THE INDO-AUSTRALIAN SPECIES OF THE *ULTOR*-GROUP OF *APANTELES* FÖRSTER (HYMENOPTERA : BRACONIDAE)

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THE INDO-AUSTRALIAN SPECIES OF THE *ULTOR*-GROUP OF *APANTELES* FÖRSTER (HYMENOPTERA : BRACONIDAE)

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CONTENTS

SYNOPSIS

In this paper, the *ultor*-group of *Apanteles* is revised, a new key to the species is given, 22 described species are dealt with, of which 2 are placed in synonymy and 23 new species are described.

The main reason for the writing of this revision was a request by Dr. B. J. Wood of the Chemara Research Station, Johore, Malaysia for the identification of a species of *Apanteles* that he found to be an important parasite of the bag-worm, *Metesa plana* Walker.

Since the species in question is one of several known to be parasites of various lepidopterous pests in the Indo-australian region, I thought it would be much more useful to revise the whole group to which they belong rather than describe a single new species in isolation.

The *ULTOR*-Group of *Apanteles*

I have already defined this group (1965 : 126) but, as usually happens when further species need to be accommodated within a category, modifications now become necessary.

The *ultor*-group is based on three characters; these concern the punctation of the mesoscutum, the shape of the posterolateral field of the propodeum and the general appearance of the vannal lobe of the hind wing. The original definitions and the changes required in them may be stated as follows:

(1) "A sharp, very well defined punctation on the mesoscutum without a trace of longitudinal striation at the posterior end of the imaginary course of the notaulices". This character holds for all the species in this paper with regard to the last remark but I have included two transitional species—*lipsis* and *fakhrulhajiae*—in which the mesoscutal punctation could be described neither as sharp nor well defined.

(2) "A postero-lateral propodeal field that is always distinctly a little transverse". This is true of the majority of the species, but one—*cato*—has this field as long as wide. In others, among them, *platyedrae*, the boundary of this field is obscured by coarse rugosities; and in one species, *tasmanica*, the area is indicated simply by a fading out of sculpture.

(3) "A vannal lobe with an evenly convex edge that is fringed throughout with short hairs". The fringe of hairs remains constant, but in a few species, among them *labaris*, the edge is straight beyond the widest part of the lobe. In this respect there is an approach to the condition found in some species of the *ater*-group (Nixon, 1965 : 25).

I also mentioned that the first tergite is usually parallel-sided; this is essentially true. It is never wedge-shaped, i.e. narrowed behind, as in most of the species of the *ater*-group.

Concerning the species dealt with in this synopsis, the only character that I have found to have real significance in separating them is the shape of the ovipositor as seen in profile.

A few transitional species are included, for it is possible that they might be sought within the *ultor*-group as I have defined it.

Key to Species

Females

1 Propodeum with only the merest trace of an areola and without trace of costulae; punctation of mesoscutum fine, dense and, towards front, obsolescent.
Antennal scape and hind femur yellow; stigma with pale, basal spot; gaster, apart from tergite 1 and the basal field of tergite (2 + 3), mainly reddish or reddish yellow; tergite 1 densely rugose; ovipositor sheath a little longer than the hind tibia . . . . . . ***fakhrulhajiae*** Mahdihassan (p. 33)

– Propodeum almost always with clearly defined areola and costulae; mesoscutum always with a very well defined, characteristic punctation (but cf. *lipsis*); in species in which the areola and costula are obscured by coarse rugosities, the punctures of the mesoscutum are particularly large and sharply defined with polished interstices (*platyedrae, gentilis*) 2

2 Basal field of tergite (2 + 3) very much wider than the apical width of tergite 1 (Text-fig. 22).
Aberrant species with the ocelli in a high triangle, the posterior tangent to the anterior ocellus passing clearly in front of the posterior pair; hind femur reddish yellow; punctation of the mesoscutum fine, obsolescent; ovipositor sheath slightly longer than the hind tibia . . . . . ***amaris*** sp. n. (p. 32)

– Basal field of tergite (2 + 3) at most slightly wider than the apical width of tergite 1 3

3 Cheeks with a whitish blotch; propodeum without clearly defined areolation.
Ovipositor sheath considerably longer than the hind tibia; ovipositor thin . 4

– Cheeks without a whitish blotch 6

4 Mesoscutum strongly shining, its punctation either fine or the punctures well separated 5

– Mesoscutum dull, showing two, broad bands of coarse, more or less coalescent punctation along the imaginary course of the notaulices.
Hind tibia with apical infuscation that extends ventrally almost to middle ***tasmanica*** Cameron (p. 17)

5 Apart from a hardly indicated areola, propodeum shiny, smooth-looking and with only vague traces of sculpture; pubescence of middle part of mesoscutum brushed inwards towards the middle line; hind tibia entirely yellow; ocelli in a high triangle, the posterior tangent to the anterior ocellus passing clearly in front of the posterior pair . . . . . ***lipsis*** sp. n. (p. 32)

– Propodeum strongly, coarsely rugose almost everywhere but with clearly indicated costulae; pubescence of mesoscutum normal; hind tibia almost black except for a pale, basal ring; posterior tangent to the anterior ocellus virtually touching the posterior pair . . . . . ***ilione*** sp. n. (p. 18)

6 Ovipositor sheath distinctly longer than the hind tibia 7

– Ovipositor sheath not longer than the hind tibia 21

7 Gaster yellow, except tergite 1 which is reddish with narrow, darker lateral margin. Mesoscutum shiny, with large coarse punctures; propodeum rather long, its three posterior fields sharply defined and highly polished; ovipositor rather thick, with down-curved, attenuated tip. . . . . ***numenes*** sp. n. (p. 31)

– Gaster dark, except in one species—*vernaliter*—and in this species at least tergite 1 is entirely blackened 8

FIGS. 1–6. *Apanteles*, ♀: Ovipositor of 1, *aso* sp. n.; 2, *parasae* Rohwer; 3, *hyposidrae* Wilkinson; 4, *cleo* sp. n.; 5, *stantoni* Ashmead; 6, *metesae* sp. n.

8 Gaster dusky yellow, except for tergite 1, the basal field of tergite (2 + 3) and a faint band on the following tergites.
Vertex to sides of posterior ocellus with rather coarse punctation
vernaliter Wilkinson (p. 21)

– Gaster entirely dark 9

9 Mesoscutum highly polished, its punctures well separated on posterior half (one to three diameters) and mid-posteriorly tending to disappear altogether.
Areola of propodeum, and sometimes costula, obscured by much rugosity; antenna rather short, somewhat shorter than the body; ovipositor sheath about one and a half times longer than the hind tibia; hind femur dark brown
platyedrae Wilkinson (p. 16)

– Mesoscutum appearing less polished because of closer punctation; where there is an approach to the condition found in *platyedrae* the antenna is longer and the ovipositor sheath much shorter (*gentilis*) 10

10 Costula of propodeum directed downwards in its lateral extension and terminating at posterior extremity of lateral propodeal keel.
Large species, *c.* 3·5 mm. without ovipositor; stigma pale with darker border; hind wing glass-clear, very broad (Text-fig. 7); ovipositor straight, rather thick but abruptly downcurved at apex . . . . . ***labaris*** sp. n. (p. 19)

— Costula of propodeum either reaching the lateral propodeal keel or ill-defined and obscured by adjacent rugosities 11

11 Stigma colourless, with faintly darker border.
Scape and hind femur entirely dark; ovipositor thin; head less circular from in front than usual (Text-fig. 14) . . . . . ***lebene*** sp. n. (p. 20)

— Stigma dark, at most with a pale basal spot 12

12 Tergite 1 polished all over and virtually without sculpture.
Punctures on posterior half of mesoscutum well separated, the interstices very shiny; scape entirely dark; wings distinctly brownish, both median and discoidal cell densely setose; apical attenuation of ovipositor abrupt, equal to about two thirds the length of the hind basitarsus (Text-fig. 21) ***lissos*** sp. n. (p. 21)

— Tergite 1 at most becoming polished and unsculptured towards apex . . . 13

13 Mesoscutum highly shining, its punctures rather large, sharply discrete, absent along middle line but tending in places to be contiguous along the imaginary course of the notaulices
Scape mainly reddish yellow; antenna long, distinctly longer than the body; hind tibia blackened, except for whitish, basal ring; ovipositor weakly but evenly down-curved . . . . . ***gentilis*** sp. n. (p. 17)

— Mesoscutum rarely as shiny between its punctures and then either the ovipositor is longer and straight, except at apex (*coequatus*), or the hind tibia is entirely yellow (*cyamon*) 14

14 Scape of antenna entirely dark 15

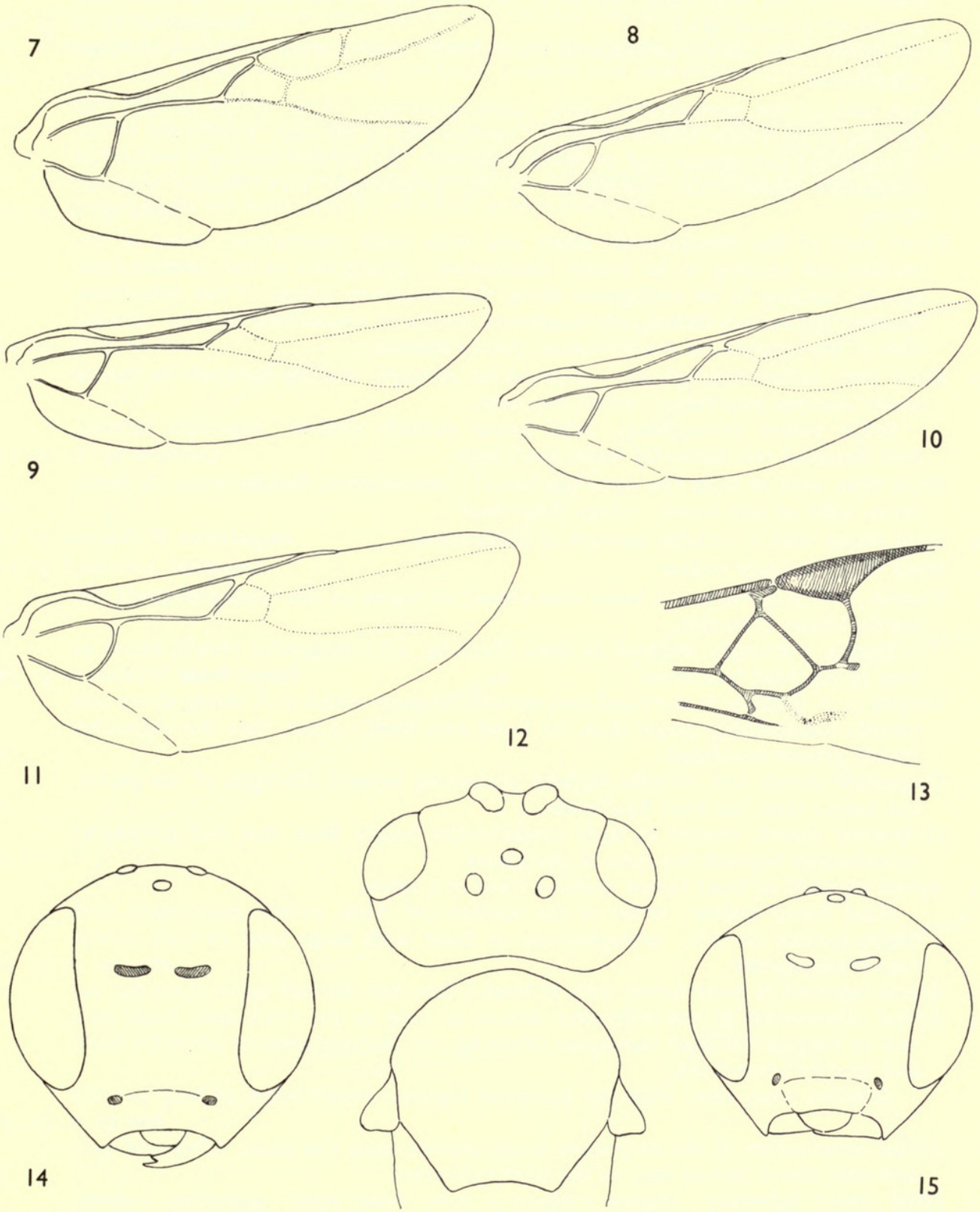
— Scape of antenna yellow, usually with darker, apical rim 19

15 Ovipositor very thick, fully equal to the width of the hind basitarsus, as seen in profile (Text-fig. 6) 16

— Ovipositor much less thick, not equal to the width of the hind basitarsus as seen in profile 17

16 First discoidal cell distinctly wider than high, 7 : 6; ovipositor strongly and deeply curved (Text-fig. 6).
Antenna long, with the preapical segment fully one and a half times longer than wide; hairs of tergite 3 reduced almost to a single row ***metesae*** sp. n. (p. 15)

— First discoidal cell not distinctly wider than high; ovipositor almost straight.
Preapical segment of the antenna only slightly longer than wide . . .
hasorae Wilkinson (p. 14)



FIGS. 7–15. *Apanteles*, ♀: Hind wing of 7, *labaris* sp. n.; 8, *lebene* sp. n.; 9, *platyedrae* Wilkinson; 10, *caniae* Wilkinson; 11, *maro* sp. n.; 12, *lipsis* sp. n., head and mesoscutum (dorsal); 13, *baoris* Wilkinson, part of fore wing; 14, *lebene* sp. n., head (from in front); 15, *cato* sp. n., head (from in front).

