

The background of the cover is a photograph of a tree trunk with a large number of reddish-brown ants. The ants are clustered together, some appearing to be tending to a dark, elongated object on the bark. The lighting is natural, highlighting the texture of the bark and the segmented bodies of the ants.

Handbook on
Hymenoptera : Formicidae

SHEELA, S.

A white circular logo with a scalloped or floral-like border is positioned in the bottom left corner of the cover.

ZOOLOGICAL SURVEY OF INDIA

Handbook on
Hymenoptera : Formicidae

SHEELA, S.

Zoological Survey of India, M-Block, New Alipore, Kolkata 700 053

Edited by the Director, Zoological Survey of India, Kolkata



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CONTENTS

INTRODUCTION	1
KEY TO SUBFAMILIES OF FORMICIDAE OF INDIA	3
Subfamily AENICTINAE	
1. <i>Aenictus aratus</i> Forel	4
2. <i>Aenictus ceylonicus</i> (Mayr).....	5
Subfamily CERAPACHYINAE	
3. <i>Cerapachys aitkenii</i> Forel	6
Subfamily DOLICHODERINAE	
4. <i>Tapinoma melanocephalum</i> (Fab.).....	7
5. <i>Technomyrmex albipes</i> (Smith)	8
Subfamily DORYLINAE	
6. <i>Dorylus (Alaopone) orientalis</i> Westwood	9
Subfamily FORMICINAE	
7. <i>Anoplolepis gracilipes</i> (Smith)	10
8. <i>Camponotus angusticollis sanguinolentus</i> Forel	10
9. <i>Camponotus compressus</i> (Fabr.).....	11
10. <i>Camponotus sericeus</i> (Fab.)	12
11. <i>Cataglyphys setipes</i> (Forel).....	12
12. <i>Oecophylla smaragdina</i> Fab.....	13
13. <i>Paratrechina longicornis</i> (Latr.).....	14
14. <i>Polyrhachis (Myrmhopla) armata</i> (Le Guill.)	14

15. <i>Polyrhachis (Myrmhopla) dives</i> Smith	15
16. <i>Polyrhachis (Myrma) illaudata</i> Walker	16
17. <i>Polyrhachis (Cyrtomyrma) rastellata</i> (Latr.)	17
18. <i>Polyrhachis (Myrmothrinax) thrinax</i> Roger	18
19. <i>Polyrhachis (Myrmhopla) tibialis</i> Smith	19
20. <i>Polyrhachis (Myrmhopla) tubericeps</i> Forel	20
Subfamily MYRMICINAE	
21. <i>Aphaenogaster beccarii</i> Emery	21
22. <i>Aphaenogaster cristata</i> (Forel)	22
23. <i>Aphaenogaster smythiesii</i> (Forel)	22
24. <i>Crematogaster perelegans</i> Forel	23
25. <i>Crematogaster subnuda</i> mayr	24
26. <i>Crematogaster rogenhoferi</i> Mayr	24
27. <i>Lophomyrmex quadrispinosus</i> (Jerdon)	25
28. <i>Meranoplus bicolor</i> (Guer.)	26
29. <i>Monomorium destructor</i> (Jerdon)	27
30. <i>Monomorium latinode</i> Mayr	28
31. <i>Monomorium pharaonis</i> Linn.	29
32. <i>Monomorium scabriceps</i> (Mayr)	29
33. <i>Myrmica rugosa</i> Mayr	31
34. <i>Myrmica smythiesii</i> Forel	31
35. <i>Myrmicaria brunnea</i> Saunders	32
36. <i>Pheidole multicens</i> Forel	33
37. <i>Pheidole sharpi</i> Forel	35
38. <i>Pheidole spathifera</i> Forel	35

39. <i>Pheidole wood-masoni</i> Forel	36
40. <i>Pheidologeton affinis</i> (Jerdon)	38
41. <i>Pheidologeton diversus</i> (Jerdon)	39
42. <i>Solenopsis geminata</i> (Fab.)	40
43. <i>Tetramorium lanuginosum</i> Mayr	41
44. <i>Tetramorium simillimum</i> (F. Smith)	42
45. <i>Tetramorium walshi</i> (Forel)	43

Subfamily PONERINAE

46. <i>Anochetus graeffei</i> Mayr	44
47. <i>Centromyrmex feae</i> Emery	45
48. <i>Diacamma rugosum</i> (Le Guill.)	45
49. <i>Diacamma sculpratum</i> (Smith)	46
50. <i>Harpegnathus venator</i> (Jerdon)	46
51. <i>Harpegnathus saltator</i> Jerdon	47
52. <i>Leptogenys chinensis</i> (Mayr)	48
53. <i>Lepotogenys kitteli</i> (Mayr)	48
54. <i>Leptogenys processionalis</i> (Jerdon)	49
55. <i>Odontomachus haematodus</i> (Linn.)	49
56. <i>Odontoponera transversa</i> (Smith)	50
57. <i>Pachycondyla rufipes</i> (Jerdon)	51
58. <i>Pachycondyla tesseronoda</i> (Mayr)	51

Subfamily PSEUDOMYRMECINAE

59. <i>Tetraponera nigra</i> (Jerdon)	52
60. <i>Tetraponera rufonigra</i> (Jerdon)	53

REFERENCES	54
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INTRODUCTION

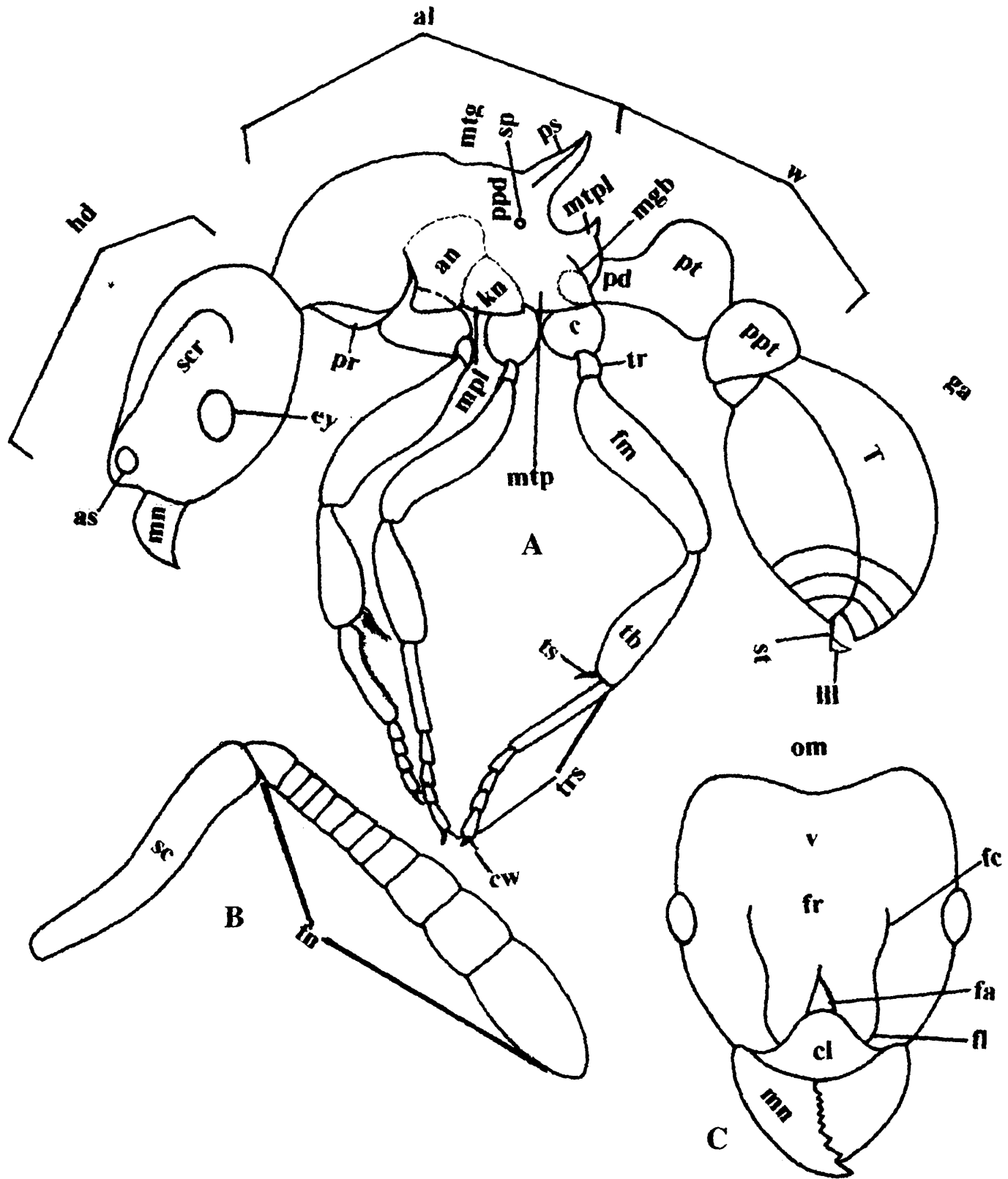
This work is a part of the endeavour taken by the Zoological Survey of India to make people recognize the common insects around them. Insects have their own fascinating world of life which are still, to a large extent, beyond our reach. Besides butterflies, beetles and flies the common insects around us includes bees, wasps and ants coming under order Hymenoptera of class Insecta. Due to their variety and vastness, each group deserves separate treatment taxonomically. The first attempt here is on the most common group 'The Ants'-which can be seen anywhere on land, at anytime.

Hymenoptera is the third largest insect order, Coleoptera and Diptera being in the first and second positions respectively among all the orders. Hymenopterous insects are more familiar to everybody than those of the other orders as they are economically one of the most important groups, because of their beneficial role as pollinators and for yielding honey. Hymenopterans have still more important role to play in controlling the population of agriculture pests, as some of them are effective predators and parasites of these pests, affecting them in their various stages of life cycle.

Ants dominate among other insects in the terrestrial ecosystem, with their capacity to intrude into any territory and to adapt to any adverse situations. The social behaviour, division of labour, parental care and their self sufficiency in producing their own food materials by successfully cultivating fungus and tending aphids as well as storing grains make them the most intelligent insect group. Individual species of the same genus shows great diversity in their habits and habitats. The highest range of polymorphism expressed by themselves is one of the secrets of their success in the ecosystem. They maintain fertile females (queens) and males for expanding the family and sterile females (workers) to fulfill all requirements of the colony, from nest building, food collection, feeding, tending and even securing the colony. In some groups the worker caste again shows differentiation into soldiers, majors and minors of different ranges. This differentiation makes it difficult to identify the members of the same species, unless they are collected together from the same colony.

The role of ants in the ecosystem varies from species to species. While some are beneficial as pollinators, predators of harmful insects, good soil turners and as a food source, many other species are pests themselves or harmful by nurturing aphids and such other pests. They are hated by everybody due to their household nuisance and also for their stinging and biting habits.

Ants belong to the family Formicidae which comes under the superfamily Vespoidea. There are nine thousand five hundred and thirty six species belonging to two hundred and ninety six genera all over the world as per the census of Bolton in



Figs. A-C. External morphology of a typical ant. **A.** Body profile; **B.** Antenna; **C.** Head front view. hd- head; al- alitrunk; w- waist; ga- gaster; as- antennal socket; scr- scrobe; ey- eye; pr- propleuron; mpl- mesopleuron; mtp- metapleuron; an- anepisternum; kn- katepisternum; ppd- propodeum; sp- propodeal spiracle; mtg- metanotal groove; ps- propodeal spine; mtpl- metapleural lobe; pd- peduncle; pt- petiole; ppt- post petiole; T- gastral tergite; c- coxa; tr- trochanter; fm- femur; tb- tibia; ts- tibial spur; trs- tarsal segments; cw- claw; mn- mandible; sc- scape; fn- funicular segments; om- occipital margin; v- vertex; fr- frons; fc- frontal carina; fa- frontal area; fl- frontal lobe; cl- clypeus; III- lamelliform appandage, st- sting.

1995, and they are grouped in sixteen subfamilies. Among these, in India, there are nine subfamilies, with approximately hundred genera comprising more than six hundred species. In this book, the most common members of eight subfamilies known from Indian territory are dealt with, inclusive of a key to subfamilies of Indian Ants (family Leptanillinae being very rare is not mentioned here). The descriptions given here are based on workers and wherever it is based on worker major or soldier it is mentioned.

Some of the major references followed in this work for the identification and distribution data of ants of India are Bingham (1903), Chapman and Capco (1951), Bolton (1976, 1977, 1987, 1994, 1995), Brown (1986), Holldobler and Wilson (1990), Seifert (2002).

KEY TO SUBFAMILIES OF FORMICIDAE OF INDIA

(Modified from Bolton, 1994)

1. Body with a single reduced or isolated segment (petiole) in between thorax and gaster 2
 - Body with two reduced segments (petiole and post petiole) in between thorax and gaster 6
2. Apex of gaster with a semicircular or circular acidopore, usually guarded by setae; sting absent FORMICINAE
 - Apex of gaster without circular or semicircular acidopore; sting mostly present 3
3. Either pygidium or hypopygium armed with peg like teeth or short spines 4
 - Pygidium and hypopygium unarmed DOLICHODERINAE
4. Gastral spiracles 3 to 5 exposed; metapleural gland orifice overhung and concealed from above by a flange which extend upwards and forwards on metapleuron as a ridge 5
 - Gastral spiracles 3 to 5 not exposed; metapleural gland orifice not overhung by a flange PONERINAE
5. Pro-mesonotal suture distinct; pygidium postero-laterally armed with a pair of short spines; no constriction between basal two abdominal segments DORYLINAE
 - Pro mesonotal suture usually absent; pygidium postero-laterally armed with a row of teeth or spines; constriction between basal two abdominal segments distinct CERAPACHYINAE
6. Eyes present 7

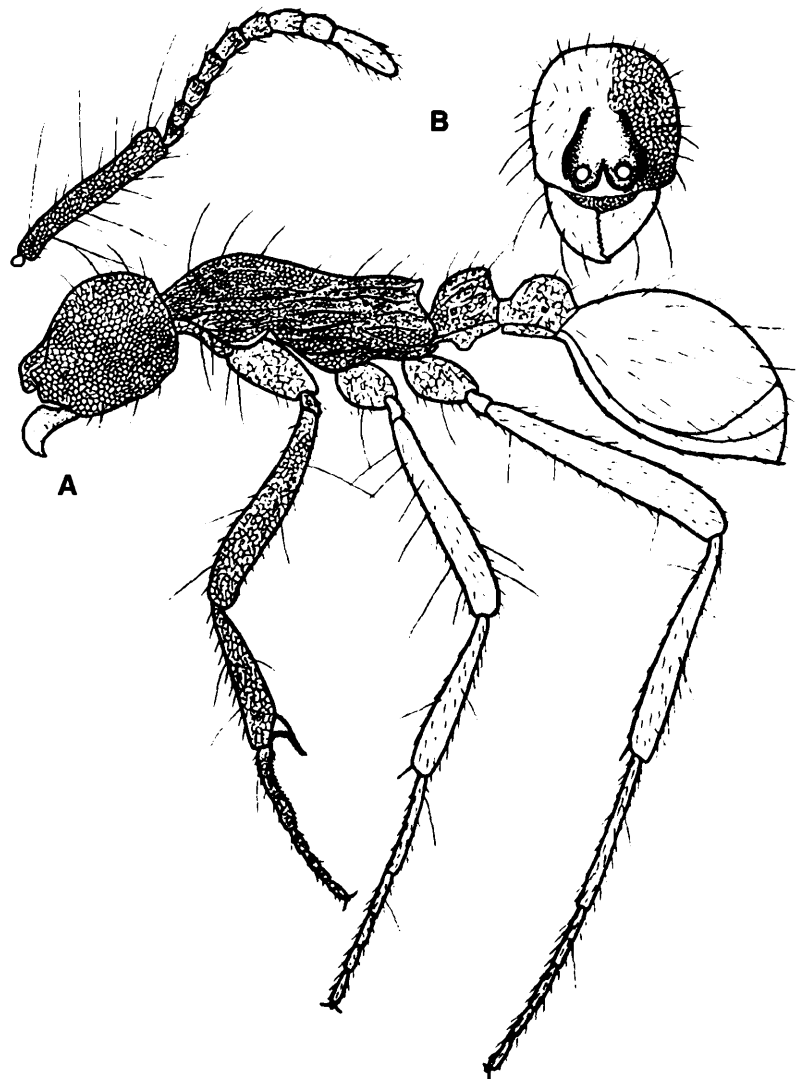
- Eyes absent 8
- 7. Posterior margin of clypeus not projecting in between antennal sockets; pro-mesonotal suture present; hind tibia with a conspicuous pectinate spur PSEUDOMYRMECINAE
- Posterior margin of clypeus projecting in between antennal sockets; pro-mesonotal suture absent; hind tibiae with only simple spur MYRMICINAE
- 8. Pro-mesonotal suture conspicuous in dorsal view LEPTANILLINAE
- Pro-mesonotal suture absent AENICTINAE

Subfamily AENICTINAE

1. *Aenictus aratus* Forel

Size 4.5-5 mm.

Head brownish red; vertex blackish brown; thorax, mandibles and abdomen dark brown; remaining parts brownish red; body except gaster finely punctate; gaster smooth, polished; thorax with dorsal and lateral wrinkles; punctures on mid and hind coxae not as strong as adjacent parts; coxae and femora with rugae seen in certain lights; scape of antennae and femora of legs with a few erect and suberect long setae; head, thorax, gaster and tibiae with a few such hairs; whole body except terminal club segment with short, decumbent setae moderate in number; hairs more on gaster; flagellum of antennae with minute appressed pubescence. Head medially broader; mandibles stout, masticatory margin with an acute apical teeth; a thin triangular lamina from anterior margin of clypeus



Figs. A-B. *Aenictus aratus* Forel
A. Body profile; B. Head front view.

extend forwards, its margin smooth, arched; antennal hollows deep, a lateral tubercle on either side of toruli, toruli leads to a backwardly converging carina that ends at middle of head; scrobe deep; occiput carinate, carina ends in a small tubercle on either side of ventral median line; antennae 10-jointed; scape basally curved, flagellar segments elongate; thorax long, narrow without sutures above; propodeum narrowing posteriorly to form a laminated carina, two corners of which prominent; metasternum just above coxae ends in a long acute teeth; legs long, mid tibiae with a simple and a slightly pectinate spur; hind tibiae with a short simple spur; petiole and post petiole laterally compressed, convex above, posterior margin vertical, without peduncle in front; petiole ventrally with projection, three setae arise from that; antero-ventral portion of post petiole acute; node of petiole and post petiole subequal.

