is rounded and edentate; the apical third of the abdomen black, the

inner margin of the black portion deeply sinuated laterally; the punctures strong, more or less confluent and oblong in form, particularly so on the disk; beneath, entirely ferruginous.

Hab.—Cape of Good Hope.

Fam. CHRYSIDIDÆ, Leach.

Chrysididæ, Leach, Brit. Encycl. (1817); Dahlb. Hym. Europ., ii. 95 (1854).

Genus Chrysis.

Chrysis, Linn. Syst. Nat. ed. xii. vol. i. p. 947.

Div. 1. *The apical segment of the abdomen entire.*

1. *Chrysis artifex.**

Length 5 lines. Head and thorax violet, with blue tints; abdomen golden, with shades of carmine in certain lights. The face with silvery-white pubescence; the antennæ also with a fine white pile, the three basal segments tinged with violet; the third segment of the abdomen of a bright carmine tint, the second slightly so on the disk in certain lights; the legs blue, with the tarsi black; wings subhyaline. The thorax slightly narrowed before the tegulæ; the anterior lateral angles subacute; the postscutellum elevated into a slight tubercle. Head and thorax strongly and very closely punctured. Abdomen: finely and very closely punctured, most strongly so at the base; the second segment with a central longitudinal carina, it is also faintly traced on the basal segment; beneath golden, with a coppery lustre on the two apical segments.

Hab.—Hong Kong.

2. *Chrysis faustus.**

Female.—Length $4\frac{3}{4}$ lines. Green with shades of blue; head and thorax strongly punctured, the abdomen very finely so.

Head and prothorax of a bright golden-green, the rest of the thorax of a dark green with brighter shades laterally; the tegulæ smooth and bright green. Abdomen: each segment more or less blue-green towards its basal margin;

the femora and body beneath golden-green; the tarsi and antennæ black, both more or less green above towards their base. The head, prothorax, scutellum and post-scutellum very strongly punctured, the latter angulated; wings subhyaline, the nervures black; the extreme base of the abdomen very strongly punctured; the rest of the abdomen very closely and finely punctured.

Hab.—Queensland.

The description is that of the most highly coloured example seen; others are of a darker green, inclining to blue, but the puncturing is constant and the carina on the second abdominal segment is always strongly marked.

3. *Chrysis reversus.*

Length $3\frac{1}{2}$ lines. Green inclining to olive above; beneath, bright green; sometimes of an uniform colour; occasionally dark green, with the prothorax and metathorax brighter, as well as the posterior margins of the segments of the abdomen; the wings hyaline, the nervures black. The head, thorax and base of the abdomen strongly and closely punctured, the abdomen finely so; the punctures on the second and third segments are oblong, placed transversely, and more or less confluent.

Hab.—Tasmania.

4. *Chrysis viridifrons.**

Female.—Length 3—4 lines. Obscure green, blue and purple; the face and body beneath bright green. The pro- and meso-thorax and also the posterior margins of the segments of the abdomen green; the metathorax, abdomen and vertex violet or more or less purple; the legs blue or more or less green, the tarsi dusky; wings hyaline, the nervures black. Head, thorax and base of the abdomen strongly and very closely punctured, the punctures more or less confluent. Abdomen finely and closely punctured; the fineness of the puncturing gradating from the base to the apex, where it is very fine and close.

Hab.—Tasmania.

Div. 2. The apical segment of the abdomen with 4 teeth.

5. *Chrysis interceptor.**

Length $4\frac{1}{4}$ lines. Green, with shades of blue above; the face and body beneath golden-green. A blue spot in

the middle of the prothorax, the central portion of the mesothorax, and the second and third segments of the abdomen, blue ; the apical margins of the segments green. The head, thorax and base of the abdomen with close, large, semi-confluent punctures ; the abdomen closely and more finely punctured ; the two intermediate teeth rather more approximating than the outer ones to the intermediate ones.

Hab.—Hunter River, New South Wales.

6. *Chrysis intrudens.*

Female.—Length 4 lines. Varied with blue and green, beneath entirely green. The mesothorax above, the tegulæ, scutellum and second and third segments of the abdomen blue, their apical margins tinged with green. The thorax narrowed from the tegulæ to the anterior angles of the prothorax. The head and thorax strongly punctured, the punctures close and in parts confluent; wings subhyaline, the nervures fuscous. The abdomen strongly punctured ; a smooth shining carina runs from the base of the second segment to the apex of the abdomen, the margin with four very acute teeth, the two central ones approximating, the lateral teeth being separated widely from them ; the central teeth produced beyond the lateral ones.

