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INSECTA : HYMENOPTERA : FORMICIDAE

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INTRODUCTION

Ants are one of the world's truly spectacular animal families. They form a single large family - the Formicidae - of the Aculeate Hymenoptera. They occupy a place close to the tiphiid wasps. Originally of the tropics, ants have spread to various ecological niches and can survive very extreme climatic conditions. Ants by their very nature, are preadapted to life in a wide variety of environments, including some of the harshest on earth. They make up 10-15% of total animal biomass in most terrestrial environs, turn more soil than earthworms and play leading role in ecology as predators and scavengers. All true-ants are social and live in groups, normally representing the offspring of one or two queens or sexually developed females.

The study of ants has produced many basic insights into the origins of altruistic behaviour, the use of chemicals (pheromones) in communication, the functioning of caste system and division of labour, and other important phenomena of social organisation (Holldobler and Wilson, 1990).

Polymorphism attains its highest expression among ants and large number of types have been recognised. Normally there are males, queens and workers. The male is the least variable of the three castes and retains many scolioid features. However, the males of Dorylinae are characterized by its large, peculiar mandibles, long cylindrical abdomen and the specialized genitalia. The queen is a female, characterized by her large stature and well developed reproductive organs. Worker is a female, characterized by the absence of wings, reduced thorox and small gaster. Workers are variable in size, colour and structure. When they are dimorphic without inter-mediates, the larger type with large head and mandibles is termed a soldier. These are often adapted to particular functions such as fighting, guarding the nest, crushing seeds and other food particles etc. The cooperation of many individuals is advantageous in foraging, nest construction, defence and care of the young.

Ants nests are quite varied, often they are excavations in the soil. In the most primitive forms, they consist of chambers and passages in the ground. Some species, nest in soft wood of rotting trunks, hollow branches and even in fallen leaves. Yet some others make silken nests on leaves. There are others which chew up plant material, the resulting pulp is glued into elaborate nest of cardboard. These

nests require no biologically expensive materials and are completely flexible as to plan and extremely efficient in that, they afford a wide range of temperature and moisture conditions from which the ants can choose and benefit. However, they are as plastic in their nest building as in other aspects of their behaviour. They can readily alter the typical plan to fit anything unusual in their nesting sites. They may normally use typical material, but can change readily to some other, if the supply is inconvenient, inadequate or even entirely lacking. A species may occupy the nest abandoned by another or even a colony can be evicted by another. thus, it may not be always easy to correctly identify a species from the nest it occupies.

Majority of ants are omnivorous. Primitive species are predators. Many have become more versatile and in addition to animal food, gather plant juices, fruits or seeds. Honeydew obtained from Homopterans is an important component in the ants' diet.

Ants are of great importance in the ecosystem, considering their diversity and abundance in the tropics. They play a major role in aerating the soil. Certain species help in the pollination of plants, the predator species play an important role in biological control of pests. However, some of them are directly or indirectly harmful as agricultural pests. Some species are house-hold pests.

Analysing the phylogeny of aculeate superfamilies of Hymenoptera, it is found that family Formicidae has originated from superfamily Bethyloidea, passing through Vespoidea (Brothers, 1975). Until recently the search for the ancestry of ants, always ended in frustration. Wilson et al. (1967a,b) obtained the first ant remains of Cretaceous age, in the fossil form of *Sphecomyra freyi.* Jell and Duncan (1986) described *Cretacoformica explicta* from lower cretaceous bed in victoria, Australia.

George Alexender James Rothneyi (1889) worked on Indian ants and later on A. Forel (1900a,b,c) published a comprehensive work on the Formicidae of India and Ceylon. Bingham (1903) published his valuable work on ants fauna of British India including Burma and Ceylon and gave details about the distribution of the species.

