Division of Apanteles Förster into two subgenera

This huge and cosmopolitan genus was thoroughly studied by Marshall (1885), Muesebeck (1920), Wilkinson (1928, 1932), Watanabe (1937), DeSaeger (1941), Granger (1949), Telenga (1955) and Vixon (1965). These workers did not consider the division of this genus into sharp subgenera. However, Muesebeck (1920) synonymized 6 genera and one subgenus of Ashmead and Viereck to Apanteles saying that Apanteles could not be divided into smaller units as it is a "homogeneous" group. But in the same paper, at another place - key to the species of Apanteles, he considered propodeal areola as the basic character to segregate the species. Later Wilkinson (1932) divided this genus into 5 groups and arbitrarily named them as A, F, S, J and M. The first 4 of these, as he himself admitted, are "extensions of the 4 sections" proposed by Marshall in 1885 for the British species. Later Wilkinson (1934) added a sixth group which he named as G. Thus this "homogeneous" group was virtually divided into 6 divisions or sections by the year 1934.

Species belonging to Wilkinson's groups A and F are similar in the presence of sulci on 2nd tergite
and carinate propodeum. All species of groups U and S possess the propodeal areola but the former group species does not have costulae while the latter group species have the costulae. Rest of all species which could not be fitted into any of these four groups were included by Wilkinson in group M. This grouping was, it appears, not based on any valid characters having generic status as is evident (i) in the groups M and G which are too artificial, (ii) groups A and F which are similar in many characters and (iii) groups U and S having common character in the presence of propodeal areola. Thus the groupings by both Marshall and Wilkinson are apparently more artificial than based on any characters of generic status.

Later Nixon (1965) divided this genus into 44 species groups. Some of these groups are very large like aster, ultor, etc.; some groups, on the other hand, have less than half a dozen species, still others are based on a single species only. Again the characters considered by Nixon for this division are not even of subgeneric value, as he himself has expressed that "these groups have certain homogeneity ---- they still lack the sharpness of generic status".
Thus it is evident that some workers favoured the division to a lesser degree and others like Nixon to much farther a degree. The common factor amongst all these earlier workers had been the "generic cleavages" of this "so large and unwieldy a genus".

The main characters to be considered for such a generic cleavage of the genus should be, as far as possible, common in the majority of the species from most of the countries and zoological regions. After a comparative and critical study with the help of all the available literature, type specimens and a large collection on hand, I arrived at the inference that presence or absence of propodeal areola as the main, valid and important character for the division of *Ananteles* into subgenera. Besides, the keys of earlier workers (Muesebeck 1920, Wilkinson 1928, Watanabe 1937, Rao 1961) support the propodeal areola as a basic character for the cleavage of the genus. This important character (propodeal areola) considered along with other characters of lesser significance like 2nd abdominal tergite, was taken into account and this genus is divided here into two subgenera viz. i. *Areolatus* and ii. *Carinatus*. The key for the two subgenera is as follows:
Propodeum with a distinct areola 
or at least some trace of it, 
with or without costulae; 
2nd tergite usually shorter 
than 3rd. ... ... *Areolatus* 
subgen. nov.

Propodeum without areola or any 
trace of it, either with a 
median longitudinal carina 
or a transverse basal carina 
or both or without carinae; 
2nd tergite usually as long 
as or longer than 3rd.... ... *Carinatus* 
subgen. nov.
PLATE I

Figures to display all important morphological characters

1. Genitalia,
2. head viewed from above,
3. head viewed from front,
4. first three abdominal tergites and
5. propodeum.
PLATE II

1. Fore wing of *Apanteles* sp.

**VEINS**  AB = Costa; BC = Stigma; CD = Metacarp; EF = 1st abscissa of radius; FG = Radius; FH = Transverse cubitus; JK = Discocubitus; HI = Cubitus; MN = Medius; NG = Basal; NO = 1st abscissa of discoides; OP = Nervulus; OL = 2nd abscissa of discoides; KL = Recurrent; QR = Brachial

**CELLS**  1 = Medial; 2 = Discoidal; 3 = Cubital; 4 = Radial; 5 = Cubital; 6 = Submedial

2. Hind wing of *Apanteles* sp.

**VEINS**  ST = Costella; VWX = Mediella; XT = Basella; WZ = Nervellus; YZ = Anal; P = Vannual fold; ab = Transverse cubitella; cd = Rediellan cross vein

**CELLS**  7 = Costellan; 8 = Mediellan; 9 = Cubitellan; 10 = Rediellan; 11 = Submediellan; 12 = Anallan (Vannual lobe)

3. Fore wing of *Protomicronlitis* sp.

**VEINS**  ef = 1st abscissa of radius; fi = 1st transverse cubitus; gh = 2nd transverse cubitus; ih = Cubitus

**CELL**  13 = 2nd cubitellan cell (areolet)

4. Fore wing of *Protomicronlitis* sp.

**VEINS**  kl = 1st abscissa of radius; 10 = 1st transverse cubitus; lm = 2nd abscissa of radius; mn = 2nd transverse cubitus; on = Cubitus

**CELL**  14 = 2nd cubitellan (areolet)
Apanteles (Areolatus) turii, sp. nov.

♀ : 2.8 mm.

Head : viewed from above (Fig. 7) nearly rectangular, 2.0 x as broad as long; vertex closely, rugosely, shallowly punctate, moderately pubescent; interorbital space 0.63 the breadth of head; interocellar space equal to ocellocular, 2.33 x the front ocellar space, latter equal to front ocellar breadth; frons rugose with few semicircular, concentric carinae around antennal sockets; face (Fig. 6), 2.2 x as broad as long, slightly convex, very shallowly, closely punctate, sparsely pubescent; clypeus very shallowly, closely punctate, sparsely pubescent, clypeo-facial suture well marked, supraclypeal fovea small, deep; labrum smooth, shiny, sparsely pubescent; antenna 0.77 the length of body, filiform; scape 1.6 x as long as broad; pedicel 2.0 x as broad as long; 1st flagellar segment 2.0 x as long as broad; 16th and 17th segments (Fig. 3) similar, each as long as broad; terminal segment (Fig. 3) conical, 1.7 x as long as broad, 1.55 x the length of penultimate; head from side 1.7 x as high as wide, temple shallowly, rugosely
Apanteles (Areolatus) turii, sp. nov.

Figs. 1-9: ♀; 10 and 11: ♂

1. Part of fore wing,
2. propodeum,
3. terminal seven antennal segments,
4. ovipositor sheath with a few apical abdominal segments,
5. hind wing,
6. head viewed from front,
7. head viewed from above,
8. basal three abdominal tergites,
9. hind tibia and basitarsus,
10. scape, pedicel and first two flagellar segments and
11. terminal five antennal segments.
punctate, sparsely pubescent, 0.5 the width of head; eye 1.5 x as long as broad; malar space rugose with a well marked subocular suture, equal to the basal width of mandible, 0.25 the length of eye, 0.16 the height of head.

Thorax: breadth between tegulae slightly more than that of head; proscutum smooth, shiny with basal and lateral furrows; mesoscutum moderately, shallowly punctate, moderately pubescent; disc of scutellum slightly convex, smooth, shiny, sparsely pubescent; metanotum with a median circular and two lateral oval depressions, the latter with a transverse carina in each; propodeum (Fig. 2) 2.2 x as broad as long, with well marked oval, closed areola and with lateral costulae, basal half of propodeum carinate, apical half rugulose; spiracle small, oval, slightly away from propodeal margin; propleuron rugulose; mesopleuron closely, shallowly punctate, moderately pubescent anteriorly, smooth, shiny with a median depression posteriorly, posterior margin bounded by a deep furrow; metapleuron smooth, shiny, moderately pubescent. Fore wing 2.7 mm. long, 1.15 mm. broad; stigma 2.7 x as long as broad; metacarp nearly as long as stigma, 4.0 x as
long as its distance from the apex of radial cell; 1st abscissa of radius nearly equal to the breadth of stigma, 1.71 x the length of transverse cubitus, 1.33 x the recurrent, latter 1.3 x the transverse cubitus; 1st discoideus shorter than 2nd; discoidal cell as long as broad; median cell without any dark setae; hind wing (Fig. 5) 3.0 x as long as broad; nervellus a little shorter than anal; vannal lobe concave. Hind coxa smooth, moderately pubescent; hind tibia (Fig. 9) densely setose with stout spines on outer side, 1.85 x as long as hind basitarsus; tibial spurs unequal, inner spur 1.5 x the outer, 0.45 the length of basitarsus; terminal segment of front tarsus without any spine.

**Abdomen:** as long as thorax, 1st tergite (Fig. 8) excavate, smooth and shiny anteriorly, deeply, moderately punctate and moderately pubescent posteriorly, with a small median depression, sides tapering posteriorly, maximum breadth 0.75 the median length; 2nd tergite transverse, entirely smooth, shiny, very sparsely pubescent, 4.5 x as broad as long, with lateral diverging, straight discal sulci as in figure 8; 3rd tergite smooth,
shiny, sparsely pubescent, median length 2.0 x the
length of 2nd tergite; ovipositor short, ovipositor
sheath (Fig. 4) slightly shorter than hind basitarsus,
2.0 x the length of inner spur of hind tibia.

Body : black; stigma and veins very pale
yellow (nearly transparent); antenna, coxae, trochanters,
hind and mid femora black; basal half of fore femur,
mid tibia, apical half of hind tibia, apical segment of
hind tarsus and apical 0.8 part of hind basitarsus dark
brown, rest of legs yellow.

♂ : similar to ♀ in all essential details
but differs in the following characters : head viewed
from above 1.82 x as broad as long; face smooth, shiny;
antenna (Fig. 10) 1.3 x as long as body; 16th segment
2.4 x as long as broad; penultimate segment 2.2 x as
long as broad; terminal segment (Fig. 11) 1.2 x the
length of penultimate and 3.0 x as long as broad.

Holotype ♀, "M.R. Chalikwar Coll., Botanic
Garden, Marathwada University, Aurangabad on Cajanus
cajan (Linn.) Millsp., 12.xi.1970"; paratypes 3 ♀ ♀,
labelled as holotype and 1 ♂ & 1 ♀, "M.R. Chalikwar
Coll. Botanic Garden, Marathwada University, Aurangabad, on *Cajanus cajan* (Linn.) Millsp., 1.xii.1970".

**Discussion**: This species runs close to *Apanteles taragamae* Viereck (1912) in Rao's (1961) key in its characters of antenna, stigma, disc of scutellum and 1st tergite but differs from the same in having: i. a very short ovipositor sheath, ii. anterior part of mesopleurum closely, shallowly punctate, iii. lst abscissa of radius much longer than recurrent and iv. carinate basal half of propodeum with an oval areola having well marked costulae.

This species has superficial resemblance with *Apanteles folla* Nixon (1965) of the *ater* group but is readily distinguished from the same in having: i. penultimate segment of antenna in *Q* as long as broad, ii. anterior half of mesopleurum only punctate, iii. smooth and shiny hind coxa, iv. smooth and shiny disc of scutellum and v. posteriorly narrowed 1st tergite.
Apanteles (Arctatus) brunus, sp. nov.

♀ : 2.8 mm.

Head : viewed from above (Fig. 3) nearly rectangular, 2.0 x as broad as long; vertex rugulose, moderately pubescent; interorbital space 0.6 the breadth of head; interocellar space equal to ocellocular, 2.5 x the front ocular space; occiput smooth, shiny; frons rugulose; face (Fig. 2) 1.7 x as broad as long, with a median longitudinal elevation in upper half, closely, shallowly punctate, sparsely pubescent; clypeus slightly convex, closely, shallowly punctate, sparsely pubescent, supraclypeal fovea small, deep; eyes convergent below, margins straight; antenna shorter than body, filiform, finely pubescent; scape 1.7 x as long as broad; pedicel 0.25 the length of scape; 1st flagellar segment 2.5 x as long as broad and equal to the combined length of scape and pedicel; 16th and 17th antennal segments similar, each 1.4 x as long as broad; terminal segment (Fig. 5) 2.1 x as long as broad, 1.4 x as long as penultimate; head from side 1.5 x as high as wide, temple rugose, sparsely pubescent, 0.35 the width of head; eye
PLATE IV

Apanteles (Areolatus) brunmus, sp. nov. ♀

1. Part of fore wing,
2. head viewed from front,
3. head viewed from above,
4. hind tibia and basitarsus,
5. terminal six antennal segments,
6. propodeum,
7. basal two abdominal tergites and
c8. ovipositor sheath with a few apical abdominal segments.
moderately pubescent, 1.5 x as long as broad; malar space sparsely, shallowly punctate, 0.17 the height of head, 1.3 x the basal width of mandible.