Hab.—Australia.

7. *Chrysis parallelus.*

Length $3\frac{1}{2}$ lines. Head and thorax blue above, with tints of green in parts ; abdomen olive-green, with the margins of the segments bright green. Head: the face green, and with a white pubescence. Thorax: the posterior lateral angles of the metathorax bright green, as well as the legs and body beneath; wings subhyaline, the nervures black. The sides of the thorax parallel. The head and thorax very strongly punctured, the punctures very close and most coarse on the scutellum and post-scutellum. The abdomen strongly punctured, the teeth at its apex short, not very acute, the two central ones approximating and slightly produced beyond the lateral ones.

Hab.—Australia.

8. *Chrysis volatilis.**

Female.—Length 5 lines. Elongate, narrow, and of a violet colour, with slight tints of green on the head and thorax. Head: the margin of the vertex and inner orbits of the eyes green; the scape, and two following joints of the antennæ, green above. The sides of the thorax nearly parallel; the anterior angles of the prothorax acute; the posterior angles of the metathorax green; wings subhyaline, the nervures fuscous. Head and thorax strongly and closely punctured; abdomen finely punctured; the basal margin of the first segment with a deep central fovea, and a broader lateral one.

Hab.—Shanghai.

9. *Chrysis janthinus.**

Female.—Length 5 lines. Bright violet, with shades of blue and green. The face and three basal joints of the antennæ bright green, the legs and entire body of the insect beneath bright green; the vertex violet, a narrow green line at the inner margin of the eyes. Thorax: the sides nearly parallel or very slightly narrowed anteriorly; the prothorax with the anterior angles rounded, of a violet colour, with a narrow green border at its posterior margin; the central portion of the mesothorax purple, the lateral portions violet; the scutellum and metathorax green; wings slightly fuscous. Abdomen violet; the sides of the first segment and the posterior margin of the second greenish, the margin widest laterally. The head and thorax very strongly punctured; abdomen evenly and strongly punctured, most strongly so at the base.

Hab.—Shanghai.

10. *Chrysis fossulatus.*

Length $4\frac{1}{2}$ lines. Head and thorax green, slightly tinged with blue; the abdomen violet. Face and body beneath bright green; the legs green, tinged with blue above; the vertex green. Thorax narrowed from the tegulæ forwards; the anterior angles of the prothorax acute, the margin hollowed to the curvature of the head; the sides of the mesothorax tinged with green, as are also the lateral angles of the metathorax; the posterior margin

of the basal segment of the abdomen green; there is also, in certain lights, a tinge of green on the sides of the two following segments and also on their apical margins; the apical margin of the posterior segment armed with four acute teeth, the two central ones approximating; a smooth central line down the second and third segments; on each side of the central carina on the third segment are four deep oblong fossulets in the place of the usual row of punctures.

Hab.—Shanghai.

Div. 3. *The apical segment of the abdomen with* 5 *teeth.*

11. *Chrysis imperiosus.**

Female.—Length 4 lines. The face, the lateral angles of the metathorax, the legs and body beneath, brilliant golden-green; the vertex and thorax above coppery, with a purple lustre; abdomen violet, with the sides more or less coppery; the post-scutellum has posteriorly a violet tint. The sides of the prothorax sinuated; the head, thorax and abdomen of equal width. The wings sub-hyaline, the nervures fuscous. The head and thorax coarsely and closely punctured. Abdomen closely and strongly punctured.

Hab.—Moreton Bay.

12. *Chrysis Shanghaiensis.**

Female.—Length 5—6 lines. Bright green, with golden tints, adorned in parts with blue. The face and three basal joints of the antennæ golden-green; the vertex behind the ocelli blue. Thorax: the disk of the mesothorax more or less blue, the central division usually so; wings fuscous, palest towards their apical margins, and having a purple iridescence; legs green, with their tarsi black. Abdomen: the basal half of the second and third segment bright blue. The head and thorax strongly and closely punctured, the scutellum and post-scutellum very closely so; the latter produced into a conical tubercle, which is flattened above. Abdomen strongly and evenly punctured, but much more finely so than the thorax; beneath, the insect is bright golden-green, with black spots at the basal margins of the segments of the abdomen.