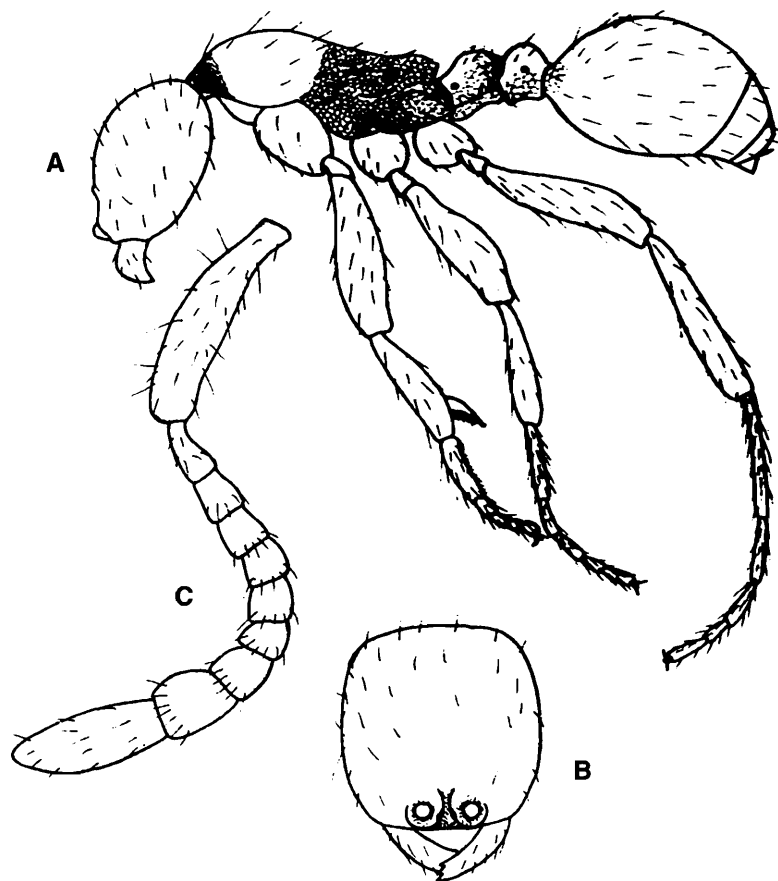
Habitat : They are blind ants not usually seen. However sometimes they appear in big trails on ground moving with high speed and biting severely on disturbance.

Distribution : Western India.

2. *Aenictus ceylonicus* (Mayr)

Size : 2.5 mm

Head except vertex, antennae, legs and gaster bright yellow; pedicel a little darker than gaster; vertex and thorax yellowish red; head, antennae, pronotum except anterior portion, pedicel dorsally, legs and abdomen smooth, polished and shining; pronotum anteriorly shagreened; pedicel except dorsum finely punctate; meso and metanotum rugoso-punctate; pilosity moderate, present all over body except terminal club segment; a few long hairs found scattered on head; scape, femora and coxae; mandibles linear, opaque with three teeth;



Figs. A-C. *Aenictus ceylonicus* (Mayr)
A. Body profile; B. Head front view; C. Antenna.

clypeus narrow, triangular, anterior margin transverse; antennae 10-segmented, scape basally curved, first flagellar segment long, second one subequal, third to seventh transverse, thorax without sutures above; apex of propodeum ends in a transverse carina; metasternal teeth minute and acute; metasternal gland bulla prominent; petiole with an antero-ventral flat projection; post petiole antero-ventrally finely toothed and smaller than petiole; nodes slightly laterally compressed; gaster with a short neck in front, dorsally highly convex.

Habitat The same as *A. aratus* Forel.

Distribution : India, Sri Lanka.

Subfamily CERAPACHYINAE

3. *Cerapachys aitkenii* Forel

Size 4.5 mm.

Head and gaster except basal tergite brownish black; all other parts brownish red; whole body widely punctured with abundant, white decumbent pilosity and polished and shining; mandibles edentate; clypeus not distinctly defined; antennal hollows deep; antennae short and thick with 12-segments, terminal club segment very large; eyes moderate, oval, lateral, more towards anterior side at middle; thorax elongate, more or



Cerapachys aitkenii Forel

less convex and no sutures above; apex of propodeum truncate, margined around and smooth; hind and mid tibial spurs pectinate; legs short, swollen; pedicel large, rounded above, as broad as thorax; anterior face concave, smooth; gastral constriction distinct; pygidium with numerous small teeth; sting exserted.

Habitat Ground dwelling, seen under rotten logs.

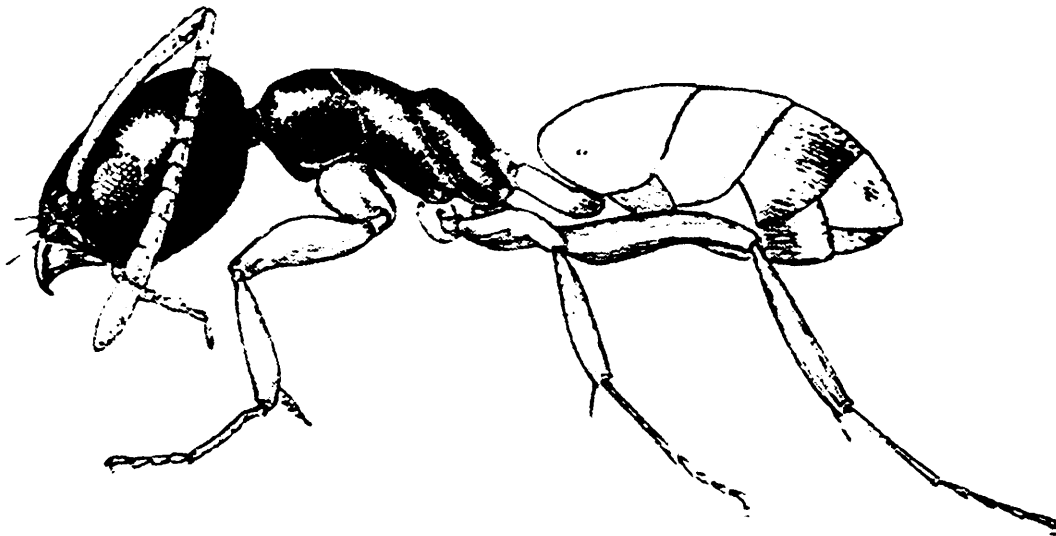
Distribution : Western India, Karnataka, West Bengal.

Subfamily DOLICHODERINAE

4. *Tapinoma melanocephalum* (Fab.)

Size : 1.5-2 mm.

Head, thorax pale brown, abdomen yellowish white with a brown tint at base, mandibles, antennae and legs yellow with some reflections of brown here and there on legs; head, thorax and abdomen finely punctate; pilosity sparse; pubescens pale and abundant on abdomen; masticatory margin of mandible equal to outer margin of mandible and former set with a row of minute teeth; anterior margin of clypeus slightly arched; posterior margin clearly arched; eyes placed towards anterior side; antennae with flagellar segments except second one longer than broad; club very thick; thorax with distinct sutures; node of pedicel thin, sloping, not immediately conspicuous; abdomen elongate, its anterior portion overhanging pedicel



Tapinoma melanocephalum Fabricius
(Reproduced from Holldobler and Wilson, 1990)

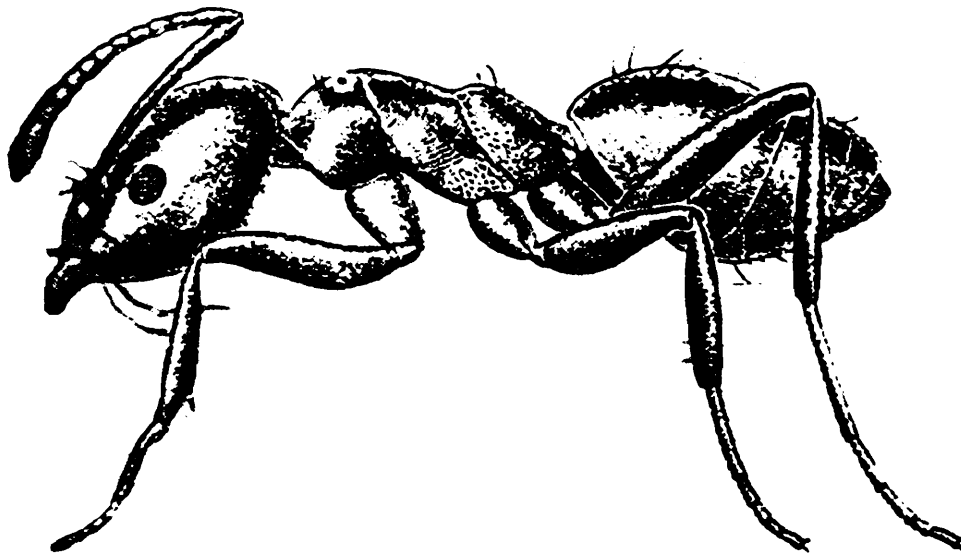
Habitat : Mostly seen on trees in abundant and running fast. Large colony can be seen under barks and rotten woods. They don't sting or bite, but they irritate by running all over body.

Distribution : Throughout the world.

5. *Technomyrmex albipes* (Smith)

Size 2.5-3 mm.

Black in colour with mandibles and tarsal segments a shade paler; head, thorax and abdomen minutely and lightly punctate; pilosity sparse; pubescence appressed, short; head posteriorly widely emerginate; masticatory margin and outer surface of mandibles equal in length with the former set with several minute teeth; clypeus convex, broad with anterior margin medially incised; scape of antennae reaching top of head; sutures on thorax distinct and thorax emarginate at meso-metanotal suture; pro-meso notum forming a regular convexity; propodeum compressed on sides and truncate at apex; hind tibial spur pectinate. Node of pedicel not visible from above, very thin; abdomen gibbous, overhanging pedicel.



Technomyrmex albipes Smith
(Reproduced from Holldobler and Wilson, 1990)

Habitat : Plants and trees, visiting flowers also.

Distribution : Throughout the world.

Subfamily DORYLINAE

6. *Dorylus (Alaopone) orientalis* Westwood

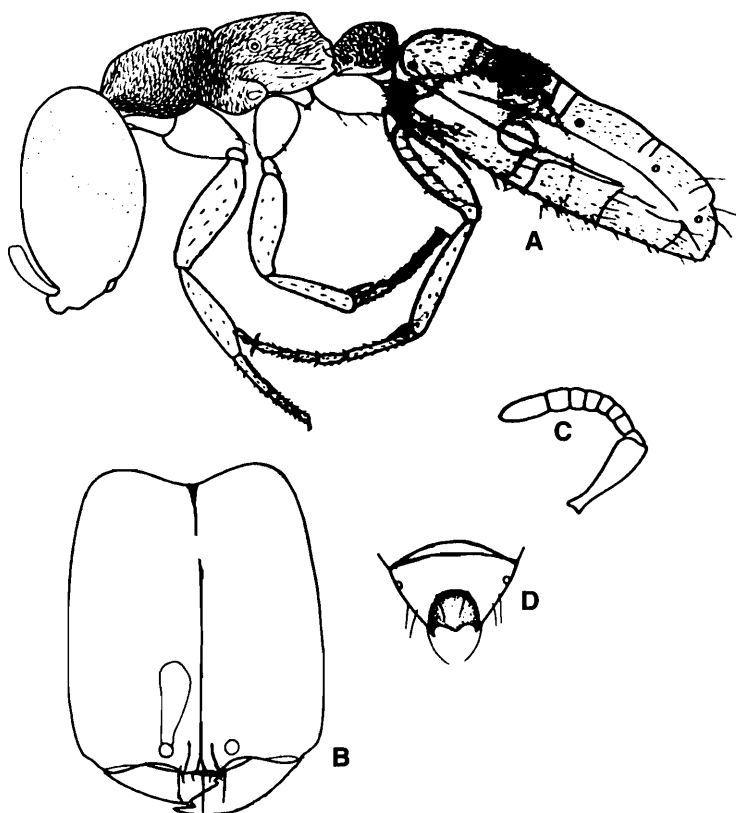
Size : Major 6 mm.

Head reddish brown, thorax, pedicel and gaster brownish yellow; legs concolorous with gaster; scape of antennae reddish brown, flagellum honey yellow; anterior margin of head, margin of frontal lobes and masticatory margin of mandibles black; third gastral sternite medially and last two sternites with brown shade; whole body smooth, polished and shining except a few scattered piligerous punctures; pubescence moderate, very short and appressed; pubescence at ventral side of abdomen long; pilosity very long limited to three or four on node of pedicel and on last two tergites; posterior margin of each abdominal sternite with a row of bristles ranging from very long to very short from anterior to posterior; head elongate, broader anteriorly than posterior, occiput finely emarginate, medially with a longitudinal deep furrow; mandibles long, linear with three teeth on inner margin, basal one blunt and apical one long, acute; frontal lobes raised, short, close together, vertical; antennae short, thick, 9-jointed, scape flat; eyes absent; thorax dorsally flat, laterally compressed, pro-mesonotal suture well marked; meso-metanotal suture absent; apex of propodeum round, legs short, robust, mid and hind tibial spurs slightly pectinate; node of pedicel slightly convex above, posteriorly a little broader than front; gaster length subequal to combined length of thorax and pedicel.

Worker Minor : Smaller than major, paler in colour; mandibles without teeth.

Habitat : They can be traced only by digging soil as they very rarely come out.

Distribution : India, Sri Lanka and Myanmar.



Figs. A-D. *Dorylus orientalis* Westw.
 A. Body profile; B. Head front view. C. Antenna
 D. Posterior tergite of gaster.

Subfamily FORMICINAE

7. *Anoplolepis gracilipes* (Smith)

Size 3.5 to 4.5 mm.

Light orange yellow, gaster posteriorly yellowish brown; whole body weakly shagreened; pilosity a few scattered pale yellow hairs; pubescence very thin, sparse; whole body polished and shining; head elongately oval; clypeus broad, convex; anterior margin arched; outer margin of mandibles very long, masticatory margin with 7-8 brown teeth; antennae wide apart, close to clypeus; eyes large, prominent, behind



Anoplolepis gracilipes (Smith)

midline; antennae very long, scape as long as thorax; pronotum anteriorly narrow, posteriorly broad; mesonotum cylindrical, broadening posteriorly; sutures distinct; propodeum gibbous; legs slender, elongate; node of pedicel small, conical, rounded above; gaster globose.

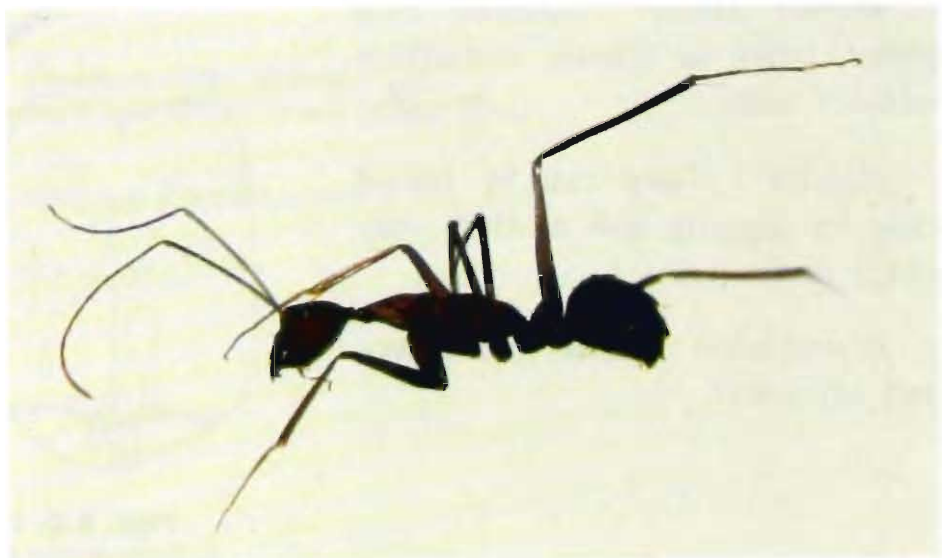
Habitat : Live in large colonies on trees and forage on dead animals. They don't bite but like *Paratrechina longicornis* run all over on the body of enemy.

Distribution : Cosmopolitan.

8. *Camponotus angusticollis sanguinolentus* Forel

Size 15-23 mm.

Head, thorax, pedicel, legs and first tergite in front brick red; scape of antennae and remaining part of gaster dark brown; whole body covered with red, sparse, decumbent hairs; body opaque except legs which is shining; head and thorax very narrow; head posteriorly constricted into a distinct collar;



Camponotus angusticollis sanguinolentus Forel

mandibles with 6 teeth; eyes large, prominent, situated laterally and posteriorly; all legs very long; thorax gradually sloping from front to back; pedicel convex in front, diagonally flat behind, above face angular; legs prismatic.

Habitat : They are very fast runners, making their nest on ground below tree trunks, lamp posts etc.

Distribution : Their black variety *C. angusticollis angusticollis* Jerdon and they are distributed through out India.

Elsewhere : Tropical Africa, Egypt, Arabia, Indochina, Sri Lanka.

9. *Camponotus compressus* (Fabr.)

Size : Worker major : 11-16 mm; minor : 6-8 mm.

Black with posterior margin of abdominal segments testaceous; mandibles, flagellum of antennae and legs reddish; body finely reticulate, punctate; pubescence sparse, minute, visible on antennae and legs; pilosity red in colour, very rarely distributed, most on gaster; head broad behind with posterior lateral angles prominent; clypeus medially carinate, anterior margin transverse, mandibles stout with 7 teeth; eyes not prominent, towards posterior and upper side; thorax with a collar, sutures clear, propodeum laterally slightly compressed; pedicel thin above, convex in front and flat behind; tibiae prismatic, gaster massive.

Habitat : They are the big 'Black Ants', found everywhere on trees, on flowers, bushes and ground. They make their nests mostly at bottom of trees. They don't usually bite or sting, run very fast and they have this habit of tending aphids. They are involved in pollination also.

Distribution : Throughout India, Africa, Arabia, Malayan subregion, Russia, Sri Lanka.



Camponotus compressus (Fabr.)

10. *Camponotus sericeus* (Fabr.)

Size major 8 to 10 mm; minor 5 to 7 mm.

Black, antennae and legs with a red tint; whole body finely minutely punctate; gaster lightly punctate with a fine thick pale yellow pubescence; pubescence on other parts sparse and a few scattered erect pilosity here and there all over body; clypeus convex; eyes more frontal, towards posterior corners; antennae passing well beyond posterior margin; pronotum as broad as head in dorsal view; mesonotum narrower, becoming more narrow towards posterior side that looks subtriangular; sutures distinct and thorax emarginate at meso-metanotal suture; propodeum parallel sided and margined, very narrow, apex slightly emarginate and sides toothed at apex; node of pedicel rounded; gaster globose.



Camponotus sericeus (Fabr.)

Habitat Seen foraging on flowers and tree trunks as well as on ground.

Distribution Cosmopolitan.

11. *Cataglyphys setipes* (Forel)

Size : 10 to 12 mm.

Head, thorax, pedicel and legs red; gaster black; mandibles and legs covered with strong red hairs, hairs setose on legs, a few scattered hairs on head, thorax and apex of gaster also; a fine thin silvery pubescence cover the body, more visible on coxae and thorax; head, thorax and pedicel finely minutely punctate; gaster lightly shagreened; mandibles striate with 5 distinct teeth and a minute tooth at base, apical tooth very long and acute; clypeus broad, transverse anteriorly;



Cataglyphys setipes (Forel)

antennae filiform, all segments elongate, scape passing far beyond head; ocelli present; eyes jet black, large, prominent, towards posterior lateral corners; pronotum broad, mesonotum narrow, saddle shaped, propodeum slightly convex; all sutures distinct; legs very long; node of pedicel small, round; gaster articulated in a highly movable way.

Habitat : They make their nests in soil under trees and in crevices. They are very fast runners, mostly seen keeping gaster upwards in 90° while running.

Distribution : India (Arunachal Pradesh, Kerala, Punjab, Uttar Pradesh, West Bengal).

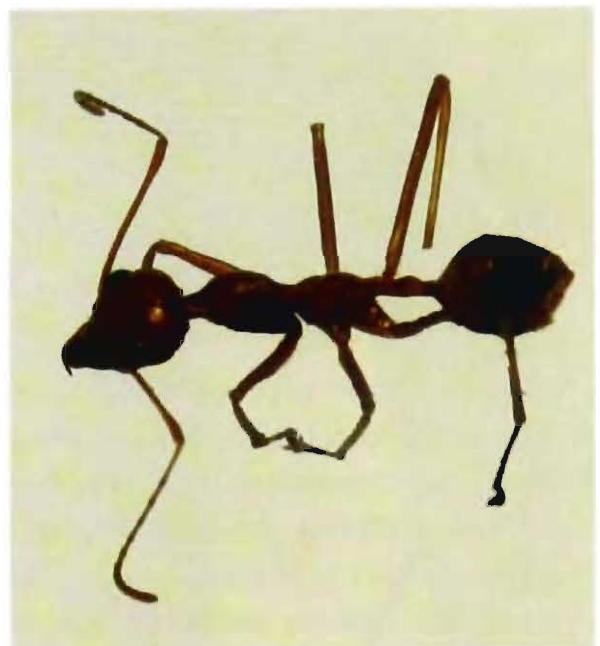
12. *Oecophylla smaragdina* (Fabr.)