17 Hind femur infuscate but with a yellowish flush along each side; mesoscutum polished between its sharp punctures. . . . . .
Ovipositor straight, except at apex, a little more than two and a half times longer than the hind tibia; spines of the outer side of the hind tibia dense and almost all of them thick . . . . . ***coequatus*** sp. n. (p. 20)

— Hind femur dark brown to blackish throughout; mesoscutum lacking a polished appearance 18

18 Front part of the mesopleurum dull, rugose-punctate; setae of the median cell tending to be widely absent along the medius side of the cell; punctation of the mesoscutum contiguous and in places confluent, the surface having a somewhat roughened appearance; areolation of the propodeum very sharply defined, strong . . . . . ***iulis*** sp. n. (p. 16)

— Front part of the mesopleurum shiny and with weak punctation; setae of the median cell tending to be evenly distributed; punctation of the mesoscutum, though tending to be contiguous along the imaginary course of the notaulices, sharper, the surface lacking the roughened confluent appearance of *iulis*; areolation of the propodeum much weaker, poorly defined . . ***miris*** sp. n. (p. 14)

19 Hind tibia yellow throughout; mesoscutum strongly shining between its rather small, discrete punctures; wings brownish.
Scape yellow throughout; hind femur entirely yellow; flagellum fulvous, first discoidal cell distinctly wider than high . . . . ***cyamon*** sp. n. (p. 13)

— Hind tibia with at least the apex blackened; mesoscutum dull between its punctures, with an oily lustre; wings glass-clear 20

20 Hind femur with a variable amount of infuscation . ***inquisitor*** Wilkinson (p. 13)

— Hind femur entirely yellow . . . . . ***stantoni*** Ashmead (p. 12)

21 Tergite (2 + 3) distal to the basal area almost as rugose as the basal area itself and hardly longer than this.
Tergite 1 strongly widened to apex (Text-fig. 27); ovipositor sheath about as long as the hind basitarsus . . . . . ***hemitheae*** Wilkinson (p. 31)

— Tergite (2 + 3) distal to the basal area smooth, at most with a dull, satiny sheen and usually considerably longer than the basal area itself; if not, then the ovipositor sheath almost concealed 22

22 Ovipositor sheath not, or only slightly projecting beyond the apex of the gaster, not longer than the hind basitarsus 23

— Ovipositor sheath always at least considerably longer than this and projecting considerably beyond the apex of the gaster 26

23 Apical segment of front tarsus without trace of a spine.
Hind femur yellow; setae of the median cell dark, evenly distributed over entire surface of cell; mesopleurum in front with large area of dull, coarse rugose-punctation . . . . . ***cleo*** sp. n. (p. 30)

— Apical segment of front tarsus with at least a fine, but distinct spine (Text-fig. 24) 24

24 Apical attenuation of the ovipositor almost as long as the thickened, basal part and as long as the hind basitarsus (Text-fig. 1); hypopygium of powerful build and heavily sclerotized. . . . . .
Antenna long, thin, with the preapical segment about twice as long as wide ***aso*** sp. n. (p. 30)

— Apical attenuation of the ovipositor much shorter than the basal, thickened part and only about half as long as the hind basitarsus 25

25 Hind femur infuscate; stigma without a pale, basal spot; scutellum convex, markedly punctate, especially along sides; spine of the apical segment of the front tarsus inconspicuous (Text-fig. 24); basal field of tergite (2 + 3) about three quarters as long as that part of the segment beyond it ***hyposidrae*** Wilkinson (p. 29)

— Hind femur yellow or almost so; stigma with a pale, basal spot; scutellum very shiny and with much less evident punctation; spine of the apical segment of the front tarsus slightly better developed than in *hyposidrae* ***expulsus*** Turner (p. 27)

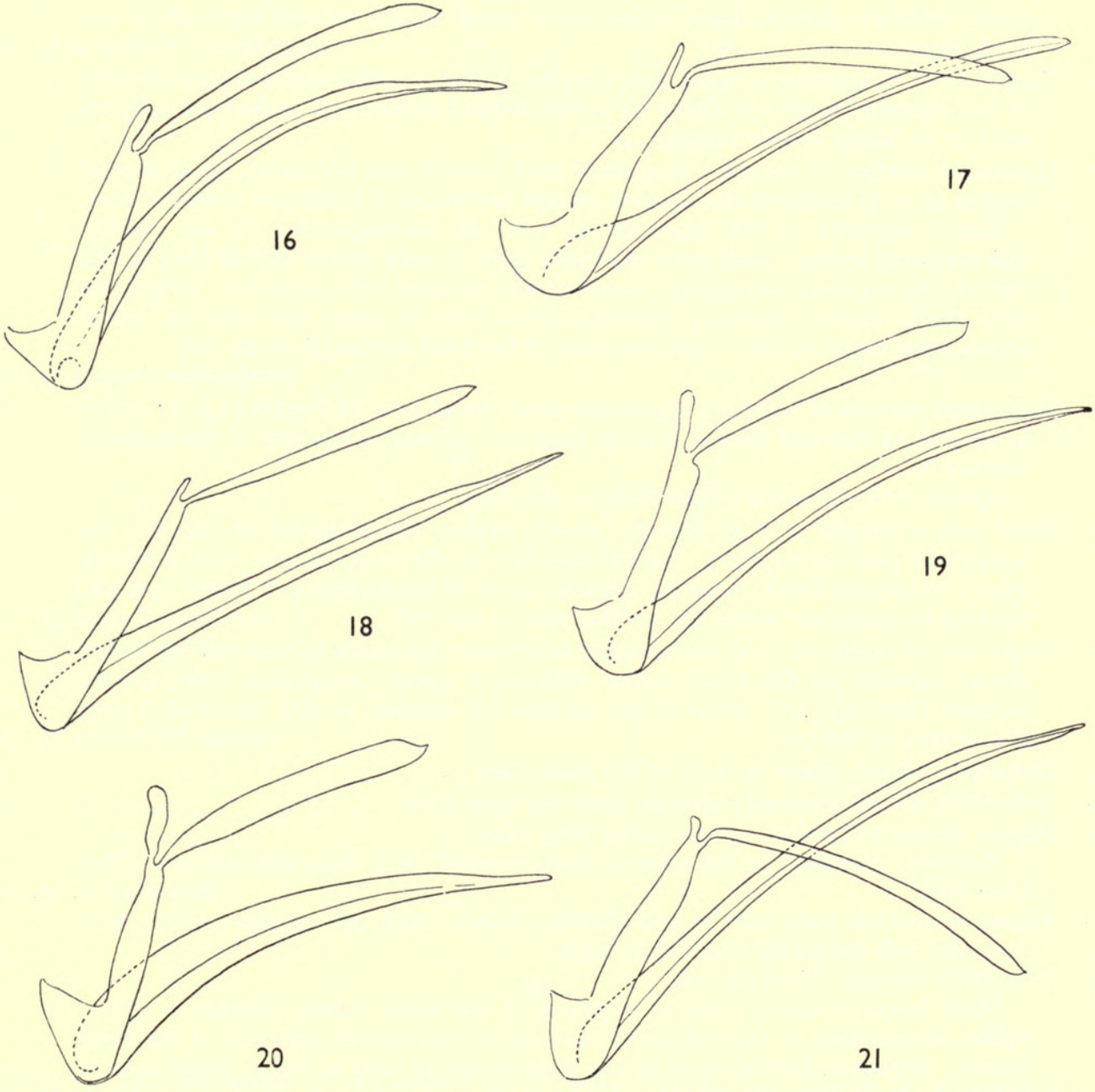
26 Ovipositor sheath much shorter than the hind tibia 27

— Ovipositor sheath at most only slightly shorter than the hind tibia . . . 32

27 Posterior half of the mesoscutum polished and with sparse, discrete punctures, the punctures widely absent along posterior margin and elsewhere separated by at least one diameter.

Hind leg blackish virtually throughout; scutellum polished, impunctate; front tarsus whitish, its apical segment without a spine . . . ***acratos*** sp. n. (p. 23)

— Posterior half of mesoscutum closely punctate, not polished between its punctures even if these are separated by as much as one diameter 28



FIGS. 16–21. *Apanteles*, ♀: Ovipositor of 16, *baoris* Wilkinson; 17, *caniae* Wilkinson; 18, *cato* sp. n.; 19, *priscus* sp. n.; 20, *prodeniae* Viereck; 21, *lissos* sp. n.

28 Hypopygium short, heavily sclerotized, without lateral creases, though, in the dead insect still tightly folded along the middle line; ovipositor sheath, seen from the side, somewhat fusiform and, seen from above, clothed densely with short, even, not erect hairs.

Hind femur yellow; scape infuscate; stigma with pale, basal spot ***nydia*** sp. n. (p. 29)

— Hypopygium longer, less heavily sclerotized and with clear indication of lateral creases in the dead insect; ovipositor sheath, seen from the side, lacking this fusiform appearance and, seen from above, with longer, more irregular hairs, many of which are more or less erect 29

29 Tergite (2 + 3) showing no differentiated basal area, the basal part of the segment (tergite 2) being completely smooth and separated from the apical part (tergite 3) only by an indistinct suture; its lateral sulci also indistinct and in any case more or less longitudinally placed.

Tergite 1 shiny and virtually smooth; ovipositor more or less straight, very thick, with an abrupt apical attenuation equal to the second segment of the hind tarsus . . . . . ***mendosae*** Wilkinson (p. 28)

— Tergite (2 + 3) showing a basal area (tergite 2) that is differentiated from the rest of the segment (tergite 3) either by a well defined suture and limited laterally by sulci or by being simply rugose 30

30 Horizontal surface of tergite 1 in greater part smooth and polished; basal area of tergite (2 + 3) polished and smooth except for traces of sculpture towards sides.

Apical segment of the front tarsus with an inconspicuous (× 40), hardly differentiated spine; basal area of tergite (2 + 3) only about half as long as the rest of the segment beyond it; setae of the median cell colourless; ovipositor very thick, curved, strongly tapering from base to apex but with an apical attenuation equal to the fourth segment of the hind tarsus (Text-fig. 20) ***prodeniae*** Viereck (p. 27)

— Horizontal surface of tergite 1 rugose all over; basal area of tergite (2 + 3) rarely as smooth as this and then it is more than half as long as the rest of the segment beyond it.