**Thorax**: breadth between tegulae equal to that of head; proscutum rugose with dorsal and basal furrows; mesoscutum closely, deeply, rugosely punctate throughout, moderately pubescent, with indistinct notauli; disc of scutellum slightly convex, rugoso-punctate, sparsely pubescent, scutellar furrow and sulci carinatae, area beyond glabrous; metanotum with a median circular and two lateral oval depressions, the latter each with a transverse carina; propodeum (Fig. 6) 2.0 x as broad as long, rugose, with distinct, closed and ovate areola giving out strong costulae, having one complete and three incomplete transverse carinae as in figure 6; spiracle oval, touching propodeal margin; mesopleuron closely, deeply and rugosely punctate anteriorly, smooth and shiny posteriorly, posterior margin bounded by a carinate furrow; metapleurum smooth, shiny medially, rugose anteriorly and posteriorly, sparsely pubescent. Fore wing (Fig. 1) 3.00 mm. long, 1.2 mm. broad; stigma 2.8 x as long as broad; metacarp slightly longer than
stigma, 4.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius 1.25 x the breadth of stigma, 3.4 x the length of transverse cubitus, 1.5 x the length of recurrent and 4.5 x the pigmented portion of 2nd abscissa of cubitus; 2nd discoideus 1.3 x the 1st; median cell with colourless setae; hind wing 3.0 x as long as broad, vannal lobe concave beyond its widest part, without a fringe of setae. Hind coxa smooth, shiny laterally, rugose above, sparsely pubescent; hind tibia (Fig. 4) densely setose, with strong and similar spines on outer side, 2.0 x as long as hind basitarsus, tibial spurs (Fig. 4) unequal, inner spur 1.5 x the outer and 0.52 the length of hind basitarsus, claw simple; terminal segment of front tarsus without any spine.

Abdomen: slightly longer than thorax; 1st tergite (Fig. 7) parallel sided up to basal 0.75, later slightly converging, median length 2.0 x the maximum breadth, 3.0 x its apical breadth, rugoso-reticulate throughout, with a shallow depression in the posterior half, with a median glabrous area at its extreme apical margin; 2nd tergite 3.7 x as broad as long, 0.18 the length of 1st tergite, smooth, shiny, with lateral
diverging, straight sulci reaching the posterior margin; 3rd tergite smooth, shiny, median length 2.5 x the length of 2nd tergite; ovipositor sheath (Fig. 8) 1.00 mm. long, sparsely pubescent, slightly longer than hind tibia.

**Body**: black; ocelli, antenna, labrum, mandibles, fore and mid legs except coxae, hind trochanters, basal half of hind tibia and basitarsus at base dark brown; hind femur, apical half of hind tibia, hind tarsi infuscate; tegulae yellow testaceous; wings glassy hyaline, stigma dark brown with a basal white spot.

**Holotype** ♂, "M.R. Chalikwar Coll., Aurangabad, at light, 28.ix.1967"; **paratype** 1 ♀, labelled as holotype, antenna and wings mounted on slides and labelled as above.

**Discussion**: This species runs close to Apanteles significans Walker (1860) in Rao's (1961) key in its characters of stigma, metacarp, mesoscutum, disc of scutellum and mesopleuron but differs from the same in having: i. 1st tergite parallel sided upto basal 0.75, later slightly converging, ii. 1st abscissa
of radius 3.4 x as long as transverse cubitus and 4.5 x
as long as pigmented portion of 2nd abscissa of cubitus,
iii. interocellar space equal to ocellocular and 2.5 x
the front ocellar and iv. propodeum with an ovate
areola, areolar space with one complete and three
incomplete transverse carinae.
Apanteles (Areolatus) longiterebrus, sp. nov.

$\Omega: 2.5$ mm.

**Head**: viewed from above (Fig. 6) nearly rectangular, $1.9 \times$ as broad as long; vertex rugose, moderately pubescent; interorbital space 0.63 the breadth of head; ocelli prominent, in a triangle, ocellocular space equal to the interocellar, front ocellar space 0.5 the interocellar and equal to the ocellar breadth; frons with a short median longitudinal carina and semicircular, concentric carinae around antennal sockets; face (Fig. 4) $1.5 \times$ as broad as long, weakly rugose, sparsely pubescent, slightly elevated in the middle; eye margin straight; clypeus smooth, shiny, sparsely pubescent, clypeo-facial suture distinct, supraclypeal fovea deeply impressed; labrum smooth, shiny, with long setae; antenna short, filiform, 0.81 the length of body; scape (Fig. 9) $1.55 \times$ as long as broad, inner side slightly curved; pedicel $2.0 \times$ as broad as long; 1st flagellar segment as long as 2nd, $2.43 \times$ as long as broad; 15th, 16th and penultimate segments similar, each $1.33 \times$ as long as broad; terminal segment (Fig.10) conical, $1.4 \times$ as long as
PLATE V

Apanteles (Areolatus) longiterebrus, sp. nov.

Figs. 1-10: ♀; 11 and 12: ♂

1. Part of fore wing,
2. hind tibia and basitarsus,
3. hind wing,
4. head viewed from front,
5. basal three abdominal tergites,
6. head viewed from above,
7. propodeum,
8. ovipositor sheath with a few apical abdominal segments,
9. scape, pedicel and first three flagellar segments,
10. terminal five antennal segments,
11. terminal five antennal segments and
12. genitalia.
penultimate, 2.2 x as long as broad; head from side 1.5 x as high as wide, temple rugose, moderately pubescent, 0.3 the width of head; eye moderately pubescent, 1.66 x as long as broad; malar space rugose, with a well marked subocular suture, 0.8 the basal width of mandible.

Thorax: breadth between tegulae equal to that of head; proscutum smooth, shiny with well marked dorso-lateral furrows; mesoscutum closely, deeply punctate, moderately pubescent; disc of scutellum slightly broader than long, slightly convex, smooth, shiny, very sparsely pubescent, scutellar furrow well marked, scutellar sulci strongly carinate, area beyond glabrous and convex anteriorly; anterior half of metanotum smooth with a median, deep depression, posterior half with two lateral oval, rugose depressions; propodeum (Fig. 7) 2.0 x as broad as long, rugose, with quadrate, closed areola with lateral costulae, other details as in figure 7; spiracle small, oval, touching propodeal margin; propleuron rugose; mesopleuron closely, deeply punctate and moderately pubescent for the anterior half, posterior half smooth, shiny, posterior margin bounded by a deep furrow; anterior 0.66 of metapleuron smooth, shiny, with a
median furrow and a deep fovea, posterior 0.33 rugoso-punctate, moderately pubescent. Fore wing (Fig. 1) 2.5 mm. long, 1.00 mm. broad; stigma 3.0 x as long as broad; metacarp 0.9 the length of stigma, 3.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius equal to the breadth of stigma, 1.5 x as long as transverse cubitus, a little longer than the recurrent, latter 1.3 x the transverse cubitus; 1st discoideus 0.72 the length of 2nd discoideus; discoidal cell as long as broad; median cell without dark setae; 1st discoideus and nervulus form a straight line; pigmented portion of 2nd abscissa of cubitus 0.9 the 1st; hind wing (Fig. 3) narrow, 3.0 x as long as broad; nervellus as long as anal; vannal lobe concave beyond its widest part. Hind coxa globular, smooth, shiny; hind tibia (Fig. 2) 2.0 x as long as hind basitarsus, with stout, sparse spines on outer side, tibial spurs (Fig. 2) unequal, inner spur 1.75 x the outer and 0.5 the length of hind basitarsus; terminal segment of front tarsus without any spine.

**Abdomen** shorter than thorax; 1st tergite (Fig. 5) nearly parallel sided, slightly convergent posteriorly, excavate anteriorly, rugoso-punctate posteriorly with a median oval depression, 1.33 x as
long as bread, median length 1.63 x the apical breadth; 2nd tergite transverse, 5.5 x as broad as long, smooth, shiny, very sparsely pubescent, with strong, straight, diverging sulci; 3rd tergite smooth, shiny, sparsely pubescent, 2.5 x as long as 2nd, 2.75 x as broad as long; ovipositer sheath (Fig. 8) as long as hind tibia, bread posteriely, moderately pubescent, 0.7 mm. long.

Body: black; antenna, coxae, trochanters, basal half of fore femur, mid femur except its apex, apical half of mid tibia, hind femur, apical half of hind tibia and apical half of hind basitarsus blackish-brown; remaining parts of legs yellow; costa and anterior margin of stigma brown; stigma and other veins hyaline.

♂: 2.3 mm.; similar to ♀ in all essential details but differs in the following characters: antenna long, 1.3 x as long as body; 15th antennal segment 3.3 x as long as bread; 16th segment 2.6 x as long as bread; penultimate segment slightly shorter than 16th, 2.4 x as long as bread; terminal segment (Fig. 11) 3.0 x as long as bread, 1.3 x as long as penultimate; pigmented portion of 2nd abscissa of cubitus 0.6 the 1st; 1st tergite 1.77 x as long as bread; median length 2.5 x the apical breadth; 2nd tergite transverse, 5.0 x as bread as long; genitalia (Fig. 12)
0.4 mm. long; parameral plate 0.75 the length of genitalia, pointed at both ends, with a few long hairs at apex; volsella 0.75 the parameral plate; cuspis inwardly directed, digitus with teeth directed apically, aedeagus 0.86 the length of parameral plate, pointed apically; aedeagal apodeme extending beyond the tip of parameral plate.

**Holotype** ♀, "M.R. Chalikwar Coll., Government College of Agriculture, Parbhani, on *Caianus caian* (Linn.) Millsp., 25.ix.1969"; **paratypes** 1 ♀, 1 ♂ labelled as holotype; 1 ♂ labelled as holotype, 23.ix.1969; 2 ♀ ♀, 1 ♂ labelled as holotype, 24.ix.1969.

**Discussion**: This species runs close to *Ananteles taragamae* Viereck (1912) in Rao's (1961) key in its characters of head, mesoscutum, disc of scutellum, propodeum, stigma and abdomen but differs from the same in having: i. metacarp shorter than stigma and 3.0 x as long as its distance from the apex of radial cell, ii. 1st abscissa of radius slightly longer than recurrent and 1.5 x as long as transverse cubitus, iii. scape 1.55 x as long as broad, iv. 15th-17th segments of antenna similar, each 1.33 x as long as broad and v. ovipositor sheath as long as hind tibia.
This species has superficial resemblance with *Apanteles areelatus* Rao & Chalikwar (in press) but differs from the same in having: i. ovipositor sheath as long as hind tibia, ii. rugose vertex, iii. weakly rugose face, iv. stigma hyaline throughout; metacarp 0.9 the length of stigma and 3.0 x as long as its distance from the apex of radial cell, vi. median cell without any dark setae and vii. 2nd tergite 5.5 x as broad as long.

This species resembles *Apanteles* (*Areelatus*) turii, sp. nov. also in some characters but differs from the same in having: i. ovipositor sheath 2.0 x as long as hind basitarsus, ii. metacarp 0.9 the length of stigma and 3.0 x as long as its distance from the apex of radial cell, iii. terminal antennal segment 2.2 x as long as broad and iv. propodeum with quadrate areela.
Apanteles (Areolatus) punctatus, sp. nov.

♀ : 2.5 mm.

Head : viewed from above (Fig. 10) nearly rectangular, 2.1 x as broad as long; vertex rugulose, moderately pubescent; interorbital space 0.6 the breadth of head; ocelli prominent, in a triangle, ocellocular space 0.62 the interocellar, front ocellar space 0.4 the interocellar, 1.4 x the front ocellar breadth; frons rugulose, moderately pubescent on sides; face (Fig. 8) 1.5 x as broad as long, slightly convex with a median longitudinal ridge, weakly rugulose, moderately pubescent; eye margins straight; clypeus weakly rugulose, moderately pubescent, supraclypeal fovea deeply impressed, clypeo-facial suture weakly marked; labrum smooth, shiny, sparsely pubescent; antenna nearly as long as body; scape (Fig. 3) 1.42 x as long as broad; pedicel 0.18 the length of scape, 3.0 x as broad as long; 1st flagellar segment slightly longer than scape, as long as 2nd and 2.4 x as long as broad; 15th and 16th segments similar, each 1.3 x as long as broad; penultimate segment 1.33 x as long as broad; terminal
PLATE VI

Apanteles (Areolatus) punctatus, sp. nov. ♀

1. Part of fore wing,
2. basal three abdominal tergites,
3. scape, pedicel and first three flagellar segments,
4. hind wing,
5. terminal six antennal segments,
6. hind tibia and tarsus,
7. propodeum,
8. head viewed from front,
9. ovipositor sheath with a few apical abdominal segments and
10. head viewed from above.
segment (Fig. 5) 1.45 x the length of penultimate, 2.0 x as long as broad; head from side 1.55 x as high as wide, temple rugulose, moderately pubescent, 0.33 the width of head; eye moderately pubescent, 1.5 x as long as broad; malar space slightly greater than the basal width of mandible, subocular suture well marked.