Hab.—Shanghai, N. China.

Div. 4. *The apical segment of the abdomen with* 6 *teeth.*

13. *Chrysis principalis.**

Female.—Length $6\frac{1}{4}$ lines. Head and thorax green; abdomen violet, with the apical margins of the segments narrowly bright green. The face golden-green; the three basal joints of the antennæ blue, with the first joint green in front; the rest of the antennæ black; an ovate blue spot on the vertex inclosing the ocelli. Thorax: a transverse blue line on the prothorax; the scutellum, tegulæ and disk of the mesothorax occasionally more or less blue; the anterior wings fusco-hyaline. The body beneath, and the legs also beneath, bright golden-green, the latter blue above; the tarsi black. The head and thorax with deep, close, coarse punctures; the abdomen finely and closely punctured; some large, deep punctures at its extreme base, and a row of similar punctures along the apical margin of the basal segment.

Hab.—Shanghai, N. China.

This species has the thorax sometimes green, with only a faint blue transverse line on the prothorax, which is slightly narrowed anteriorly and has the lateral angles acute.

14. *Chrysis gemmatus.*

Female.—Length 5 lines. Green, with black markings on the head and thorax; the second segment of the abdomen with a bright-golden ocellate spot on the second segment, towards the apical margin laterally; beneath, bright green, with golden tints; the face golden-green. A black spot on the vertex inclosing the ocelli, an ovate one in the middle of the prothorax, and an oblong one on each side of it; the central divisions of the mesothorax, and the scutellum, more or less black; the apical segment of the abdomen blue. The head and thorax coarsely and closely punctured, the scutellum most strongly so; the abdomen more finely punctured and with a few large punctures at its extreme base. Wings fuscous, the posterior pair palest.

Hab.—Australia.

15. *Chrysis agilis.**

Female.—Length 4 lines. Dark blue; the face, body beneath and the legs more or less green. Strongly punctured; the punctures very close on the head and thorax;

rather more distant on the abdomen; the puncturing on the first segment nearly as strong as on the thorax; on the two following segments much finer, increasing gradually in fineness to the apex; wings hyaline, the nervures black.

Hab.—Queensland.

16. *Chrysis bipartitus.*

Female.—Length 4-4½ lines. Head and thorax purple, abdomen golden-green. The face green, the body purple beneath, the femora purple, the tibiæ green; the face with silvery-white pubescence. The head and thorax coarsely punctured; wings subhyaline, the nervures fuscous. The abdomen strongly punctured, its extreme base most strongly so.

Var. The thorax tinged in parts with green.

Hab.—Australia.

17. *Chrysis varicolor.*

Length 4 lines. Head and thorax varied with blue and green; abdomen green, with bright-golden and coppery lustre. Head blue; prothorax green, with a transverse interrupted blue line in the middle; the mesothorax with the middle of the disk and the scutellum blue, the rest purple above, margined laterally with blue; the metathorax green; wings fuscous, not very dark, and with their base subhyaline; the nervures black; the legs and body green beneath. Abdomen: the first segment green, with more or less of a golden lustre, the two following segments with a bright-coppery effulgence, the sides more or less golden; the teeth on the apical margin acute, nearly equidistant, and in a slight curve. The head and thorax strongly and closely punctured. Abdomen rather finely punctured, most strongly so at the base; on the second and third segments the punctures more or less confluent.

Hab.—Foo-chow.

Div. 5. *The apical segment of the abdomen with* 7 *teeth.*

18. *Chrysis festinus.**

Female.—Length 5 lines. Head and thorax green, abdomen blue, with the extreme base more or less green, beneath golden-green. Head: the face covered with silvery pubescence. The anterior angles of the prothorax acute. The head and thorax strongly and very closely punctured;

at the sides of the thorax the punctures are more or less confluent. Abdomen: the first segment strongly punctured, the punctures not very close except at the sides of the segment; the second and third segments less strongly punctured, and having a central, smooth, longitudinal line; the apical margin of the third segment with seven teeth, the central one smallest. Wings hyaline, the nervures fuscous.

The male exactly resembles the female.

Both sexes have seven teeth.