Species with the setae of the median cell dark 31

31 Basal area of tergite (2 + 3) strongly, evenly rugose, the sculpture like that of the horizontal part of tergite 1; apical segment of the front tarsus with a strong spine; ovipositor thick, tapering, curved; setae of the median cell longer, sparser, tending to disappear along the medius side of the cell . ***expulsus*** Turner (p. 27)

— Basal area of tergite (2 + 3) with weaker sculpture that tends to fade out medially; apical segment of the front tarsus without a spine; ovipositor thin, almost straight (Text-fig. 17); setae of the median cell shorter, evenly distributed over the surface of the cell . . . . . ***caniae*** Wilkinson (p. 26)

32 Ovipositor sheath about as long as the hind tibia 33

— Ovipositor sheath obviously shorter than the hind tibia 40

33 Stigma almost colourless, except along wing edge.

Venation proximal to the areolet unpigmented; first discoidal cell not wider than high . . . . . ***acron*** sp. n. (p. 23)

— Stigma somewhat pale only in one species—*baoris*—and this species has the first discoidal cell distinctly wider than high 34

34 Ovipositor straight (Text-fig. 18).

Hind femur blackish; apical segment of the front tarsus without a spine; apical attenuation of the ovipositor as long as the second segment of the hind tarsus; posterior, lateral areas of the propodeum as long as wide; basal area of tergite (2 + 3) virtually smooth . . . . . ***cato*** sp. n. (p. 26)

— Ovipositor at most nearly straight and then the hind femur is yellow and the basal area of tergite (2 + 3) is rugose 35

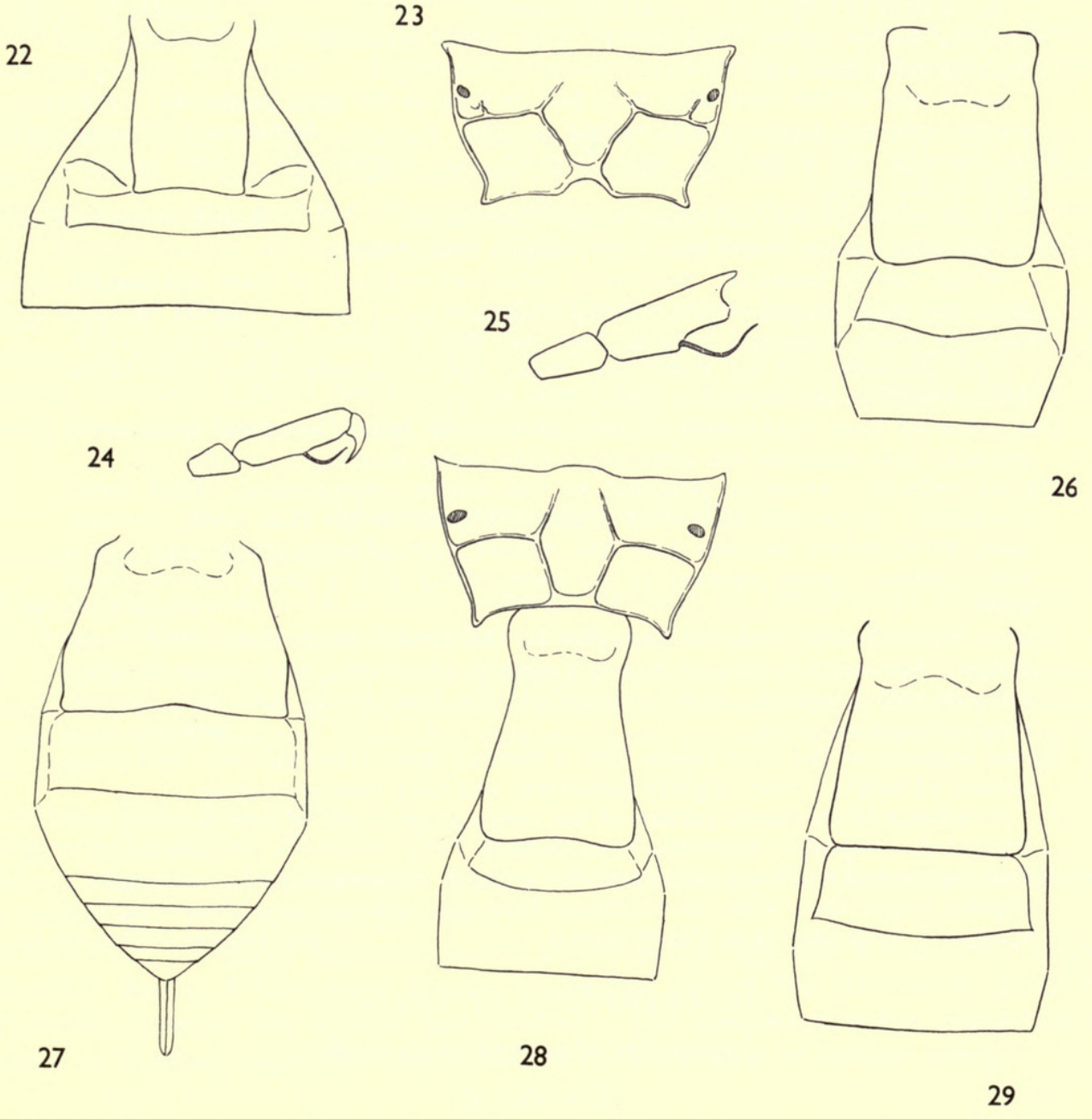
35 Ovipositor weakly curved and with a weakly differentiated apical attenuation that is about equal to the length of the hind basitarsus (Text-fig. 2).

Hind femur infuscate; apical segment of the front tarsus without a spine; setae of the median cell rather sparse and only weakly pigmented ***parasae*** Rohwer (p. 22)

— If the ovipositor shows an apical attenuation as long as the hind basitarsus, then this attenuation is much more sharply differentiated and the hind femur is yellow 36

36 Ovipositor with an apical attenuation equal to about the length of the hind basitarsus.

Hind femur yellow; horizontal surface of tergite 1 distinctly transverse, coarsely rugose, almost right-angled at its junction with the anterior, declivous



FIGS. 22–29. *Apanteles*, ♀: 22, *amaris* sp. n., basal tergites; 23, *cato* sp. n., propodeum; 24, *hyposidrae* Wilkinson; apical segment of front tarsus; 25, *priscus* sp. n., same; 26, *orelia* sp. n., basal tergites; 27, *hemitheae* Wilkinson, gaster (dorsal); 28, *numenes* sp. n., propodeum and basal tergites; 29, *priscus* sp. n., basal tergites.

surface; the two surfaces almost humped at their junction; apical segment of the front tarsus with a feeble spine; ovipositor almost straight
heterusiae Wilkinson (p. 25)

— If the ovipositor shows an abrupt apical attenuation, then this is clearly shorter than the hind basitarsus.
Apical segment of the front tarsus without a spine 37

37 Ovipositor thin and without an apical attenuation 38

— Ovipositor thick, strongly down-curved and with an abrupt, apical attenuation.
Hind femur infuscate; apical attenuation of the ovipositor about two thirds as long as the hind basitarsus (Text-fig. 16) 39

38 Ovipositor almost straight; hind femur yellow, except for faint darkening above at apex; first discoidal cell not wider than high.
Basal field of tergite (2 + 3) almost smooth . . . ***aluella*** sp. n. (p. 27)

— Ovipositor feebly curved throughout; hind femur infuscate; first discoidal cell slightly wider than high, 25 : 22.
Inner spur of the hind tibia fully half as long as the hind basitarsus; horizontal surface of tergite 1 fully as long as wide . . ***bambusae*** Wilkinson (p. 24)

39 First discoidal cell wider than high (Text-fig. 13); stigma pale, almost pellucid, with darker border.
Hairs of the median cell dense, evenly distributed . ***baoris*** Wilkinson (p. 22)

— First discoidal cell not wider than high; stigma evenly dark.
Wings faintly brownish; horizontal surface of tergite 1, at least mid-basally, becoming polished and almost without sculpture . . . ***agilis*** Ashmead (p. 22)

40 Ovipositor much thickened towards base and with a distinct apical attenuation.
First discoidal cell not wider than high; apical segment of the front tarsus with at least an inconspicuous spine (Text-fig. 25) 41

— Ovipositor at most only weakly thickened towards apex; no apical attenuation present; first discoidal cell distinctly a little wider than high, 25 : 22 . . 42

41 Stigma pellucid; venation proximal to the areolet unpigmented; hind femur blackened; horizontal surface of tergite 1 slightly longer than wide; towards apex, its sculpture becomes very fine, almost longitudinally striate and with a satiny sheen; apical segment of the front tarsus with a small, inconspicuous spine . . . . . ***maro*** sp. n. (p. 25)

— Stigma not pellucid; venation proximal to the areolet pigmented; hind femur yellow; horizontal surface of tergite 1 slightly transverse, with coarse striation towards apical corners; apical segment of the front tarsus with long, curved, very conspicuous spine . . . . . ***priscus*** sp. n. (p. 24)

42 Apical segment of the front tarsus with a distinct spine (Text-fig. 26); horizontal surface of tergite 1 very slightly transverse and very coarsely rugose. . .
Punctures of the dorsal surface of the mesoscutum large, of even size and well separated; ovipositor thickened towards base . . . ***orelia*** sp. n. (p. 28)

— Apical segment of the front tarsus without a spine; horizontal surface of tergite 1 slightly longer than wide, its sculpture finer and, towards apex, becoming fine striation; ovipositor thin, feebly curved . . ***bambusae*** Wilkinson (p. 24)

DESCRIPTIONS OF SPECIES

Apanteles stantoni (Ashmead)

(Text-fig. 5)

Urogaster stantoni Ashmead, 1904 : 20.
Apanteles stantoni (Ashmead) Wilkinson, 1928 : 131.
Apanteles fistulae Wilkinson, 1928 : 134. **Syn. n.**

♀. Hind femur yellow. Wings hyaline; venation proximal to the areolet almost colourless.

Areolation of propodeum on the whole sharp, distinct; the three posterior fields polished and more or less smooth.

Horizontal part of tergite 1 varying from slightly transverse to fully as long as wide; rarely a little widened towards apex; often becoming markedly smoother towards apex. Basal field of tergite (2 + 3) with only weak traces of sculpture, about half as long as the rest of the segment beyond it; in the two females of the type series of *fistulae*, tergite 1 is sculptured right to apex, the apical corners of the segment showing the striation common to many related species. Ovipositor sheath about one and one third times longer than the hind tibia (Text-fig. 5).

Length: *c.* 2·5 mm. without ovipositor.

CHINA. FIJI. INDIA (type locality of *fistulae*). MALAYSIA. PHILIPPINES: Manila (type locality of *stantoni*).

Host. None known for type series of *stantoni*. Series in B.M. bred from the Pyralids: *Glyphodis laticostalis* Guenée, *Margaronia glauculalis* Guenée and *Margaronia marginata* Hampson. *Argyroploce codonectis* Meyrick (Eucosmidae). *Sylepta derogata* Fab. (Pyraustidae).

Wilkinson (1928 : 132) recorded *stantoni* as a solitary parasite but this was in error, I think. There are two batches of cocoons in the B.M., one from China (without host name) and the other from Malaysia (ex *Sylepta derogata* on *Hibiscus*).

My interpretation of *stantoni*, like Wilkinson's, is based on a paratype in the British Museum.