Thorax: breadth between tegulae equal to that of head; proscutum with dorsal and lateral furrows; mesoscutum closely, shallowly punctate, densely covered with silvery white pubescence; disc of scutellum slightly convex, rugulose, moderately pubescent, scutellar furrow well marked, scutellar sulci carinate, area beyond glabrous; metanotum with one median and two lateral oval depressions, the latter each with a few longitudinal carinae; propodeum (Fig. 7) 2.0 x as broad as long, granular, densely pubescent throughout, with sunken areola, without costulae, with obliquely ascending strong but incomplete carinae as in figure 7, areolar space rugose; spiracle small, oval, touching propodeal margin; propopleurum smooth, moderately pubescent; anterior 0.66 of mesopleurum very shallowly, closely punctate, posterior 0.33 smooth, shiny, moderately pubescent throughout, posterior margin bounded by a
deep furrow; metapleurum smooth anteriorly, granulose posteriorly, moderately pubescent throughout. Fore wing (Fig. 1) 2.55 mm. long, 1.00 mm. broad; stigma 2.7 x as long as broad; metacarp 0.85 the length of stigma, 2.7 x as long as its distance from the apex of radial cell; 1st abscissa of radius nearly equal to the breadth of stigma, 2.0 x as long as transverse cubitus and 1.5 x the length of recurrent, latter 1.3 x the transverse cubitus; 1st discoideus shorter than 2nd; discoidal cell as long as broad; median cell without dark setae, other details as in figure 1; hind wing (Fig. 4) 3.15 x as long as broad, narrow, vannal lobe concave beyond its widest part; anal 1.2 x as long as nervellus; cubitellan cell slightly longer than broad. Hind coxa smooth, profusely pubescent; hind tibia (Fig. 6) 1.34 x as long as hind basitarsus, with short spines on outer side, tibial spurs unequal, inner spur 1.4 x the length of outer, 0.5 the length of hind basitarsus; terminal segment of front tarsus without any spine.

Abdomen: spindle shaped, shorter than thorax; 1st tergite (Fig. 2) nearly parallel sided, slightly narrowed posteriorly as in figure, 1.5 x as long as broad, median length 2.0 x the apical breadth,
rugulose, sparsely pubescent throughout, glabrous at apex; 2nd tergite transverse, smooth, very sparsely pubescent, apical breadth 5.0 x the median length, with posteriorly diverging, lateral deep sulci as in figure 2; 3rd tergite smooth, sparsely pubescent, 2.5 x as broad as long, 2.4 x the length of 2nd tergite; ovipositor sheath (Fig. 9) long, as long as hind tibia, shorter than abdomen, moderately pubescent throughout.

**Body**: black; apical part of fore femur, fore tibia, fore tarsal segments, mid tarsal segments and palpi pale yellow; rest of legs dark black; tibial spurs white; wings milky white; veins and margin of stigma pale brown; stigma transparent.

**Holotype**: ♀, "M.R. Chalikwar Coll., Bidkin, Aurangabad, on weeds, 3.viii.1969"; wings, antenna and legs mounted on slides and labelled as above.

**Discussion**: This species runs close to *Ananteles singaporenensis* Szepligeti (1905) in Rae's (1961) key in its characters of hind leg, propodeal areola, densely pubescent thorax and abdominal tergites but differs from the same in having:
i. head 2.1 x as broad as long from above, ii. ocellocular space 0.62 the interocellar, iii. metacarp 0.85 the length of stigma, iv. ovipositor sheath as long as hind tibia, v. 3rd tergite 2.4 x the length of 2nd and vi. 2nd tergite 5.0 x as broad as long.

This species has superficial resemblance with *Apanteles leptothecus* (Cameron) (1907) but differs from the same in having: i. metacarp 0.85 the length of stigma, ii. 1st abdominal tergite 1.5 x as long as broad, iii. granular and rugulose propodeum and iv. rugulose disc of scutellum.
**Ananteles (Areolatus) brunnipes**, sp. nov.

♀ : 3.2 mm.

**Head** : viewed from above (Fig. 9) transverse, 2.0 x as broad as long; vertex smooth, shiny, moderately pubescent; interorbital space 0.64 the breadth of head; ocelli prominent, in a triangle, ocellocular space 1.5 x the interocellar, front ocellar space 0.42 the interocellar and 0.83 the ocellar breadth; frons smooth, shiny; face (Fig. 5) 1.7 x as broad as long, slightly convex, with a median ridge like elevation, closely, shallowly punctate, moderately pubescent; clypeus closely, shallowly punctate, moderately pubescent; supraclypeal fovea well marked, clypeo-facial suture distinct; labrum smooth, shiny; antenna as long as body, profusely pubescent; scape (Fig. 10) long, 1.7 x as long as broad; pedicel 1.7 x as broad as long, 0.27 the length of scape; 1st flagellar segment as long as 2nd, 2.7 x as long as broad; 15th segment slightly shorter than 14th, 1.6 x as long as broad; 16th and 17th segments similar, each 1.6 x as long as broad; terminal segment (Fig. 7) 2.0 x as long as broad, 1.33 x as long as penultimate; head from side 1.5 x as high as
wide, temple shallowly, closely punctate, moderately pubescent, 0.45 the width of head; eye moderately pubescent, 1.5 x as long as broad; malar space shallowly, moderately punctate, with a well marked subocular suture, length equal to the basal width of mandible.

**Thorax**: breadth between tegulae nearly equal to that of head; proscutum smooth, shiny, with well marked dorsal and lateral furrows; mesoscutum closely, deeply punctate throughout, moderately pubescent; disc of scutellum slightly convex, as long as broad, smooth, shiny, sparsely pubescent, sparsely, shallowly punctate laterally; scutellar furrow and sulci well carinate; area beyond glabrous; metanotum smooth, shiny, except for a median rectangular and two lateral oval depressions; propodeum (Fig. 3) 2.0 x as broad as long, deeply, closely punctate anteriorly, moderately pubescent, with a well marked sunken, oval areola, as in figure 3; spiracle oval, separated from propodeal margin by 0.25 of its width; proplearum rugoso-punctate; mesopleurum closely, deeply punctate, moderately pubescent anteriorly, smooth, shiny posteriorly, posterior margin bounded by a carinate furrow; metapleurum smooth, shiny, medially with a deep
PLATE VII

*Ananteles (Areolatus) brunipes*, sp. nov. ♀

1. Part of fore wing,
2. hind tibia and basitarsus,
3. propodeum,
4. ovipositor with a few apical abdominal segments,
5. head viewed from front,
6. hind wing,
7. terminal six antennal segments,
8. basal three abdominal tergites,
9. head viewed from above and
10. scape, pedicel and first three flagellar segments.
fovea, anterior corner and posterior half rugose, sparsely pubescent. Fore wing (Fig. 1) 3.00 mm. long, 1.35 mm. broad; stigma long, 2.9 x as long as broad; metacarp slightly longer than the length of stigma, 4.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius 1.1 x the breadth of stigma, 1.45 x the length of transverse cubitus, latter equal to the recurrent; 1st abscissa of cubitus 1.25 x the pigmented portion of 2nd abscissa of cubitus; 2nd discoideus 1.3 x the 1st discoideus; discoidal cell as long as broad; anal and medius unusually far away from each other; median cell with sparse and dark setae throughout; hind wing (Fig. 6) 3.1 x as long as broad; anal as long as nervellus; cubitellum cell longer than broad; vannal lobe very slightly concave beyond its widest part. Hind coxa closely, shallowly punctate above; hind tibia (Fig. 2) 2.0 x as long as hind basitarsus, with short, stout spines on outer side; tibial spurs unequal, inner spur 1.5 x the outer and 0.52 the length of hind basitarsus.

Abdomen: nearly as long as thorax; 1st tergite (Fig. 8) 1.5 x as long as broad, median length 2.0 x the apical breadth, excavate anteriorly, strongly rugoso-punctate posteriorly, with a median depression,
parallel sided in anterior 0.75 and very slightly converging posteriorly; 2nd tergite transverse, apical breadth 6.0 \times \text{the median length, smooth, shiny, except for a few shallow, sparse posterior punctae, with lateral, straight discal sulci; 3rd tergite smooth, shiny, moderately pubescent, } 3.0 \times \text{as broad as long, } 2.0 \times \text{as long as 2nd tergite; remaining tergites smooth, shiny, sparsely pubescent; evipesiter long, exserted, slightly curved, evipesiter sheath (Fig. 4) } 1.1 \times \text{as long as hind tibia, bread posteriorly, pubescent throughout, other details as in figure 4.}

**Body:** black; labrum, tegulae, stigma and veins of fore wing, coxae, hind tibia at apex, first three tarsal segments of hind leg except base of basitarsus and membranous margins of first two tergites dark reddish-brown; other parts of legs yellow; flagellum blackish-brown.

**Holotype:** ♀, "M.R. Chalikwar Coll., Fruit Research Station, Aurangabad, on weeds, 24.ix.1968", legs, wings and antenna mounted on slides and labelled as above.

**Discussion:** This species runs close to *Apanteles calycinae* Wilkinson (1928) in Rae's (1961)
key in the characters of metacarp, hind femur, areola without costulae, vannal lobe without fringe of setae but differs from the same in having: i. 1st abscissa of radius 1.1 x the breadth of stigma and 1.45 x the length of transverse cubitus, ii. 1st tergite nearly parallel sided in the anterior 0.75, very slightly converging posteriorly, iii. ovipositor sheath 1.1 x as long as hind tibia, iv. ocellocular space 1.5 x the interocellar, v. penultimate segment of antenna 1.6 x as long as broad and vi. propodeum with a well marked sunken areola, closely, deeply punctate anteriorly and with strong radiating carinae posteriorly.

This species has superficial resemblance with *Apanteles mycetophilus* Wilkinson (1931) but differs from the same in having: i. mesoscutum closely and deeply punctate throughout, ii. propodeum closely, deeply punctate anteriorly, carinate posteriorly, with a well marked sunken, even areola without costulae, iii. 1st abscissa of radius and transverse cubitus well angled, iv. apical breadth of 2nd tergite 6.0 x the median length and v. ovipositor sheath 1.1 x the length of hind tibia.
Apanteles (Areolatus) rugosus, sp. nov.

♂: 2.55 mm.

**Head**: viewed from above (Fig. 9) nearly rectangular, 1.75 x as broad as long; vertex smooth, moderately pubescent; interorbital space 0.64 the breadth of head; ocelli prominent, in a triangle, ocellocular space 0.81 the interocellar space, front ocellar space 0.4 the interocellar and equal to ocellar breadth; frons smooth, shiny, with a median weak longitudinal carina; face (Fig. 7) slightly convex, rugose, moderately pubescent, 1.5 x as broad as long; clypeus smooth, shiny, sparsely pubescent, clypeo-facial suture weakly marked, supraclypeal fovea small, deep; antenna 1.4 x as long as body, filiform, attenuate, finely pubescent; scape (Fig. 1) 1.5 x as long as broad; pedicel 0.27 the length of scape; first flagellar segment longer than scape and pedicel combined, as long as 2nd, 2.75 x as long as broad; 15th segment 3.7 x as long as broad; 16th segment 2.5 x as long as broad, much shorter than 15th and slightly longer than penultimate; penultimate segment 2.1 x as long as broad; terminal segment (Fig. 5) 1.3 x as long as penultimate and
PLATE VIII

Apanteles (Areolatus) rugosus, sp. nov.

Figs. 1-9: ♂; 10 and 11: ♀

1. Scape, pedicel and first three flagellar segments,
2. part of fore wing,
3. basal three abdominal tergites,
4. hind tibia and basitarsus,
5. terminal five antennal segments,
6. hind wing,
7. head viewed from front,
8. propodeum,
9. head viewed from above,
10. terminal six antennal segments and
11. ovipositor sheath with a few apical abdominal segments.
2.75 x as long as broad; head from side 1.5 x as high as wide, temple 0.33 the width of head, moderately pubescent, rugulose; eye moderately pubescent, 1.75 x as long as broad; malar space rugulose, well marked by a subocular suture, 1.5 x the basal width of mandible, 0.2 the height of head and 0.3 the length of eye.