Size : Worker major : 9-11 mm.; minor : 7-8 mm., female : 15-20 mm.

Workers orange red; slender bodied; an appressed minute thin pubescence all over body and a few grey hairs on trochanters and gaster (more at apex); the whole body minutely punctate and opaque; head subtriangular with the eyes large and prominently set at mid line; outer margin of mandible very long with an apical, acute and curved teeth; clypeus broad; antennae filiform with an extremely long scape; pronotum broad; mesonotum narrow; cylindrical, mesosternum bulging a little outwards; node of pedicel elongate, somewhat cylindrical, gaster flat above.

Habitat : They are usually called 'weaver ants' or 'red ants' They live in large colonies, make big nests on trees by bending the leaves together and sticking with an adhesive thread extracted from the excretion of their larvae. Then they fill the nests with eggs and collect innumerable insects inside for their larvae. This nature make them a good biological control agent and they are being successfully used in orangeries in China for keeping the pests of citrus trees under control. But on disturbing they very badly attack even humans and bite with their strong mandibles and spray acid into the wound from their acidopore giving a severe burning sensation. We can smell their presence from distance for this acid. Their queens are looking entirely different with a green colour and bulky shape as well as a delicate body.

Distribution : All over India, Australia, Borneo, Java, Malayan subregion, Myanmar, New Guinea, Philippines, Sri Lanka.



Oecophylla smaragdina (Fabr.)

13. *Paratrechina longicornis* (Latr.)

Size 2.5 to 3 mm.

Dull black, shining; antennae, maxillary and labial palpi and legs paler; joints light brownish yellow; whole body smooth and polished except superficial shagreening on legs and gaster, visible only on certain reflections of light; whole body covered with sparse, strong, stout brown setae; a fine thin appressed pubescence on legs, visible on certain reflections of light only; clypeus broad and convex, anterior margin arched; clypeal and antennal hollows very close; scape of antennae very long, about half length of body; eyes very large, situated on midline, more frontal; thoracic sutures distinct; pro-mesonotum evenly shallowly convex; meso-metanotal suture slightly impressed;

legs very long; node of pedicel small, inclined towards anterior side, posteriorly overhung by gibbous anterior part of gaster; gaster small.



Paratrechina longicornis (Latr.)

Habitat They mostly find shelter inside cavities and inside outer covering of trees, usually dead trees, and leaf litter. They stay in large colonies and found foraging everywhere. It is a very common species called 'crazy ants' for their fast running to everywhere. Harmless, otherwise entering into sweets.

Distribution Cosmopolitan.

14. *Polyrhachis (Myrmhopla) armata* (Le Guill.)

Size : 9-10.5 mm.

Red in colour with a black tint, especially on head and anterior of thorax; head, thorax and pedicel wholly punctured; no hairs on body except a thin minute, pale, appressed pubescence on legs and antennae, visible only on certain reflections of light; and a few scattered, sub-erect yellow hairs below and on tip of gaster; antennae, legs and gaster finely granulate, opaque; head posteriorly very narrow in front view; clypeus sub-carinate, anterior margin broadly emarginate with two teeth; eyes highly prominent; scape of antennae extending well beyond top of head; sides of thorax rounded, not



Polyrhachis (Myrmhopla) armata (Le Guill.)

margined, pronotum anteriorly and propodeum posteriorly with two very long and strong spines, propodeal spines longer than pronotal ones; petiole with two stout spines diverging backwards; sub-petiolar process with an anterior lamina and a posterior vertical small spine; gaster globose.

Habitat : Unknown

Distribution : India (Arunachal Pradesh, Assam, West Bengal).

15. *Polyrhachis (Myrmhopla) dives* Smith

Size : 6-7 mm.

Black; characters almost like *P. tibialis* Smith; difference is in the colour of pubescence being yellowish, pedicel with three small teeth in between lateral long spines.

Habitat : They are very common species seen on bushes and their nests can be seen on leaves with silken threads and some debris.

Distribution : Through out India.



Polyrhachis (Myrmhopla) dives Smith

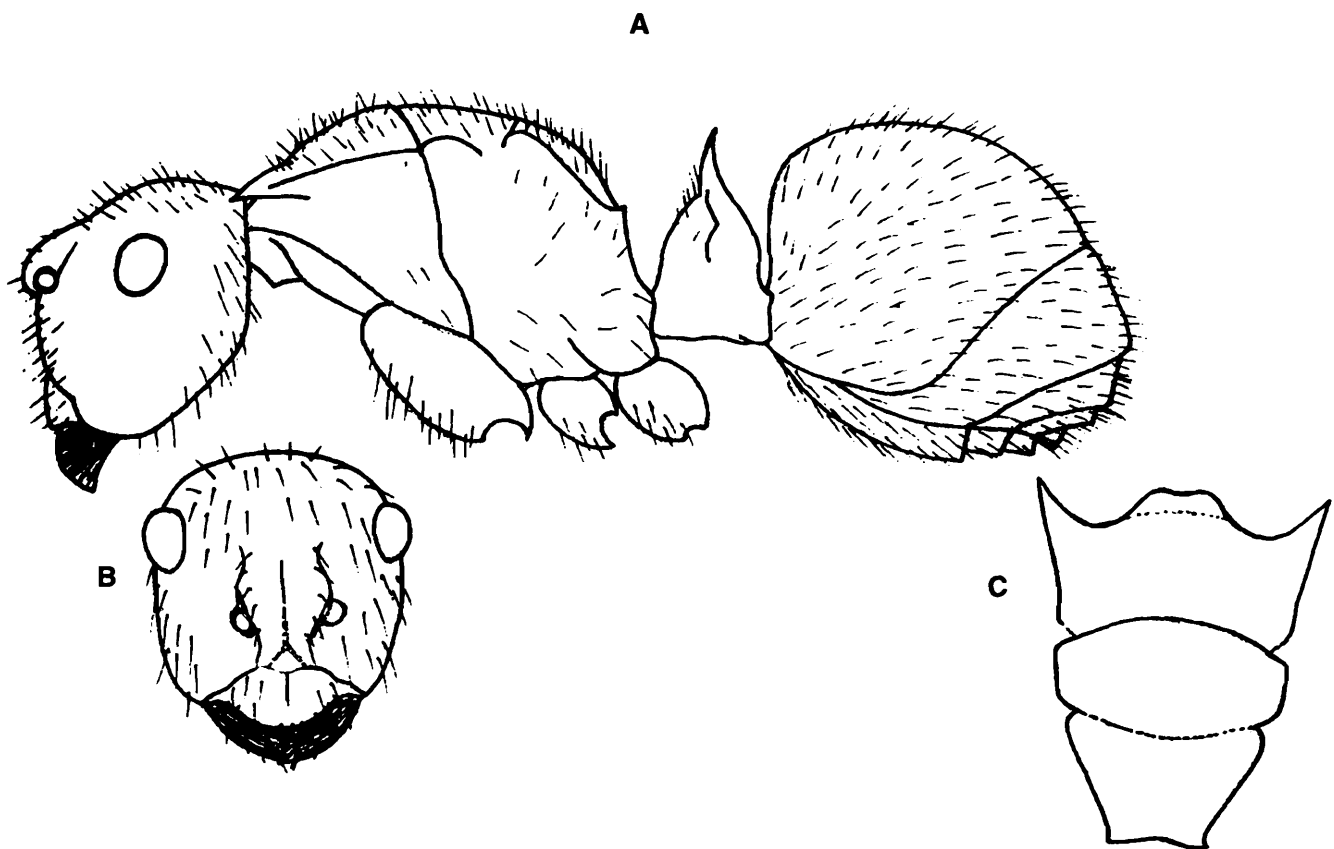
16. *Polyrhachis (Myrma) illaudata* Walker

Size 10 mm.

Black. It is a stout specimen with long legs, an appressed thick pubescence concealing sculpture of the body and a thick cover of erect and suberect stout hairs. Head, mandibles and thorax finely longitudinally striate; clypeus opaque, anterior margin arched; eyes large, prominent, situated towards posterior lateral corners, scape extending well beyond top of head; laterally margined sides of thorax overhang sides, with two strong and long spines on pronotum pointing straight forwards; pro-meso and meso-metanotal sutures present, latter faintly indicated; propodeal teeth small; petiole thin above with two long spines on dorso lateral edges guarded by two small spines on sides; gaster gibbous in front.

Habitat : Seen on trees.

Distribution India (Arunachal Pradesh, Karnataka, Kerala, Sikkim, West Bengal), Indochina, Malayan sub region, Myanmar, Sonde Is., Sri Lanka.

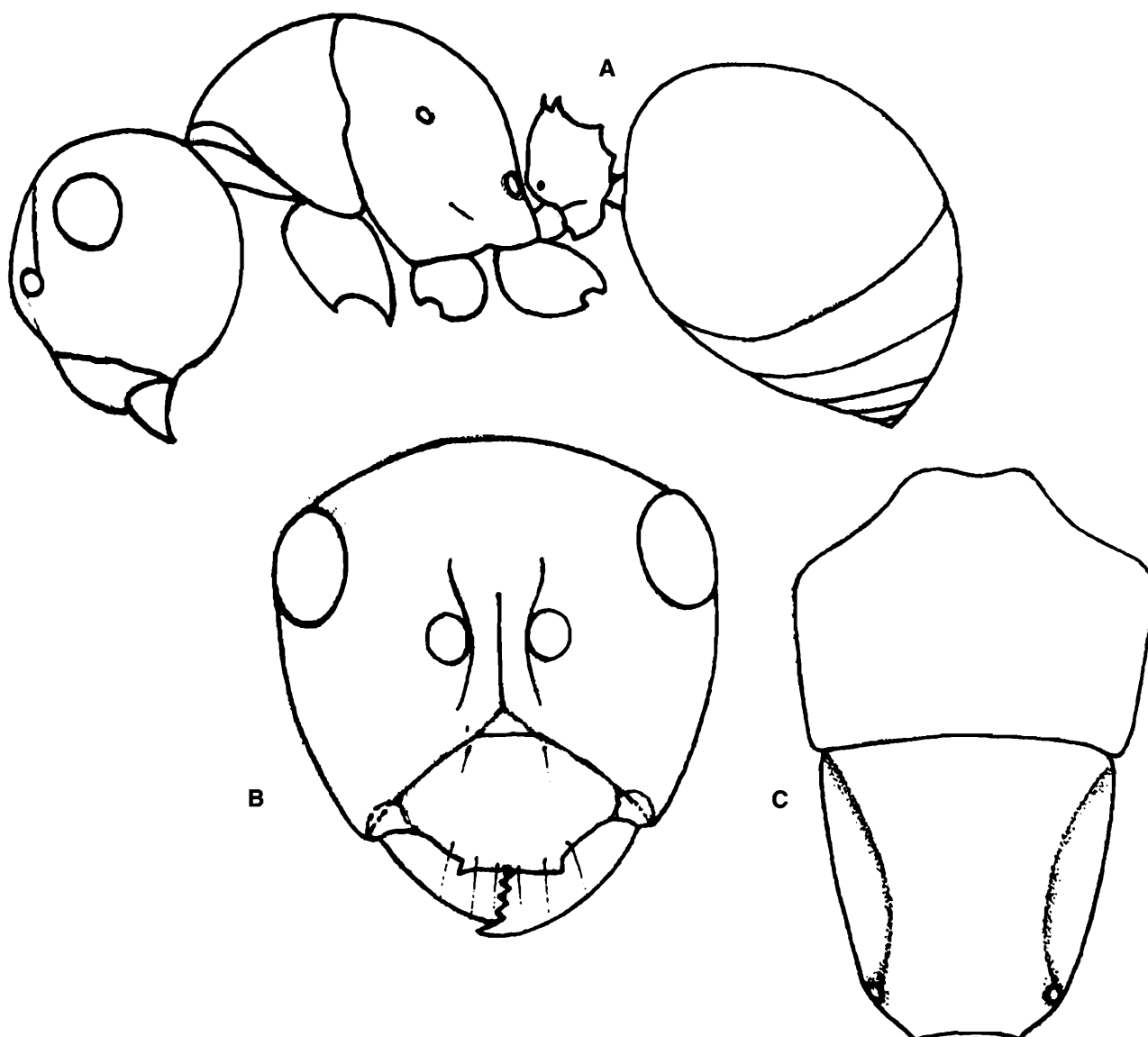


Figs. A-C. *Polyrhachis illaudata* Walker
A. Body profile; B. Head front view; C. Thorax dorsal view.

17. *Polyrhachis (Cyrtomyrma) rastellata* (Latr.)

Size : 5-6.5 mm.

Head, thorax, pedicel, gaster, antennae, coxae and tarsal segments black, trochanter, femora and tibiae of legs reddish yellow; body completely polished and shining with a faint shagreening everywhere; pubescence, a thin covering on flagellum, tarsi, widely spaced on scape, rarely on coxae; pilosity very sparse on gaster, legs and frontal carinae; clypeus not carinate in the middle, anteriorly slightly incised and lateral corners denticulate; eyes large, prominent, situated at postero-lateral corners in front view; scape extend well beyond top of head; thorax evenly convex and narrowing from front



Figs. A-C. *Polyrhachis rastellata* (Latr.)
A. Body profile; B. Head front view; C. Thorax dorsal view.

to back; no spines, meso-metanotal suture not indicated; pedicel small with four short spines of almost equal size, median spines close together; sub petiolar process present; gaster highly convex above.

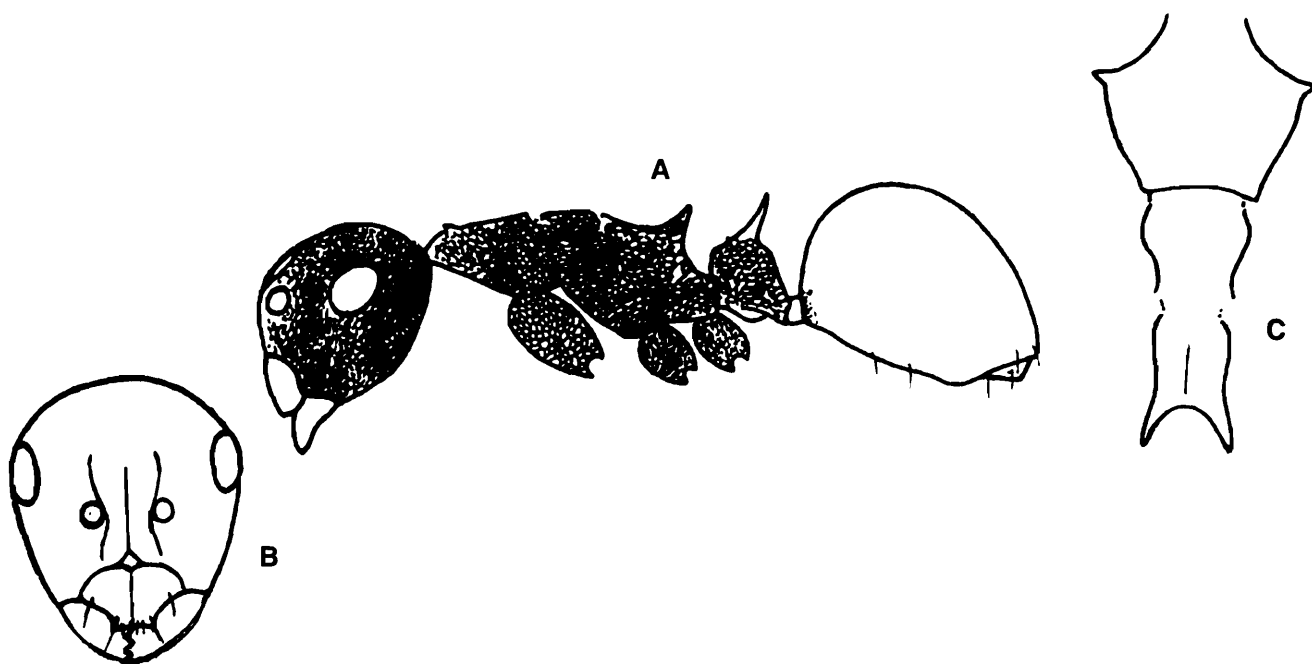
Habitat They live in small colonies making small nests on leaves. They emit a fine smell on touching.

Distribution : India (Karnataka, Kerala, West Bengal), Borneo, Myanmar, Sumatra.

18. *Polyrhachis (Myrmotherinax) thrinax* Roger

Size : 4.5-6 mm.

Ferrugino-testaceous with a black tint all over; scape dorso-basally, flagellar segments 1-5 and tarsal segments brownish black, remaining flagellar segments becoming yellow so that apical segment clear yellow; frontal carina and anterior margin of clypeus brown; body minutely reticulate, punctate in a regular pattern; gaster faintly shagreened; pubescence moderate on flagellum and legs, a few on scape, tibiae and gaster; pilosity very few, scattered on scape, frontal lobes, legs and apex of gaster.



Figs. A-C. *Polyrhachis thrinax* Roger
A. Body profile; B. Head front view. C. Thorax dorsal view.

Clypeus medially carinate, anterior margin transverse with a slight incision, sides of mid lobe toothed; clypeus very long, extending well beyond top of head; eyes large, elongately oval, situated beyond midline; thorax margined throughout its length; sides compressed, broad anteriorly, narrow behind, pronotum with two short teeth at antero-

lateral corners, sutures distinct; propodeum very narrow, set with two upwardly projecting spines, dorsal surface of propodeum with a weak median longitudinal carina; petiole with one long median vertical spine which is bifurcated at apex and two short, acute lateral teeth; sub petiolar process nearly conical in shape.

Habitat : They make their nests on leaves stitched together by silken threads, on trees.

Distribution : India (Karnataka, Kerala, Tamil Nadu, West Bengal), Java Myanmar, Sri Lanka.

19. *Polyrhachis (Myrmhopla) tibialis* Smith

Size : 4-6 mm.

Black with scape of antennae and legs except tarsal segments yellowish red, tarsi and flagellum of antennae blackish brown, eyes black with a red tint; whole insect covered with a fine appressed silvery white pubescence all over, hiding sculpture which is granulate; clypeus arched anteriorly; eyes prominent, lateral; thorax uniformly arched with a slight depression on meso-metanotal suture; pro-mesonotal suture distinct; pronotum and propodeum with long, acute, straight spines; pronotal spines pointing forwards, smaller than propodeal spines which point backwards; pedicel biconvex, more behind; with two minute teeth in the middle and two very long spines on sides which is curved to accommodate gaster.

Habitat : Can be seen foraging on tree trunks and leaves, and live in small colonies by folding single leaves; so that a number of such folded leaves can be seen on the tree where they live.

Distribution : India (Arunachal Pradesh, Karnataka, Kerala, West Bengal), Malayan sub-region, Myanmar, Sri Lanka.