The legs of *fistulae* are as bright yellow as those of *stantoni* but the ovipositor sheaths are slightly longer. For this reason, these specimens of *fistulae* are intermediate between typical *stantoni* and *inquisitor*. Wilkinson records *fistulae* as having been bred from a Pyralid defoliating *Cassia fistula*.

Apanteles inquisitor Wilkinson

Apanteles inquisitor Wilkinson, 1928 : 134.

This species seems to be a fairly common parasite of *Lamprosema diemenalis* in S.E. Asia. Whether it is really distinct from *stantoni* I cannot be sure.

♀. The hind femur is obscurely yellowish compared with that of *stantoni*, distinctly darkened towards base and often along upper surface; sometimes the entire femur is lightly infuscate.

Ovipositor sheath distinctly longer than that of *stantoni*, one and a half times longer than the hind tibia.

CHINA. FIJI. MALAYSIA.

Type in the British Museum (Nat. Hist.).

Host. *Lamprosema diemenalis* Guérin (Pyraustidae); *Maruca testulalis* Geyer (Pyraustidae). A gregarious parasite.

Apart from the slight difference in the colour of the legs and a constantly longer ovipositor sheath, I have been unable to confirm any of the differences, given by Wilkinson, between this species and *stantoni*. The *stantoni*-complex, consisting as it does, of *stantoni*, *inquisitor* and *fistulae* is in much need of further study.

Apanteles cyamon **sp. n.**

In length of ovipositor and yellow scape, a species fairly close to *stantoni*, with which it may be compared as follows:

♀. Hind tibia entirely yellow; hind tarsus almost as pale; only first two segments darkened along outer side. Scape bright yellow, without a darkened, apical rim; flagellum brownish fulvous. Underside of thorax brownish. Wings faintly brownish, the venation proximal to the areolet pigmented and the setae dark.

Antenna rather short, a little thicker than in *stantoni*, the preapical segment hardly longer than wide.

Mesoscutum highly polished between its punctures, the punctures more sharply defined and more discrete than in *stantoni*. Setae of the first discoidal and median cells denser, shorter than in *stantoni*. Spines of the outer side of the hind tibia thicker, more numerous.

Tergite 1 sculptured right to apex. Ovipositor evenly curved as in *stantoni* but slightly thinner. Ovipositor sheath slightly longer.

Length: *c.* 2·5 mm. without ovipositor.

Type ♀. NEW HEBRIDES: 1935 (*M. Risbec*), ex *Batrachedra* sp.

Type in the British Museum (Nat. Hist.).

Host. *Batrachedra* sp.

This species is characterized by the shiny mesoscutum, and entirely pale scape and hind tibia. I am a little puzzled by the pale flagellum. If this is really a feature of the species and not the result of accident, it provides a colour character of considerable use in the recognition of the species.

Apanteles miris sp. n.

♀. Differs mainly from *stantoni* in having a black scape and the hind femur deeply infuscate. The hind tibia is also infuscate but becomes dull reddish on about basal third. Wings very faintly tinted; venation proximal to the areolet pigmented and the setae of the median cell dark.

Thorax, seen from the side, slightly less deep. Areolation of propodeum less well defined; costula very poorly defined, situated distinctly a little posterior to middle. First discoidal cell more densely setose; hind wing a little narrower.

Tergite 1 rugose right to apex. Basal field of tergite (2 + 3) as rugose as the apical part of tergite 1. Ovipositor sheath very slightly longer.

Length: *c.* 2·5 mm. without ovipositor.

Type ♀. AUSTRALIA: F.C.T., Molonglo R., 8.v.1930 (*L. F. Graham*) B.M. (Nat. Hist.).

Paratypes. AUSTRALIA: same data, 10.iv.1930, 1 ♀; F.C.T., Blundell's, 15.iii.1930, 1 ♀ (both *L. F. Graham*).

On the whole, this is a poorly characterized species, clearly close to the *stantoni-inquisitor* complex and differing from it only by a very subtle combination of features, within which a general deepening of colour plays an important part. The dull, strongly rugose basal field of tergite (2 + 3) is probably diagnostic.

Apanteles hasorae Wilkinson

Apanteles hasorae Wilkinson, 1928 : 133.

This species and the next—*metesae*—are mainly characterized by the greatly thickened ovipositor.

♀. In the type series, discoloured and shrivelled through having been initially preserved in fluid, the scape is entirely infuscate. Hind femur infuscate throughout; hind tibia weakly infuscate but paler towards base.

Antenna a little shorter than the body, with the three preapical segments very slightly longer than wide. Side of face distinctly, closely punctate.

Scutellum flat, polished, impunctate.

Horizontal part of tergite 1 about as long as wide, smooth and polished over most of its surface; this may be merely a feature of the single series available. Ovipositor with an abrupt, apical attenuation equal to about the length of the second segment of the hind tarsus.

JAVA.

Type in the British Museum (Nat. Hist.).

Host. *Hasora mixta* Mabille (Hesperiidae) on Derris.

Apart from the colour of the scape and the legs, and the much thicker ovipositor, there is virtually nothing to separate this species from *stantoni*. Certainly, the face of *stantoni* appears much less closely and distinctly punctate but it must be remembered that only one series of *hasorae* has been available for comparison.

Apanteles metesae sp. n.

(Text-fig. 6)

♀. A very dark-legged species with the hind femur almost black; at least the apical half of the hind tibia and whole of the hind tarsus deeply infuscate. Scape blackish. Wings almost hyaline; venation proximal to the areolet faintly pigmented; setae of the median cell dark.

Face with the usual satiny sheen and with weak, obsolescent punctation more like that of *stantoni* than of *hasorae*. Antenna unusually thin; preapical segment fully one and a half times longer than wide.

Punctation of mesoscutum typical of group, not distinguishable from that of the *stantoni*-complex. Scutellum flat, with scattered punctures that become closer towards sides. Spiracle of propodeum separated from junction of costula and lateral propodeal keel by three times its own diameter; in *hasorae*, this distance is distinctly less; in the *stantoni*-complex, it is much less, hardly twice the diameter of the spiracle.

Horizontal part of tergite 1 varying from slightly transverse to being as long as wide; towards apex, the coarse rugosity of the basal part of this area gives way to delicate longitudinal striation on a smooth surface with a satiny sheen; sometimes the apical part of the tergite is as smooth and polished as in many examples of the *stantoni*-complex. Basal field of tergite (2 + 3) virtually smooth, about two thirds as long as the rest of the segment. Ovipositor (Text-fig. 6).

Length: *c.* 2·5 mm. without ovipositor.

Type ♀. MALAYSIA: Johore, 1963, ex *Metesa plana* (*B. J. Wood*) B.M. (Nat. Hist.).

Paratypes. Same data, 11. MALAYSIA: Selangor, Highland Estate, 4 ♀, ex *Crematopsyche pendula*, 22.xii.1960; Perak, Ulu Bernam Estate, 3 ♀, ex *C. pendula*, 22.x.1954 (*I. J. Wyatt*); 2 ♀, ex *C. pendula*, 15.ii.1955 (*Dept. Agriculture*). VIETNAM: Saigon, 2 ♀, ex *C. pendula ?*, 1934 (*Inst. Agron. Colon*).

Host. *Crematospyche pendula* Joannis; *Metesa plana* Walker (Psychidae).

In the twenty three examples examined, the scutellum is weakly shining and distinctly punctate at least towards sides; in this respect, there seems to be a constant difference between this species and the closely related *hasorae*.

It is curious that in none of the above series of *metesae* are males present. There are three males in the types series of *hasorae*.

Apanteles iulis sp. n.

A very dark-looking species, closely related to *stantoni* with which it may be compared as follows:

♀. Hind femur blackish; hind tibia becoming dull reddish yellow on about basal quarter. Scape entirely dark. Fore wing proximal to the areolet showing a slightly greater degree of pigmentation.

Punctation of the mesoscutum slightly less even; punctures of posterior part tending to be confluent in places. Front part of the mesopleurum densely rugose-punctate, dull; in *stantoni*, this sculpture is reduced to discrete, sometimes more or less contiguous punctation.

Horizontal part of tergite 1 slightly longer in relation to its apical width than in *stantoni* and sculptured right to apex, evenly rugose.

Length: *c.* 2·5 mm. without ovipositor.

Type ♀. NEW GUINEA: Lae, vii.1957, ex larva on *Ipomea* leaf (*R. W. Paine*) B.M. (Nat. Hist.).

Paratypes (♀). Same data: 3 ♀, 1 ♂.

Host. Unknown. Since both "larva" and "leaf" are singular, this is probably a gregarious parasite.

Although differing strikingly from *stantoni* in colour, this species, nevertheless, resembles it very closely. The possibility cannot be overlooked that *iulis* is perhaps only an extreme colour form of *stantoni*; the sculptural differences, based only on a small series of *iulis*, do not provide wholly satisfactory evidence of specific validity.

In colour, this species is exactly like *gentilis* though I do not doubt that *gentilis* is a good species.

Apanteles platyedrae Wilkinson

(Text-fig. 9)

Apanteles platyedrae Wilkinson, 1928 : 133.

This species is essentially characterized by reduction of sculpture, the punctation of the mesoscutum being sparser than in any other species dealt with in this paper.

♀. Scape entirely dark. Stigma almost black. Hind femur deeply infuscate; hind tibia infuscate but yellowish on about basal quarter; hind tarsus infuscate throughout.

Temples strongly shining, with hardly a trace of punctation. Antenna a little shorter than the body.

Scutellum smooth, highly polished. Setae of the median cell short, dark, widely absent along the medius side of the cell; first discoidal cell distinctly wider than high, 24 : 19; hind wing rather narrow (Text-fig. 9). Spines of the outer side of the hind tibia numerous, nearly all thick and, on proximal half of tibia, almost dense.

Ovipositor sheath almost twice as long as the hind tibia; ovipositor rather thin but still thick enough to show a distinct, though weak, apical attenuation.

Length: 2·5 mm. without ovipositor.

FIJI.

Type in the British Museum (Nat. Hist.).

Host. *Platyedra* (now *Pectinophora*) *gossipiella* Saunders (Gelechiidae); *Decadarchis heterogramma* Meyrick (Lyonetiidae). No information exists to show whether *platyedrae* is a gregarious or solitary parasite.

The head of this species is wider in comparison with the width of the thorax than in the *stantoni*-complex and the thorax, seen from the side, is more elongate and a little flattened.

Apanteles gentilis sp. n.

In darkness of leg colour and reduction of mesoscutal punctation, this species is much like *platyedrae*. It is, however, rather less elongate than that species and, having a pale scape, is perhaps more closely related to the species clustering around *stantoni*.

It may be compared with *platyedrae* as follows:

♀. Hind tibia darker, almost black, with a sharply delimited, whitish yellow, basal band covering about basal fifth. Scape yellow, except for faint darkening around the apical rim.

Temples with slightly more distinct punctation. Antenna considerably longer with segment 15, fully one and a half times longer than wide; in *platyedrae*, this segment is hardly longer than wide.

Punctures of the mesoscutum large, occasionally confluent and, on each side of the middle line on posterior half, virtually contiguous. Propodeum more coarsely rugose, the costula hardly defined as such and the areola very poorly indicated. First discoidal cell less obviously wider than high. Spines of the outer side of the hind tibia slightly less thick and less dense.

As in *platyedrae*, tergite 1 is rugose right to apex but here rather more densely so than in *platyedrae*. Ovipositor sheath as long as the hind tibia; ovipositor thinner and with an apical attenuation; evenly curved.

Length: 2·4 mm. without ovipositor.

Type ♀. NEW GUINEA: Lae, x.1957, ex larva of *Agonoxena pyrogramma* (*R. W. Paine*) B.M. (Nat. Hist.).

Paratypes (♀). Same data, 2 ♀, 2 ♂. NEW BRITAIN: Rabaul, 7 ♀, 3 ♂, ex *Agonoxena pyrogramma* (*R. W. Paine*). SOLOMONS: Banika Is., 1 ♀, ex *Agonoxena* sp., 2.viii.1963 (*R. W. Paine*).