**Thorax**: breadth between tegulae a little more than that of head; proscutum rugose, shallowly punctate, sparsely pubescent; mesoscutum closely, deeply rugoso-punctate throughout, moderately pubescent; disc of scutellum flattened, strongly rugose, sparsely pubescent, scutellar furrow and sulci carinate, area beyond glabrous; metanotum with a median circular and two lateral oval depressions, space other than depressions smooth; propodeum (Fig. 8) 1.8 x as broad as long, strongly, closely, rugoso-carinate anteriorly, strongly, not so closely rugoso-carinate posteriorly, with quadrates, closed areola, having lateral costulae as in figure 8, areolar space smooth; spiracle oval, small, touching propodeal margin as in figure 8; propleurum smooth, shiny; anterior 0.6 of mesopleurum strongly rugoso-punctate, posterior 0.4 smooth, shiny, sparsely pubescent, posterior margin bounded by a carinate
furrow; anterior half of metapleurum smooth, shiny, with a median deep fovea and posterior half rugoso-punctate, sparsely pubescent. Fore wing (Fig. 2) 2.6 mm. long, 1.00 mm. broad; stigma 3.0 x as long as broad; metacarp 1.15 x the length of stigma and 4.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius well angled with transverse cubitus, equal to the breadth of stigma, 1.5 x the transverse cubitus and equal to the recurrent; 1st abscissa of cubitus 0.66 the recurrent; 1st discoides slightly shorter than 2nd; median cell with sparse and dark setae throughout; discoidal cell as long as broad; hind wing (Fig. 6) 3.3 x as long as broad; vannal lobe concave beyond its widest part; cubitellae cell slightly longer than broad; anal very slightly longer than nervellus, other details as in figure 6. Hind coxa 1.9 x as long as broad, smooth; hind tibia (Fig. 4) densely setose, 1.9 x the length of hind basitarsus, with spines on lateral sides, tibial spurs unequal, inner spur 2.0 x the outer and half the length of basitarsus; terminal segment of front tarsus without any curved spine.

**Abdomen**: spindle shaped, nearly as long as thorax; 1st tergite (Fig. 3)
parallel sided, excavate anteriorly, margins rounded posteriorly, strongly rugose throughout, nearly 1.7 x as long as broad, median length 2.3 x the apical breadth; 2nd tergite smooth, shiny, sparsely pubescent, 0.25 the length of 1st tergite, 2.6 x as broad as long, with posteriorly diverging, deep, discal sulci, posterior suture curved; 3rd tergite smooth, shiny, sparsely pubescent, 1.6 x as broad as long.

**Body**: black; tegulae, lateral parts of tergites, fore coxa, mid coxa, hind femur, apical half of hind tibia and hind tarsal segments except base of basitarsus dark brown; fore and mid legs except coxae, hind trochanters, basal half of hind tibia and hind basitarsus at base, tibial spurs, and palpi dark yellow.

♀ : 2.8 mm.; similar to ♂ in all essential details but differs in the following characters: antenna longer than body; 15th segment 1.62 x as long as broad; 16th segment 1.5 x as long as broad; penultimate segment 1.5 x as long as broad; terminal segment (Fig. 10) 2.3 x as long as broad and 1.4 x the length of penultimate; hind coxa rugose; 1st tergite 1.55 x as long as broad; 2nd tergite 2.9 x as broad as long, weakly rugose; ovipositor sheath (Fig. 11) broader posteriorly, sparsely pubescent, 0.8 the length of hind tibia.
**Holotype** ♂, "M.R. Chalikwar Coll., Bidkin, Aurangabad, on wing, 3.viii.1969"; **paratypes** 1 ♀, "M.R. Chalikwar Coll., Fruit Research Station, Aurangabad, on wing, 7.viii.1969"; 4 ♂♂ labelled as holotype; wings, antenna, legs mounted on slide and labelled as above.

**Discussion**: This species runs close to *Apanteles valvulae* Rao and Kurian (1950) in Rao's (1961) key in its characters of mesoscutum, disc of scutellum, legs, some veins of the wing and abdomen but differs from the same in having: i. propodeum with well marked quadrate, closed areola, ii. recurrent 1.5 x the length of 1st abscissa of cubitus, iii. inner spur of hind tibia 2.0 x the outer, iv. malar space 0.3 the length of eye and v. ocellocular space 0.81 the interocellar.
Apanteles (Areolatus) cassiae, sp. nov.

\( \varphi : 2.3 \text{ mm.} \)

Head: viewed from above (Fig. 4) nearly rectangular, 2.0 x as broad as long; vertex very shallowly, closely punctate, moderately pubescent; interorbital space 0.6 the breadth of head; ocelli prominent, interocellar space 1.5 x ocellocular space, front ocellar space 0.43 the interocellar and equal to the ocellar breadth; frons smooth, shiny, moderately pubescent; face (Fig. 5) slightly convex, with very shallow punctae and long pubescence, 1.8 x as broad as long; clypeus separated from face by clypeo-facial suture, with very shallow punctae and long pubescence, supracylpeal fovea well marked, deeply impressed; labrum smooth, shiny; eyes slightly convergent below; antenna as long as body, filiform, attenuate; scape 1.5 x as long as broad; pedicel 1.5 x as broad as long; 1st flagellar segment as long as 2nd, 3.0 x as long as broad; 15th segment 1.66 x as long as broad; 16th segment 1.5 x as long as broad; penultimate segment 1.6 x as long as broad; terminal segment (Fig. 7) 2.2 x as long as broad and 1.3 x the
PLATE IX

Apanteles (Areolatus) cassiae, sp. nov.

Figs. 1-10: ♀ and 11: ♂

1. Part of fore wing,
2. propodeum,
3. terminal segment of front tarsus,
4. head viewed from above,
5. head viewed from front,
6. ovipositor sheath with a few apical abdominal segments,
7. terminal six antennal segments,
8. basal three abdominal tergites,
9. hind tibia and basitarsus,
10. hind wing and
11. terminal six antennal segments.
length of penultimate; head from side 1.5 x as high as wide, temple moderately pubescent, 0.37 the width of head; eye 1.6 x as long as broad; malar space 1.66 x the basal width of mandible, 0.23 the height of head and 0.3 the length of eye.

**Thorax**: breadth between tegulae equal to that of head; scutellum, metanotum and anterior half of propodeum in the same plane; proscutum weakly rugose, with basal and lateral furrows; mesoscutum deeply, closely punctate throughout, moderately pubescent; disc of scutellum slightly convex, sparsely pubescent, rugose and shallowly punctate laterally, scutellar furrow well marked, sulci carinate, area beyond glabrous; metanotum with one median circular and two lateral, oval depressions; propodeum (Fig. 2) 2.0 x as broad as long, sparsely pubescent, pubescence long, anterior half rugose, posterior half with longitudinal carinæ as in figure 2, areola well marked, with lateral costulae as in figure 2, areolar space more rugose than other parts; spiracle small, circular, separated from propodeal margin by 0.4 of its width; propleurum smooth, shiny; anterior half of mesopleurum closely, deeply punctate, sparsely pubescent, posterior half smooth, shiny with a median depression, posterior
margin bounded by a carinate furrow; anterior half of metapleurum smooth, shiny, with a median deep fovea, posterior half shallowly, closely punctate, sparsely pubescent. Fore wing (Fig. 1) 2.3 mm. long, 0.95 mm. broad; stigma 2.6 x as long as broad; metacarp nearly as long as stigma, 4.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius 0.8 the breadth of stigma, 1.18 x the length of transverse cubitus and 1.1 x the length of recurrent, 1st abscissa of radius and transverse cubitus well angled; 1st discoideus shorter than 2nd; discoidal cell as long as broad; median cell with a few dark setae in distal half only; hind wing (Fig. 10) 3.2 x as long as broad, narrow, vannal lobe convex, with a fringe of minute setae; cubitellan cell 1.5 x as long as broad; anal 1.2 x the length of nervellus, other details as in figure 10. Hind coxa smooth, shiny; hind tibia (Fig. 9) 2.0 x the length of hind basitarsus, with stout, sparse spines on outer side, tibial spurs unequal, inner spur 1.4 x the outer and 0.4 the length of hind basitarsus; terminal segment of front tarsus with a fine curved spine as in figure 3.

Abdomen: slightly shorter than thorax; 1st tergite (Fig. 8) nearly parallel sided, except for the broader subapical region, median length 1.55 x the
apical breadth, excavate anteriorly, shallowly, sparsely punctate posteriorly; 2nd tergite transverse, shorter than 3rd, smooth, shiny, very sparsely pubescent, median length 0.38 the apical breadth, with lateral, deep, diverging sulci as in figure 8; 3rd tergite smooth, shiny, sparsely pubescent, 2.5 x as broad as long; hypopygium acutely angled, ovipositor (Fig. 6) very short, tapering, shorter than inner spur of hind tibia.

**Body**: black; wings hyaline; stigma brown with a basal white spot; trochanterellus, femur, tibia and tarsal segments of fore leg, femur at apex only, tibia and tarsal segments of mid leg, basal part of tibia and basitarsus at base of hind leg and palpi yellow; mandibles, apical half of hind tibia and tarsal segments of hind leg brown; rest of legs black.

$\sigma^7$: 2.2 mm.; similar to $\Phi$ in all essential details but differs in the following characters: antenna slightly longer than body; 15th segment 2.4 x as long as broad; 16th and penultimate segments similar, each 2.0 x as long as broad; terminal segment (Fig. 11) 2.2 x as long as broad and 1.1 x the penultimate; propodeal areola pentagonal and divided medially by a transverse carina; stigma hyaline throughout; veins
transparent; median cell without dark setae; 1st abscissa of radius 0.89 the breadth of stigma; 3rd tergite 2.0 x as broad as long.

**Holotype** ♀, **paratypes** 1 ♂ and 3 ♀ ♀ reared from cocoons collected on the leaves of *Cassia auriculata* Linn., "P.D. Advant Coll., Daulatabad, Aurangabad, 13.viii.1969"; wings, antenna, legs mounted on slides and labelled as above.

**Cocoons**: completely white, measuring 3.00 mm. long, 1.35 mm. broad, in masses of 5-9 on the leaves of *Cassia auriculata* Linn.

**Discussion**: This species has a superficial resemblance to *Apanteles indica* Bhatnagar (1948) and *Apanteles hypnoidae* Wilkinson (1928) in Rao's (1961) key in its characters of short ovipositor sheath, disc of scutellum, tegulae, scape, stigma and mesoscutum. But it differs from *indica* in having:

i. unequal hind tibial spurs, ii. rugose areolar space, iii. 1st abscissa of radius 0.8 the breadth of stigma, iv. transverse cubitus shorter than 2nd discoideus, v. smooth, shiny 2nd tergite, vi. very short ovipositor sheath, 0.3 the length of hind basitarsus, vii. smooth hind coxa and viii. yellow
testaceous fore tibia. This species is also distinguished from *hyposidrae* in having: i. metacarp as long as stigma, ii. inner spur of hind tibia 0.43 the length of hind basitarsus, iii. 1st abscissa of radius 0.8 the breadth of stigma, iv. smooth, shiny 2nd tergite, v. stigma with a pale basal spot and vi. very short ovipositor sheath, 0.3 the length of hind basitarsus.
Ananteles (Areolatus) paraambusae, sp. nov.

♀: 2.2 mm.

**Head**: viewed from above nearly transverse, 2.0 x as broad as long; vertex smooth, shiny, sparsely pubescent; interorbital space 0.65 the breadth of head; interocellar space nearly equal to ocellocular, front ocellar space 0.42 the interocellar and slightly less than ocellar breadth; occiput smooth, shiny; frons smooth, shiny; face (Fig. 3) 2.0 x as broad as long, slightly convex, closely, shallowly punctate, sparsely pubescent; clypeus slightly convex, closely, shallowly punctate, sparsely pubescent, supraclypeal fovea small; eye margin straight; antenna as long as body, filiform, attenuate, finely pubescent; scape cup-shaped, 1.75 x as long as broad; pedicel 2.0 x as broad as long, 0.25 the length of scape; 1st flagellar segment 2.7 x as long as broad; 15th and 16th segments similar, each nearly 1.5 x as long as broad; penultimate segment 1.35 x as long as broad; terminal segment (Fig. 7) 2.38 x as long as broad, 1.4 x as long as penultimate; head from side 1.5 x as high as wide, temple sparsely pubescent, shallowly, closely punctate; eye moderately pubescent, 1.5 x as long as broad; malar
PLATE X

Apanteles (Areolatus) parabambusae, sp. nov.