Polyrhachis (Myrmhopla) tibialis Smith

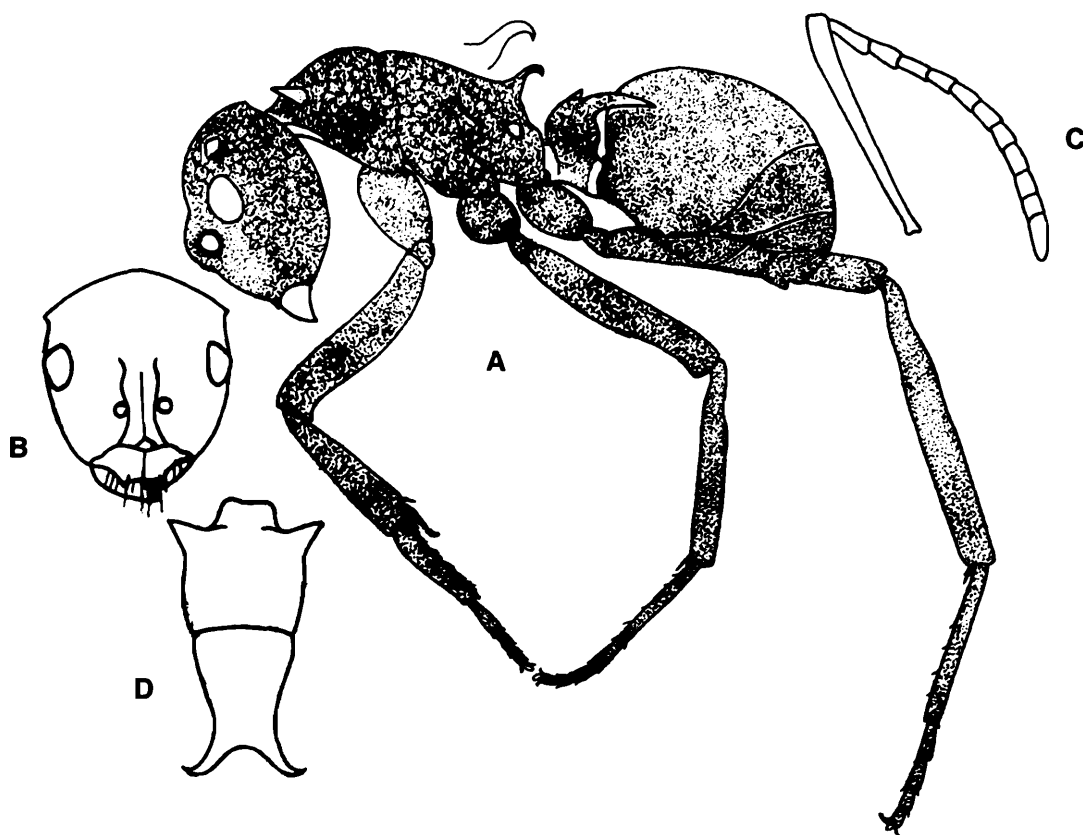
20. *Polyrhachis (Myrmhopla) tubericeps* Forel

Size 6.5-8 mm.

Black, eyes brownish black; body completely minutely punctate; mandibles finely striate; head, thorax and pedicel with superficial fine reticulation over punctures; body covered with short, appressed, regular, not so abundant, silvery white pubescence; pilosity restricted to a very few long hairs at apex of gaster; clypeus medially carinate; anterior margin medially slightly concave; concavity ending in two teeth on either side; eyes prominent; two triangular tubercles present behind eyes; antennae 12-jointed, scape extending far beyond top of head; sides of thorax not laterally margined; pronotum and propodeum with spines, pronotal spines straight; propodeal spines curved at tip; meso-metanotal suture not distinct; petiole biconvex; two short, vertical, acute median teeth and two long curved lateral spines present; gaster massive.

Habitat : Seen on trees.

Distribution : India (Kerala, Uttarakhand, Uttar Pradesh, West Bengal).



Figs. A-D. *Polyrhachis tubericeps* Forel.
A. Body profile; B. Head front view; C. Antenna; D. Thorax dorsal view.

Subfamily MYRMICINAE

21. *Aphaenogaster beccarii* (Emery)

Size : 6.5-7 mm.

Light brown; mandibles brownish red; antennal club and tarsi lighter in colour; whole body smooth and shining covered with sub erect brown, strong setae; pubescence entirely absent; head elongate with a neck posteriorly and its posterior margin prominent; mandibles striate, broad with apical teeth acute and curved; clypeus convex, anteriorly rounded; antennal hollows deep and broad and covered on both sides by two carinae, lateral one (above eyes) very strong; eyes large, prominent; antennae very long and thin; pronotum broad, anteriorly constricted to a neck; mesonotum narrow, elongate; pro-mesonotal suture weakly indicated; meso-metanotal suture distinct; propodeal spines small, straight; legs very long; petiole rounded; post-petiole elongate; gaster biconvex.

Habitat : On ground and plants.

Distribution : Karnataka and Maharashtra.



Aphaenogaster beccarii (Emery)

22. *Aphaenogaster cristata* (Forel)

Size 5.5 mm.

Yellowish red with legs lighter in colour, head darker and gaster yellowish brown, polished and shining with minute reticulations on head and sides of meso sternum and dorsum of propodeum; mandibles longitudinally striate, clypeus rugulose, head up to vertex rugulose, vertex and occiput, dorsum of pronotum and mesonotum and gaster smooth & polished; prosternum and anterior neck of thorax faintly shagreened; metanotum transversely rugulose above, apex smooth; erect, short, yellowish white hairs scattered all over, more on gaster; pubescence absent; head elongate, constricted behind eyes; mandibles stout with three sharp apical teeth followed by a few denticles; clypeus anteriorly slightly emarginate; antennae very long, slender, all flagellar

segments elongate; eyes small, round, lateral, at midline; pronotum broad, convex; promesonotal suture distinct; propodeal spines short, erect; legs very long; petiole with a long peduncle in front; petiole node conical, post petiole a little broader than petiole; rounded above; gaster massive; first tergite covering more than $2/3^{\text{rd}}$ its length.



Aphaenogaster cristata (Forel)

Habitat : Unknown.

Distribution : Common species in Himalayas and all high altitudes of India.

23. *Aphaenogaster smythiesii* (Forel)

Size : 4.5 to 5.5 mm.

Brownish black, legs brownish red with tarsi more light; apex of mandibles and flagellum of antennae with a red tint, whole body smooth, polished and shining, with a few irregular striations in front and sides of head, whole body covered with sparse, suberect, white, obtuse hairs, more on head and gaster; mandibles striate, masticatory margin with three distinct but not so sharp teeth at apex and a few irregular denticles at base; anterior margin of



Aphaenogaster smythiesii (Forel)

clypeus broadly emarginate, scape of antennae extending beyond top of head; flagellar segments elongate; club formed of apical 4 joints; pronotum convex, mesonotum at a level above pronotum, with a raised ridge, mesonotum steeply sloping posteriorly; pro-meso and meso-metanotal sutures distinct; thorax emarginate at meso-metanotal suture; propodeum more or less convex above with two short acute spines posteriorly; pedicel with a long peduncle in front; and small, thick conical node; post petiole a little broader than petiole; gaster oval in shape.

Habitat : They are found dominant at the foot-hills of Himalayas. They can be seen foraging in colonies and usually slow moving.

Distribution : All high altitudes of India mostly Himalayas.

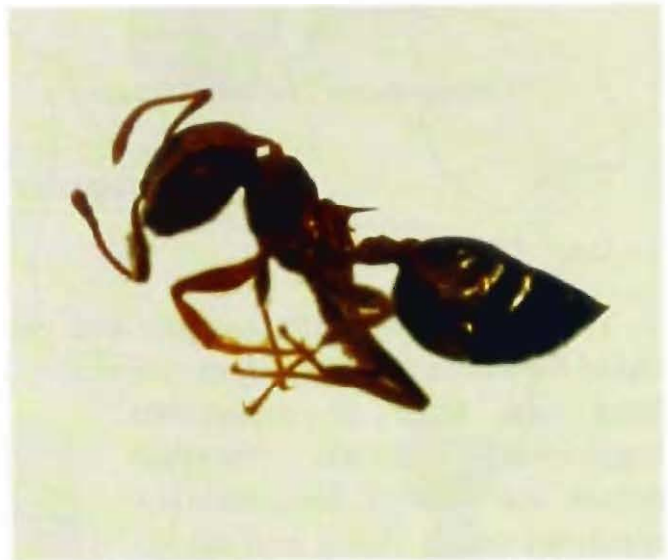
24. *Crematogaster perelegans* Forel

Size : 4-5.5 mm.

Head, thorax and pedicel red; gaster brownish black; head, thorax and pedicel longitudinally striate; gaster smooth, shining; whole body covered with fine appressed white pubescence; head broader than long; mandibles finely striate; anterior clypeal margin transverse; eyes lateral, placed just behind midline; scape of antennae reaching top of head; pronotum broad; thorax emarginate at pro-mesonotal suture; propodeal spines long, acute, slender, first joint of pedicel flat, second node longitudinally grooved in the middle.

Habitat : Bushes. Generally the species of *Crematogaster* tilt their gaster vertically upwards on disturbance and run in that posture. They usually makes carton nest high up on trees. Most of them are aphid tending.

Distribution : Mostly on high altitudes of India.



Crematogaster perelegans Forel

25. *Crematogaster subnuda* Mayr

Size 3-3.5 mm.

Head, thorax and pedicel, antennae and legs brownish red; pilosity sparsely spread on thorax and apex of gaster, pubescence white, appressed, widely and regularly arranged all over; head smooth with a small striae surrounding antennal hollows; mandibles striate; clypeus broad, anterior portion almost transverse; eyes lateral, situated on middle, more to posterior part; scape clearly reaching top of head; flagellum formed of apical three joints; pronotum flat above, rugulose, antero-lateral corners

nearly angular; pro-mesonotal suture weakly and meso-metanotal suture clearly indicated; propodeal spines straight and acute; apex of propodeum smooth; petiole semicircular in front, sides angular; post-petiole shallowly longitudinally grooved; gaster broadly cordate.



Crematogaster subnuda Mayr

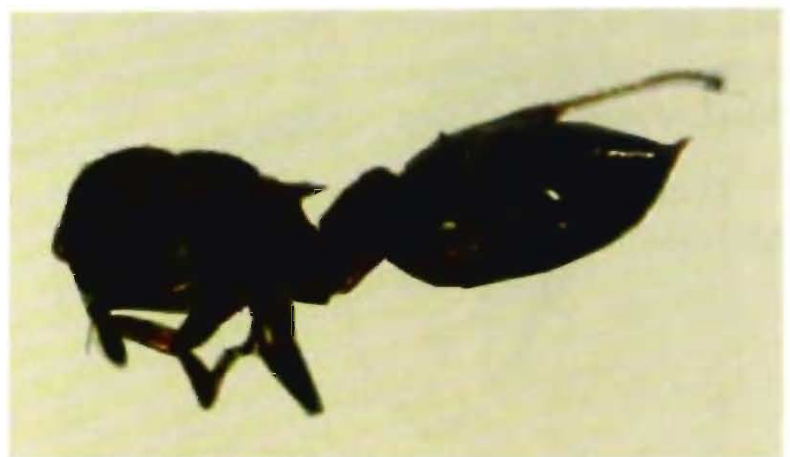
Habitat On plants as well as on ground.

Distribution : Throughout India, Myanmar and Sri Lanka.

26. *Crematogaster rogenhoferi* Mayr

Size: 3.5 to 4.5 mm.

Yellowish brown with legs pale and gaster dark; most of specimens possess brown shade on vertex; pilosity short, very rare; pubescence thin, appressed, widely placed; head and apex of metanotum longitudinally striate; pro-mesonotum and pedicel longitudinally rugulose; gaster finely and faintly minutely reticulate, polished and shining; head almost square; mandibles longitudinally striate with five teeth on it; clypeus convex, anterior margin transverse; antennae 12-jointed, scape reaching top of head; eyes somewhat



Crematogaster rogenhoferi Mayr

prominent, lateral, on midline; ocelli distinct; pronotum flat above, rounded anteriorly; pro-mesonotal suture not very conspicuous, but present; mesonotum laterally margined, narrow, posteriorly obliquely curving down with a concave face; meso-metanotal suture distinct; apical face of propodeum smooth, polished; propodeal spines long, pointing backwards and a little downwards; node of pedicel thick, anteriorly rounded, sides angular in the middle; post petiole with a small anterior tubercle followed by two tubercles medially divided by a longitudinal channel; gaster massive.

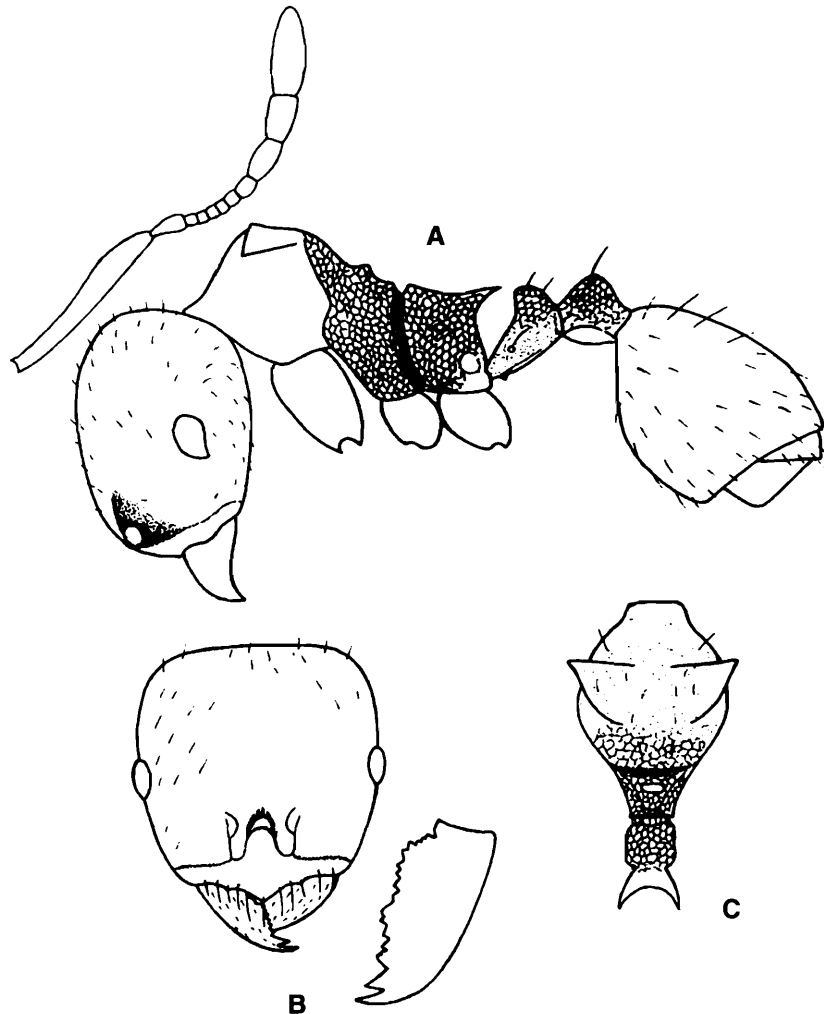
Habitat : It is very common found on plants.

Distribution : Throughout India.

27. *Lophomyrmex quadrispinosus* (Jerdon)

Size : 2.7-4 mm.

Brownish orange red with colour lighter on legs; gaster brown with an yellow tint; whole body polished and shining; head, pronotum, propleura and abdomen smooth, polished and shining, mandibles basally finely striate, pronotal collar feebly shagreened, remaining portions of thorax, and pedicel reticulate punctate; body with yellowish sub erect hairs, more on antennae, legs and gaster, less on thorax; antennae 11 jointed, eyes small, placed at middle, lateral, with an antero-ventral point; pronotum with an anterior vertical face whose sides ends in two strong teeth above, facing forwards; thorax narrow behind propodeum and laterally margined from pronotal tooth to propodeal spines but



Figs. A-C. *Lophomyrmex quadrispinosus* (Jerdon)
A. Body profile & Antenna; B. Head front view & mandible; C. Thorax dorsal view.

interrupted at sutures; propodeal spines slightly down curved; petiole with a long peduncle anteriorly; post petiole broader than petiole; gaster with first tergite covering 2/3 length.

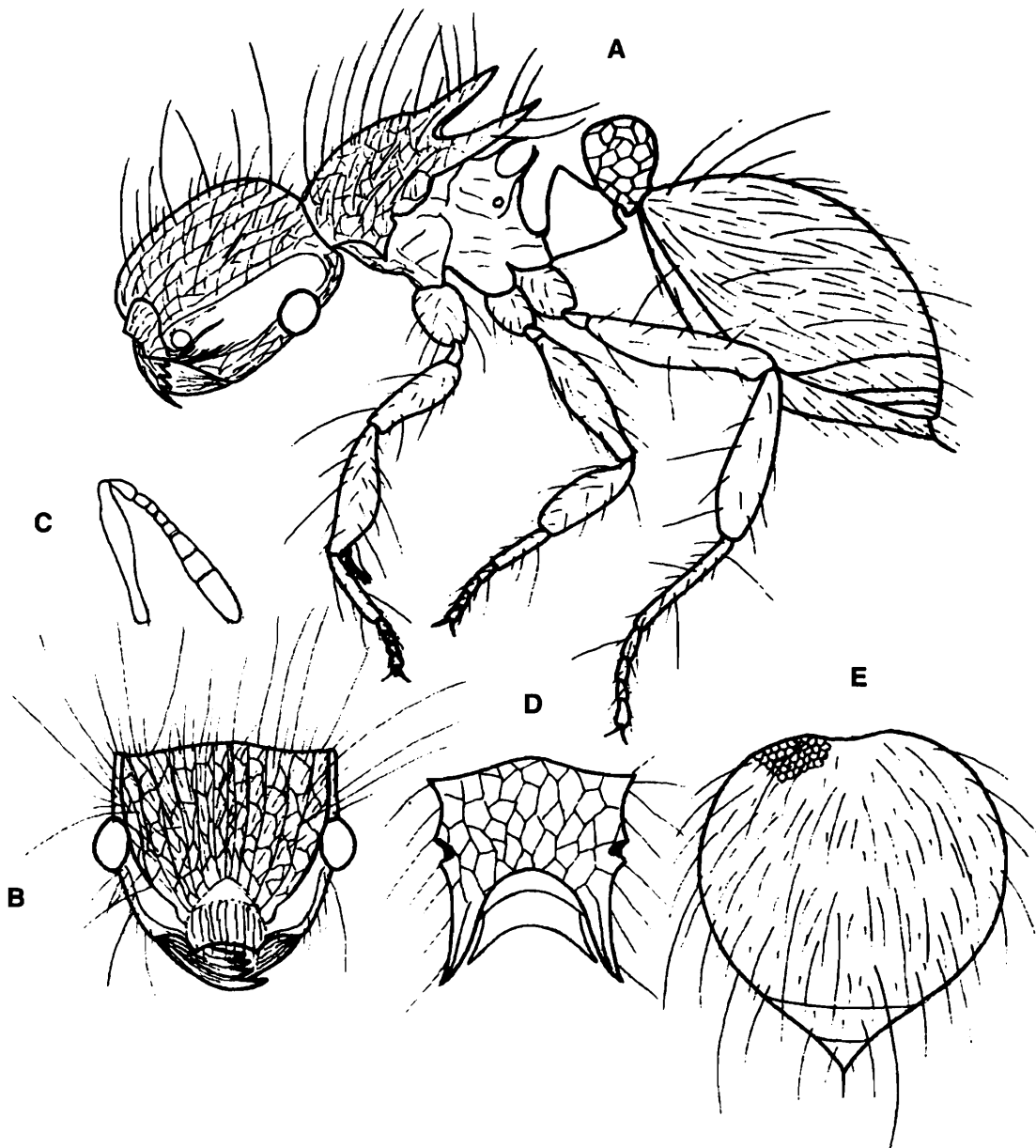
Habitat They are being collected from soil as well as from bushes.