Host. *Agonoxena pyrogramma* Meyrick (Agonoxenidae). Solitary parasite, making a very thin, white cocoon.

This species is largely characterized by the combination of colour of the hind legs and coarsely rugose propodeum. It should be mentioned that the definition of the costula of the propodeum is variable; it is more obscure in the type series from N. Guinea than in the longer series from New Britain.

Agonoxena pyrogramma is also parasitized by *Apanteles pyrogrammae* Nixon (1965) and *A. painei* Nixon (1965), both of which are very different from *gentilis*.

Apanteles tasmanica Cameron

Apanteles tasmanica Cameron, 1912 : 196.
Apanteles tasmanica Cameron; Wilkinson, 1928 : 120.

There are two specimens labelled "tasmanica type" in the B.M., a male and a female. Wilkinson (1928 : 121) expressed a doubt concerning the correct association of these two specimens. Having examined a large series of *tasmanica*, I am satisfied that both male and female belong to this species.

♂ ♀. Cheeks with a conspicuous, whitish, transparent blotch. Tegula bright yellow. Wings hyaline. Hind femur entirely yellow. Basal half of gaster yellowish beneath.

♀. Head between the posterior ocellus and the eye polished, virtually smooth. Antenna about as long as the body, with the preapical segment about one and a quarter times longer than wide.

The two dull, broad bands of densely crowded, large punctures are characteristic of the mesoscutal sculpture. Propodeum with a prevailing sculpture of coarse, rugose-punctation; the posterior, lateral area represented by a small, transverse field that is almost smooth; towards the dorsal areas, the surface becomes smoother, more shiny and with isolated punctures; owing to the absence of clearly defined areolation, the area occupied by hairs is considerably greater than in typical species of the *ultor*-group with complete areolation; in such species (typified by the common *stantoni*), the hairs are restricted to the two, lateral, dorsal areas. Setae of the median cell dark, tending to be widely absent along the medius side of the cell; edge of vannal lobe evenly convex.

Ovipositor sheath about one and one third times longer than the hind tibia; ovipositor thin, evenly down-curved.

Length: *c.* 2·8 mm. without ovipositor.

TASMANIA (type locality). NEW ZEALAND: Nelson, long series in the B.M. (Nat. Hist.) bred from *Tortrix postvittana* on Apple.

Type in the British Museum (Nat. Hist.).

Host. *Tortrix postvittana* Walker (Tortricidae).

The colour of the hind tibia seems to be variable; it is always darkened at base but in some of the New Zealand specimens the infuscation spreads on the under-side of the tibia as far as middle. Sometimes tergite (2 + 3) distal to the basal area shows a yellow mark on each side (type ♀ and some of the New Zealand examples).

Two specimens from Australia vary in the colour of the hind femur; one of them (Queensland, Lockyer, "from Lucerne") has the hind femur infuscate throughout and the hind tibia yellowish only on about basal third but the infuscation more extensive below than above as in typical examples. The second specimen (F.C.T., Brindabella) has the hind femur infuscated mainly along upper surface and is thus intermediate.

The essential character for recognizing *tasmanica* is the sculpture of the mesoscutum.

Apanteles ilione sp. n.

This species is closely related to *tasmanica* in general facies, in having a white genal blotch and reduced propodeal areolation. It may be compared with *tasmanica* as follows:

♀. Hind femur infuscate but with a paler flush along each side; hind tibia infuscate but sharply paler on about basal fifth; hind tarsus blackish throughout. Stigma with a pale mark at base, that cuts distally like a wedge into the darker part; venation proximal to the areolet less deeply pigmented.

Head slightly more transverse, even smoother above and with a slightly more evident satiny sheen.

Mesoscutum strongly shining and polished between its sharp punctures; these are slightly more crowded to form, broad, bands along the imaginary course of the notaulices but nowhere are the punctures confluent. Setae of the median cell very sparse as in *tasmanica* but even more widely absent along the medius side of the cell. Propodeum more coarsely rugose, the

rugosities occupying the whole of the dorsal areas; costulae distinctly indicated in the single female available. Anterior part of mesopleurum polished, with sharp, discrete punctation.

Gastral setae a little shorter and sparser, those on tergite (2 + 3) distal to basal area reduced almost to a single row. Ovipositor sheath longer, about one and two thirds times longer than the hind tibia.

Type ♀. FIJI: Koronivia, 19.i.1963, ex *Phycita* sp. (*B. A. O'Connor*) B.M. (Nat. Hist.).

Host. *Phycita* sp. Presumably a solitary parasite.

Apanteles labaris sp. n.

(Text-fig. 7)

This is the largest of the species dealt with in the synopsis and is unlike any other on the structure of the propodeum.

♀. Scape entirely blackened. Wings glass-clear; venation proximal to the areolet without pigmentation. Hind femur reddish yellow; in one female, (Viti Levu, *not type*), the hind femur is faintly darkened along the upper edge; hind tarsus deeply infuscate.

Temples shiny, with only a vague trace of punctation. Antenna long with segment 16 fully one and a half times longer than wide.

Mesoscutum shiny but with a faint oily lustre; on anterior half the punctures are fine but along the imaginary notaulic courses, the punctures are larger, contiguous and form dull bands; posterior to middle, the course of the notaulices is lost and the punctures everywhere become larger and more widely spaced than on the front, middle part of the mesoscutum. Scutellum highly polished, flat, with only the merest trace of fine punctation along sides. Propodeum on the whole coarsely rugose; areola ill-defined and filled with rugosities. Setae of the median cell and the first discoidal cell unusually sparse, those of the discoidal cell separated by a distance greater than the length of a seta; hind wing unusually broad (Text-fig. 7); basella of hind wing straight; vannal lobe very slightly convex beyond its widest part. Anterior part of mesopleurum shiny and with discrete punctation.

Horizontal part of tergite 1 slightly transverse, coarsely rugose but with a smoother, more shiny, median area. Basal field of tergite (2 + 3) almost as long as the rest of the tergite beyond it and with a row of punctures along its posterior part; the long, rather sparse hairs of the apical part of tergite (2 + 3) are distributed more or less evenly over its entire surface. Ovipositor sheath fully one and a half times longer than the hind tibia.

Length: *c.* 3·5 mm. without ovipositor.

♂. Like the female but the hind femur entirely infuscate. In one of the two males, (the other has been damaged by a pin), the large, mid-basal area of the mesoscutum is polished and without punctures.

Type ♀. FIJI: Viti Levu, Verata, Tailevu, 17.ix.1954, ex ? *Cryptophlebia pallifimbriana* (*B. A. O'Connor*) B.M. (Nat. Hist.).

Paratypes (♀). Same data, 1 ♀, 2 ♂; FIJI: Suva, 1 ♀, 29.i.1938.

Host. ? *Cryptophlebia pallifimbriana* Bradley (Tortricidae).

An interesting species and rather far removed from such typical species of the *ultor*-group as *stantoni*. Apart from size and propodeal structure, the shortness of the apical part of tergite (2 + 3) in relation to the length of the basal field is a decidedly characteristic feature of the species.

Apanteles coequatus sp. n.

♀. May be compared with *labaris* as follows: wings very faintly darkened; venation proximal to the areolet weakly pigmented; setae of the median cell dark. Hind femur darkened along both upper and under surface but yellowish along sides; hind tibia deeply infuscate except for basal third; examples with entirely dark or entirely pale hind femur are to be expected.

Antenna shorter, segment 16 being only about one and quarter times longer than wide. Punctation of mesoscutum typical of the group but shiny between the punctures; the punctation is closer than that of *platyedrae* but hardly different from that of *gentilis*. Scutellum not so obviously flat and with a more obvious trace of punctation extending inwards from sides. Costula of propodeum hardly emphasized amid the adjacent rugosities but its position typical of the group. Setae of the median and first discoidal cells dense, more or less evenly distributed.

Horizontal part of tergite 1 as long as wide, less strongly rugose, more shiny and virtually indistinguishable from such species as *platyedrae, iulis, gentilis* and *ilione*. Basal field of tergite (2 + 3) hardly more than half as long as the rest of the tergite beyond it and with a row of large, rather indistinct pits. Ovipositor sheaths a little shorter; ovipositor thinner, straight but abruptly down-curved right at apex.

Length: *c.* 2·4 mm. without ovipositor.

Type ♀. TONGA-SAMOAN group, Niue Island, 28.v.1949 (*B. A. O'Connor*) B.M. (Nat. Hist.).

A. coequatus seems to be one of a small group of species that includes *platyedrae, ilione* and *gentilis*, characterized partly by reduced definition of propodeal areolation accompanied by a general increase in propodeal rugosity. The species have the hind tibia mainly deeply infuscated. Their distribution seems to be papuasian.

Apanteles lebene sp. n.

(Text-figs. 8, 14)

Distinct from all the other species in this paper because of a slight, but significant lengthening of the face as seen from in front.

♀. Legs very dark, all the femora infuscate; hind tibia becoming pale on about basal quarter. Stigma pellucid with faintly darker border; venation proximal to the areolet without pigmentation. Gaster mainly dark brown; tergite 1 more or less black.

Head in facial view (Text-fig. 14). Temples with a faint trace of punctation. Antenna thin, not longer than the body, with the preapical segment about one and a quarter times longer than wide.

Mesoscutum with the punctation typical of the group; surface markedly dull, the punctation close and even. Areolation of the propodeum sharply defined but the general surface rather more rugose than in *stantoni*. Wings narrower than in *stantoni*; setae of the median cell evenly distributed, more numerous than in *stantoni*; basella of the hind wing strongly curved (Text-fig. 8). Inner spur of the hind tibia somewhat long for the group.

Horizontal part of tergite 1 slightly transverse, rugose all over; rest of gaster dull, with an oily lustre; basal field of tergite (2 + 3) almost as smooth as the apical part of the tergite; distal part of tergite (2 + 3) with numerous, adpressed hairs over its entire surface. Ovipositor sheath about one and a third times longer than the hind tibia; ovipositor thin, weakly down-curved towards apex.

Length: 2·5 mm. without ovipositor.

Type ♀. INDIA: Pusa, 16.ii.1931, ex *Pectinophora gossipiella* on cotton, B.M. (Nat. Hist.).

Paratypes. Same data, 2 ♀.

Host. *Pectinophora gossipiella* Saunders (Gelechiidae).

The pallid stigma is a useful secondary aid in the recognition of this species.

Apanteles lissos sp. n.

(Text-fig. 21)

A small species, characterized essentially by the smoothness of the first tergite, and the shape of the ovipositor (Text-fig. 21).

♀. The main characters have been given in the key; there is little to add.

Scape entirely dark. Stigma somewhat pale and with a still paler, faintly indicated, basal spot. Hind femur weakly infuscate and paler along each side; hind tibia obscurely yellow but darkened at apex.

Antenna thin, weak, not longer than the body. Head above with a satiny sheen; space between the posterior ocellus and the eye-margin with only a very faint trace of punctation. Face on each side with distinct punctation.

Areolation of propodeum very weak; areola not always sharply separated from the postero-lateral fields; all three fields strongly shining and almost smooth. First discoidal cell distinctly a little wider than high, 11 : 10.

Gaster strongly shining, its setae very sparse. Ovipositor sheath very slightly longer than the hind tibia, *c.* 23 : 20.

Length: *c.* 1·8 mm. without ovipositor, a small species.

Type ♀. CHINA: Canton (*W. E. Hoffman*) B.M. (Nat. Hist.).

Paratypes (♀). Same data, 11 ♀, 1 ♂.