Hab.—Perth, Western Australia.

Genus Pyria, St. Farg.

This genus is composed of species that form a section of the *Chrysididæ* intermediate between the genus *Stilbum* and that of *Chrysis*. Its claims to generic distinction appear to be based on a difference in the relative length of the joints of the antennæ, and in the post-scutellum being produced into a conical pointed tubercle, which projects over the base of the abdomen; the neuration of the wings in the genera *Pyria* and *Chrysis* being essentially the same; *Stilbum*, however, appears to have a permanent difference in the marginal cell, it being, in the extensive series of examples that I have examined, open at its apex; in the genera *Pyria* and *Chrysis* it is closed. That an occasional exception to this circumstance will be found is certain, but that is only what is to be expected in so extensive a genus as *Chrysis*; I have observed exceptions to the rule in some of the beautiful species from Brazil.

The number of joints of which the antennæ of the species belonging to the genera *Stilbum*, *Pyria* and *Chrysis* is composed is thirteen, that number being found in both sexes of the species. The third joint of the antennæ, in the genus *Stilbum*, is the longest, as it is also in the genus *Chrysis*, but in the genus *Pyria* the fourth is the longest. The latter genus has the post-scutellum produced in the form of a conical spine over the base of the abdomen, but the cone, or tuberculate process, is not hollowed out as in the genus *Stilbum*; I only know of a single exception to this characteristic,—it is found in *Pyria smaragdula* of St. Fargeau, *P. stilboides* of Spinola; in this species the conical spine is hollowed out above, but the excavation is coarsely punctured.

The produced post-scutellum, although one of the essential characters of the genus *Pyria*, is also found to characterize one or two species of *Chrysis* from Western Africa; these belong to the division of that genus in which the third abdominal segment is armed with four teeth. Belonging to the same division, and also from the same locality, several species of *Chrysis* have the post-scutellum triangular and slightly projecting; these species form apparently a connecting link between the genera.

Dahlbom has united the species of the genus *Pyria* with those of *Chrysis*, but the general aspect, or rather habit of the species is sufficient in my opinion to warrant their separation; the type of the genus, *Pyria lyncea*, closely resembles a true *Stilbum* in its general form; it has the head narrower than the thorax, the post-scutellum produced, the convex abdomen, gradually narrowed from the base to the apex, whilst the construction of the antennæ separates them at once from the genus *Chrysis*. There are, however, species which are placed in the genus *Pyria* which have not the post-scutellum produced; *P. ocellata* is an example of this: the genus, therefore, will probably be regarded as a mere section of the extensive genus *Chrysis*; any well-defined section of an extensive genus is advantageous, whether a distinctive name be assigned to it or not.

1. *Pyria lyncea.*

Chrysis lincea, Fabr. Syst. Ent. p. 357. *Chrysis lyncea*, Fabr. Ent. Syst. ii. 240; Syst. Piez. p. 172; Dahlb. Hym. Europ. ii. 339.

Pyria armata, St. Farg. Encycl. Méth. x. 459; Brullé, Hist. Nat. des Ins. Hym. (St. Farg.) iv. p. 21.

Pyria Reichei, Spin. Ann. Soc. Ent. France, vii. 448.

Pyria canaliculata, Brullé, Hist. Nat. Ins. Hym. iv. p. 20.

Pyria lyncea, Gerst. Peters' Reise Mossamb. p. 519.

Hab.—Sierra Leone; Mozambique; Gambia; Angola; Knysna; Cape of Good Hope.

2. *Pyria stilboides.*

Pyria stilboides, Spin. Ann. Soc. Ent. France, vii. 446; Gerst. Peters' Reise Mossamb. p. 519.

Stilbum sexdentatum, Guér. Rev. Zool. p. 145 (1842).
Chrysis nobilis, Klug, Symb. Phys. Dec. v. Tab. xlv. Fig. 2; Dahlb. Hym. Eur. ii. 347.
Pyria smaragdula, Brullé, Hist. Nat. Ins. Hym. iv. 19 (nec St. Farg.).

Hab.—Egypt; Gambia; Mozambique; Senegal; Algeria.

3. *Pyria plurimacula.*

Pyria plurimacula, Brullé, Hist. Nat. Ins. Hym. (St. Farg.) iv. 22.

Hab.—Madagascar.