Figs. 1-8 : ♀; 9 and 10 : ♂

1. Part of fore wing,
2. hind wing,
3. head viewed from front,
4. ovipositor with a few apical abdominal segments,
5. propodeum,
6. basal three abdominal tergites,
7. terminal five antennal segments,
8. hind tibia and basitarsus,
9. terminal five antennal segments and
10. genitalia.
space shallowly punctate, shiny, equal to the basal width of mandible and 0.16 the height of head.

**Thorax**: breadth between tegulae nearly equal to that of head; proscutum smooth, shiny, with basal and lateral furrows; mesoscutum closely, deeply, broadly punctate throughout, sparsely pubescent; disc of scutellum flat, very sparsely, shallowly punctate, sparsely pubescent, scutellar sulci carinate, area beyond transverse, glabrous; metanotum with a median circular and two lateral, oval depressions; propodeum (Fig. 5) nearly 2.0 x as broad as long, sparsely, shallowly punctate anteriorly, smooth, shiny posteriorly, with an oval, closed areola as in figure 5, with lateral, strong, costulae; propleurum reticulate and shiny; mesopleurum closely, deeply punctate anteriorly, smooth, shiny posteriorly and posterior margin bounded by a carinate furrow; metapleurum smooth, shiny anteriorly, rugosely punctate posteriorly. Fore wing (Fig. 1) 2.3 mm. long, 0.9 mm. broad; stigma 2.8 x as long as broad; metacarp as long as stigma, 4.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius well angled with transverse cubitus, 0.9 the breadth of stigma, 1.4 x the length of transverse
cubitus and equal to the length of recurrent; 2nd discoideus shorter than 1st; discoidal cell 4 : 5; median cell with dark setae throughout; hind wing (Fig. 2) 4.0 x as long as broad; vannal lobe convex beyond its widest part and well fringed with setae. Hind coxa smooth, shiny; hind tibia (Fig. 3) 2.1 x the length of hind basitarsus, tibial spurs subequal, inner spur 0.5 the length of hind basitarsus, claw simple.

Abdomen : spindle shaped; 1st tergite (Fig. 6) nearly parallel sided, slightly broader at apex, rugosely punctate throughout, 1.2 x as long as broad; 2nd tergite rugulose, very sparsely pubescent and with posteriorly diverging sulci, apical breadth 3.66 x the median length; 3rd tergite smooth, shiny, sparsely pubescent, maximum breadth 3.3 x the median length; ovipositor sheath (Fig. 4) as long as hind tibia.

Body : black; labrum, mandibles, fore and mid coxae, apical part of tibia and tarsal segments of hind leg dark brown; fore and mid legs except coxae, trochanters, femur and basal part of tibia of hind leg yellow; palpi and tibial spurs pale yellow; stigma faint brown.
♂: 2.1 mm.; similar to ♀ in all essential details but differs in the following characters: 16th and 17th antennal segments similar, each 2.2 x as long as broad; terminal segment (Fig. 9) 2.5 x as long as broad and 1.1 x as long as penultimate; stigma transparent with dark margin; 1st tergite parallel sided, 1.5 x as long as broad; 2nd tergite smooth, shiny; genitalia as in figure 10 (parameral plates broken).

Holotype ♀, paratypes 1 ♀ and 3 ♂♂♂, "M.R. Chalikwar Coll., Ambulga, Manded district, on wing, 3.ix.1970"; antenna, legs, wings and genitalia mounted on slides and labelled as above.

Discussion: This species runs close to *Apanteles bambusae* Wilkinson (1928) in Rao's (1961) key in its characters of scape, ovipositor, stigma, discoidal cell, disc of scutellum, mesoscutum and hind tibial spurs but differs from the same in having: i. well marked oval propodeal areola, ii. 1st abscissa of radius 1.4 x as long as transverse cubitus, iii. metacarp as long as stigma and 4.0 x as long as its distance from the apex of radial cell, iv. 1st tergite 1.2 x as long as broad, v. smooth and shiny occiput, vi. smooth, shiny hind coxa and vii. yellow testaceous hind femur.
Apanteles (Areolatus) carinatus, sp. nov.

♀ 3.0 mm.

Head: viewed from above (Fig. 7) nearly oval, 1.9 x as broad as long; vertex shiny, closely, shallowly punctate, sparsely pubescent; interorbital space 0.57 the breadth of head; ocelli prominent, in a triangle, interocellar space 1.2 x the ocellocular and nearly 2.0 x front ocellar space; occiput slightly concave, smooth, shiny; frons rugose; face (Fig. 6) slightly convex, 1.6 x as broad as long, closely, finely punctate, sparsely pubescent, inner orbital border straight; clypeus rugose, supraclypeal fovea well marked; labrum smooth, shiny; antenna (broken in type) as long as body, filiform, attenuate, finely pubescent; scape (Fig. 9) cup-shaped, narrower at base than at apex, 1.7 x as long as broad; pedicel 0.33 as long as scape, broader at base than at apex, maximum breadth 1.5 x the length; 1st flagellar segment as long as 2nd, 3.37 x as long as broad; head from side oval, 1.76 x as high as wide; temple shiny, sparsely pubescent; closely and finely punctate, 0.3 the width of head, less than maximum breadth of eye; latter moderately pubescent, 1.5 x as long as broad; malar space 0.16 the height of head, shallowly punctate.
PLATE XI

Apanteles (Areolatus) carinatus, sp. nov.

Figs. 1-9 : ♀ ; 10 and 11 : ♂

1. Part of fore wing,
2. hind wing,
3. propodeum,
4. hind tibia and basitarsus,
5. basal three abdominal tergites,
6. head viewed from front,
7. head viewed from above,
8. ovipositor sheath,
9. scape, pedicel and first three flagellar segments,
10. terminal five antennal segments and
11. genitalia.
Thorax: breadth between tegulae equal to that of head, less than maximum height of thorax; mesoscutum shiny, strongly convex, closely, deeply and strongly punctate throughout; disc of scutellum flat, rough, with shallow punctae laterally and apically, scutellar sulci carinate, area beyond glabrous; metanotum with one median and two lateral oval depressions; propodeum (Fig. 3) strongly rugose, strongly, deeply punctate anteriorly, rugoso-carinate posteriorly, with transversely carinate areola having strong lateral costulae; spiracle oval, nearly touching propodeal margin; propleuron closely and finely punctate; mesopleuron closely, deeply punctate and finely pubescent except for the smooth and shiny median area; metapleuron smooth, shiny anteriorly, closely, finely punctate and finely pubescent posteriorly. Fore wing (Fig. 1) 2.7 mm. long, 1.05 mm. broad; stigma 2.85 x as long as broad, 1.17 x the length of metacarp, latter short, 1.5 x as long as its distance from the apex of radial cell; 1st abscissa of radius 0.88 the breadth of stigma, 1.2 x the length of transverse cubitus and 0.9 the length of recurrent, latter 1.25 x the length of transverse cubitus; 2nd discoideus 1.4 x the 1st discoideus; discoidal cell 1.1 x as long as broad; median cell with dark setae throughout; hind wing (Fig. 2) 3.75 x as long
as broad; vannal lobe straight beyond its widest part and fringed throughout; anil 1.12 x the length of nervellus; cubitellin cell 1.25 x as long as broad, other details as in figure 2. Hind coxa smooth, shallowly punctate above; hind tibia (Fig. 4) 2.0 x as long as hind basitarsus, finely setose, with stout spines on outer side, tibial spurs unequal, inner spur 0.5 and outer 0.33 the hind basitarsus.

**Abdomen**: as long as thorax, roughly spindle shaped; 1st tergite (Fig. 5) rugoso-punctate, broader at base than at apex, in anterior 0.75 parallel sided and slightly narrowed towards apex, median length 3.0 x the apical breadth; 2nd tergite transverse, 3.0 x as broad as long, rugose, with lateral diverging sulci; 3rd tergite smooth, shiny, 2.0 x as long as 2nd tergite; ovipositor sheath (Fig. 8) very long, 0.75 the length of abdomen and slightly longer than hind tibia.

**Body**: black; wings infumate; fore and mid legs except coxae, 0.2 basal of hind tibia, hind basitarsus at base and tegulae yellow testaceous; fore and mid coxae, hind femur, apical 0.8 of hind tibia, hind tarsal segments and antenna dark brown; hind
coxae black; mandibles yellowish-brown; palpi pale yellow.

♂: 2.3 mm.; similar to ♀ in all essential details but differs in the following characters: antenna long, 1.5 x as long as body; 15th segment 3.5 x as long as broad; 16th segment 2.6 x as long as broad; penultimate segment 2.2 x as long as broad; terminal segment (Fig. 10) longer than penultimate, 3.0 x as long as broad; stigma 2.63 x as long as broad; metacarp 0.35 the length of stigma and 2.0 x as long as its distance from the apex of radial cell; genitalia (Fig. 11) 0.45 mm. long; 1.5 x as long as broad, parameral plate 0.78 the length of genitalia, set with few long hairs in apical part, volsella 0.74 the parameral plate, cuspis directed inwardly, other details as in figure 11.

Discussion: This species runs close to *Ananteles longitergialae* Rao and Kurian (1950) in Rao's (1961) key in its characters of 1st tergite, mesoscutum, tegulae and head but differs from the same in having: i. transversely carinate propodeal areola, ii. metacarp shorter than the length of stigma, iii. 1st abscissa of radius 1.2 x the length of transverse cubitus, iv. inner spur of hind tibia 0.5 the length of hind basitarsus, v. disc of scutellum with shallow lateral punctae, vi. ovipositor sheath slightly longer than hind tibia and vii. recurrent much longer than 1st abscissa of cubitus.
Apanteles (Areolatus) nigripes, sp. nov.

♂: 2.9 mm.

Head: viewed from above (Fig. 5) nearly oval, 1.9 x as broad as long; vertex smooth, shiny, moderately pubescent; interorbital space 0.65 the breadth of head; ocelli prominent, in a triangle, ocellocular space 1.2 x the interocellar, front ocellar space 0.38 the interocellar and 0.66 the ocellar breadth; frons smooth, shiny; face (Fig. 2) slightly convex, 1.6 x as broad as long, shallowly, sparsely punctate, moderately pubescent; clypeus and labrum smooth, shiny, moderately pubescent, supraclypeal fovea small, clypeo-facial suture indistinct; antenna filiform, long, 1.2 x as long as body; scape (Fig. 7) 1.4 x as long as broad; pedicel 2.4 x as broad as long, 0.25 the length of scape; 1st flagellar segment 3.0 x as long as broad; 15th segment 4.18 x as long as broad; 16th and penultimate segments similar, each 2.5 x as long as broad; terminal segment (Fig. 3) elongated, 1.3 x as long as penultimate, 3.0 x as long as broad; head from side 1.5 x as high as wide, temple rugulose,
PLATE XII

Apanteles (Areolatus) nigripes, sp. nov. ♂

1. Part of fore wing,
2. head viewed from front,
3. hind wing,
4. basal three abdominal tergites,
5. head viewed from above,
6. propodeum,
7. scape, pedicel and first three flagellar segments,
8. hind tibia and basitarsus and
9. terminal six antennal segments.
moderately pubescent, 0.4 the width of head; eye
moderately pubescent, 1.8 x as long as broad; malar
space rugulose, length equal to the basal width of
mandible, with a well marked subocular suture.

Thorax: breadth between tegulae equal to
that of head; proscutum rugulose, dorsal furrow well
marked; mesoscutum closely, deeply, strongly punctate
throughout, moderately pubescent; disc of scutellum
slightly convex, smooth, shiny, sparsely pubescent,
scutellar furrow well marked with longitudinal
carinae, scutellar sulci carinate, area beyond
glabrous; metanotum with one median and two lateral,
oval depressions; propodeum (Fig. 6) 2.0 x as broad
as long, rugose anteriorly, with transversely carinate,
oval, closed areola as in figure 6, with lateral
costulae; spiracle oval, touching the propodeal
margin; pronotum rugose; anterior half of
mesopleuron strongly, deeply, closely punctate,
moderately pubescent, posterior half smooth, shiny
and posterior margin bounded by a carinate furrow;
anterior half of metapleuron smooth, shiny, with a
median deep fovea, posterior half strongly rugoso-
punctate, moderately pubescent. Fore wing (Fig. 1)
2.7 mm. long, 1.15 mm. broad; stigma broad, 2.5 x as
long as broad; metacarp 1.15 x the length of stigma, 4.5 x as long as its distance from the apex of radial cell; 1st abscissa of radius well angled with transverse cubitus, 0.9 the breadth of stigma, 1.6 x the length of transverse cubitus, 1.1 x the length of recurrent; pigmented portion of 2nd abscissa of cubitus shorter than 1st abscissa, recurrent 1.5 x the transverse cubitus; 2nd discoideus 1.5 x the 1st discoideus; discoidal cell as long as broad; median cell with sparse, long, dark setae throughout; hind wing (Fig. 3) narrow, 3.15 x as long as broad; vannal lobe straight beyond its widest part; nervellus as long as anal; cubitellian cell longer than broad. Hind coxa smooth, shiny, moderately pubescent; hind tibia (Fig. 8) 1.9 x as long as hind basitarsus with stout spines on outer side, tibial spurs unequal, inner spur 2.36 x as long as outer and 0.5 the length of basitarsus; terminal segment of front tarsus without any spine.