Apart from the highly polished first gastral segment, this species is interesting because of the well defined apical attenuation of the ovipositor. Such an attenuation is usually found correlated with a much shorter ovipositor. Where the ovipositor is much longer than the hind tibia, it can be thin and evenly curved as in *stantoni*, curved and much thickened as in *metesae* or straight with curved tip as in *coequatus* but never with a readily obvious apical attenuation.

Apanteles vernaliter Wilkinson

Apanteles vernaliter Wilkinson, 1932*a* : 141; 1932*b*.: 338.

Very distinct among the species with long ovipositor because of the punctation of the temples and the rather brightly coloured gaster.

♀. Scape yellow; flagellum paler towards base. Hind femur entirely yellow; hind tibia yellow throughout in type series but darkened at tip in a single female from the New Hebrides.

Vertex between the posterior ocellus and the eye-margin, and the temples, sharply and very distinctly punctate, dull.

Punctation of the mesoscutum like that of *stantoni* and allied species. Areolation of propodeum sharp, distinct, the three posterior fields shining, almost polished.

Tergite 1 sculptured right to apex; basal field of tergite (2 + 3) almost as rugose as tergite 1. Ovipositor sheath a little longer than the hind tibia; ovipositor evenly curved throughout.

Length: *c.* 2·2 mm., without ovipositor.

JAVA: Buitenzorg (type locality). NEW HEBRIDES: 1 ♀, 1935, ex larva of *Tortrix* on cocoa tree (*Risbec*).

One of the more distinct species, characterized essentially by the punctation of the top of the head. In this synopsis, the only other species with pale-marked gaster is *numenes* but this species has the gaster mainly brilliant yellow. In *vernaliter*, the pale colour is a much less obvious feature.

Apanteles parasae Rohwer

(Text-fig. 2)

Urogaster philippinensis Ashmead, 1904 : 19 (nec *Apanteles philippinensis* Ashmead, 1904 : 19), [Wilkinson, 1932 : 129].
Apanteles parasae Rohwer, 1922 : 129.
Apanteles parasae Rohwer; Wilkinson, 1928 : 129.

This is a poorly characterized species, most easily recognized by the long, but feebly differentiated, apical attenuation of the ovipositor (Text-fig. 2).

In most of the series examined, the hind femur is infuscate but in one (MALAYSIA: Rambau, without host data) it is yellow throughout.

JAVA: Buitenzorg (type locality of *parasae*). PHILIPPINES: Manila (type locality of *philippinensis*). CEYLON.

Type in the U.S. National Museum.

Host. *Setora nitens* Walker (Limacodidae, in Malaysia). Limacodid sp. on *Cinnamomum* (Ceylon). *Parasa lepida* Cramer (Limacodidae, in Malaysia and Ceylon).

Apanteles baoris Wilkinson

(Text-figs. 13, 16)

Apanteles baoris Wilkinson, 1930 : 280.

One of the smaller species, about 1·5 mm. without ovipositor of female.

The stigma tends to be pale but never so strikingly pellucid as in *acron*. Hind femur, apex of hind tibia and whole of hind tarsus infuscate.

Mesoscutum somewhat shiny, its punctation not sharp, and the punctures on posterior half well separated. Wing (Text-fig. 13).

Horizontal surface of tergite 1 polished and almost smooth.

MALAYSIA: Perak Province (type locality). CEYLON. INDIA.

Type in the British Museum (Nat. Hist.).

Host. *Parnara mathias* Moore; *Parnara bada* Moore (Hesperiidae). A gregarious parasite with cocoons forming a narrow elongate mass, covered with rather loose silk.

This species is essentially characterized by the shape of the first discoidal cell in combination with the thick ovipositor and its long, abrupt, apical attenuation (Text-fig. 16).

Apanteles agilis Ashmead

Pseudapanteles agilis Ashmead, 1905 : 969.
Apanteles hidaridis Rohwer, 1922 : 54. [Wilkinson, 1928 : 131].
Apanteles agilis (Ashmead) Wilkinson, 1928 : 130.

Close to *baoris* but larger and differing chiefly in the shape of the first discoidal cell. Mesoscutum more distinctly and more closely punctate than in *baoris*. Spurs

of hind tibia longer and of more powerful build. Ovipositor as in *baoris* (cf. Text-fig. 16).

JAVA: Buitenzorg (♀ paratype in B.M.). PHILIPPINES: Manila (type locality of *agilis*). SUMATRA: Padang (type locality of *hidaridis*).

Type in the U.S. National Museum.

Host. *Hidara irava* Moore (Hesperiidae), recorded host of *hidaridis*. No host known for *agilis*.

Apanteles acron sp. n.

♀. Scape entirely dark; flagellum yellowish brown on basal half, darkening towards apex. Wings milky hyaline. Hind femur weakly infuscate; hind tibia and hind tarsus entirely yellow, the tibia with faint, dark spot on inside at apex.

Temples with the faint roughness common to most species of group. Antenna not longer than the body, rather short; preapical segment about one and a third times longer than wide.

Mesoscutum with the punctation typical of the group. Spiracle of the propodeum separated from junction of costula and lateral, propodeal keel by about its longer diameter; the three posterior areas of the propodeum polished, almost smooth. Setae of the median cell colourless.

Horizontal surface of tergite 1 very slightly longer than wide; apical half of this surface with a microsculpture superimposed on faint, longitudinal striation; the apical part of this tergite has thus a satin-like sheen. Basal field of tergite (2 + 3) about two thirds as long as the rest of the segment. Ovipositor more tapered to apex than in *baoris* and with a much less abrupt apical attenuation (cf. Text-fig. 16).

♂. Like the female except for the sexual differences. Horizontal surface of tergite 1 with hardly a trace of raised rugosity towards apex, smooth-looking but with the same satin-like sheen shown by the female.

Length: ♂ ♀, *c.* 2 mm. without ovipositor of female.

Type ♀. THAILAND ("Siam" on label): Bangkok, 1934–35, ex larva of *Sesamia cretica* (*A. Manjikul*) B.M. (Nat. Hist.).

Paratypes. Same data, 2 ♀, 4 ♂.

Host. *Sesamia cretica* Leder (Phalaenidae).

This species is distinctive mainly on account of its pale stigma. *A. baoris* sometimes has the stigma almost as pale but is smaller than *acron*, with the first discoidal cell obviously wider than high and the vannal lobe relatively smaller.

Apanteles acratos sp. n.

♀. Wings distinctly brownish; stigma without a pale, basal spot; setae of the median cell dark. All the femora darkened, but the hind pair darkest; front and middle tarsi whitish.

Head above polished, impunctate, with a faint satin-like sheen. Antenna longer than the body, the preapical segment about one and a half times longer than wide.

Anterior part of the mesopleurum coarsely rugose. Propodeum posteriorly having a somewhat flattened appearance; its spiracle separated from the junction of costula and lateral propodeal keel by about its longer diameter; posterolateral areas with a considerable amount of coarse rugosity. First discoidal cell very slightly wider than high.

Horizontal surface of tergite 1 about as long as wide, strongly rugose all over. Basal area of tergite (2 + 3) evenly rugose-striate and nearly as long as the rest of the segment posterior to it; hairs of the apical part of tergite (2 + 3) sparse and reduced almost to a single row. Hypopygium in profile acutely pointed. Ovipositor thick with a very abrupt, apical attenuation equal to about the second segment of the hind tarsus.

Length: ♀, *c.* 1·6 mm. without ovipositor.

Type ♀. NEW GUINEA: Pater, 2,500 ft., 30.vi.1957, from Zygaenid larva on *Musa* sp. (*R. W. Paine*) B.M. (Nat. Hist.).

Paratypes. Same data, 2 ♀.

Host. Zygaenid sp.

A small species, largely characterized by the blackened hind legs and sculpture of mesoscutum. The reduced punctation of the mesoscutum is reminiscent of what occurs in *platyedrae* and *lissos*.

Apanteles bambusae Wilkinson

Apanteles bambusae Wilkinson, 1928 : 129.

♀. Scape dark throughout. Stigma without a pale, basal spot; setae of the median cell dark. Hind femur infuscate.

Mesoscutum of the two available females (type and paratype) largely obscured by pin but anterior the surface is shiny between the clearly discrete punctures. Hind spurs rather long, the inner one fully half as long as the hind basitarsus. Hind wing rather narrow.

Horizontal surface of tergite 1 fully as long as wide, finely rugose-striate. Basal area of tergite (2 + 3) feebly rugose, slightly more than half as long as the rest of the segment beyond it.

Length: *c.* 2 mm. without ovipositor.

INDIA: Pusa (type locality).

Type in the British Museum (Nat. Hist.).

Host. *Cosmopteryx bambusae* Meyrick (Cosmopterygidae).

Unfortunately I know this species only from the original, partly damaged series, described by Wilkinson. The shape of the ovipositor seems to be its most distinctive feature.

Apanteles priscus sp. n.

(Text-figs. 19, 25, 29)

♀. Scape entirely dark. Wings hyaline; stigma dark brown with at most a faint, basal spot; setae of the median cell almost colourless. Hind femur bright reddish yellow.

Temples shiny but with traces of shallow punctation. Antenna about as long as the body, with the preapical segment about one and a half times longer than wide.

Mesoscutum with the punctation typical of the group. Spiracle of the propodeum separated from junction of costula and lateral propodeal keel by about two to two and a half times its longer diameter. Apical segment of the hind tarsus with a weak indication of a modification similar to that which occurs on the apical segment of the front tarsus (Text-fig. 25) but here the modification takes the form of a straight bristle rather than a curved spine.

Basal area of tergite (2 + 3) almost as long as the rest of the segment beyond it (Text-fig. 29). Ovipositor (Text-fig. 19).

♂. Like the female except for the sexual differences.

Length: ♂ ♀, 2·3 mm. without ovipositor of female.

Type ♀. INDIA: W. Bengal, Kalimpong, 7.ii.1966, ex *Tiracola plagiata* B.M. (Nat. Hist.).

Paratypes. Same data, 8 ♀, 6 ♂. CEYLON: Peradenya, 11 ♀, 4 ♂, 28.vi.1928, ex *Achaea janata* on *Ricinus*. INDIA: Dehra Dun, 2 ♀, 2 ♂, 7.ix.1933, ex *Hypsa alciphron*. MALAYSIA: Kuala Lumpur, 1 ♀, 1 ♂, 9.iii.1944, ex *Tiracola plagiata*.

Host. *Achaea janata* L. (Phalaenidae). *Hypsa alciphron* (Hypsidae). *Tiracola plagiata* Walker (Phalaenidae). Evidently a solitary parasite, making a white cocoon covered with much loose silk.

The two females from Dehra Dun have the underside of the gaster entirely yellow and a yellowish suffusion towards the sides of tergite (2 + 3) distal to the basal area.

This species is largely characterized by the strongly developed spine on the apical segment of the front tarsus (Text-fig. 25) and the position of the propodeal spiracle. This last character is not always easy to verify because the two relevant keels are sometimes ill defined at their junction and obscured here by additional rugosities.

Apanteles heterusiae Wilkinson

Apanteles heterusiae Wilkinson, 1928 : 127.

This species is very much like *priscus*, differing from it most obviously in having a longer and virtually straight ovipositor.

♀. Wings faintly brownish; setae of the median cell darker than in *priscus*.

Antenna slightly shorter than in *priscus*, with the preapical segment one and one third times longer than wide.

Spiracle of propodeum separated from junction of costula and lateral, propodeal keel by about one and a half times its longer diameter. Hind wing rather narrow, very slightly wider than in *platyedrae* (cf. Text-fig. 9) but narrower than in *maro* (cf. Text-fig. 11).

Basal field of tergite (2 + 3) relatively shorter than in *priscus* but slightly smaller in proportion to the total area of tergite (2 + 3). Ovipositor sheath hardly shorter than the hind tibia.