4. *Pyria oculata.*

Chrysis oculata, Fabr. Syst. Ent. p. 357; Ent. Syst. ii. p. 239; Dahlb. Hym. Eur. ii. p. 310.
Pyria oculata, Brullé, Hist. Nat. des Ins. Hym. iv. p. 19.

Hab.—India.

5. *Pyria violacea.**

Length $5\frac{1}{2}$ lines. Bright violet, with more or less of shades of green or purple. The head and thorax with strong, coarse, confluent punctures; the abdomen with strong punctures, those at the base strongest and most dense; the post-scutellum produced into a stout projecting conical spine, the spine coarsely punctured and having a central longitudinal smooth carina; the margin of the apical segment of the abdomen with four teeth and also a tooth on its lateral margins. Beneath, the insect is usually bright green; the legs usually green beneath and blue above, or entirely green; wings fusco-hyaline, the nervures black.

Var. The head more or less green.

Hab.—Australia; Swan River, &c.

6. *Pyria Proteus.**

Length $4\frac{1}{2}$—$5\frac{1}{4}$ lines. Blue, green, or a mixture of those colours. Strongly punctured; the punctures on the sides of the pro- and meso-thorax more or less confluent; the scutellum more strongly punctured; the post-scutellum produced into a conical projecting tubercle, which is coarsely punctured and has a central longitudinal smooth carina:

wings subhyaline, the nervures black. The apical segment of the abdomen with six teeth, four apical and two lateral.

Var. 1. Green, with a violet spot enclosing the ocelli; the sutures of the mesothorax, the scutellum and post-scutellum violet or purple; the base of the abdomen and middle of the first segment, as well as a transverse changeable fascia in the middle of the second and the third segments, violet.

Var. 2. Thorax and abdomen more or less green; the abdomen violet; beneath usually green.

This species closely resembles *P. lyncea;* it differs from that insect, being of a broader form: the abdomen is not so narrow towards the apex; the basal segment has the lateral angles rounded, not sub-acute as in *P. lyncea*, and the teeth at the apex are wider apart.

Hab.—Australia; North and West Australia; Swan River; Lizard Island.

7. *Pyria bispilota.*

Pyria bispilota, Guér. Rev. Zool. v. p. 145 (1842).
Hab.—Madagascar.

8. *Pyria orientalis.*

Pyria orientalis, Guér. Rev. Zool. v. p. 146 (1842).
Hab.—Sumatra.

9. *Pyria Mouattii.*

Pyria Mouattii, Guér. Rev. Zool. v. p. 145 (1842).
Hab.—Madagascar.

10. *Pyria Gheudei.*

Pyria Gheudei, Guér. Rev. Zool. v. p. 145 (1842).
Hab.—Madagascar.

Genus Stilbum, Spin.

The genus *Stilbum*, notwithstanding the researches and labours of many eminent Entomologists, has hitherto been arranged in erroneous exactitude. Fabricius was the first author who described, with any degree of satisfactory correctness, the type of the genus. This was done in his first systematic work, "Systema Entomologiæ."

Guérin-Meneville, in his "Revue Zoologique," 1842,

described a new species from Madagascar, and Brullé, in the "Histoire Naturelle des Insectes Hyménoptères," enumerates three species,—*S. splendidum*, *S. calens*, and the *S. viride* of Guérin. Dahlbom, in his elaborate monograph, also gives three species, but he overlooks Guérin's species altogether; he describes a species, *S. Wesmaeli*, as new, but which is, in my opinion, a variety of the male of *S. amethystina*. Dr. Gerstaecker is of opinion that *S. splendidum* of Brullé and Dahlbom, and *S. calens* of Fabricius, constitute but a single species, and in this opinion I coincide. There is a distinctive difference in coloration, which is frequent in *S. calens*, but which I have never seen in the exotic specimens; but I know of no structural character or difference in sculpture that would warrant their separation. In a large series of *S. calens*, specimens of a burnished coppery splendour are found, having only the apical segment of the abdomen blue; others have the head and thorax blue and green, with the abdomen coppery; such varieties I have not found in Asiatic or African specimens, but among the latter are found examples entirely of a deep blue colour.

One of the principal objects that I have in writing the present paper is to rectify the unavoidable errors which Hymenopterists have committed; in the second place, I am desirous of describing a few beautiful species of *Chrysididæ* which are not in Dahlbom's work.