Distribution : Throughout India.

28. *Meranoplus bicolor* (Guer.)

Size 4-5 mm.

Head, thorax, pedicel and legs red, gaster black; whole body covered with very long, long and small hairs; head, thorax and post petiole coarsely striate, reticulate;



Figs. A-E. *Meranoplus bicolor* (Guer.)

A. Body profile; B. Head front view. C. Antenna; D. Thorax dorsal view; E- Gaster dorsal view.

propodeum and petiole smooth, polished; gaster minutely reticulate; head trapezoidal; antennae 9-jointed; eyes prominent, lateral; pro-mesonotal shield fused, with an incision on sides at pro-mesonotal suture; pronotum dentate; mesonotum posteriorly projecting in two long acute spines; propodeum with two slender spines; petiole node triangular in profile; post petiole globose, larger than petiole; gaster heart shaped.

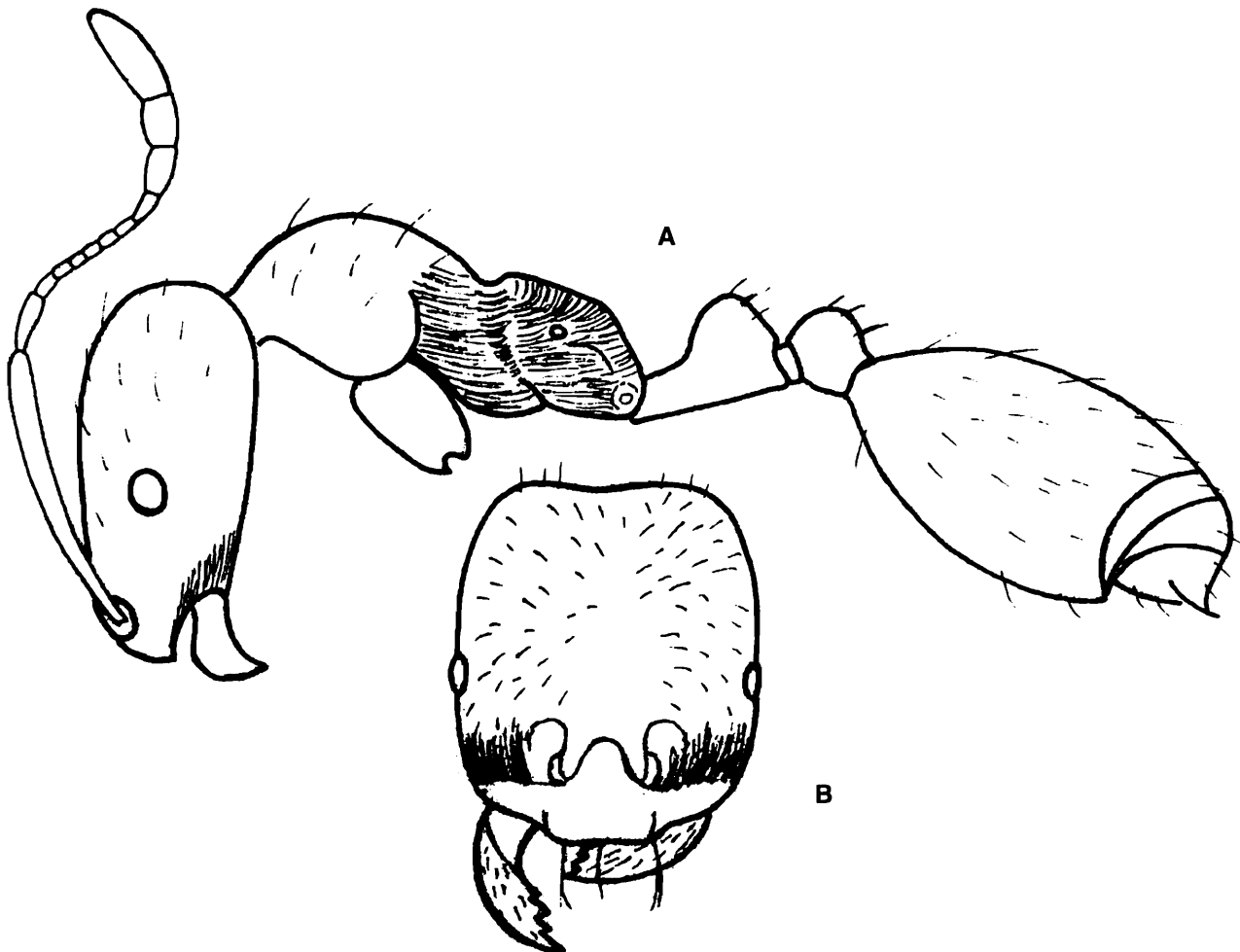
Habitat : Sluggish, make subterranean nests with some outlets on surface.

Distribution : Throughout India.

29. *Monomorium destructor* (Jerdon)

Size : 2.5 to 3 mm.

Head, antennae, thorax, legs and pedicel reddish yellow; gaster brownish black with an yellow colour at base; head, pronotum, mesonotum, pedicel and gaster smooth, shining; propodeum faintly transversely striate; striae continuing on metathoracic



Figs. A-B. *Monomorium destructor* (Jerdon)
A. Body profile; B. Head front view.

sternites; mesonotum finely minutely punctate; mandibles weakly longitudinally striate; head with longitudinal striations on either side of antennal hollows and on lateral portions of clypeus; pilosity long, sparse, pale yellow, more on gaster; pubescence sparse; head longer than broad; each mandible with one apical tooth and three small denticles; clypeus anteriorly a little depressed, anterior margin transverse; antennae 12-jointed, scape reaching vertex; thorax narrowing towards posterior side; pro-mesonotum together form a single convexity; meso-metanotal suture deep with longitudinal ridges within, groove continuing laterally; postero-dorsal angles of propodeum prominent; petiole with a long peduncle in front; post petiole lower and broader than petiole; gaster almost flat above, convex below; antero-lateral angles prominent; anterior margin straight.

Habitat : This is one of the most notorious household pests; being very small in size enter into any food stuffs kept anywhere. They bite too, they form lengthy trails and forage from distant places. They live inside cracks and crevices forming small holes.

Distribution : All over India.

30. *Monomorium latinode* Mayr

Size : 3-4 mm.

Head, thorax, and pedicel yellowish brown; mandibles, antennae and legs honey yellow; abdomen dark brown; whole body smooth, polished and shining; metanotum and sides of mesonotum transversely striate; pilosity moderate, brown, suberect; pubescence absent. Head longer than broad; scape of antennae reaching top of head; club of flagellum thick formed of apical three segment; eyes lateral, situated in front of midline; pro-mesonotum together forming a convexity, behind which metanotum narrow and almost straight, meso-metanotal suture distinct; propodeal spiracles distinctly indicated; propodeum with upper



Monomorium latinode Mayr

angles sub margined, apex smooth; petiole conical; post-petiole distinctly broader than petiole; gaster broadly oval from above.

Habitat : Seen everywhere and very much sensitive to food materials, a household pest.

Distribution : Throughout India, Borneo, Myanmar, Sri Lanka.

31. *Monomorium pharaonis* Linn.

Size : 2.5-3 mm.

Colour yellow, base of abdomen brownish yellow, the rest black; head, thorax and pedicel minutely granulate; gaster smooth, polished; pilosity a few white hairs on tip of abdomen and pedicel; an appressed short pubescence visible only on antennae; head distinctly elongate; anterior margin of clypeus rounded; scape of antennae reaching top of head, club thick, formed of apical three segments; eyes lateral and more anterior; pro-mesonotal suture weakly indicated; pronotum broad; mesonotum elongate; meso- metanotal suture deep; propodeum also long; posterolateral angles of propodeum somewhat prominent; petiole cuneiform, thick; post-petiole rounded, broader than petiole; abdomen broadly oval.

Habitat : A common species, always sneak in to the kitchen.

Distribution : Throughout India and all tropical regions.

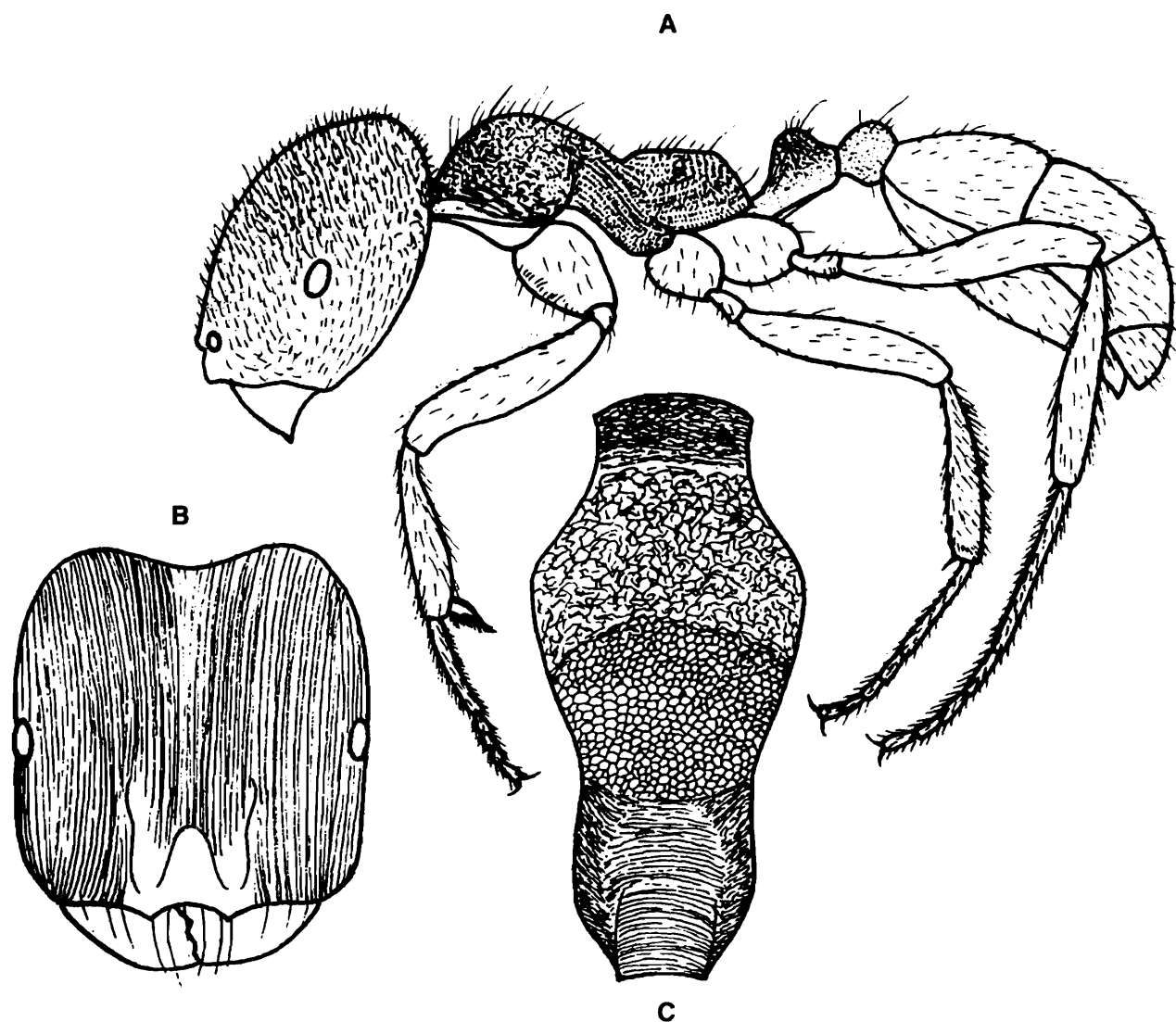


Monomorium pharaonis Linn.

32. *Monomorium scabriceps* (Mayr)

Size : 4.8 mm.

Head, thorax, trochanters and pedicel brownish red; gaster, legs and antennae blackish brown; tibiae of legs and flagellum of antennae with a red tint, tarsi of legs and apex of terminal club segment reddish yellow; head except clypeus finely longitudinally striate, punctate; clypeus smooth, polished and shining; mandibles striate, opaque; ventral side of head widely punctate; pro-mesonotum granulate, rugulose; propodeum transversely rugulose, punctate; pro-thoracic sternite and meso-sternite



Figs. A-C. *Monomorium scabriceps* (Mayr)
 A. Body profile; B. Head front view C. Thorax dorsal view.

punctate, latter posteriorly rugulose, metasternite basally longitudinally striate, becoming rugose above; pedicel rugoso-punctate; gaster smooth, polished; head and gaster with abundant long appressed white pubescence and pedicel and legs with sparse, decumbent short hairs; head posteriorly emarginate; mandibles with two apical blunt teeth; anterior margin of clypeus with two minute clypeal teeth; antennae 12-jointed, club not thick, all segments elongate; eyes small, lateral, situated in front of mid-transverse line; pro-mesonotum together form a single convexity; meso-metanotal suture deep, postero-lateral corners prominent, carinate; pedicel, short, slender, ventral flange continuing throughout peduncle; node of petiole and post petiole subequal.

Habitat They make small nests on ground by excavating soil.

Distribution India from Punjab to Kerala.

33. *Myrmica rugosa* Mayr

Size : 6 mm.

Dark brown; mandibles, antennae and legs with a red tint; head and thorax longitudinally striate, rugose, pedicel opaque; mandibles and clypeus finely longitudinally striate; gaster smooth; pilosity white, suberect, scattered, more on gaster and pedicel; pubescence only on legs and antennae; head rectangular; mandibles with two sharp teeth followed by a few ill-defined denticles; clypeus convex, anterior margin angulate; antennal sockets touching clypeal margin; antennal scape reaching top of head; club of flagellum formed of apical 4 joints; eyes prominent, lateral; pro-mesonotal suture not distinct; meso-metanotal suture distinct; propodeal spines long, acute; hind legs with pectinate spur; petiole node very small with a short peduncle in front; node longer than broad, anteriorly rounded, posteriorly gradually sloping; post petiole broader than petiole; rounded above, anteriorly narrow; gaster oval.



Myrmica rugosa Mayr

Habitat : Seen foraging on ground. They are restricted to high altitude.

Distribution : Himalayas.

34. *Myrmica smythiesii* Forel

Size : 4 mm.

Dark brown; antennae and legs lighter in colour; polished and shining with sub erect and decumbent, silvery white hairs (erect on thorax) widely dispersed all over; and antennae, legs and mandibles covered with short appressed hairs; head, thorax and pedicel rugoso-reticulate; gaster smooth; legs appear slightly shagreened in certain reflections of light; mandibles finely striate with one or two sharp teeth at apex, followed by a number of small denticles; clypeus broad, anterior margin broadly angulate in the middle; frontal lobes wide apart; antennae 12-jointed with a 4-jointed club; scape almost reaching posterior lateral corners of head; eyes lateral, big,



Myrmica smythiesii Forel

prominent, close to base of mandibles; occipital carina sharp and distinct; thorax with an anterior collar, pro-mesonotum evenly convex; pro-mesonotal suture dorsally not conspicuous, laterally distinct; meso-metanotal suture distinct and thorax emarginate on this suture; propodeum constricted at base of spines, dorsally; spines straightly produced backwards; length of spines less than distance between their apex; apex of propodeum polished and shining, smooth except a few rugae in between spines; metapleural lobes finely angulate; petiole and post petiole thicker; post petiole a little broader than petiole.

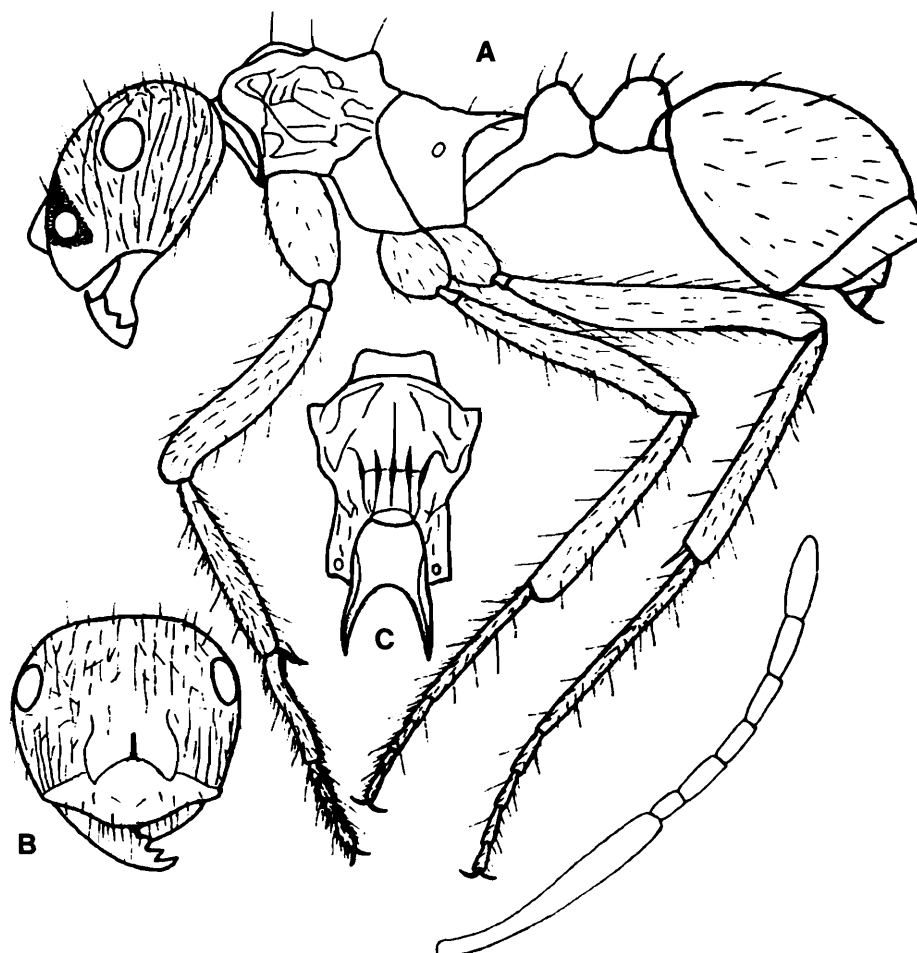
Habitat : High altitudes, on ground.

Distribution : Himalayas.

35. *Myrmicaria brunnea* Saunders

Size : 5.5-8 mm.

Dark red to brownish black; mandibles and scape of antennae finely longitudinally striate; head except vertex and thorax widely striate, vertex rugoso-reticulate; nodes



Figs. A-C. *Myrmicaria brunnea* Saunders
A. Body profile; B. Head front view; C. Thorax dorsal view.

of pedicel and gaster smooth, polished and shining; pilosity abundant, long, reddish yellow; very long setae also spread all over body; minute pubescence present on flagellum and coxae; head more or less rounded; mandible with 4 teeth; antennae 7 segmented; a median longitudinal carina running parallel to frontal lobes extending up to vertex; pronotum globose, convex and rounded above with anterior lateral angles above and below marked by distinct tubercles, prosternal tubercles developed into acute spines beneath; pronotum broad, pro-mesonotal suture obsolete, mesonotum ending posteriorly in a transverse carina, subdentate at lateral angles; metanotum in a level lower than mesonotum, narrow, cubical, dorsally concave, sides margined by a carina, meso-metanotal suture distinctly indicated; propodeal spines acute, oblique; nodes of pedicel conical, sub-equal, slightly compressed with a distinct but narrow surface; peduncle of petiole long; length of petiole and post-petiole subequal; abdomen broadly oval, subglobose.

Habitat : They are sluggish, attracted equally towards sweets and meat; they are regular visitors inside toddy pots on coconut trees in Kerala. Some localities are found wholly covered by them. They make their nests on soil. While moving they look smaller in size, for their peculiar articulation of peduncle.