CEYLON: Madulsima (type locality). Two further series in the British Museum from Ceylon (Talawakele and Passara) both bred from host of type series—*Heterusia cingala*.

Type in the British Museum (Nat. Hist.).

Host. *Heterusia cingala* Moore (Zygaenidae).

The long apical attenuation of the ovipositor is a very characteristic feature of this species and alone will serve to distinguish it from *priscus*.

Apanteles maro **sp. n.**

(Text-fig. 11)

♂ ♀. The main differences between this species and *priscus* have been given in the key; there is little to add.

Pale parts of the legs much paler than in *priscus*.

Hind wing relatively as broad as in *priscus* (Text-fig. 11); edge of vannal lobe beyond its widest part almost straight; in *priscus* it shows normal convexity but the difference is extremely slight. Spiracle of propodeum separated from junction of costula and lateral propodeal keel by about its longer diameter.

Length: ♂ ♀, 2·3 mm. without ovipositor of female.

Type ♀. INDIA: W. Bengal, Chinsurah, 1950, "on *Diacrisia obliqua*", (*Jute Agricultural Research Institute*) B.M. (Nat. Hist.).

Paratypes. Same data, 3 ♀, 1 ♂.

Host. Presumably *Diacrisia obliqua* Walker (Arctiidae).

Distinctive on account of pale stigma, a rare feature of the *ultor*-group.

Apanteles cato sp. n.

(Text-figs. 15, 18, 23)

♀. A very dark-looking species. Scape entirely black. Wings faintly brownish; venation fully pigmented; setae of the median cell dark. Hind leg blackened, except that the hind tibia becomes paler on proximal half (obscurely yellowish).

In a facial view of the head, the cheeks are less rounded than is usual in the group (Text-fig. 15). Ocelli close together; a lateral ocellus separated from the median ocellus by hardly more than half its own diameter. Antenna fully as long as the body; preapical segment about one and a half times longer than wide.

Punctures of the mesoscutum large, almost contiguous along the broad, imaginary notaulic courses. Scutellum rather coarsely rugose-punctate, especially along sides. Discoidal cell of fore wing slightly wider than high, 8 : 7; hind wing narrow, as in *caniae* (cf. Text-fig. 10) but the basella more obliquely placed than in that species; setae of median cell decidedly long.

Basal field of tergite (2 + 3) almost as long as the rest of the segment beyond it and, being almost as smooth, hardly discrete; apical part of segment highly polished, its hairs very sparse and restricted more or less to a single row. Ovipositor (Text-fig. 18).

♂. Like the female except for the sexual differences; wings slightly less dark.

Length: ♂ ♀, *c.* 2·2 mm. without ovipositor of female.

Type ♀. MALAYSIA: Johore, B.M. (Nat. Hist.).

Paratypes. Same data: 14 ♀, 5 ♂.

Somewhat aberrant on account of the non-transverse posterolateral fields of the propodeum (Text-fig. 23) and very distinct on combination of this and shape of ovipositor but cf. *mendosae*.

Apanteles caniae Wilkinson

(Text-figs. 10, 17)

Apanteles caniae Wilkinson, 1928 : 126.

A pale-legged species; hind femur yellow; hind tibia usually yellow except for faint apical infuscation; rarely this infuscation extending to middle (one series in B.M. from Sumatra). Scape yellowish, with darker, apical rim. Wings distinctly brownish; stigma usually evenly brown but sometimes paler with darker border.

♀. Antenna a little longer than the body; preapical segment fully one and a half times longer than wide. First discoidal cell very slightly wider than high, 11 : 10; hind wing decidedly narrow (Text-fig. 10). The thin, rather short ovipositor is feebly down-curved (Text-fig. 17).

Length: ♂ ♀, *c.* 1·8 mm. without ovipositor of female—a rather small species.

MALAYSIA: Java (type locality). CEYLON. INDIA. N. CELEBES. CHINA. THAILAND.

Type in the British Museum (Nat. Hist.).

Host. *Cania bilinea* Walker (Limacodidae). *Thosea cervina* Moore; *Thosea recta* Hampson (Limacodidae). A gregarious parasite, spinning a tight mass of cocoons beneath the slug-like body of its host.

The short, thin ovipositor is the most important feature of this otherwise poorly characterized species.

Apanteles expulsus Turner

Apanteles expulsus Turner, 1918 : 346.
Apanteles expulsus Turner; Wilkinson, 1928 : 125.
Apanteles mendanae Wilkinson, 1928 : 126. **Syn. n.**

The main differences between this species and *caniae* have been given in the key. The most important of them are the presence of a strong spine on the apical segment of the front tarsus of *expulsus* and the strikingly different ovipositor of this species.

♀. Wings virtually hyaline. Sculpture of posterior part of mesoscutum subtly distinctive, the surface between the punctures being slightly roughened. Hind wing as in *caniae* (cf. Text-fig. 10). All five panels of the propodeum tend to be highly polished and unsculptured.

Length: ♂ ♀, 2 mm. without ovipositor of female.

FIJI (type locality of *expulsus*): several further series in the British Museum. SAMOAN IS.: one series in the British Museum. MARQUESAS IS. (type locality of *mendanae*).

Type in the British Museum (Nat. Hist.).

Host. *Anticarsia irrorata* Fab. (host of type series) (Phalaenidae). *Cosmophila* (now *Anomis*) *flava* Fab. (Phalaenidae). No host known for type series of *mendanae*.

This small species is fairly easily recognized on the combination of the well developed spine on the front tarsus and the strongly rugose basal area of tergite (2 + 3).

Apanteles prodeniae Viereck

(Text-fig. 20)

Apanteles (*Apanteles*) *prodeniae* Viereck, 1912 : 139.
Apanteles prodeniae Viereck; Wilkinson, 1928 : 127.

♀. Hind femur yellow. Antenna rather short, not longer than the body; preapical segment about one and one third times longer than wide.

Horizontal surface of tergite 1 fully as long as wide.

INDIA: Mysore, Bangalore (type locality). SIAM.

Type in the U.S. National Museum. A single "cotype" in the British Museum.

Host. *Prodenia litura* Fab. (Phalaenidae). *Euproctis fraterna* Moore (Lymantriidae) (two series from this host in B.M. (Nat. Hist.) from India, Coimbatore).

The spine on the apical segment of the front tarsus is so poorly developed that, in comparison with the spine occurring in *expulsus*, it might be considered as virtually non-existent.

This species is recognizable on the combination of very thick ovipositor (Text-fig. 20) and unsculptured apical surface of tergite 1.

Apanteles aluella sp. n.

♀. Scape more or less evenly brown. Hind femur yellow but with faint infuscation at apex above. Wings markedly brownish. Gaster brown, except for the black first tergite; the other tergites show a faint, darker band.

Temples with obsolescent rugose-punctation. Antenna rather short, shorter than the body, the preapical segment being about one and one third times longer than wide.

Punctation of mesoscutum typical of most of the species, uncharacteristic. Setae of the median cell dense, evenly distributed over the entire surface of the cell. Inner spur of the

hind tibia fully half as long as the hind basitarsus; apical segment of the front tarsus without a spine.

Dorsal surface of tergite 1 distinctly transverse, the surface very shiny and its sculpture fading out beyond middle. Basal area of tergite (2 + 3) almost smooth and about two thirds as long as the rest of the segment beyond it.

Length: 2·4 mm. without ovipositor.

Type ♀. INDONESIA: Sumatra, Pematang, Siantar, 16.ix.1932, ex larva of *Belippa lohor* (*R. I. Nel*) B.M. (Nat. Hist.).

Paratypes (♀). Same data, 8 ♀, 1 ♂.

Host. *Belippa* (now *Nemeta*) *lohor* Moore (Limacodidae).

Distinct on account of long, thin ovipositor but close to *caniae*; *caniae* has the ovipositor and its sheaths much shorter than in *aluella*, among other differences.

Apanteles orelia sp. n.

(Text-fig. 26)

♀. Scape blackish. Venation proximal to the areolet weakly pigmented; stigma dark brown throughout; setae of the median cell dark. Hind femur infuscate.

Temples with only weak punctation, but the surface with a distinct satin-like sheen. Antenna about as long as the body, with segment 16 about one and one third times longer than wide.

Punctation of the mesoscutum characteristic in that the punctures are large and evenly spaced, and, on the disc at least, are separated by about half a diameter. Areolation of the propodeum very strongly defined in two of the four females (including type), with the three posterior fields polished and almost excavate; in the other two females, the areola is filled with coarse rugae. Setae of the median cell rather long, sparse and widely absent along the medius side of the cell.

Gaster (Text-fig. 26). Basal area of tergite (2 + 3) almost as strongly rugose as tergite 1. Ovipositor slightly but evenly thickened towards base; without trace of an apical attenuation at a magnification of (× 40).

Length: *c.* 2·5 mm. without ovipositor.

Type ♀. FIJI: Viti Levu, Naduruloulou, 6.vi.1962, ex ? *Agonoxena argaula* (*B. A. O'Connor*) B.M. (Nat. Hist.).

Paratypes. Same data, 3 ♀.

Host. Probably *Agonoxena argaula* Meyrick (Agonoxenidae). A single cocoon spun in a fold of a leaf-fragment suggests a solitary parasite.

In general facies much like *expulsus* but differing from that species in the sculpture of the mesoscutum and the shape and length of the ovipositor.

Apanteles mendosae Wilkinson

Apanteles mendosae Wilkinson, 1929 : 113.

Scape yellow except for darkened, apical rim. Hind femur yellow.

The anterior brow of the mesoscutum shows on each side of the middle line an elongate, more shiny, less closely punctate area. First discoidal cell distinctly wider than high, 14 : 11; setae of the median cell long, rather sparse. Apical segment of the front tarsus without a spine.

The smooth, almost unsculptured first tergite is distinctly widened towards apex.

Length: *c.* 2·5 mm. without ovipositor.

MALAYSIA: Kuala Lumpur (type locality).

Type in the British Museum (Nat. Hist.).

Host. *Dasychira mendosa* Hübner (Lymantriidae).

Rather easily recognized by the absence of a differentiated basal field on tergite (2 + 3) and the straight ovipositor. A similar ovipositor occurs in *cato* but in this species, the posterolateral field of the propodeum is not transverse.

The sculpture of the anterior part of the mesoscutum is subtly distinctive but in no sense striking.

Apanteles nydia sp. n.

♀. Except for the coxae, the legs are yellow virtually throughout; hind tibia faintly darkened at apex and the hind basitarsus with a dark streak beneath. Wings hyaline, the venation proximal to the areolet colourless.

Antenna a little shorter than the body; preapical segment about one and one third times longer than wide.

Punctation of mesoscutum close but rather shallow over posterior half. Scutellum shining and almost impunctate. Hind spurs short, the inner one not reaching to middle of hind basitarsus. Setae of median cell sparse and widely absent along medius side of cell; hind wing rather broad, as in *maro* (cf. Text-fig. 11).

Horizontal surface of tergite 1 slightly transverse and with a weak, striate sculpture towards sides. Basal field of tergite (2 + 3) fully three quarters as long as the rest of the segment, weakly striate and much narrowed towards sides as in *orelia* (cf. Text-fig. 26). Ovipositor thick, tapering, with an abrupt, apical attenuation that is slightly shorter than the fourth segment of the hind tarsus.

Length: *c.* 3 mm. without ovipositor.

Type ♀. INDIA: Dehra Dun, 17.xi.1934, ex *Selepa celtis* (*S. N. Chatterjee*) B.M. (Nat. Hist.).

Paratypes (♀). Same data, but xi.1934–i.1935, 5 ♀, 2 ♂; also 3 ♀, 2 ♂, labelled as bred from Noctuid larva defoliating unidentified shrub (*S. N. Chatterjee*).

Host. *Selepa celtis* Moore (Phalaenidae), defoliating *Stereospermum suaveolens*.