The type specimens of Fabricius's species, preserved in the Banksian collection, are now deposited in the British Museum; a careful examination of them enables me to correct former errors. It is acknowledged that the descriptions of Fabricius are frequently too succinct and devoid of specific distinctions to enable the student to identify his species. The descriptions of many of the elder Entomologists may have served in their day for the discrimination of a species from the few by which it was then surrounded, but they are, in the present state of our knowledge, totally inadequate for that purpose.

Of the genus *Stilbum*, Fabricius, under the generic name *Chrysis*, described two species, *C. splendida* and *C. amethystina*, the latter being the insect hitherto regarded as his *C. splendida*. On referring to the "Systema Entomologiæ" the first descriptions of these species are found, *C. splendida* being placed at the head of the genus, it is distinguished from all the rest by the appellation "Magna"; the smallest having the prefix "Parva"; this

is attached to *C. lucidula*. Fabricius, in describing his species *Chrysis amethystina*, gives the locality New Holland, and says in the Banksian Museum, his description distinguishing it as a species of the modern genus *Stilbum*; "Thorax viridis, scutello prominulo, concavo." In the British Museum are specimens also from Australia; the size of the "*amethystina*" is exactly four and a half lines, French measure; it is of an entirely blue colour, in this respect resembling many examples from Africa. Dahlbom, relying on the authority of a specimen which he saw in the Museum at Kiel, which, if named by Fabricius, it was certainly subsequent to his visit to England, when he named the insect preserved in the Banksian collection, and, trusting to his memory, he gave the name "*amethystina*" to a species belonging to the genus *Chrysis*, as now restricted. The habitat New Holland may possibly have influenced some Hymenopterists to believe it probable that the locality given is an error; such is certainly not the case, as other examples have been received from that country; neither *Stilbum* nor *Chrysis* appear to be generally abundant there,—I have only seen two of the former and five of the latter genus; of the genera *Cleptes*, *Omalus*, *Hedychrum*, *Euchræus*, or of *Parnopes*, I have not seen a single species from Australia.

The habits of some of the species of the family have been carefully observed and recorded; these belong to the genera *Hedychrum*, *Chrysis*, and one or two other genera found in Europe; of the habits of exotic species very little has, to my knowledge, been observed. In the British Museum are several nests of *Eumenes tinctor*, sent from Port Natal by Herr Gueinzius, who bred from them specimens of *Stilbum amethystina*, the parasite of the wasp. *Parnopes carnea* is known to be the parasite of *Bembex rostrata*. *Elampus Panzeri* I have observed entering the burrows of *Mimesa bicolor*. Some of the species of the genus *Hedychrum* do not appear to confine their attacks to a particular species; *Hedychrum lucidulum* is parasitic on species of *Halicti*; this habit I have observed myself, having on one occasion found it numerous, entering the burrows of *Halictus leucozonius*. *Hedychrum ardens* is the parasite of *Mimesa unicolor*, and *Hedychrum roseum* is parasitic on the larva of *Tachytes pompiliformis*, and also, according to Shuckard, upon that of *Arpactus tumidus*. *Omalus auratus* is said by Latreille to be parasitic on *Philanthus triangulum*;

and, Walckenaer says, also upon *Cerceris ornata*; I have bred it in large numbers from bramble sticks containing cells of *Cemonus unicolor*, and I have seen it repeatedly entering the burrows of *Megachile argentata*.

The species of the genus *Chrysis*, judging from the amount of knowledge which we at present possess, are principally parasitic on species of *Vespidæ*, and some by no means confine their attacks to one insect; *Chrysis ignita* is known to attack the larvæ of several wasps as well as of bees; Walckenaer found it parasitic upon *Halicti*. I have bred it from nests of *Osmia bicornis*; Prof. Westwood bred it from the nest of the solitary wasp, *Odynerus Antilope*, and Mr. Chapman reared it from that of *Odynerus spinipes*. I once obtained many individuals from a nest of *Vespa rufa*. *Chrysis cyanea* is the parasite of *Chelostoma florisomne*, and *Chrysis bicolor* is the parasite of *Osmia parietina*; Zetterstedt bred the latter *Chrysis* from nests of *Osmia nigriventris*. *Chrysis neglecta* and *C. bidentata* are well-known parasites of *Odynerus spinipes*, details of the economy of these two *Chrysides*, and their mode of attack and development, are given by Mr. T. Algernon Chapman in the sixth volume of the Entomologist's Monthly Magazine.