Abdomen: slightly shorter than thorax; 1st tergite (Fig. 4) excavate anteriorly, broader at base, narrowed at apex, in anterior 0.8 parallel sided, median length 3.0 x apical breadth, strongly rugose throughout, with few strong, deep punctae and
an elongated depression posteriorly; 2nd tergite transverse, rugulose, sparsely pubescent, 4.0 x as broad as long, with lateral diverging, discal sulci as in figure 4; 3rd tergite smooth, shiny, moderately pubescent, 1.8 x as broad as long, 2.5 x as long as 2nd tergite; remaining tergites smooth and shiny.

Body: black; coxae black; antenna, stigma, veins and tegulae blackish-brown; apical half of hind femur, apical half of hind basitarsus, apical 0.33 of hind tibia dark blackish-brown; fore and mid legs, hind trochanter, basal half of hind femur, basal 0.66 of hind tibia, basal half of hind basitarsus, remaining tarsal segments, palpi and spurs yellow testaceous.

Holotype O, "M.R. Chalikwar Coll., Chikalthana, Aurangabad, on weeds 27.ix.1970": legs, antenna, wings mounted on slides and labelled as above.

Discussion: This species runs close to *Apanteles carinatus*, sp. nov. in its characters of mesoscutum, propodeum and abdominal tergites but differs from the same in having: i. hyaline wings, ii. vannal lobe straight beyond its widest part, iii. metacarp 1.15 x the length of stigma and 4.5 x as long as its distance from the apex of radial cell, iv. pigmented
portion of 2nd abscissa of cubitus shorter than its 1st abscissa, v. inner spur of hind tibia 2.36 x as long as outer, vi. smooth and shiny disc of scutellum, vii. smooth and shiny vertex and viii. terminal segment of antenna 3.4 x as long as broad.
Apanteles (Carinatus) indicua, sp. nov.

♀: 2.4 mm.

Head: viewed from above nearly rectangular, 1.75 x as broad as long; vertex smooth, shiny, moderately pubescent; interorbital space 0.61 the breadth of head; ocelli prominent, in a triangle, ocellocular space equal to interocellar, 0.33 the interorbital space, front ocellar space 0.5 the interocellar and equal to its own breadth; occiput slightly concave, smooth, shiny; frons slightly concave, shiny, moderately pubescent, rough; face (Fig. 4) slightly convex, sparsely, shallowly punctate, moderately pubescent, 1.66 x as broad as long; clypeus slightly convex, sparsely, shallowly punctate, sparsely pubescent; antenna shorter than body, finely pubescent; scape cup-shaped, breadth at apex 0.66 the length, pedicel broader at base than at apex; 1st flagellar segment as long as 2nd, 3.0 x as long as broad; 15-17 segments similar, each 1.5 x as long as broad, terminal segment (Fig.2) 2.2 x as long as broad, 1.4 x as long as penultimate, rest of the details as in figure 2; eye moderately
PLATE XIII

Apanteles (Carinatus) indicus, sp. nov.

Figs. 1-7 : ♀ and 8 : ♂

1. Part of fore wing,
2. terminal five antennal segments,
3. hind wing,
4. head viewed from front,
5. basal three abdominal tergites,
6. hind tibia and tarsus,
7. terminal segment of front tarsus and
8. genitalia.
pubescent, margin straight, 1.5 x as long as broad; palpi densely pubescent; head from side 1.44 x as high as wide; temple sparsely, minutely punctate, sparsely pubescent; 0.5 the width of head; malar space 0.2 the height of head, 0.26 the length of eye, shallowly punctate, sparsely pubescent.

**Thorax**: breadth between tegulae equal to that of head, less than height of thorax; proscutum deeply, sparsely punctate; mesoscutum strongly convex, moderately pubescent, closely, deeply punctate in middle, punctae shallow and well separated laterally; disc of scutellum moderately convex, with close, deep punctae; metanotum with a median circular and two lateral oval depressions; propodeum slightly convex, 1.5 x as broad as long, strongly rugoso-reticulate throughout, without carinae, very sparsely pubescent, spiracle small, circular; propleuron smooth; mesopleuron closely, deeply punctate anteriorly, smooth, shiny posteriorly; metapleuron closely, strongly punctate. Fore wing (Fig. 1) 2.4 mm. long, 0.95 mm. broad; stigma 2.7 x as long as broad; metacarp nearly equal to the length of stigma, 2.5 x as long as its distance from the apex of radial cell; 1st abscissa of radius 0.6 the breadth of stigma, as
long as transverse cubitus, 0.66 the recurrent; 1st abscissa of radius and transverse cubitus well angled; 1st discoideus shorter than 2nd; discoidal cell 4 : 4.5; median cell with dark setae throughout; hind wing (Fig. 3) narrow, 3.7 x as long as broad; vannal lobe convex beyond its widest part, fringed with fine setae; nervellus as long as anal; other details as in figure 3. Hind coxa stout, moderately pubescent, closely, deeply punctate; hind tibia (Fig. 6) with few spines on outer side, tibial spurs equal, 0.5 the length of hind basitarsus, latter 0.45 the length of hind tibia; terminal segment of front tarsus (Fig. 7) with a fine curved spine.

**Abdomen**: shorter than thorax, nearly spindle shaped; 1st tergite (Fig. 5) broader at apex, median length as long as apical breadth, breadth at apex 2.0 x the same at base, strongly rugoso-reticulate throughout; 2nd tergite strongly rugose, maximum breadth 2.2 x the median length, lateral sulci wanting; 3rd tergite entirely smooth, shiny, very sparsely pubescent, as long as 2nd tergite, 0.47 its maximum breadth; rest of tergites smooth, shiny; ovipositor sheath slightly shorter than half the length of hind tibial spur, sparsely pubescent.
Body: black; antenna dark brown; mandibles, hind tarsal segments, hind femur at apex and wing veins brown; hind coxae black; tegulae, legs except hind coxae, hind tarsal segments and apices of hind femur yellow; palpi pale yellow.

♂: 2.00 mm.; similar to ♀ in all essential details but differs in the following characters: antenna as long as body, penultimate segment 1.7 x as long as broad; genitalia (Fig. 8) 0.32 mm. long, 1.33 x as long as broad; parameral plate 0.75 the length of genitalia, pointed at base, blunt at apex, beset with a few hairs externally in 0.33 apical part; volsella 0.65 the length of parameral plate; digitus mandibuliform, with teeth directed to the side; aedeagus slightly shorter than parameral plate.

Holotype ♀, "P.K. Nikam Coll., Himayat Bagh, Aurangabad, on jowar, 17.xi.1967"; paratypes 2 ♀ ♂, labelled as holotype; 4 ♀ ♂, 6 ♀ ♂, on pin and 4 ♀ ♂, 4 ♀ ♂ in 90 % alcohol, "S.V. Deshpande Coll., Aurangabad, on jowar, 25.xii.1970"; wings, legs, antenna and genitalia mounted on slides and labelled as above.

Cocoons: white, 3.1 mm. long.
**Host**: Armyworm (*Leucania unipuncta* Haworth).

**Biology**: Cocoons were collected on jowar (*Sorghum vulgare* Pers.) plants at Himayat Bagh, Aurangabad, on 15.xi.1967; 3 ♀ ♂ emerged from these on 17.xi.1967. Besides one parasitized armyworm larva “collected on jowar, on 20.xii.1970 at Aurangabad” was passed on to me by Shri S.V. Deshpande. Cocoons were noticed on this larva on 22.xii.1970; 8 ♀ ♂ and 9 ♂ ♂ emerged from these cocoons on 25.xii.1970.

**Discussion**: This species runs close to *Apanteles epijarbi* Rao (1953) in Rao’s (1961) key in its characters of head, mesoscutum, propodeum, hind coxa and 3rd tergite but differs from the same in having: i. metacarp equal to the length of stigma and 2.5 x as long as its distance from the apex of radial cell, ii. 1st abscissa of radius as long as transverse cubitus, iii. 1st tergite with its median length equal to its apical breadth and iv. equally long hind tibial spurs.
Apanteles (Carinatus) orientalis, sp. nov.

\[ \text{♀} : 2.8 \text{ mm.} \]

**Head**: viewed from above nearly rectangular, 1.75 x as broad as long; vertex smooth, shiny medially, with very very shallow punctae laterally; interorbital space 0.63 the breadth of head; ocelli in a triangle, ocellocular space equal to interocellar, front ocellar space 0.4 the interocellar and equal to its own breadth; frons smooth, shiny; face (Fig. 3) slightly convex, with median elevation, closely, very shallowly punctate, moderately pubescent, 1.5 x as broad as long; clypeus transverse, smooth, shiny, moderately pubescent, supraclypeal fovea deeply and broadly impressed; labrum smooth, shiny, with long setae; antenna shorter than body, filiform; scape (Fig. 4) 1.5 x as long as broad; pedicel as in figure 4; 15th and 16th segments similar, each 1.4 x as long as broad; penultimate segment 1.33 x as long as broad and shorter than 16th segment; terminal segment (Fig. 5) 1.4 x as long as penultimate, 2.0 x as long as broad; head from side 1.5 x as high as wide, temple 0.4 the width of head, moderately
PLATE XIV

Apanteles (Carinatus) orientalis, sp. nov.

Figs. 1-9 : Q ; 10 and 11 : ♂

1. Fore wing,
2. hind wing,
3. head viewed from front,
4. scape, pedicel and first two flagellar segments,
5. terminal six antennal segments,
6. part of thorax,
7. ovipositor sheath with a few apical abdominal segments,
8. basal three abdominal tergites,
9. hind tibia and basitarsus,
10. terminal six antennal segments and
11. genitalia.
pubescent, closely, very shallowly punctate; eye
moderately pubescent, 1.66 x as long as broad; malar
space rugulose, equal to the basal width of mandible,
0.17 the height of head, with a well marked subocular
suture.

**Thorax**: breadth between tegulae slightly
less than that of head, shorter than height of
thorax; proscutum sparsely, deeply punctate, with
distinct dorsal and lateral carinate furrows;
mesoscutum closely, deeply punctate throughout,
moderately pubescent; disc of scutellum moderately,
shallowly punctate, scutellar furrow and sulci
carinate, area beyond glabrous; metanotum (Fig. 6)
with a median circular, medially divided depression
and two lateral, oval, longitudinally carinate
depressions, rest smooth, shiny; propodeum (Fig. 6)
2.0 x as broad as long, strongly rugoso-reticulate,
very sparsely pubescent; spiracle circular, situated
near the propodeal margin, other details as in
figure 6; propoleurum smooth; anterior 0.66 of
mesopleurum closely, deeply punctate, moderately
pubescent, posterior 0.33 smooth in the dorsal half and
shallowly punctate in the ventral half, posterior margin
bounded by a carinate furrow; anterior corner and posterior
half of metapleurum rugosely punctate, moderately pubescent, medially smooth, shiny. Fore wing (Fig. 1) 2.7 mm. long, 1.1 mm. broad; stigma 2.5 x as long as broad; metacarp slightly longer than the length of stigma, 3.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius 0.87 the breadth of stigma, 1.2 x the length of transverse cubitus, nearly equal to the length of recurrent; pigmented portion of 2nd abscissa of cubitus nearly as long as 1st abscissa; 1st discoideus 0.66 the 2nd; discoidal cell slightly broader than long; median cell with sparse, dark setae; hind wing (Fig. 2) narrow, 3.4 x as long as broad; nervellus as long as anal; vannal lobe convex beyond its widest part, fringed with minute setae. Hind coxa elongated, moderately pubescent, closely, deeply punctate dorsally; hind tibia (Fig. 9) 1.86 x the length of basitarsus, with stout spines on outer side, tibial spurs unequal, outer spur 0.75 the length of inner, latter 0.46 the length of hind basitarsus; terminal segment of front tarsus without any spine.