Recognizable essentially on the heavily sclerotized hypopygium together with the details of the ovipositor and its sheaths.

Apanteles hyposidrae Wilkinson

(Text-figs. 3, 24)

Apanteles hyposidrae Wilkinson, 1928 : 125.

♀. Stigma without a pale, basal spot; setae of the median cell virtually colourless. Hind femur infuscate; hind tibia infuscate but paler on about basal third.

Punctation of mesoscutum dense and somewhat confluent along the broad, imaginary course of the notaulices. First discoidal cell not obviously wider than high, 23 : 22.

Basal field of tergite (2 + 3) smoother than the apical part of tergite 1 and distinctly a little shorter than the rest of the segment distal to it (about three quarters as long). Hypopygium very short, quite inconspicuous, falling far short of the apex of the gaster. Ovipositor (Text-fig. 3).

Length: 2·0–2·2 mm.

JAVA: (type locality, series from *Hyposidra* sp. on *Mimosa*). INDIA: various series from lepidopterous larvae defoliating *Tectona grandis*, Bombay, Madras and

S. Coorg; Dehra Dun, New Forest, series from cocoons found on leaf of Teak (*Tectona grandis*). BURMA: Mandalay, series from lepidopterous larva on *Rosa*. MALAYSIA: Selangor, two series from *Stictoptera cuculloides*. NEW BRITAIN: Keravat, series from *Anomis flava* on Kenah. N. PAPUA: Girua, 2 ♀, from *Tiracola plagiata* (introduced ?). AUSTRALIA: Queensland, series from Noctuid larva on *Urena lobata*. All in the British Museum (Nat. Hist.).

Type in the British Museum (Nat. Hist.).

Host. *Hyposidra* sp. (Geometridae). *Anomis flava* Fab. (Phalaenidae). *Stictoptera cuculloides* Guenée (Noctuidae). A gregarious parasite, but there is, in the British Museum, a single female (W. Bengal, Siligari-Kalimpong Road) bred from solitary cocoon found near hole made by *Hypsipyla robusta* Moore (Phycitidae) on twig of toon (*Cedrela toona*). Although this female has the setae of the median cell darker than in typical *hyposidrae*, I believe it, nevertheless, to be this species.

This species seems to vary considerably in the amount of rugosity shown by the basal tergites of the gaster, series from Malaysia having the basal field of tergite (2 + 3) much more rugose than typical series from India and the type series from Java. The species may be composite as I interpret it but all forms have the short, quite inconspicuous ovipositor shown in Text-fig. 3.

Apanteles cleo sp. n.

(Text-fig. 4)

♀. The differences between this species and *hyposidrae* have been given in the key; there is little to add. The most significant difference is the absence of a spine on the apical segment of the front tarsus and the most easy to recognize is the bright yellow hind femur of *cleo*.

The hypopygium is as poorly developed as in *hyposidrae* but the ovipositor is slightly less curved and the apical attenuation is relatively longer (Text-fig. 4).

Type ♀. INDIA: Assam, Sibsagar dist., xi.1951, ex larva of *Eriboea arja*, B.M. (Nat. Hist.).

Paratype (♀). Same data, 8 ♀, 1 ♂.

Host. *Eriboea arja* Felder (Nymphalidae).

Apanteles aso sp. n.

(Text-fig. 1)

♀. This species is essentially characterized by the long, apical attenuation of the ovipositor (Text-fig. 1).

Scape infuscate. Hind femur infuscate. Setae of the median cell dark.

Basal field of tergite (2 + 3) weakly sculptured or sometimes almost smooth. Apical segment of the front tarsus without a spine. Hypopygium well developed, heavily and evenly sclerotized.

Length: *c.* 2·5 mm.

Type ♀. INDIA: United Provinces, Mussoorie, Vincent Hill, bred 19.viii.1934 from *Lasiocampid* larva, B.M. (Nat. Hist.).

Paratypes (♀). Same data, 8 ♀, 11 ♂.

Host. Lasiocampid sp. Evidently a gregarious parasite.

Readily separated from the other two species with short ovipositor—*hyposidrae* and *cleo*—on the shape of the ovipositor.

Apanteles hemitheae Wilkinson

(Text-fig. 27)

Aapnteles hemitheae Wilkinson, 1928 : 124.

Having almost the whole of tergite (2 + 3) rugose, this is perhaps the most easily recognized of all the species included in this synopsis.

♀. The temples and the vertex immediately behind the ocelli are densely, strongly punctate; the intensity of the punctation is characteristic and also reminiscent of the head punctation of *vernaliter*. Scape and hind femur reddish yellow.

Gaster (Text-fig. 27).

MALAYSIA: Kuala Lumpur (type locality).

Type in the British Museum (Nat. Hist.).

Host. *Hemithea costipunctata* Moore (Geometridae). Presumably a gregarious parasite though the evidence is not conclusive.

Apart from the type-series, comprising two females and three males, I have seen only one other specimen of this species—a single female (Malaysia, Selangor) taken on *Hevea* flower.

Apanteles numenes sp. n.

(Text-fig. 28)

♀. Scape yellow. Hind tarsus infuscate; hind tibia very weakly infuscate at apex; legs otherwise, including all the coxae, bright reddish yellow. Stigma dark brown, with still slightly darker border; venation proximal to the areolet fully pigmented.

Temples with weak, but distinct punctation.

The large punctures of the mesoscutum tend to be contiguous along the broad, imaginary course of the notaulices. Posterolateral areas of propodeum only very weakly transverse. Median cell densely pubescent, the setae not obviously sparser along the medius side of the cell; edge of vannal lobe virtually straight beyond the widest part.

Tergite 1 rather markedly narrowed towards base (Text-fig. 28), rugose all over. Basal field of tergite (2 + 3) polished, more or less smooth.

Length: *c.* 2·4 mm. without ovipositor.

Type ♀. MALAYSIA: Java, Jelawa, 8.viii.1931, "ex caterpillar on *Glochidion* sp." (*L. G. E. Kalshoven*) B.M. (Nat. Hist.).

Paratypes (♀). Same data, 6 ♀, 1 ♂.

Host. Unknown. The number of specimens in the series indicates a gregarious parasite.

A most distinctive species on colour alone. The punctation of the mesoscutum is subtly distinctive and this, in combination with colour and shape of propodeum, isolates the species from all others dealt with in this synopsis.

Apanteles lipsis sp. n.

(Text-fig. 12)

An aberrant species, having perhaps almost as much in common with the *laevigatus*-group (Nixon, 1965 : 181) as with the *ultor*-group. Apart from a striking difference in the type of mesoscutal punctation and the virtually complete absence of propodeal areolation, the species differs from all other in this paper in the form of the ocellar triangle.

♀. Cheeks with a conspicuous whitish blotch. Scape blackish. Front and middle legs entirely yellow; hind femur entirely yellow. Basal third of stigma obscurely yellowish.

Head rather large for the size of the insect, deep from back to front and very slightly wider than the thorax (Text-fig. 12). Face smooth, shiny. Temples smooth, virtually without a trace of punctation; space between the posterior ocellus and eye polished. Antenna broken but the segments discontinuously shorter after the 13th; segment 14 about one and a third times longer than wide.

Mesoscutum strongly shining, its punctation very fine but distinct, tending to fade out posteriorly in the type. Scutellum polished, impunctate. First abscissa of the radius and the transverse cubitus together forming a short vein, the radial abscissa being only slightly longer than the transverse cutibus; first discoidal cell distinctly wider than high, 4 : 3. Propodeum strongly shining, with some vague punctation marking the position of the dorsal areas; the postero-lateral areas indicated merely by a transverse, polished, dorsally unbounded space. Unlike all the other species in this synopsis, the inner spur of the hind tibia is distinctly shorter than the outer one and hardly more than one third as long as the hind basitarsus.

Horizontal part of tergite 1 parallel-sided, slightly transverse, polished (type) to slightly roughened (paratype) and with a few scattered punctures. Basal area of tergite (2 + 3) about one third as long as the rest of the segment beyond and separated from this only by a very fine suture. Ovipositor sheath as long as the hind tibia; ovipositor thin, straight but with and abrupt, downward curve at apex.

Length: *c.* 2 mm. without ovipositor.

Type ♀. S.W. AUSTRALIA: Yallingup, xi.1913, (*R. E. Turner*) B.M. (Nat. Hist.).

Paratype. Same data, 1 ♀.

I associate with this species two males (W. AUSTRALIA: Dongarra, 23.viii.–5.ix.1935, *R. E. Turner*) that I think are the same species. Both show a whitish blotch on the cheek, the same characteristic of mesoscutal pubescence and the same, curiously short, inner spur of the hind tibia. Tergite 1 is slightly narrowed behind, almost smooth; the basal area of tergite (2 + 3) is slightly longer in proportion to the rest of the segment beyond it than in the female.

Apanteles amaris sp. n.

(Text-fig. 22)

This is a highly aberrant species and, on the structure of the tergites, far removed from the other species included in this synopsis.

♀. Scape dark; flagellum brown, the underside still paler. Hind coxa brown, becoming yellowish on apical half; hind femur entirely yellow; hind tibia yellow but with dark tip. Wings faintly brownish; venation proximal to the areolet pigmented; stigma somewhat pale, with faintly darker border.

Face dull, with a pronounced satiny sheen and an excessively fine punctation, just visible at a magnification of (× 40). Vertex with a similar sheen but with slightly more distinct punctation

on temples. Antenna thin, slightly longer than the body, with the preapical segment fully one and half times longer than wide and antennal segment 15 fully twice as long as wide.

Mesoscutum with the same dull, satiny sheen as the head; its punctation very fine, but the punctures larger along the broad, imaginary notaulic course. Areolation of the propodeum very ill-defined and obscured by much rugosity; the position of the costula indicates an obviously transverse, posterolateral area; in the type, the areola is virtually not indicated but is more distinct in the second female. Median cell densely, evenly setose all over; first discoidal cell distinctly wider than high.

Tergite 1 parallel-sided, its horizontal surface clearly longer than wide, densely, evenly rugose all over; at the side of this tergite is a large area of conspicuously yellow membrane (Text-fig. 22); rest of gaster densely, very finely pubescent, much more so than in the any of the other species treated in this synopsis. Tergite (2 + 3) faintly dull, with satiny sheen; its basal area slightly less rugose than tergite 1. Ovipositor sheath slightly longer than the hind tibia; ovipositor thin, evenly curved throughout.

Length: *c.* 2·3 mm. without ovipositor.

♂. Like the female but tergite much narrower.

Type ♀. THAILAND ("Siam" on label): Bangkok, 1934–35, ex *Nymphula stagnalis* (*A. Manjikul*) B.M. (Nat. Hist.).

Paratypes. Same data, 2 ♂. THAILAND ("Siam"): 1 ♀, 1 ♂.

Apanteles fakhrulhajiae Mahdihassan

Apanteles fakhrulhajiae Mahdihassan, 1925 : 82.
Apanteles rufulus Wilkinson, 1930 : 154. [Syn. Wilkinson, 1935 : 72].

I include this species because in several respects it is transitional between the *ultor*-group and the *laevigatus*-group (Nixon, 1965 : 181). The apparent absence of propodeal areolation, the relatively fine punctation of the mesoscutum, the pale spot at the base of the stigma and the parallel-sided first tergite are all typical features of the *laevigatus*-group.

Between the feebly indicated arm of the areola and the lateral margin of the propodeum is a much smoother, transverse area, free from hairs, almost polished and undoubtedly corresponding to the postero-lateral area of the typical *ultor*-group. It is mainly on account of this feature that I include *fakhrulhajiae* in this synopsis.

INDIA.

Location of type unknown. Type of *rufulus* in the British Museum.

Host. *Holcocera pulverea* Meyrick (Blastobasidae), on lac.

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