Distribution : Throughout India.

36. *Pheidole multidentis* Forel

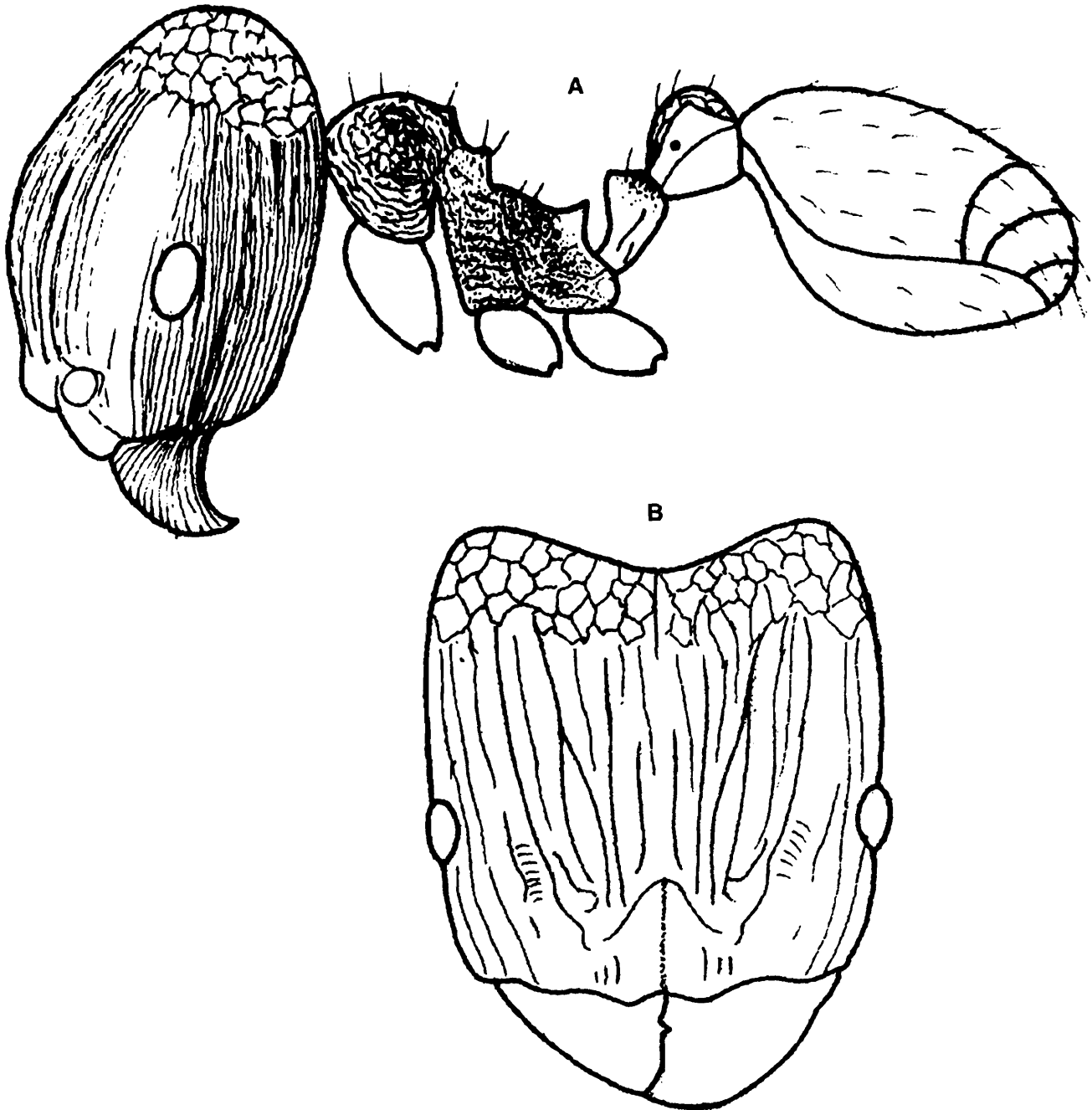
Size : 3.5-4 mm.

Soldier : Head and thorax brownish red; pedicel yellow; gaster brown with an yellow tint anteriorly and more dark behind; whole body covered with long erect and suberect hairs; whole insect shining with head longitudinally weakly striate, punctate; pronotum smooth with superficial rugae; mesonotum, propodeum and pedicel lightly punctate, rugulose; gaster polished and smooth, mandibles smooth; anterior margin of clypeus emarginate, clypeus smooth, eyes prominent, lateral more towards anterior side; frontal grooves punctate; pronotum convex above, sides almost rounded; mesonotum with two tubercles; thorax emarginate at meso-metanotal suture, propodeal spines small, straight; node of petiole thin and transverse above; post petiole more than twice broader than petiole; its sides angulate; abdomen broad.

In all species of *Pheidole*, worker minors are looking entirely different with a normal head and slender body, and dentate mandibles.

Habitat Ground as well as bushes.

Distribution South India, Western India, Uttar Pradesh and West Bengal.



Figs. A-B. *Pheidole multidentis* Forel
A. Body profile; B. Head front view.

37. *Pheidole sharpi* Forel

Size : 4.5-5.5 mm.

Soldier : Head, thorax and pedicel brownish red, gaster dark brown, posterior margins of gastral segments testaceous; mandibles edentate, black; antennae and legs a shade paler than body; whole body covered with abundant erect reddish yellow hairs; mandibles lightly punctate; clypeus narrow with anterior margin depressed, with median smooth area and on which a carina; head finely longitudinally striate with posterior lobes reticulate and sharp depression on vertex; eyes small, lateral, placed anterior to mid line; thorax transversely striate, rugose; pronotal angles tuberculate; mesonotum with a ridge, meso-metanotal suture distinct; propodeal spines short, pointing vertically upwards; first node of pedicel with appendix beneath, with a transverse margin above; postpetiole twice as broad as long, transversely striate above; gaster flat above fully longitudinally striate.



Pheidole sharpi Forel

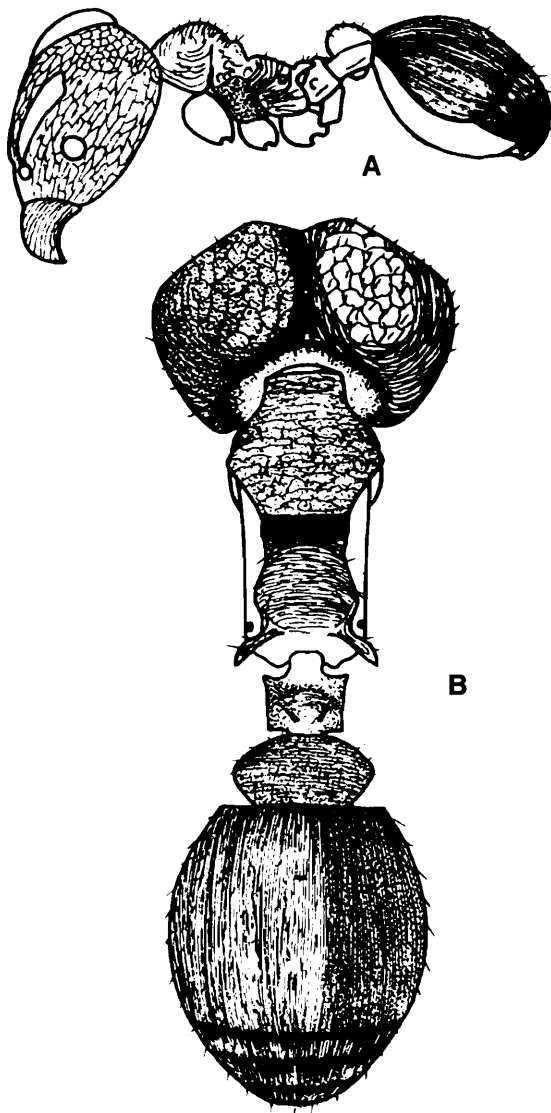
Habitat : Seen on ground and bushes.

Distribution : All over India.

38. *Pheidole spathifera* Forel

Size : 6.4 mm.

Soldier : Head, thorax and pedicel brownish red, antennae and legs ferruginous red; mandibles centrally red, sides black; gaster brownish black with posterior margin of tergites testaceous yellow; clypeus laterally and antero-median margin brownish black; anterior 1/3 of first tergite with a yellowish red tint; whole body covered with abundant, short, brownish red, erect and suberect hairs, pubescence restricted to a few appressed, short ones on antennae and legs; head finely longitudinally striate, reticulate; striae on head posteriorly diverging; beyond depression, head finely reticulate; whole body finely distinctly punctate; pro-meso and metanotum and post-petiole transversely striate; gastral tergites finely longitudinally striate; petiole and its appendix punctate; gastral sternites, especially first one smooth, polished; head length and posterior breadth subequal; occipital margin deeply emarginate; mandibles broad, stout, with two apical teeth; antennae 12-jointed, all flagellar segments elongate, club three jointed;



Figs. A-B. *Pheidole spathifera* Forel
A. Body profile; B. Body dorsal view.

eyes prominent, round, lateral, placed in front of midline; sides of pronotum subtuberculate; meso-metanotal suture deep; metanotum in a lower level than mesonotum; propodeal teeth long, curved, medially thicker than apices and base; petiole with a large, flat appendix beneath; node emarginate above, in dorsal view petiole node with lateral keels, antero-lateral corners of which form small teeth; post petiole broader than petiole; gaster biconvex, anterior margin transverse.

Habitat : Found on soil surface.

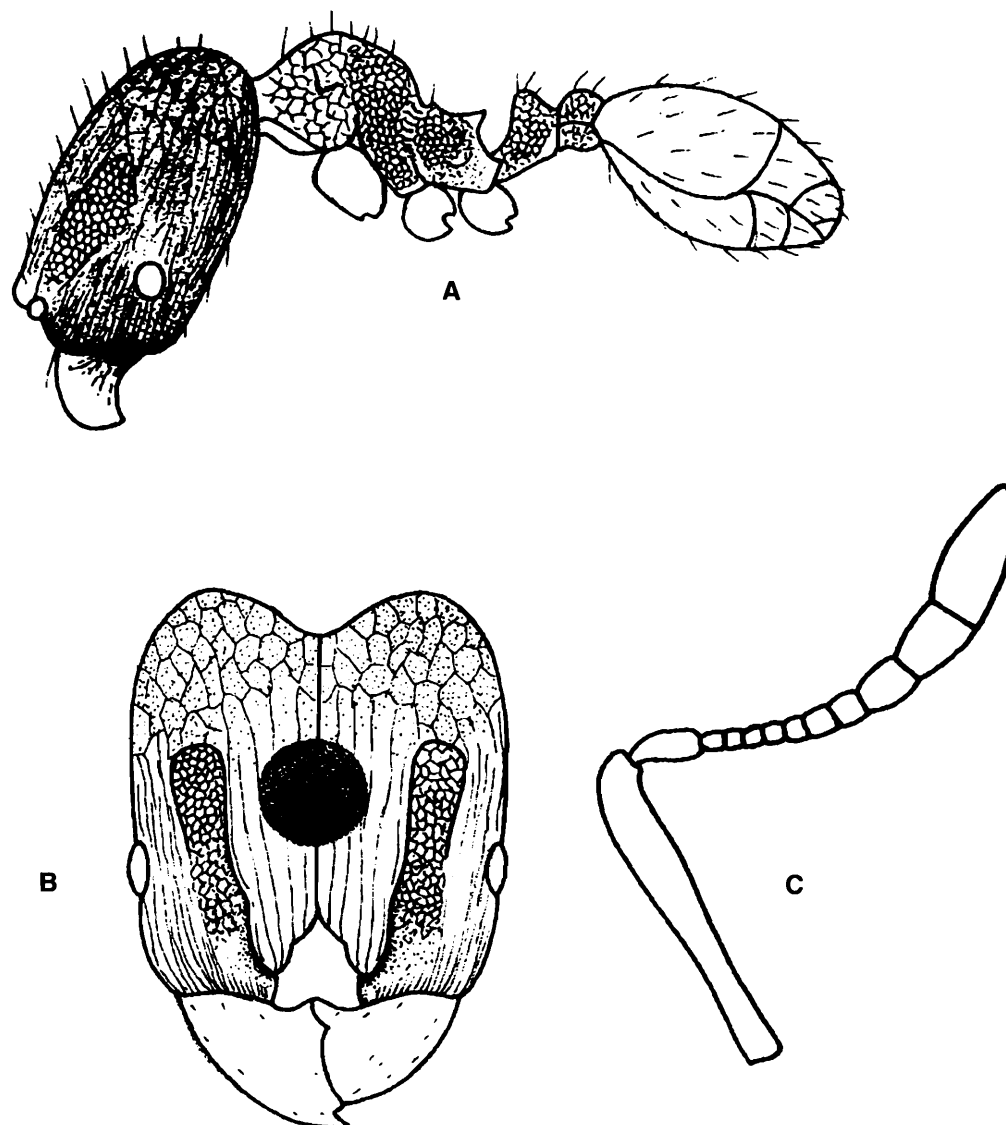
Distribution : India (Assam, Karnataka, Kerala, Tamil Nadu, West Bengal)

Elsewhere : Myanmar.

39. *Pheidole wood-masoni* Forel

Size : 2.87 mm.

Soldier : Head, thorax, mandibles and pedicel rusty red, antennae and legs testaceous yellow; head mid-dorsally with a black patch; masticatory margin of mandibles black; gaster brownish black, posterior margin of tergites with a yellow tint; head anteriorly with longitudinal striations, beyond posterior half weakly reticulate, punctate, occiput and clypeus smooth, thorax and pedicel finely punctate; pronotum with a few mid-dorsal rugae; gaster smooth, polished and shining; head with abundant, appressed, decumbent hairs, on thorax hairs erect and long; gaster with abundant, long, decumbent hairs; scape of antennae with sparse, suberect hairs and flagellum and tarsi with dense appressed pubescence; head distinctly longer than broad; mandibles smooth with two large apical teeth and a small basal tooth; antero-ventral margin of head



Figs. A-C. *Pheidole woodmsoni* Forel
 A. Body profile; B. Head front view; C. Antenna

medially bidentate; anterior margin of clypeus medially intended; antennae of 12-joints, short, flagellar segments 2-8 transverse, club three jointed; eyes small, lateral, placed well in front of midline; pro-mesonotum forming single convexity; pronotum laterally broadly tuberculate; pro-mesonotal suture indistinct; meso-metanotal suture deep with cross ridges, continuing laterally and ends in between mid and hind coxae; propodeum laterally margined, posteriorly ends in two short, erect teeth; femora and tibiae swollen; petiole medially widely emarginate above; node cuneiform, post-petiole convex above, distinctly broader; gaster broadly oval, almost flat above.

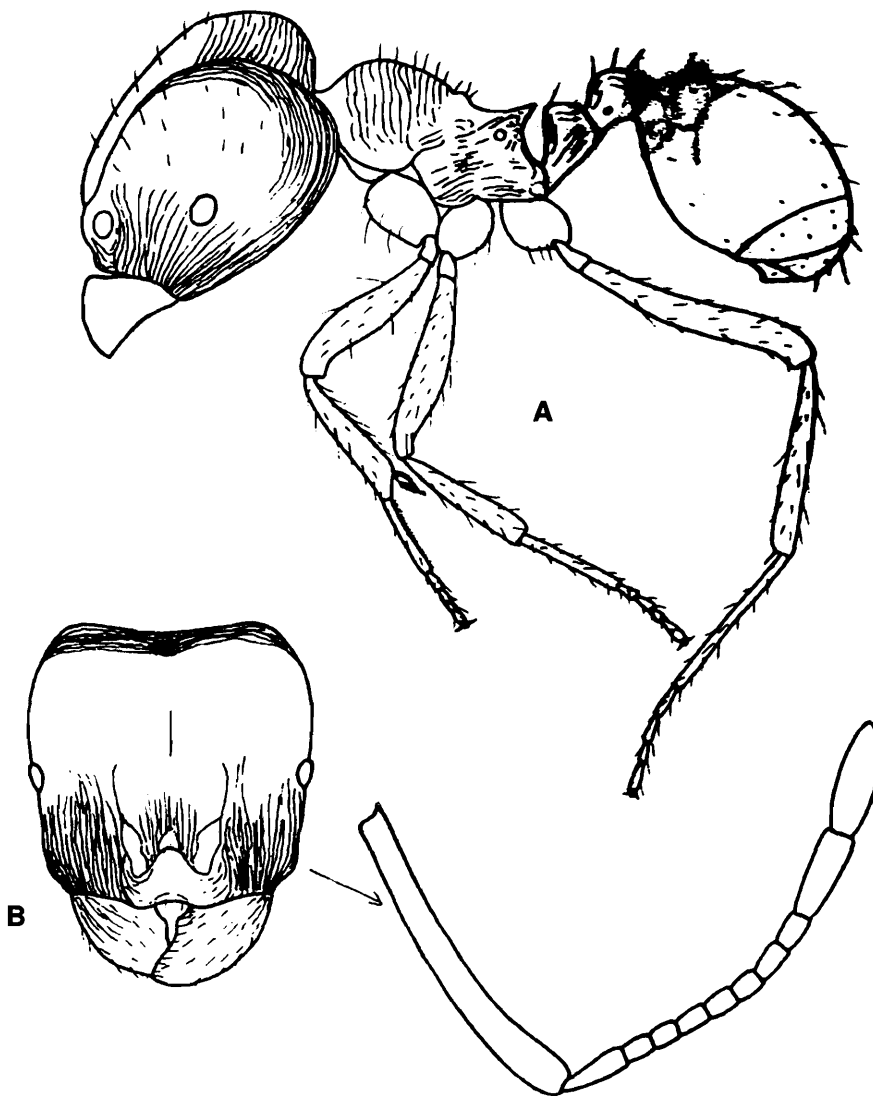
Habitat : Ground dwelling.

Distribution : Throughout India and Sri Lanka.

40. *Pheidologeton affinis* (Jerdon)

Size : Soldier 5 to 11mm, worker 2 to 2.5 mm.

Soldier Head red, thorax and pedicel yellowish brown, gaster brown; clypeus, middle of head and gaster smooth, polished and shining; anterior half and sides of head, base of mandibles longitudinally striate; vertex, thorax and petiole rugose; ocelli absent. Rest of the characters same as *P. diversus*.



Figs. A-B. *Pheidologeton affinis* (Jerd.)
A. Body profile & antenna (Soldier); B. Head front view (Soldier)

Worker minors of *Pheidologeton* are normal and slender bodied and their mandibles possess distinct teeth.

Habitat : The same as *P. diversus* Jerdon

Distribution : India (Assam, Western India, West Bengal); Celebes, Malaysia.