Successive workers like Jerdon (1851), Mukherjee (1927), Karwajew (1926, '27, '28), Menozzi (1935), Donisthorpe 1942a, b), Smith (1948) Chapman and Capco (1951), Brown Jr. (1954, '57, '59a), Wilson (1964), Taylor (1965, '66, '68), Collingwood (1970), Baroni Urbani (1977a, b), Bolton (1977), Tiwari et al. (1977a, b, c, '86a, b '94, a,b,'96,'97,'98) and Imai et al. (1984) have made valuable contribution on Indian fauna of Formicidae. Aphidocolous ants of North-East India are studied by Datta et al. (1983) and Devi and Singh (1987). The present work is based on the material collected and deposited at the Zoological Survery of India, Eastern Regional Station, Shillong, and the Headquarters at Calcutta.

Meghalaya comprises of an area of 22,549 sq. km. and is bounded by Bangladesh on the south and west and by Assam on the north and east. Originally it consisted of Garo hills, Khasi hills and Jaintia hills, which have been further divided into seven districts viz. West Garo-Hills, East Garo-Hills, South Garo Hills, West Khasi Hills, East Khasi Hills, Ri-Bhoi and Jaintia Hills.

The state merges almost to the sea-level in the plains of Bangladesh and Assam on all sides, except in the east, where it extends to the main ranges of the eastern Himalayas by a continuous hill

range through Mikir Hills, North Kachar Hills and Nagaland. Jaintia-Hills on its eastern border merges into Brail range, its central part comparatively flat and valley form. The southern part of Khasi and Jaintia Hills is mostly formed by gentle slopes. The central and northern part of Khasi and Garo Hills are hilly.

The state is watered with innumerable rivulets and streams. Besides this, there are number of lakes, ponds and rivers. The rivers are torrential and follow the directions of ranges. The Shillong peak and Nokrek peak, form the main watersheds of the rivers.

The climate of Meghalaya varies from sub-tropical in foot hills to temperate at higher elevations. In general, Khasi and Jaintia hills districts have warm summer and cold winter, while Garo-hills districts appear slightly warmer. South eastern monsoon from June to September accounts for 75% of the total rainfall. The north eastern monsoon lasting from December to January, accounts for minor percentage of rainfall.

The state shows different vegetative zones from tropical to temperate. Tropical evergreen vegetation with luxurious growth is met at lower altitudes. Topical forest is gradually replaced by subtropical forest. Trees are heavily loaded with epiphytes - mostly orchids.

Southern part of Khasi hills districts, due to heavy rainfall and soil erosion has scanty vegetation. There are number of Reserve forests in the state, specially in the southern part of Khasi and Garo Hills where artificial plantation of economically important timber producing plants are present.

For details of the topography of Meghalaya, Alfred (1995) may be referred to.

SYSTEMATICS

The known living ants comprise of 11 living subfamilies, viz. Ponerinae, Nothomyrmecinae, Myrmecinae, Dorylinae, Ecitoninae, Leptanillinae, Pseudomyrmecinae, Myrmicinae, Dolichoderinae, Formicinae and Aneuretinae, spread over 297 genera with approximately 8,800 species from the world. (Wilson et al., 1990)

Turning to the entire fauna of ants, it is estimated and is quite possible that 20,000 or more species of ants, constituting as many as 350 genera exist in the world. (Holldobler and Wilson, 1990). A total of 163 species (including a few upto genera only) are reported in this paper.

COLLECTION, PRESERVATION AND IDENTIFICATION

Ants can be collected by hand picking with fine forceps or with the help of an aspirator. They are also taken in an insect net by sweeping the foliage or by extraction through a Berlese funnel. Baiting is another method. Storage is possible in 70 to 80 percent alcohol. Large specimens can be pinned directly through the body and smaller ones mounted on paper-tips. Identification is mainly based on worker caste (Fig.1). In species where modified worker caste occur, characters studied are mainly that of worker major or soldier forms.

In the pages that follow key characters and descriptions of species are based on worker or soldier forms whichever may be relevant. In text, abbreviations used to differentiate different forms of ants, are : M-Male; F-Female; W-Workers; S-Soldiers. While describinbg the species, the following abbreviations are used : TL - Total length of the specimen; HL - Length of head measured from the anterior border of clypeus; HW - Width of head measured excluding the eyes; CI - Cephelic Index; SL - Length of antennal scape; SI - Scape Index; PW - Width of pronotum and Th L - Diagnoal length of thorax measured in lateral view, DE - Diameter of eye. All measurements are in millimeters and magnification of drawings, wherever given, is mentioned in parenthesis.