1. *Stilbum splendidum.**

Chrysis splendida, Fabr. Syst. Entom. p. 357, ♀; Ent. Syst. ii. p. 238; Syst. Piez. p. 170.

Female.—Length 8—8½ lines. Head usually bright green, sometimes blue on the vertex; the three basal joints of the antennæ green, occasionally blue. Thorax blue; the prothorax frequently tinted with green at the sides, also occasionally narrowly so at its posterior margin; the mesothorax with a broad, longitudinal, lateral, green stripe; the posterior angles of the metathorax frequently more or less green; the legs green; wings fusco-hyaline, the nervures black. Abdomen blue, with usually a tint of green at the sides of the first segment; the second segment frequently green posteriorly; beneath, with changeable tints of blue and green. The head and thorax strongly and closely punctured; the abdomen more finely and not so closely punctured; a central, narrow, impunctate line on the second segment; the apical margin of the third segment armed with four acute teeth.

The male is smaller, about six and a half lines long, and is coloured like the female; the two central spines on the apical segment of the abdomen scarcely project beyond the lateral ones, but in the females of this genus they invariably do.

Hab.—Australia (Sydney; Moreton Bay; Queensland; Port Essington; Swan River).

2. *Stilbum amethystinum.**

Chrysis amethystina, Fabr. Syst. Entom. p. 359, ♂; Ent. Syst. ii. p. 243; Syst. Piez. p. 176.

Chrysis calens, Fabr. Ent. Syst. ii. p. 239; Syst. Piez. p. 171; Rossi, Faun. Etrus. ii. 74.

Stilbum splendidum, Brullé, Hist. Nat. des Ins. Hym. (St. Farg.), iv. p. 15, ♂, ♀; Dahlb. Hym. Eur. ii. p. 358; Gerst. Peters' Reise Mossamb. p. 519; Smith, Journ. Linn. Soc. iv. p. 144.

Stilbum calens, Spin. Ins. Ligur. i. p. 9; Brullé, Hist. Nat. des Ins. Hym. (St. Farg.), iv. p. 16; Dahlb. Hym. Eur. ii. p. 360, ♂, ♀; Lucas, Explo. Sc. de l'Algér. iii. p. 315, pl. 17, fig. 13; Chevr. Chrys. du Bassin du Léman, 7.

Stilbum Wesmaeli, Dahlb. Hym. Eur. ii. p. 359, ♂.

Stilbum amethystinum, Smith, Journ. Linn. Soc. iv. p. 177.

Hab.—Australia; Senegambia; Sierra Leone; Angola; Port Natal; Cape of Good Hope; Mozambique; Madagascar; Egypt; Arabia; Algeria; Calcutta; Tarancore; Himalaya; Singapore; Java; Celebes; Aru; Gilolo; Ceram; New Guinea; China; Japan; Persia; Turkey; Barbary; Greece; Italy; France; Dalmatia; Sicily.

3. *Stilbum viride*, Guér.

Stilbum viride, Guér. Revue Zool. Mai, 1842, p. 144, ♀; Brullé, Hist. Nat. des Ins. Hym. (St. Farg.) iv. 16, ♂.

Hab.—Madagascar.

In the British Museum is a specimen from Madagascar collected by Madame Ida Pfeiffer, which I believe to be

Guérin's species; it is entirely green above and beneath, with tints of blue on the thorax; the antennæ beyond the three basal joints being black, the middle division of the mesothorax is blue black, inclining to purple; the apical segment of the abdomen is golden-green. The thorax is entirely covered with strong confluent punctures, as are also the tegulæ; the wings smoky, with black nervures. Abdomen: the first and second segments rather more closely and strongly punctured than in *Stilbum amethystina*, the third segment entirely covered with fine confluent punctures. The lateral angles of the basal segment rounded, in *S. amethystina* they are acute.

Neither Guérin nor Brullé mention the different structure of the basal segment of the abdomen; this is probably an oversight, if not, the insect I describe will prove to be a new species.

NOTE.—The types of the species distinguished by a * are in the British Museum.