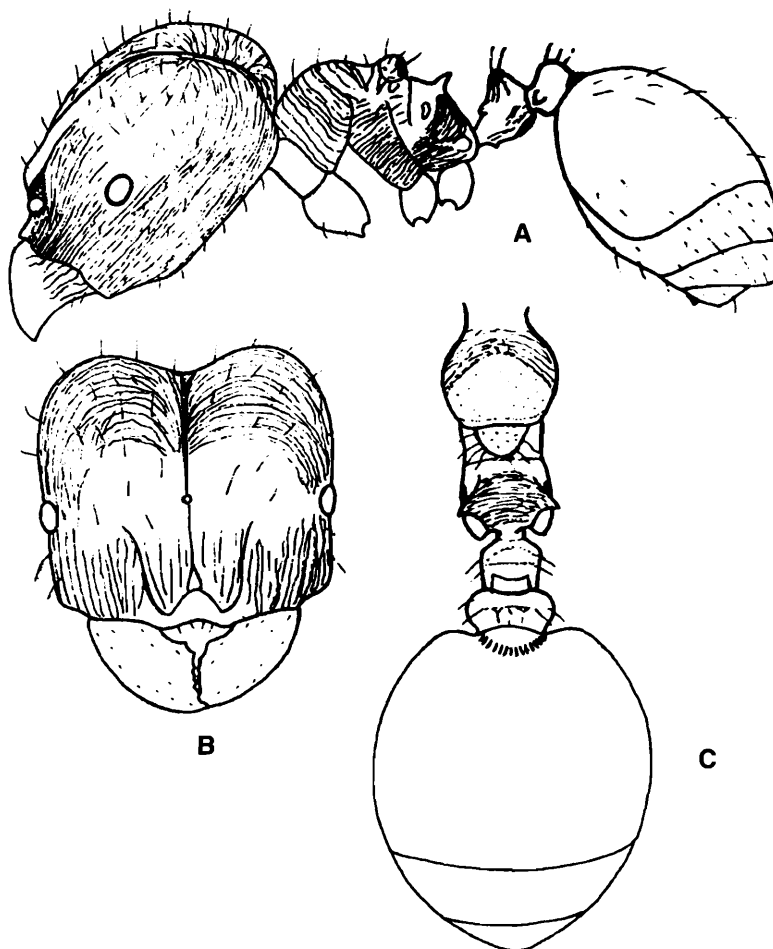
41. *Pheidologeton diversus* (Jerdon)

Size : Soldier : 4.5-14 mm; Worker : 2.5-3.5 mm.

Soldier : Brownish red, gaster darker with margins of tergites testaceous, mandibles black, clypeus brownish black; anterior half of head, cheeks and sides of thorax longitudinally striate, vertex and pronotum transversely striate, mesonotum smooth, propodeum and pedicel rugoso-punctate, gaster with scattered superficial punctures, remaining portions smooth, polished and shining; moderate number of brownish yellow, long and short setae intercalate all over, more on head and thorax; head posteriorly deeply emarginate, mandibles large with two apical teeth followed by minute serrations; anterior margin of clypeus medially emarginate, antennae 11-jointed, scape reaching up to level of anterior margin of eye; club formed of apical two joints; eyes small, lateral, situated on midline, more to anterior side; a median longitudinal furrow divide head into two lobes, a single ocellus situated inside this furrow; promesonotum together form a dome like convexity and a shallow depression at its posterior end of pronotum and sub-tuberculate; mesonotum behind posterior margin with a shallow depression; beyond which margin projecting a little upwards; scutellum small, prominent, semicircular; propodeum depressed medially and from sides, propodeal spines short, erect; legs proportionately small; petiole node thick, upper margin emarginate, antero-ventrally with an acute short spine, ventral keel very thin; post petiole broad, lateral keels present; anterior margin of gaster transverse and constriction with fine ridges.

Habitat : They make long channels on ground and forage in large group.

Distribution : India (Kerala, Pune, Sikkim, West Bengal) Myanmar, Malayan subregion.



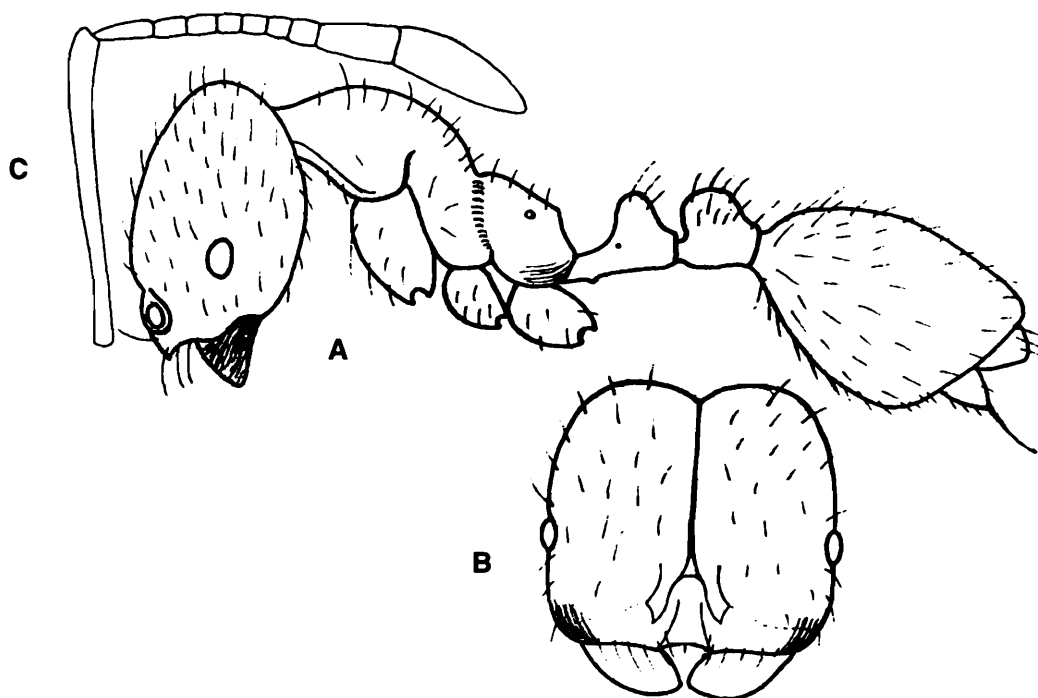
Figs. A-C. *Pheidologeton diversus* (Jerd.)

A. Body profile; B. Head front view; C. Thorax & Abdomen dorsal view.

42. *Solenopsis geminata* (Fab.)

Size : Soldier : 7-8 mm; worker : 3-4.5 mm.

Reddish yellow, gaster basally reddish yellow and remaining blackish brown, masticatory margin of mandibles black, striate; meso and meta sternites weakly rugosopunctate, otherwise body smooth polished and shining with scattered reddish yellow erect and suberect pilosity and on antennae and tarsi a thin appressed pubescence; mandibles with four teeth, clypeus bicarinate and anteriorly ends in two teeth; antennae 10 segmented, club thick, eyes small, lateral on mid line; vertex with a median, longitudinal superficial groove; pro-mesonotum forming a single convexity, no suture in between; thorax emarginate at meso-metanotal groove; prepodeum in a lower level than pro-mesonotum; apex of propodeum margined so that corners somewhat angulate; petiole with a long peduncle in front; ventrally peduncle with a small tubercle in the middle; node broader than long, rounded above; post-petiole sub globose; broader and thicker than petiole; gaster with a constriction at its joining with post-petiole; 1st tergite covering more than 4/5 gaster; sting powerful exerted.



Figs. A-C. *Solenopsis geminata* (Fab.) A. Body profile (Worker minor); B. Head front view of soldier; C. Antenna

Soldier with a massive head which longitudinally grooved in the middle; head postero-medially incised; mandibles without teeth, when closed do not touch each other.

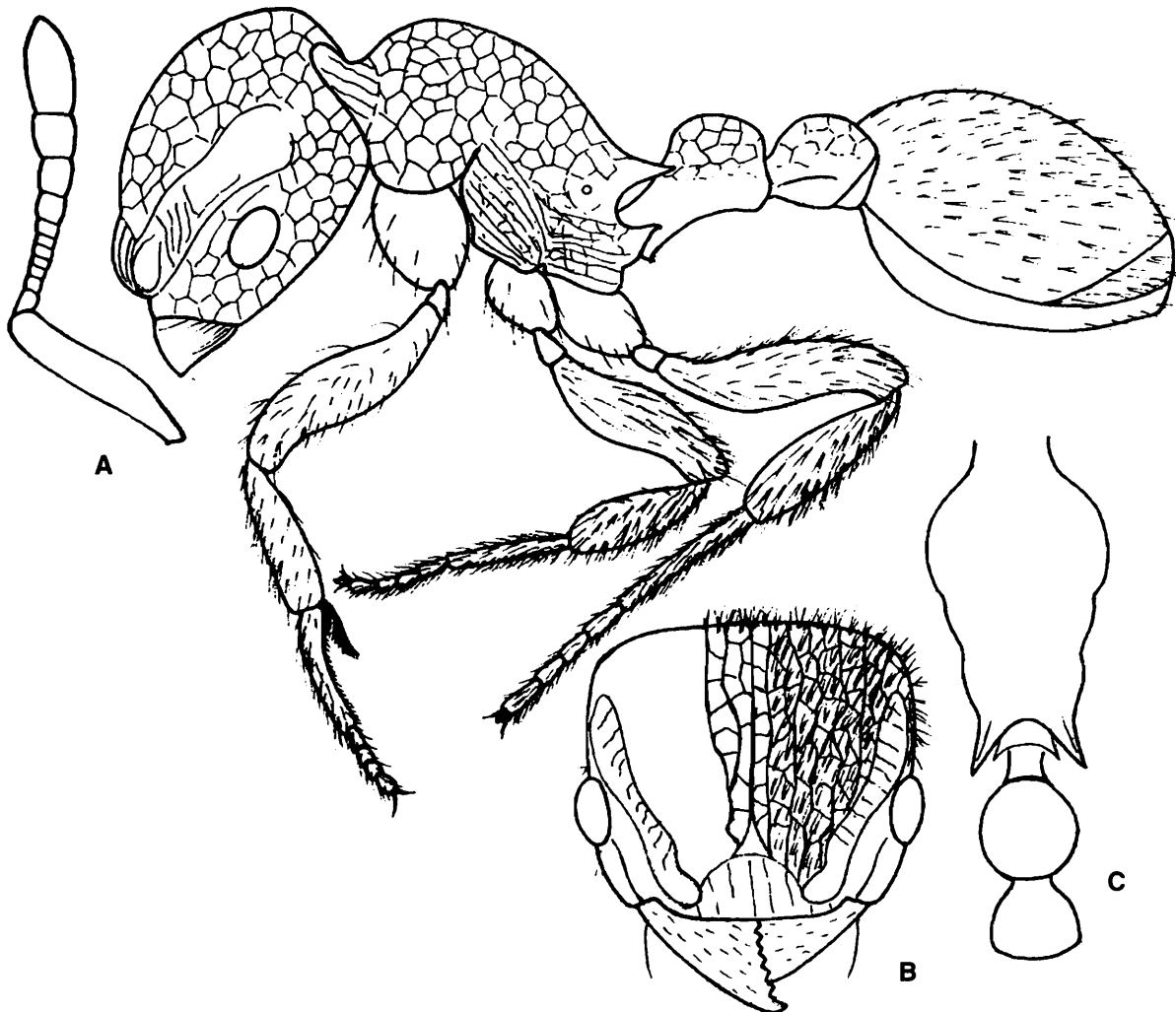
Habitat : These are the ferocious 'fire ants' which massively inflict painful sting. They are one of the most dominant group having a cosmopolitan distribution; survive in any adverse ecological situations. They are carnivorous and make their nests under ground with number of outlets. They are good soil turners also.

Distribution : Cosmopolitan.

43. *Tetramorium lanuginosum* Mayr

Size : 2 to 2.5 mm.

Head, thorax and pedicel rusty brown, abdomen clear blackish brown, posterior margins of gastral tergites with light golden tint, legs and antennae testaceous; head, thorax and pedicel densely rather coarsely rugoso-reticulate and opaque; abdomen smooth, polished and shining; whole body covered with long, soft, white, dense pilosity, hairs bifid and trifid; on gaster most are single hairs so not abundant; masticatory



Figs. A-C. *Tetramorium lanuginosum* Mayr
A. Body profile & antenna; B. Head front view. C. Thorax & pedicel dorsal view

margins of mandibles with three distinct apical teeth followed by three or four small denticles; anterior margin of clypeus transverse, slightly depressed inwards; frontal carinae reaching well beyond posterior eye margin; antennae short, 12-jointed; eyes lateral, oval, placed on midline, more anterior; thorax with an anterior short neck; metanotum laterally carinate; propodeal spines extend beyond base of petiole node;

spines acute, straight; metasternal teeth long, acute, upcurved; pedicel with petiole circular in dorsal view and post petiole semicircular; petiole higher than post petiole; post petiole distinctly broader than long and broader than petiole; postero-dorsal corners of petiole less angulate than antero-dorsal corners.

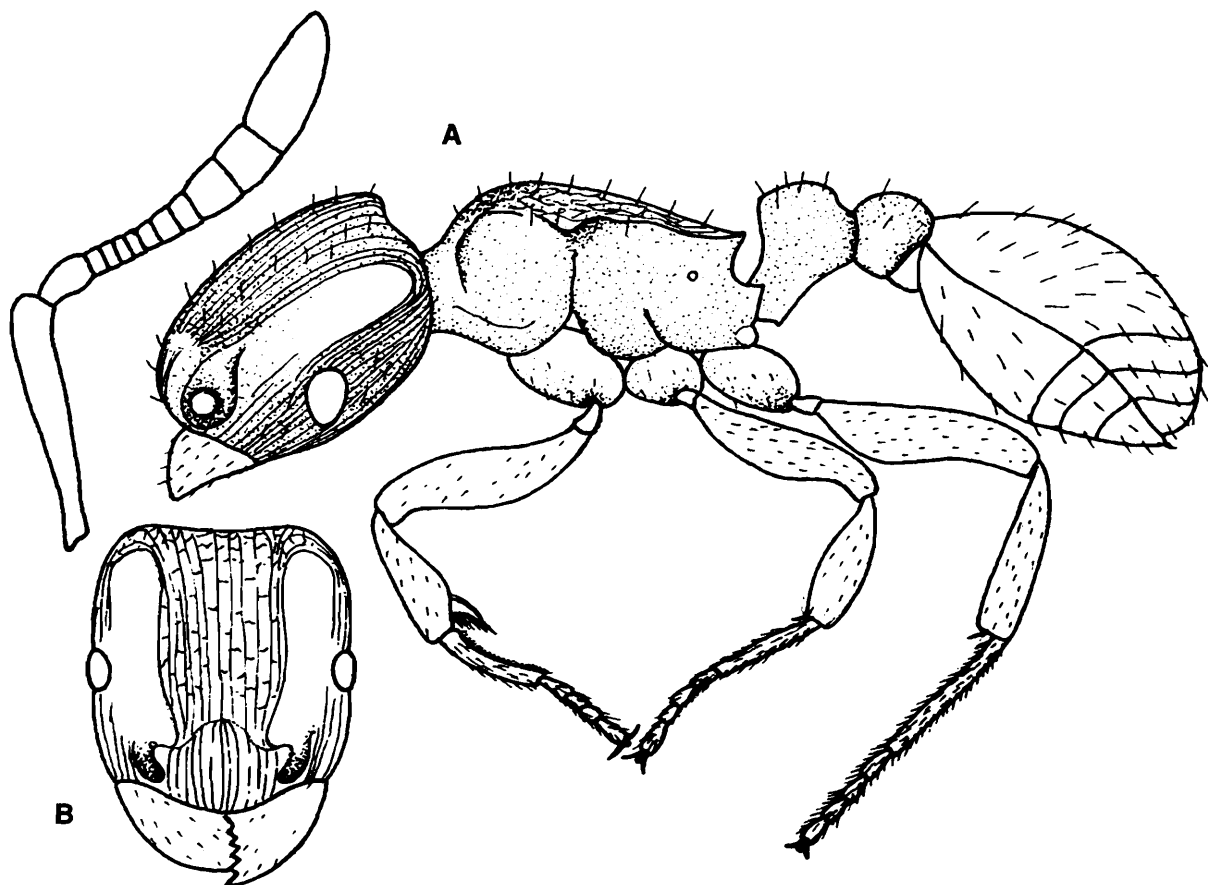
Habitat Seen mostly on plants.

Distribution Almost all Oriental and Australian Regions.

44. *Tetramorium simillimum* (F. Smith)

Size : 2 to 2.5 mm.

Yellowish brown, antennae and legs a shade paler, gaster dark brown; head longitudinally striate with posterior margin and region below eyes rugose; frontal cavity with small punctures; thorax dorsally reticulate, finely punctate; nodes of pedicel punctate, rugose; spaces between sculpture all over body completely filled by a dense punctation so that surface appears dull, matt and granular; gaster smooth, polished and shining; whole body except legs and antennae with short, scattered, erect hairs, generally longer on gaster; hairs blunt and stout; legs and antennae with small appressed pubescence; masticatoy margin of mandibles with three acute apical teeth



Figs. A-B. *Tetramorium simillimum* (F. Smith)
A. Body profile; B. Head front view.

followed by three smaller ones; clypeus broad with a distinct median carina and a few striations; frontal carinae touching almost posterior margin; antennae 12-jointed; pronotum anteriorly round; pro-meso and meso-metanotal sutures indistinct; meso-metanotum slightly margined along their length; propodeum ending in two short, triangular teeth, length of which almost equal to metapleural lobes; pedicel nodes broader than long; petiole with a stout anterior peduncle; post petiole round; first gastral tergite covers $\frac{3}{4}$ its length.

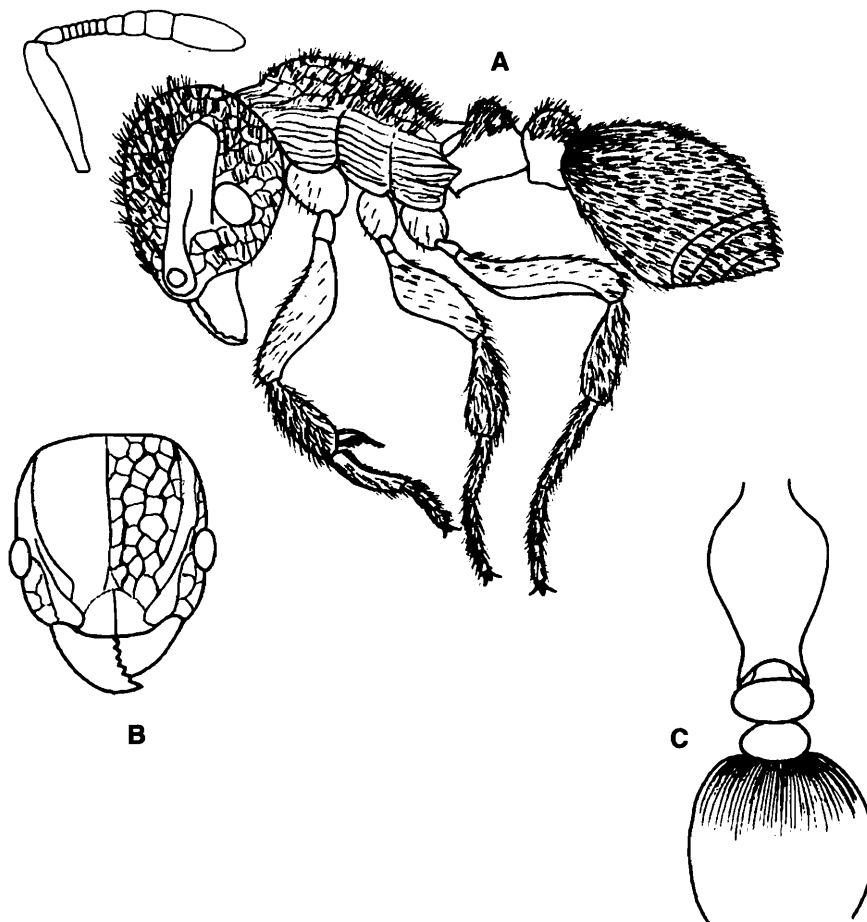
Habitat : On plants as well as ground it can be seen wandering (not in trails).

Distribution : Throughout Oriental Region.

45. *Tetramorium walshi* (Forel)

Size : 2 to 2.6 mm.