Method of Study : It is necessary to relax the specimen fully before its study at high magnification. The method applied here for study is reasonably rapid and does not cause excessive damage or discolouration to the specimen.

Equipment and chemicals required are (1) saturated ammonia solution, (2) glycerine, (3) Barber's or Ward's fluid and (4) dissecting equipments.

The specimen is removed from the pin and placed in ammonia in a rubber stoppered vial of suitable size. Depending on the size of the specimen, it will be flexible and workable in 3-30 minutes. The specimen is removed to Barber's or Ward's fluid and examined at suitable magnification; the head is grasped with forceps and the mandible well separated; the labio-maxillary complex can now be removed and finally the labrum is removed; one antenna is dissected off and all the parts except mandible are removed to glycerine in a cavity slide. One mandible is air dried and mounted in the point with the specimen; the mandible is mounted with "trulleum" in an exposed position. The parts in glycerine are stored after examination in a genitalia vial in the absolute minimum of glycerine. The vial is mounted on the same pin through the cork end of vial - at an angle of 45°, to prevent the glycerine running upto the cork. Wings of male and female if any, are mounted in canada balsum on slides under coverslips. If the wings of dried specimen are undistorted, they may be wetted with xylene and mounted immediately. The distorted wings are relaxed, dried and then mounted (Ettershank, 1966). Morphological characters are illustrated in figs. 1-5

TAXA INCORPORATED IN THE TEXT

FAMILY : FORMICIDAE

I. Subfamily : DORYLINAE Forel

1. Genus *Aenietus* Schuckard

1. *Aenictus binghami* Forel, 1901

2. *Aenictus brevicornis* (Mayr, 1878)

3. *Aenictus fergusoni* Forel, 1900

4. *Aenictus laeviceps* Smith, 1856

5. *Aenictus longi* Forel, 1901

6. *Aenictus shillongenisis* sp. nov.

2. Genus ***Dorylus*** Fabricius.

7. *Dorylus orientalis* Westwood, 1835

II. Subfamily CERAPACHYINAE Forel

3. Genus. ***Lioponera*** Mayr

8. *Lioponera Longitarsus* Mayr, 1878

9. *Lioponera parva* Forel, 1900

4. Genus ***Cerapachys***

10. *Cerapachys risii* Forel, 1892

11. *Cerapachys aitkeni* Forel,

III. Subfamily PONERINAE Lepeletier

5. Genus ***Gnamptogenys*** Roger

12. *Gnamptogenys bicolor* Emery, 1892

6. Genus ***Proceratium*** Roger

13. *Proceratium williamsi* sp.nov.

7. Genus ***Diacamma*** Mayr

14. *Diacamma rugosum* (Le Guillou, 1841)

15. *Diacamma scalpratum* (Fred Smith, 1858)

8. Genus ***Harpegnathos***

16. *Harpegnathos venator* (Fred Smith)

9. Genus ***Loptogenys*** Roger

17. *Leptogenys assamensis* Forel, 1900

18. *Leptogenys birmana* Forel, 1900

19. *Leptogenys binghami* Forel, 1900

20. *Leptogenys diminuta* (Fred Smith, 1857)

21. *Leptogenys kitteli* Mayr, 1870

22. *Leptogenys peuqueti* Er. André, 1887

23. *Leptogenys ocellifera* (Roger, 1861)

24. *Leptogenys punctiventris* Mayr, 1878

25. *Leptogenys jeanettei* sp.nov.