Abdomen: spindle shaped, as long as thorax; 1st tergite (Fig. 8) slightly broader at apex than at base, excavate anteriorly, anterior half smooth,
shiny, posterior half sparsely, deeply punctate, rugose, sparsely pubescent; 2nd tergite 2.75 x as broad as long, shiny, with few deep punctae medially, rugoso-punctate laterally, sparsely pubescent; 3rd tergite smooth, shiny, sparsely pubescent, 2.0 x as broad as long, 1.4 x as long as 2nd tergite; remaining tergites smooth, shiny, sparsely pubescent; ovipositor sheath as long as inner spur of hind tibia, with few hairs at apex.

**Body**: black; scape at apex, pedicel, flagellum, mandibles, all coxae, apices of femur and tibia and tarsal segments of hind leg, stigma and veins of fore wing and abdomen except 3rd and membranous margins of first two tergites dark brown; basal 0.7 part of scape, tegulae, fore and mid legs except coxae, hind trochanters, hind femur and hind tibia except apices, 3rd tergite, membranous margins of first two tergites and vertex yellow; palpi and tibial spurs pale yellow; wings hyaline; veins of hind wing faint brown.

O'2.5 mm; antenna longer than body; 16th segment 3.2 x as long as broad; penultimate segment 3.0 x as long as broad; terminal segment (Fig. 10)
longer than penultimate, 4.25 x as long as broad; stigma 2.7 x as long as broad, 1st abscissa of radius nearly equal to the breadth of stigma, 1.25 x the length of transverse cubitus; abdomen dark brown except membranous margins of first two tergites; genitalia (Fig. 11) 0.7 mm. long, gonobase with median concavity; parameral plate 0.75 the length of genitalia, beset with a few hairs in apical 0.33 part; volsella 0.66 the length of parameral plate; aedeagus shorter than parameral plate, tapering at both ends, maximum width across middle, aedeagal apodeme extending towards the base of gonobase.

Holotype ♀, "M.R. Chalikwar Coll., Botanic Garden, Marathwada University, Aurangabad, on Cajanus cajan (Linn.) Millsp., 5.1.1969"; wings, legs and antenna mounted on slides and labelled as above; paratypes 2 ♂♂, "M.R. Chalikwar Coll., PL-480 field, Marathwada University, Aurangabad, on Cajanus cajan (Linn.) Millsp., 5.iii.1970"; wings, legs, antenna and genitalia mounted on slides and labelled as above; 1 ♀, "M.R. Chalikwar Coll., Botanic Garden, Marathwada University, Aurangabad, on Cajanus cajan (Linn.) Millsp., 31.xii.1968"; 2 ♀ ♀, labelled as holotype.
**Cocoons**: white, 4.00 mm. long, made up of white threads.

**Host**: larva of *Exelastes* sp. feeding on leaves and pods of *Cajanus cajan* (Linn.) Millsp.

**Discussion**: This species runs close to *Apanteles taprobanae* Cameron (1897) in Rao's (1961) key in its characters of mesescutum, 2nd tergite and some veins of fore wing but differs from the same in having: i. unequal hind tibial spurs, ii. recurrent 1.17 x the length of transverse cubitus, iii. 1st tergite slightly broader at apex than at base, iv. entirely smooth and shiny 3rd tergite, v. ocellocular space equal to interocellar and vi. yellow tegulae.
Apanteles (Carinatus) diurnii, sp. nov.

Q = 2.7 mm.

Head: viewed from above broadly rectangular, 1.78 x as broad as long; vertex smooth, shiny, sparsely pubescent; interorbital space 0.65 the breadth of head; ocellocular space slightly more than interocellar, front ocellar space 0.38 the interocellar and slightly less than ocellar breadth; frons smooth, shiny; face (Fig. 5) 1.6 x as broad as long, with a median longitudinal elevation, smooth, shiny, moderately pubescent; eyes slightly convergent below; clypeus smooth, shiny, well demarcated from face, supraclypeal fovea deeply impressed; labrum smooth, shiny, moderately pubescent; antenna 0.84 the length of body, filiform; scape 1.5 x as long as broad; pedicel 1.6 x as broad as long, 0.33 the length of scape; 1st flagellar segment slightly longer than 2nd and 2.57 x as long as broad; 15th and 16th segments similar, each as long as broad; penultimate segment 1.12 x as long as broad; terminal segment (Fig. 8) 1.75 x as long as broad, 1.5 x the length of penultimate; head from side 1.5 x as high as wide,
PLATE XV

Apanteles (Carinatus) diurnii, sp. nov. ♀

1. Part of fore wing,
2. basal three abdominal tergites,
3. hind wing,
4. ovipositor with a few apical abdominal segments,
5. head viewed from front,
6. propodeum,
7. hind tibia and basitarsus and
8. terminal seven antennal segments.
temple smooth, shiny, moderately pubescent, 0.33
the width of head; eye moderately pubescent, 1.7 x as
long as broad; malar space 1.25 x the basal width of
mandible, 0.17 the height of head and with a well
marked subocular suture.

Thorax: breadth between tegulae equal to
that of head, nearly equal to the greatest height of
thorax; proscutum smooth, shiny, with sparse, very
shallow punctae, moderately pubescent, with dorsal
and lateral furrows; mesoscutum moderately pubescent,
with close, very shallow punctae, disc of scutellum
slightly convex, as long as broad, smooth, shiny,
sparsely pubescent, scutellar furrow well marked,
with longitudinal carinae; metanotum with a median
circular and two lateral, oval depressions, rest smooth
and shiny; propodeum (Fig. 6) 2.0 x as broad as long,
strongly rugoso-reticulate, with a faint wavy,
transverse basal carina; spiracle large, oval,
touching propodeal margin; propleurum smooth, shiny;
mesopleurum shallowly, closely punctate, moderately
pubescent anteriorly, glabrous posteriorly;
metapleurum with a median furrow, anterior half smooth,
shiny, posterior half rugose, moderately pubescent.
Fore wing (Fig. 1) 2.5 mm. long, 1.0 mm. broad; stigma
2.25 x as long as broad; metacarp nearly equal to the length of stigma, 3.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius 0.8 the breadth of stigma, 1.6 x the length of transverse cubitus, 1.2 x the length of recurrent, latter 1.3 x the length of transverse cubitus; 1st discoideus 0.75 the 2nd; discoidal cell as long as broad; hind wing (Fig. 3) 3.48 x as long as broad; vannal lobe convex, fringed with fine, sparse setae; cubitellum cell longer than broad. Hind coxa elongated, smooth, shiny; hind tibia (Fig. 7) with strong spines on outer side; tibial spurs equal, 0.4 the length of hind basitarsus, latter 0.56 the length of hind tibia; terminal segment of front tarsus without any spine.

**Abdomen** : spindle shaped, as long as thorax; 1st tergite (Fig. 2) slightly broader at apex than at base, median length 1.33 x the maximum breadth, excavate anteriorly, posterior half rugosely, shallowly punctate, sparsely pubescent; 2nd tergite 2.6 x as broad as long, rugose, shallowly, sparsely punctate, sparsely pubescent, with diverging, incomplete sulci; 3rd tergite entirely smooth, shiny, sparsely pubescent, 1.8 x as broad as long, median length nearly 1.5 x the length of 2nd tergite; ovipositor exerted, ovipositor
sheath (Fig. 4) short, with a few setae at apex, nearly half the length of hind basitarsus; hypopygium evenly sclerotized.

**Body**: black; antenna, coxae, extreme apex of hind femur, apex of hind tibia, stigma, ovipositor sheath, first two tergites and tegulae dark brown; labrum, mandibles, all legs except coxae and apices of hind tibia and hind femur, wing veins and lateral membranous margins of 1st tergite yellow; wings hyaline.

**Holotype**: ♀, **paratype**: ♀, "M.R. Chalikwars Coll., Botanic Garden, Marathwada University, Aurangabad, on Cajanus cajan (Linn.) Millsp., 31.xii.1968"; antenna, legs, wings mounted on slides and labelled as above.

**Cocoons**: white, 3.5 mm. long.

**Host**: larva of *Exelastes* sp. feeding on leaves and pods of *Cajanust cajan* (Linn.) Millsp.

**Discussion**: This species runs close to *Apanteles exelastigae* Bhatnagar (1948) in Rao's (1961) key in its characters of mesoscutum, hind leg and 2nd tergite but differs from the same in having: i. 1st tergite slightly broader at apex than at base, median length 1.33 x the maximum breadth, ii. smooth
and shiny disc of scutellum, iii. eyes slightly convergent below, iv. propodeum without median longitudinal carina, v. 1st abscissa of radius 0.8 the breadth of stigma, vi. entirely smooth, shiny 3rd tergite, vii. smooth, shiny vertex and viii. scale 1.5 x as long as broad.
Apanteles (Carinatus) rugulosus, sp. nov.

♀ : 3.00 mm.

Head : viewed from above (Fig. 3) nearly rectangular, 1.88 x as broad as long; vertex smooth, shiny, moderately pubescent; interorbital space 0.6 the breadth of head; ocelli prominent, in a triangle, ocellocular space 0.8 the interocellar, front ocellar space 0.4 the interocellar, equal to its own breadth; frons smooth, shiny; face (Fig. 6) 1.6 x as broad as long, slightly convex, with a median longitudinal ridge, very shallowly punctate, moderately pubescent; clypeus moderately pubescent, with very shallow, moderate punctae; labrum smooth, with long setae; antenna nearly as long as body, densely pubescent; scape (Fig. 10) 1.5 x as long as broad; pedicel 2.0 x as broad as long; 1st flagellar segment slightly longer than 2nd, 2.45 x as long as broad; 16th segment 2.0 x as long as broad; penultimate segment 1.83 x as long as broad; terminal segment (Fig. 4) conical, 1.27 x as long as penultimate, 2.5 x as long as broad; head from side 1.44 x as high as wide, temple 0.22 the width of head, smooth, shiny, moderately pubescent; eye 1.7 x as long as broad,
PLATE XVI A

Apanteles (Carinatus) rugulosus, sp. nov. ♀

1. Part of fore wing and
2. hind wing.
moderately pubescent; malar space rugoso-punctate, with a subocular suture, length 1.5 x the basal width of mandible and 0.15 the height of head.

**Thorax**: breadth between tegulae more than that of head; proscutum deeply, sparsely punctate, with dorsal and lateral carinate furrows; mesoscutum closely, deeply punctate throughout, moderately pubescent; disc of scutellum slightly convex, as long as broad, closely, shallowly punctate, moderately pubescent, scutellar furrow well carinate, scutellar sulci deep, carinate, area beyond glabrous and interrupted at middle by rugoso-punctate area; metanotum with a median oval depression, with a longitudinal carina in it and two lateral, oval depressions, with longitudinal carinae; propodeum (Fig. 5) 2.0 x as broad as long, strongly rugoso-reticulate, with a median longitudinal carina; spiracle oval, separated from propodeal margin by 0.33 of its own breadth; anterior half of mesopleurum closely, deeply punctate, moderately pubescent, posterior half smooth, shiny and posterior margin bounded by a carinate furrow; metapleurum anteriorly and posteriorly rugoso-reticulate, sparsely pubescent, medially smooth, shiny. Fore wing (Fig. 1) 3.2 mm.
PLATE XVI B

Apanteles (Carinatus) rugulosus, sp. nov. ♀

3. head viewed from above,
4. terminal seven antennal segments,
5. propodeum,
6. head viewed from front,
7. basal three abdominal tergites,
8. ovipositor with a few apical abdominal segments,
9. hind tibia and tarsus and
10. scape, pedicel and first two flagellar segments.
long, 1.3 mm. broad; stigma 2.5 x as long as broad; metacarp slightly longer than the length of stigma, 3.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius 1.1 x the breadth of stigma, 1.75 x the length of transverse cubitus, 1.43 x the recurrent, latter slightly longer than transverse cubitus; 2nd discoideus 1.4 x the length of 1st discoideus; median cell with sparse, dark setae in anterior half only; hind wing (Fig. 2) 3.0 x as long as broad; vannal lobe straight beyond its widest part; anal slightly longer than nervellus; cubitellan cell longer than broad, other details as in figure 2. Hind coxa with shallow and sparse punctae dorsally, smooth and shiny laterally; hind tibia (Fig. 9) 1.8 x the length of hind basitarsus, with many strong and stout spines on outer side, tibial spurs subequal, inner spur 0.45 the length of basitarsus; terminal segment of front tarsus without any spine.