Brown in color except lateral part of head, thorax and pedicel which is testaceous, antennae, mandibles, and postero-ventral region of gaster light yellow, legs bright yellow; head, thorax and pedicel finely closely reticulate; gaster striate at base, rest



Figs. A-C. *Tetramorium walshi* (Forel)
A. Body profile; B. Head front view; C. Thorax and gaster dorsal view

smooth, polished; pilosity white and dense, giving a woolly appearance, hairs bifid and trifid; masticatory margin of mandibles with three distinct teeth followed by three or four denticles; clypeus broad with a distinct median carina and two weak carinae on either side of it; anterior margin depressed, transverse; antennae 12-jointed; eyes lateral, prominent, on mid line; thorax short and broad without sutures above; propodeal spines short, divergent, directed backwards and a little downwards; metasternal teeth rounded; petiole node strongly compressed in front and behind; post petiole a little longer than petiole, but not as broad as petiole in dorsal view.

Habitat Ground dwelling, slow moving.

Distribution : India (Karnataka, Kerala, Orissa, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal), China, Philippines, Sri Lanka.

Subfamily PONERINAE

46. *Anochetus graeffei* Mayr

Size : 4.5 to 6 mm.

Head, thorax and pedicel orange red, antennae and legs a shade lighter, gaster black; the whole insect polished, shining; head, thorax and base of gaster with wide punctures as well as longitudinal striations; dense, short appressed pubescence visible on certain reflections of light; mandible elongate, almost parallel sided, situated on the middle with three acute teeth at apex of which middle one small and inner sides of mandible with two margins along their length; clypeus very narrow; antennae 12-jointed filiform situated close to base of mandibles; apical segment of flagellum longest with an acute apex; scape reaching postero-median margin of head; eyes lateral, situated on an extended portion of head, behind which head constricted; thorax with anterior margin of pronotal disc rounded, so that pronotum looks semicircular; thorax narrow

behind pronotum; pro-mesonotal suture distinct; mesosternum smooth, propodeum laterally compressed, postero-lateral angles margined; petiole thin above; sloping behind, vertical in front.



Anochetus graeffei Mayr

Habitat : Seen sluggish on soil surface.

Distribution : India, Australia, Borneo, Indonesia, Malaysia, Sri Lanka, Polinasea, samoa.

47. *Centromyrmex feae* Emery

Size : 3.5-4 mm.

Reddish yellow, covered with short erect hairs, concolorous with body; head and thorax punctured with faint rugae here and there; remaining parts smooth and polished; mandibles very long at outer side and small at inner side, masticatory margins broad; clypeus narrow, depressed; antenna 12-jointed with flagellum gradually thickening to apex; posterior margin and sides of head straight; eyes absent; thorax anteriorly broad and flat; posteriorly narrow and compressed; pro-mesonotal suture distinct; propodeum saddle shaped, apical portions raised and slightly convex; legs short and stout; tarsi tapering to apex; hind tibial spur pectinate; pedicel cubical, with a small ventral spine in front of midline; in dorsal view two small acute teeth on either side of joining of pedicel to thorax; abdomen elongately oval with sting exerted and antero-ventrally a small depressed area whose sides clearly margined.

Habitat : Sluggish in nature, living on ground.

Distribution : Scattered distribution all over India.



Centromyrmex feae Emery

48. *Diacamma rugosum* (Le Guill.)

Size : 8-9.5 mm.



Diacamma rugosum (Le Guill.)

Black with red mandibles and sting; head with longitudinal and pronotum, pedicel and 1st abdominal tergite with longitudinally arched striae, mesonotum and clypeus opaque; metanotum with striae produced in to wrinkles; apex of propodeum with transverse striae which continue obliquely to sides of thorax; whole body covered with fine appressed pubescence and sparse short erect grey pilosity; eyes large prominent, more frontal than lateral,

at middle; pronotum rounded, meso-meta notum subtruncate, hind tibial spurs pectinate; petiole rounded above, convex in front and straight behind with two small straight spines; sting exerted.

Habitat : Make nests under ground below stones and fallen trees. They sting severely with their powerful sting and the pain lasts for long time.

Distribution Common through out India.

49. *Diacamma sculpratum* (Smith)

Size 15 to 18 mm.

Black; mandibles, radicles and joints of antennae and legs with red colour; head with longitudinal striations except on clypeus which is opaque; pronotum with transverse and metanotum and sides of petiole with oblique long striations; apex of propodeum with a triangular excavation which is transversely striate; a fine minute dull pubescence, more visible on gaster; pilosity almost absent; clypeus triangular; antennae 12-jointed; eyes prominent, at middle; pronotum broad, mesonotum narrow, opaque; propodeum and pedicel laterally compressed; spines on pedicel acute and parallel; gaster large; sting large, powerful.



Diacamma sculpratum (Smith)

Habitat : Seen under stones and fallen trees. They sting severely on disturbance and pain lasts for long time.

Distribution : India (Assam, Maharashtra, Meghalaya, Karnataka, Sikkim, West Bengal) Myanmar.

50. *Harpegnathus venator* (Jerdon)

Size : 16 to 18 mm.

Black with mandibles antennae and legs brownish red; head, thorax and pedicel coarsely cribrate; gaster punctate; head, thorax, pedicel and gaster covered with short, erect pale hairs; a thick, appressed pubescence more visible on legs and antennae; antennae 12-jointed; mandibles very long, articulated at sides of head, sickle-shaped, curved upwards, inner side serrated, serrations end in a large triangular laminate tooth

just above base; immediately behind mandibles is situated the large, prominent, oval eyes which is posteriorly broader than anterior side; ocelli present; scape of antennae extending beyond top; thorax rounded above, compressed from sides; promesonotal suture distinct; legs slender, posterior tibial spurs pectinate; node of pedicel long, posteriorly broader, posterior face truncate; gaster with constriction strong.



Harpegnathus venator (Jerdon)

Habitat : Unknown.

Distribution : India, (Assam, Sikkim, Tamil Nadu) Hong Kong, Myanmar.

51. *Harpegnathus saltator* Jerdon

Size : 14 to 17 mm

Body except gaster yellowish red, gaster brownish black, eyes brownish red; head thorax and pedicel coarsely punctured, cribrate; gaster with base of first tergite cribrate, punctate, remaining part of tergites with fine sparse punctures, polished and shining; body covered with soft erect hairs; a fine thin appressed pubescence visible in certain reflections of light; second flagellar segment of antennae longer than first and third. Other characters same as *H. venator* (Jerdon).

Habitat : They are called 'leaping ants' They are found on leaves and tree trunks, sometimes come to light also.

Distribution : North, Central India, China, Myanmar, Sri Lanka.



Harpegnathus saltator Jerdon

52. *Leptogenys chinensis* (Mayr)

Size 8-10 mm.

Black. mandibles, flagellum, radicles and tarsi yellowish red, smooth, polished and shining except a few scattered punctures; long and short abundant suberect and decumbent hairs all over body. Head elongate, posteriorly narrow; mandibles long, linear, apex with an acute tooth; clypeus subtriangular, medially carinate, anterior margin crenulate; antennae long, scape passing beyond head by about its half length; second flagellar segments more than twice basal one; eyes large, lateral at middle; pronotum broad, mesonotum transversely oval in shape dorsally; all sutures distinct; propodeum very long, anteriorly a little narrow, apex laterally with a few transverse striae; middle smooth; tibial spurs and claws pectinate; legs very long; pedicel compressed laterally, narrow in front, posterior face vertical; abdomen long; sting powerful, exerted.

Habitat : Small trails can be seen moving on moist soil surface.

Distribution : All over India, China, Japan, Sri Lanka.



Leptogenys chinensis (Mayr)

53. *Leptogenys kitteli* (Mayr)

Size : 7-8.5 mm.

Black, with a brown tint, mandibles, antennae, legs and hypopygeum testaceous, sting yellow; body covered with sparse, erect, silvery hairs; head, thorax and pedicel finely longitudinally striate; abdomen smooth, the whole insect shining well; mandible with no well defined teeth; anterior margin of clypeus arched; eyes situated towards anterior side; sutures on thorax well marked, thorax emarginate at meso-metanotal suture; claws and posterior tibial spur pectinate; node of pedicel thick and broad, rounded in front and above, flat posteriorly.



Leptogenys kitteli (Mayr)

Habitat : Ground dwelling.

Distribution : Mostly in high altitudes of India (Assam, Kerala, West Bengal) Java, Myanmar.

54. *Leptogenys processionalis* (Jerdon)

Size : 8-9 mm.

Blackish brown, legs and antennae reddish brown; whole insect polished and shining with erect and suberect brownish yellow hairs all over; mandibles finely longitudinally striate; inner side of mandible with small denticulations; clypeal lobe rounded anteriorly; antennae 12-jointed; eyes small, more towards anterior side of head; sutures on thorax well marked; propodeum truncate; node of pedicel thin above, anteriorly sloping and posteriorly compressed; posterior tibial spur and all tarsal claws pectinate

Habitat : Ground dwelling.

Distribution : Throughout India, Borneo and Sri Lanka.

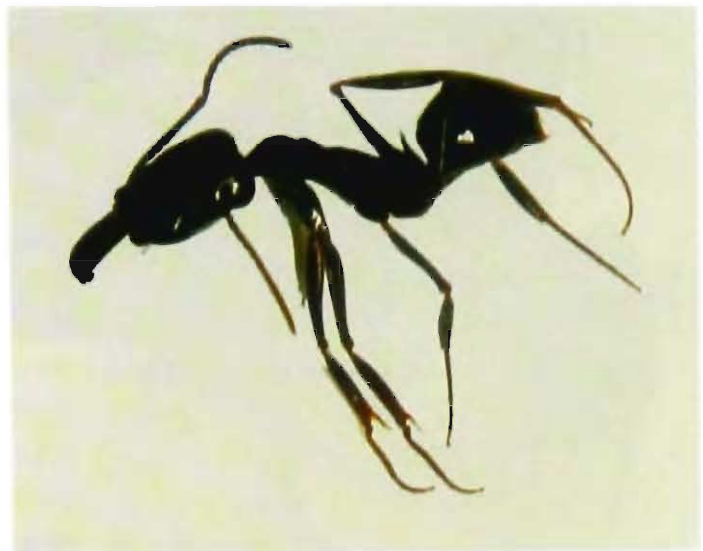


Leptogenys processionalis (Jerdon)

55. *Odontomachus haematodus* (Linn.)

Size : 9 to 11 mm.

Brownish red (some are dark brown) with legs lighter; a fine delicate pubescence all over body; head and pronotum finely longitudinally and meso and metanotum transversely striate; node of pedicel slightly opaque in front, hind face of pedicel and gaster smooth, polished and shining; mandibles long, linear articulated at middle with three blunt teeth at apex; eyes situated laterally, behind level of toruli; antennal hollows posteriorly confluent; antennae 12-jointed, a groove starting from middle of frontal lobes divide head into two halves and ends in a 'Y' shaped line in occiput; thorax a little longer than head, excluding mandibles; sutures distinct; propodeal apex slightly



Odontomachus haematodus (Linn.)

truncate; posterior tibial spur pectinate; node of pedicel biconvex with long sharp spine at middle; gaster elongate, sting exserted.

Habitat: They can be seen foraging on ground in small trails.

Distribution : Cosmopolitan

56. *Odontoponera transversa* (Smith)

Size : 12 mm.

Head, thorax, pedicel and gaster black; antennae, mandibles, anterior margin of clypeus and legs brownish red; mandibles, clypeus and head longitudinally striate; vertex with a triangular lamina, in front of which striations diverge to both corners of head; lamina with concentric arches striations; thoracic dorsum coarsely transversely striate, gaster smooth but dull; whole insect covered with brownish yellow, scattered, erect hairs and abundant pale pubescence, more visible on gaster; antennae 12-jointed; eyes small, situated in front of middle line; clypeus-anterior margin dentate; mandibles with 5 teeth; anterior lateral angles of pronotum dentate; mesonotum – a transversely oval disc separated by distinct sutures; propodeum laterally compressed,

so that a narrow ridge above deviates on sides forming an inverted 'Y' shaped ridge at apex whose sides denticulate; apex finely, transversely striate; all tibial spurs pectinate; pedicel thin and emarginate above; anterior joining of base clearly 'V' shaped with its sides sharply pointed.



Odontoponera transversa (Smith)

Habitat : Seen on ground.

Distribution : Spread throughout India and Indo-Malayan subregion.

57. *Pachycondyla rufipes* (Jerdon)

Size : 13-16 mm.

Dull black, mandibles, antennae, legs, sub petiolar process and apex of gaster more red; head, thorax and pedicel with coarse punctures, interstices finely minutely punctate; meso and metanotum longitudinally striate; gaster opaque with widely spaced prominent longitudinal striations; apex of propodeum smooth, polished; whole body covered with abundant, sub erect reddish brown hairs and fine, pale, appressed pubescence; mandibles finely longitudinally striate without distinct teeth; clypeus narrow with a median carina; a fine groove in between frontal lobes extending up above the middle of head; antennae 12-jointed; scape of antennae reaching to posterior margin of head, club thick at apex; eyes small, lateral, at more anterior; thorax rounded above; pro-mesonotal suture distinct; spurs on tibiae pectinate, tarsi spinose; node of pedicel convex in front, rounded above; posterior margin with irregular dentition; posterior face concave, smooth; sub-petiolar tooth facing backwards, gaster with sting powerful, exerted.

Habitat : This genus is more prevalent on more congested and rough areas. On disturbance they produce a lathery secretion. They can be seen foraging on ground.

Distribution : Throughout India, Sri Lanka, Myanmar.



Pachycondyla rufipes (Jerdon)

58. *Pachycondyla tesseronoda* (Mayr)

Size : 6.5-8 mm.

Dull black, flagellum of antennae, mandibles and tarsi red; whole insect covered with a pale yellow pubescence and scattered, short, erect pilosity; whole body minutely punctate with widely spaced, shallow, piligerous pits; mandibles with a faint, minute, ground sculpture and a few distinct punctures towards masticatory margin; masticatory margin with seven acute teeth; clypeus convex; scape of antenna just reaching top of



Pachycondyla tesseronoda (Mayr)

head; first flagellar segment slightly longer than second one; eyes lateral, placed in front of midline; thorax with pro-mesonotal suture distinct and meso- metanotal suture obsolete; pronotal collar distinct; apex of propodeum flat; hind tibial spur pectinate; node of pedicel rounded above, thick and broader than propodeum; gaster cylindrical.

Habitat : Ground dwelling.

Distribution Throughout India.

Subfamily PSEUDOMYRMECINAE

59. *Tetraponera nigra* (Jerdon)

Size : 7-8 mm.

Black, antennae, mandibles and tarsal segments with a red tint; pubescence thin, pilosity very rare, body very lightly punctured, shining; clypeus narrow, anterior margin transverse; scape of antennae reaching posterior eye margin; flagellum thickening towards apex; eyes large, oval, lateral; pronotum flat, sides slightly margined; pro-meso and meso-meta notal sutures distinct; mesonotum nearly circular in dorsal view; meso-metanotal suture deeply marked; propodeum in a higher position than mesonotum; propodeum evenly rounded from front to back; petiole node as long as peduncle;



Tetraponera nigra (Jerdon)

dorsally looking narrow; post-petiole broad; tibial spurs pectinate and claws toothed; basitarsi swollen above middle with sulcus distinct; sting very powerful, exerted.

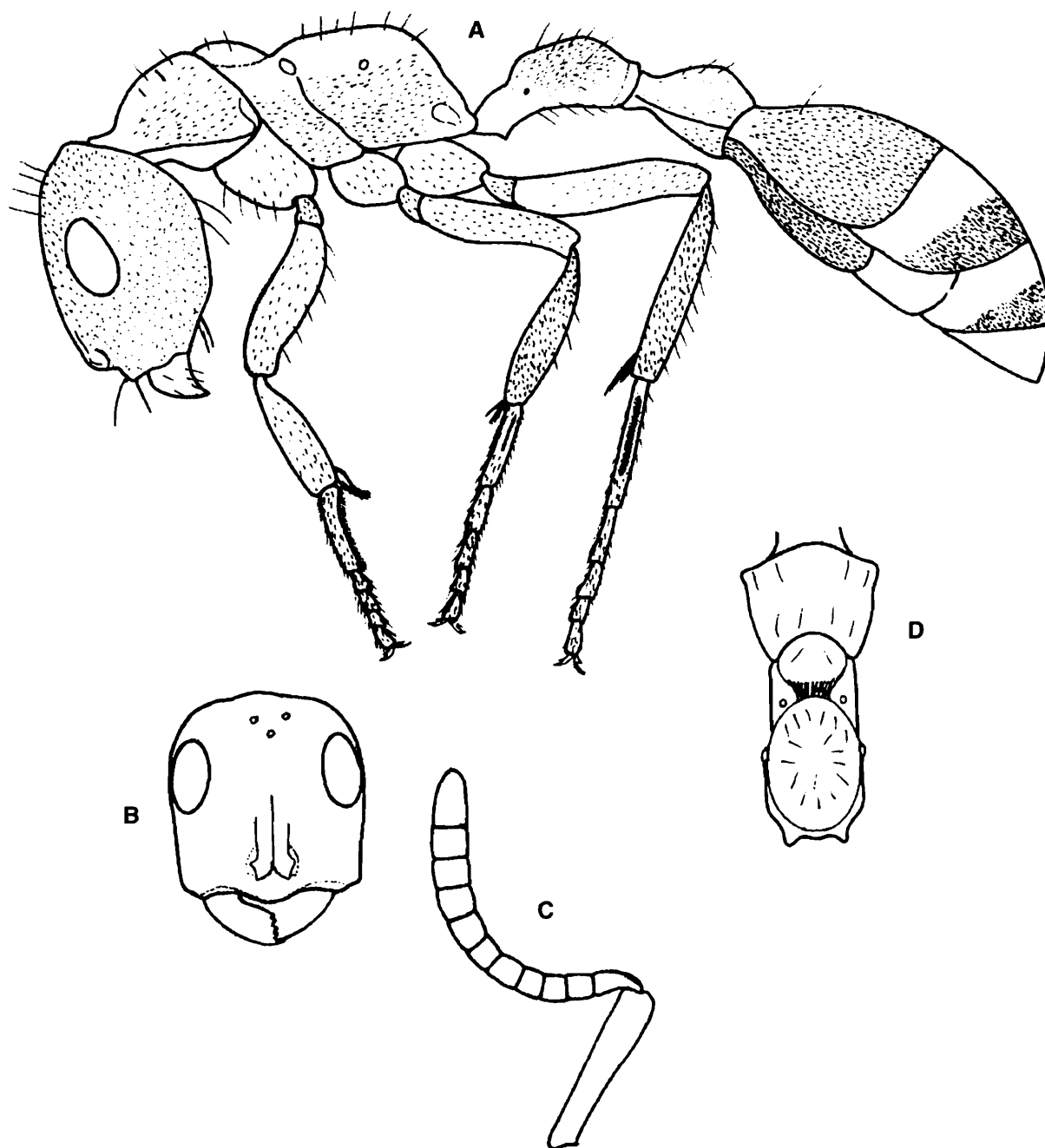
Habitat : Almost same habitat of *T. rufonigra*, but not so much feroceous in nature.

Distribution : South India, Western India, Sikkim, Uttar Pradesh, West Bengal, Myanmar, Sri Lanka.

60. *Tetraponera rufonigra* (Jerdon)

Size : 10 to 13 mm.

Head, post petiole and gaster brownish black, mandibles except black apex, antennae, thorax and petiole reddish yellow, legs brownish yellow, tarsi more yellow; whole insect covered with minute, abundant, silky pubescence and a few sparse, scattered, suberect, long, brownish yellow hairs; whole body finely minutely punctate,



Figs. A-D. *Tetraponera rufonigra* (Jerdon)

A. Body profile; B. Head front view; C. Antenna; D. Thorax dorsal view.