10. Genus ***Odontoponera*** Mayr

26. *Odontoponera transversa* (Fred. Smith), 1875

11. Genus ***Pachycondyla*** Fred Smith

27. *Pachycondyla amblyops* (Emery)

12. Genus ***Ectomomyrmex*** Mayr

28. *Ectomomyrmex astuta* (Fred. Smith), 1858

29. *Ectomomyrmex javana materna* (Forel), 1901

30. *Ectomomyrmex leeuwenhoeki* (Forel), 1886

13. Genus ***Brachyponera*** Emery

31. *Brachyponera luteipes* (Mayr, 1862)

32. *Brachyponera nigrita* (Emery, 1894)

14. Genus ***Bothroponera*** Mayr

33. *Bothroponera rufipes* (Jerdon, 1851)

15 Genus ***Odontomachus*** Latreille

34. *Odontomachus haematodos* (Linnaeus, 1738)

35. *Odontomachus monticola* Emery, 1891

36. *Odontomachus punctulatus* Forel, 1900

37. *Odontomachus rixosus* Fred. Smith, 1857

16. Genus ***Anochetus*** Mayr

38. *Anochetus myops* (Emery, 1893)

39. Anochetus punctiventris Mayr, 1878

IV. Subfamily : PSEUDOMYRMECINAE Emery

17. Genus ***Tetraponera*** Smith

40. *Tetraponera aitkeni* (Forel), 1902

41. *Tetraponera allaborans* (Walker, 1859)

42. *Tetraponera nigra* (Jerdon, 1851)

43. *Tetraponera rufonigra* (Jerdon, 1851)

V. Subfamily MYRMICINAE Lepeletier

18. Genus ***Rhoptromyrmex*** Mayr

44. *Rhoptromyrmex wroughtonii* Forel, 1902

19. Genus ***Triglyphothrix*** Forel

45. *Triglyphothrix lanuginosa* (Mayr), 1870

46. *Triglyphothrix walshi* Forel, 1890

20. Genus ***Myrmica*** Latreille

47. *Myrmica margaritae* Emery, 1889

21. Genus ***Aphaenogaste***r Mayr

48. *Aphaenogaster rothneyi* (Forel, 1902)

49. *Aphaenogaster sagei* (Forel), 1902

50. *Aphaenogaster schurri* (Forel, 1902)

51. *Aphaenogaster smythiesi* (Forel), 1902

22. Genus ***Monomirium*** Mayr

52. *Monomorium aberrans* Forel, 1902

53. *Monomorium floricola* (Jerdon, 1851)

54. *Monomorium longi* Forel, 1902

55. *Monomorium minutum* Mayr, 1855

56. *Monomorium pharaonis* (Linnaeus, 1758)

57. *Monomorium schurri* Forel, 1902

23. Genus ***Cardiocondyla*** Emery

58. *Cardiocondyla nuda* (Mayr), 1866

24. Genus ***Tetramorium*** Mayr

59. *Tetramorium barryi* Mathew, 1980

60. *Tetramorium bicarinatum* (Nylander), 1846

61. *Tetramorium browni* sp.nov.

62. *Tetramorium christiei* Forel, 1902

63. *Tetramorium mixtum* Forel, 1902

64. *Tetromorium simillimum* (Fred. Smith), 1851

65. *Tetramorium Smithi* Mayr, 1878

66. *Tetramorium* sp.

25. Genus ***Xiphomyrmex*** Forel

67. *Xiphomyrmex tortuosum* (Roger), 1863

26. Genus ***Pheidole*** Westwood

68. *Pheidole allani* Bingham, 1903

69. *Pheidole bhavanae* Bingham, 1903

70. *Pheidole capellinii* Emery, 1887

71. *Pheidole constanciae* Forel, 1902

72. *Pheidole feae* Emery, 1894

73. *Pheidole jucunda* Forel, 1885

74. *Pheidole lamellinoda* Forel, 1902

75. *Pheidole malinsii* Forel, 1902

76. *Pheidole mus* Forel, 1902

77. *Pheidole parva* Mayr, 1865

78. *Pheidole pronotales* Forel, 1902

79. *Pheidole roberti* Forel, 1902

80. *Pheidole sagei* Forel, 1902

81. *Pheidole smythiesi* Forel, 1902

82. *Pheidole striativentris* Mayr, 1878

83. *Pheidole watsoni* Forel, 1902

84. *Pheidole wood-masoni* Forel, 1885

85. *Pheidole* sp.