**Abdomen** : as long as thorax, sparsely pubescent; 1st tergite excavate anteriorly, strongly rugoso-punctate posteriorly, as long as broad, slightly broad posteriorly, apical corners rounded as in figure 7; 2nd tergite transverse, strongly
rugose, 3.0 x as broad as long, basally and apically margined by pitted furrows, with lateral curved sulci; 3rd tergite 2.4 x as broad as long, 1.5 x as long as 2nd tergite, entirely rugulose except for the smooth apical region; remaining tergites smooth, shiny; ovipositor short, exserted, ovipositor sheath (Fig. 8) with few setae at apex, 0.73 the length of hind basitarsus, 1.6 x the length of inner spur of hind tibia.

Body: black; antenna, tegulae, wing veins, stigma, all coxae, trochanters, hind femur at apex, hind tibia at apex, hind tarsal segments except base of basitarsus dark brown; fore and mid legs except coxae and trochanters, all trochanterellus, hind femur except at apex, hind tibia except at apex, hind basitarsus at base, tibial spurs and membranous margins of first two tergites yellow; basal three tergites yellowish-brown.

Holotype ♀, "M.R. Chalikwar Coll., on weeds, Chikalthana, Aurangabad, 22.viii.1969"; antenna, wings and legs mounted on slides and labelled as above; paratypes 1 ♀, labelled as holotype; 1 ♀, "M.R. Chalikwar Coll., on weeds, Aurangabad, 26.viii.1969"; 1 ♀, "M.R. Chalikwar Coll., on weeds, Ambulga, Nanded district, 3.ix.1970".
**Discussion**: This species runs close to *Ananteles ruidus* Wilkinson (1928) in Rao's (1961) key in its characters of mesoscutum, disc of scutellum, 1st and 3rd tergites but differs from the same in having: i. 1st abscissa of radius 1.1 x the breadth of stigma, 1.43 x the length of recurrent, 1.75 x the length of transverse cubitus, ii. smooth and shiny vertex, iii. hind coxa shallowly and sparsely punctate dorsally, iv. ovipositor sheath 1.6 x the length of inner spur of hind tibia and v. propodeum with only median longitudinal carina.
Ananteles (Carinatus) giganticus, sp. nov.

♀ : 3.00 mm.

Head : viewed from above broadly rectangular, 1.72 x as broad as long; vertex shallowly, moderately punctate, moderately pubescent; interorbital space 0.63 the breadth of head; ocelli prominent, in a triangle, ocellocular space 0.83 the interocellar, front ocellar space 0.4 the interocellar and equal to its own breadth; occiput slightly concave, smooth, shiny; face (Fig. 4) 1.41 x as broad as long, slightly convex, with median longitudinal elevation, moderately, shallowly punctate, moderately pubescent; clypeus demarcated from face, closely, shallowly punctate, moderately pubescent, supraclypeal fovea well marked; labrum smooth, shiny, sparsely pubescent; antenna (broken) filiform, finely pubescent; scape cup-shaped, 1.56 x as long as broad; pedicel 0.25 the length of scape; 1st flagellar segment 3.0 x as long as broad; head from side oval, 1.5 x as high as wide, temple moderately, shallowly punctate, 0.28 the width of head; eye moderately pubescent, 1.43 x as long as broad; malar space shallowly, sparsely punctate, equal to the basal width of mandible, 0.15 the height of
PLATE XVII

Apanteles (Carinatus) giganticus, sp. nov.

Figs. 1-6: ♀; 7-9: ♂

1. Part of fore wing,
2. basal three abdominal tergites,
3. hind wing,
4. head viewed from front,
5. ovipositor with a few apical abdominal segments,
6. propodeum,
7. genitalia,
8. hind tibia and tarsus and
9. terminal five antennal segments.
head, with a well marked subocular suture.

Thorax: breadth between tegulae nearly equal to that of head; proscutum shallowly punctate, shiny; mesoscutum slightly convex, closely, deeply punctate, moderately pubescent; disc of scutellum moderately, deeply punctate; metanotum with a median circular and two lateral, oval depressions, area beyond the circular depression closely, deeply punctate; propodeum (Fig. 6) 2.0 x as broad as long, rugose anteriorly, rugulose posteriorly, very sparsely pubescent, with a very strong median, longitudinal carina and a weak transverse, basal carina, longitudinal carina giving out short, lateral carinae as in figure 6; spiracle small, oval, separated from propodeal margin by 0.33 of its breadth; propleuron smooth, shiny; mesopleuron closely, deeply punctate anteriorly, glabrous posteriorly, posterior margin bounded by a deep carinate furrow; metapleuron smooth, shiny anteriorly, shallowly, rugosely punctate, sparsely pubescent posteriorly. Fore wing (Fig. 1) 3.3 mm. long, 1.3 mm. broad; stigma 3.0 x as long as broad; metacarp long, almost closing the radial cell, 1.3 x as long as stigma, 6.2 x as long as its distance from the apex of radial cell; 1st abscissa of radius angled with
transverse cubitus, nearly as long as latter, 1.15 x the breadth of stigma, 1.5 x the recurrent; 1st discoideus shorter than 2nd; discoidal cell as long as broad; hind wing (Fig. 3) narrow, 3.85 x as long as broad; vannal lobe straight beyond its widest part, fringed with minute setae. Hind coxa smooth, shiny, elongated; hind tibia (Fig. 8) (drawn from male specimen) densely setose, with strong spines on outer side; tibial spurs unequal, inner spur 2.0 x the outer and 0.65 the length of basitarsus, latter 0.55 the length of hind tibia; tarsal segments densely setose; terminal segment of front tarsus without any spine.

Abdomen: nearly as long as thorax, roughly spindle shaped; 1st tergite (Fig. 2) strongly narrowed posteriorly, excavate anteriorly, sparsely, deeply punctate, rugose, sparsely pubescent posteriorly, polished at extreme apex, median length 4.0 x the apical breadth; 2nd tergite smooth, shiny, very very sparsely pubescent, apical width 3.0 x the median length and 3.0 x the basal width, with two lateral, diverging, straight sulci; 3rd tergite entirely smooth, shiny, sparsely pubescent, median length 1.5 x the length of 2nd tergite, maximum
breadth 2.6 x the median length; ovipositor long, exerted, with apical attenuation; ovipositor sheath 0.75 the length of hind tibia, moderately pubescent.

**Body** : black; scape at apex, flagellum, clypeus, stigma, veins, hind tarsal segments and 1st tergite dark brown; wings faint brown; labrum, mandibles, scape at base, tegulae, all legs except hind tarsal segments and membranous margins of first two tergites yellow; palpi pale yellow.

\[ \varphi \] 3.00 mm., similar to \( \varphi \) in all essential details in addition to the following characters: antenna long, 1.5 x as long as body; 15th segment 3.0 x as long as broad; 16th segment 3.1 x as long as broad, shorter than 15th; penultimate segment 3.0 x as long as broad; terminal segment (Fig. 9) longer than penultimate, 3.4 x as long as broad; genitalia (Fig. 7) 0.4 mm. long; parameral plate 0.7 the length of genitalia, pointed basally, blunt apically, beset with a few hairs in apical 0.33 part; volsella 0.74 the length of parameral plate, cuspis directed inwardly; aedeagus and other details as in figure 7.

It however differs from the \( \varphi \) in the propodeum having strong, transverse, basal carina and a few ascending oblique carinae in the apical corners.
Holotype ♀, paratypes 1 ♀, 5 ♂♂, "M.R.
Chalikwar Coll., Govt. Agricultural College field,
Parbhani, on weeds, 30.ix.1968"; wings, legs, antenna
and genitalia mounted on slides and labelled as above.

Discussion: This species runs close to
Apanteles sundanus Wilkinson (1930) in Rao's (1961)
key in its characters of propodeum, wings, 1st tergite
and hind tibial spurs but differs from the same in
having: 1. closely, deeply punctate mesoscutum,
ii. moderately, deeply punctate disc of scutellum,
iii. entirely yellow hind coxa and hind tibia, iv.
dark brown hind tarsal segments and v. moderately
punctate face.
Apanteles (Carinatus) deepica Rao & Chalikwar

1971. Apanteles deepica Rao & Chalikwar
Mar. Univ. J. Sci., 10(2) : 181-182, ♂

The holotype description of this species by Rao & Chalikwar was from the ♂ only. Recently one ♀ of this species was collected and described below to complete the description of this species. The more important characters of ♂ ♂ are as below: the propodeum with V-shaped, apical, longitudinal carinae; the metacarp longer than stigma; the disc of scutellum sparsely, shallowly punctate and 2nd tergite smooth, shiny, sparsely pubescent, with a transverse row of six moderate punctae at apex.

This species is now included in the subgenus Carinatus proposed as one of the 2 subgenera in this thesis.

♀ : 2.7 mm.

Head: viewed from above nearly rectangular; 1.88 x as broad as long; vertex smooth, shiny, sparsely pubescent; interorbital space 0.6 the breadth of head; ocelli prominent, in a triangle, ocellocular space 1.2 x interocellar, front ocellar space 0.5 the
interocellar, slightly less than ocellar breadth; occiput smooth, shiny; frons smooth, shiny; face slightly convex with median elevation, sparsely and very shallowly punctate, sparsely pubescent, 1.5 x as broad as long; clypeus sparsely, shallowly punctate, sparsely pubescent, supraclypeal fovea small, deeply impressed, clypeo-facial suture distinct; eye margin straight; antenna 1.1 x the length of body, filiform, finely pubescent; scape 1.5 x as long as broad; pedicel 0.28 the length of scape, 1st flagellar segment 1.25 x as long as scape and pedicel combined; 14-17 segments similar, each 1.83 x as long as broad; terminal segment 1.36 x as long as penultimate, 2.0 x as long as broad; head from side 1.4 x as high as wide, temple very shallowly punctate, sparsely pubescent, 0.33 the width of head; eye moderately pubescent, 1.6 x as long as broad; malar space closely, deeply punctate, 2.0 x the basal width of mandible, with a well marked subocular suture.

Thorax: breadth between tegulae equal to that of head; proscutum smooth, shiny, with dorsal and lateral furrows; mesoscutum deeply punctate, punctae well separated, moderately pubescent; disc of scutellum slightly convex, sparsely, shallowly
punctate, sparsely pubescent, scutellar sulci carinate, area beyond glabrous; metanotum with a median circular and two lateral, oval depressions; propodeum 2.1 x as broad as long, rugose throughout, with a few shallow punctae basally, having a median longitudinal, oval depression and 2 longitudinal, oblique, short carinae apically; spiracle circular, separated from propodeal margin; propodeum smooth, shiny; anterior 0.33 of mesopleurum closely, deeply punctate, sparsely pubescent, posterior 0.66 smooth, shiny, posterior margin bounded by a carinate furrow; metapleurum smooth, shiny. Fore wing 2.6 mm. long, 1.00 mm. broad; stigma 3.0 x as long as broad; metacarp 1.15 x the length of stigma, 6.0 x as long as its distance from the apex of radial cell; 1st abscissa of radius slightly shorter than the breadth of stigma, nearly equal to the transverse cubitus, slightly longer than recurrent; 1st discoideus slightly longer than half of the 2nd; discoidal cell slightly longer than broad; median cell with dark setae throughout; hind wing narrow, 3.7 x as long as broad, nervellus shorter than anal; vannal lobe convex, fringed with minute setae. Hind coxa smooth; hind tibia 2.1 x the length of basitarsus, tibial spurs unequal, inner spur 0.55 the basitarsus, 1.6 x as long as outer spur.
**Abdomen** : slightly longer than thorax; 1st tergite parallel sided up to basal 0.75, later converging, smooth, shiny anteriorly, sparsely, shallowly punctate posteriorly, median length 1.8 x the maximum breadth and 3.6 x the apical breadth; 2nd tergite smooth, shiny, 2.4 x as broad as long, with strong, posteriorly diverging sulci; 3rd tergite smooth, shiny, sparsely pubescent, 1.8 x as broad as long, 1.4 x as long as 2nd tergite; rest of the tergites smooth, shiny; ovipositor exerted, 0.85 the length of inner spur of hind tibia, hypopygium acutely angled.

**Body** : black; antenna, ocelli, stigma and veins, apical half of hind tibia, and hind tarsal segments dark brown; fore leg, mid leg except base of coxa, 0.25 apical part of hind coxa, hind trochanters, hind femur, basal half of hind tibia, tarsal segments at base, tegulae and basal half of 1st tergite yellow testaceous; tibial spurs and palpi pale yellow.

**Paratype Q**, "M.R. Chalikwar Coll., Aurangabad, on wing, 27.ix.1970"; wings and hind leg mounted on slides and labelled as above.