27. Genus ***Trigonogaster*** Forel

86. *Trigonogaster recurvispinosa* Forel, 1890

28. Genus ***Cataulacus*** Fred. Smith

87. *Cataulacus taprobanae* Fred. Smith, 1853

88. *Cataulacus simoni* Emery, 1893

29. Genus ***Crematogaster*** Lund

89. *Crematogaster anthracina* Fred. Smith, 1857

90. *Crematogaster artifex* Mayr, 1878

91. *Crematogaster biroi* Mayr, 1892

92. *Crematogaster flava* Forel,1887

93. *Crematogaster hodgsoni* Forel, 1911

94. *Crematogaster politula* Forel, 1902

95. *Crematogaster dohrni rogenhoferi* Mayr, 1878

96. *Crematogaster rothneyi* Mayr, 1902

97. *Crematogaster travancorensis* Forel, 1902

98. *Crematogaster walhi* Forel, 1902

99. *Crematogaster* sp.

30. Genus ***Lophomyrmex*** Emery.

100. *Lophomyrmex bedoti* Emery, 1893

101. *Lophomyrmex burmanus* Emery, 1893

102. *Lophomyrmex quadrispinosus* (Jerdon), 1851

31. Genus ***Pheidologeton*** Mayr

103. *Pheidologeton affinis* (Jerdon, 1851)

32. Genus ***Myrmecina*** Curtis

104. *Myrmecina striate* Emery, 1889

33. Genus ***Meranoplus*** Smith

105. *Meranoplus bicolor* (Guerin, 1838)

106. *Meranoplus rothneyi* Forel, 1902

107. *Meranoplus laeviventris* Emery, 1889

34. Genus ***Carebara*** Westwood

108. *Carebara lignata* Westwood, 1841

35. Genus ***Strumigenys*** Fred Smith

109. *Strumigenys godeffroyi* Mayr, 1866

36. Genus ***Myrmicaria*** Saunders

110. *Myrmicaria brunnaea* Saunders, 1841

37. Genus ***Vollenhovia*** Mayr

111. *Vollenhovia* sp.

VI. Subfamily DOLICHODERINAE Forel

38. Genus ***Liometopum*** Mayr

112. *Liometopum lindgreeni* Forel, 1902

39. Genus ***Bothriomyrmex*** Emery

113. *Bothriomyrmex myops* Forel, 1895

40. Genus ***Iridomyrmex*** Mayr

114. *Iridomyrmex anceps* (Roger, 1863)

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41. Genus ***Dolichoderus*** Lund

115. *Dolichoderus affinis* Emery, 1889

116. *Dolichoderus bituberculatus* Mayr, 1862

117. *Dolichoderus fuscus* Emery, 1895

118. *Dolichoderus sundari* sp. nov.

119. *Dolichoderus taprobanae* (Fred. Smith, 1858)

120. *Dolichoderus* sp.

42. Genus ***Tapinoma*** Foerster

121. *Tapinoma indicum* Forel, 1895

122. *Tapinoma melanocephalum* (Fabricius, 1793)

43. Genus ***Technomyrmex*** Mayr

123. *Technomyrmex* sp.

VII. Subfamily FORMICINAE Lepeletier

44. Genus ***Oecophylla*** Fred Smith

124. *Oecophylla smargdina* (Fabricius, 1775)

45. Genus ***Pseudolasius*** Emery

125. *Pseudolasius familiaris* (Fred. Smith, 1860)

46. Genus ***Myrmecocystus*** Wesmael

126. *Myrmecocystus setipes* Forel, 1894

47. Genus ***Acantholepis*** Mayr

127. *Acantholepis capensis* Mayr, 1862

128. *Acantholepis frauenfeldi* Mayr, 1855

129. *Acantholepis capensis simplex* Forel, 1892

48. Genus ***Anoplolepis*** Santschi

130. *Anoplolepis longipes* (Jerdon, 1851)

49. Genus *Plagiolepis* Mayr

131. *Plagiolepis dichroa* Forel, 1902

50. Genus *Paratrechina* Motschoulsky

132. *Paratrechina longicornis* Latreille, 1802

51. Genus *Camponotus* Mayr

133. *Camponotus cotesii* (Forel, 1893)

134. *Camponotus pubescens* (Mayr, 1862)

135. *Camponotus strictus* (Jerdon, 1851)

136. *Camponotus angusticollis* (Jerdon, 1851)

137. *Camponotus camelinus* (Fred Smith)

138. *Camponotus compressus* (Fabricius, 1787)

139. *Camponotus holosericeus* Emery, 1889

140. *Camponotus paria* Emery, 1889

141. *Camponotus rufoglaucus* (Jerdon, 1851)

142. *Camponotus selene* (Emery, 1889)

143. *Camponotus sericeus* (Fabricius, 1778)

144. *Camponotus wasmanni* Emery, 1893

52. Genus *Polyrhachis* Fred Smith

145. *Polyrhachis abdominalis* Fred. Smith, 1858

146. *Polyrhachis affinis* Smith, 1858

147. *Polyrhachis armata* (La Guillou, 1841)

148. *Polyrhachis bicolor* Fred Smith, 1858

149. *Polyrhachis ceylonensis* emery

150. *Polyrhachis convexa* Roger, 1863

151. *Polyrhachis dives* Fred Smith, 1858

152. *Polyrhachis furcata* Fred Smith, 1858

153. *Polyrhachis illaudata* Walker, 1859

154. *Polyrhachis intermedia* Forel, 1886

155. *Polyrhachis laevissima* Fred. Smith, 1858

156. *Polyrhachis mayri* Roger, 1863

157. *Polyrhachis mutata* Fred Smith, 1858

158. *Polyrhachis proxima* Roger, 1863

159. *Polyrhachis punctillata* Roger, 1863

160. *Polyrhachis rastellata* Latreille, 1802

161. *Polyrhachis striata* Mayr, 1862

162. *Polyrhachis tibialis* Fred. Smith, 1858

163. *Polyrhachis* sp.

SYSTEMATIC ACCOUNT

Key to the Subfamilies of Formicidae

Based on Workers

1. Eyes absent or vestigial; pedicel with one or two segments (one in female and male); clypeus short; frontal carinae short and vertical, not covering the antennal insertions; antennae usually short; epinotum usually unarmed; pro-masonotal suture weak or absent ..... Dorylinae

- Without this combination of characters 2

2. Pedicel of one segment 3

- Pedicel of two segments 4

3. With a conspicuous constriction between 1st and 2nd gastric segments 5

- Without a constriction between 1st and 2nd gastric segments 6

4. Elongate, often slender, eyes very large and elongate; clypeus with a rounded upper margin, not produced between the frontal carinae, frontal carinae usually close together, usually narrow and not expanded laterally to cover the antennal insertions; antennae short ..... Pseudomyrmecinae

- Frontal carinae usually large, nearly always well separated and covering the antennal insertions ..... Myrmicinae

5. Elongate, slender and subcylindrical; scape usually short and stout; antennal fossa more or less encircled by a lateral carina on the cheek; posterior surface of head usually with a distinct carina running ventrally from each dorsolateral corner; dorsal surface of thorax with sutures indistinct or absent . . . . . Cerapachyinae

- Without this combination of characters . . . . . Ponerinae

6. Mandibles articulted near the middle of the ventral border of the head; when closed, parallel to each other; when fully open, they form together a straight line parallel to the ventral border of the head. . . . . Ponerinae

- Mandibles articulated on the corners of the head. 7

7. Opening at posterior end of gaster terminal, circular and usually surrounded by a fringe of hairs; sting vestigial; node of pedicel usually scale like . . . . . Formicinae

- Opening at posterior end of gaster slit-like; sting vestigial; node of pedicel scale like . . . . . Dolichoderinae

I. SubFamily DORYLINAE

Sub-family Dorylinae comprises the renowned army ants of the tropics. They exhibit great difference in size between the worker caste and alate sexual forms. This sub-family is represented by two genera *Dorylus* and *Aenictus*. Their colonies may run into thousands of individuals.

Key to the genera of Dorylinae

1. Pedicel with one segment . . . . . *Dorylus*

- Pedicel with two segments . . . . . *Aenictus*

1. Genus *Aenictus* Shuckard, 1840

Aenictus Shuckard 1840, *Ann. Mag. Nat. Hist.*, **5** : 266.

Aenictus, Brown, 1973, *Tropical forest ecosystems in Africa and South America* : 161-185.

Workers of this genus are blind; antennae with 10 segments; males are wasp like insects and resemble the males of *Dorylus*. Pedicel in workers 2-jointed.

Key to the species of *Aenictus* Shuckard

1. Head with yellowish or reddish white spot on eash side 2

- Head without yellowish or reddish white spot on each side 4

2. Posterior margin of head transverse, as wide as in front . . . . . *fergusoni*

Posterior margin of head not transverse, narrower than in front 3

3. First joint of pedicel finely sculptured . . . . . *laeviceps*

- First joint of pedicel coarsely sculptured, rugose . . . . . *binghami*

4. Scape of antennae very short; pronotum smooth, polished and shining, rest of the thorax sculptured. . . . . *brevicornis*

- Scape of antennae longer; entire thorax sculptured, not polished and shining . . . . . *shillongensis Sp.nov*

Note : The above key is based on workers and hence does not contain *Aenictus longi* which is represented by male only.

1. ***Aenictus binghami*** Forel (Fig. 5)

Aenictus binghami Forel, 1901, *J. Bombay nat. Hist. Soc.*, **13** : 465.

Aenictus binghami, Chapman and Capco, 1951, Check list of ants of Asia, **1** : 12.

Aenictus binghami; Wilson, 1964, *Pacific Insects,* **6** (3) : 450.

Material examined : 15 ex: 5 ex, India, Meghalaya, Garo hills, Songsak, 12.xi.78, Coll. K.P. Singh; 7 ex, East Khasi hills, Nongpoh, Nongkhyllem Reserve Forest, 19.x.82, Coll. R. Mathew; 3 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C Radhakrishnan.

Diagnostic characters : Worker. Black, head highly polished, smooth and shining; pronotum convex, delicately transversely sculptured and shining; metanotum compressed, longitudinally striate; 1st node of pedicel rugose and opaque, 2nd node smooth and shining; abdomen oval, narrow at base.

Length : W 4-5 mm.

Distribution : INDIA : (East and West Khasi hills, West Garo hills), Meghalaya, Assam. Elsewhere : Myanmar; Tenasserim.

2. ***Aenictus brevicornis*** (Mayr) (Fig. 6)

Typhlatta brevicornis Mayr, 1878, *Verh. zool-bot. Ges. Wien,* **28** : 668.

Aenictus brevicornis, Wilson, 1964, Pacific Insects, **6** (3) : 451.

Material examined : 27 ex: 14 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 12.vii.76, Coll. R. Mathew; 13 ex, East Khasi hills, Shillong, Risa Colony, 16.viii.78, Coll. R. Mathew.

Diagnostic characters : Worker. Reddish yellow; head rectangular, very broad posteriorly, smooth and shining; mandibles with three distinct teeth; pronotum convex, smooth and shining, mesonotum posteriorly and metanotum densely and very finely rugulose; nodes of pedicel round, shining, 1st node slightly rugulose in front; abdomen elongate oval.

Length : W 2.5-3 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Assam; West Bengal; Karnataka; Kerala.

3. ***Aenictus fergusoni*** Forel (Fig. 7)

Aenictus fergusoni Forel, 1900, *J. Bombay nat. Hist. Soc.*, **13** : 473.

Aenictus Fergusoni, Wilson, 1964, Pacific Insects, **6**(3) : 462.

Material examined : 6 ex: 2 ex, India, Meghalaya, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. Mathew; 4 ex, East Khasi hills, Nayabunglow, Raithwang forest, 10.ii.82, Coll. J. P. Sati.

Diagnostic characters : Worker Reddish brown; yellow spots on the head placed high up, head smooth and shining; mandibles broad, armed with minute teeth; thorax convex, pronotum smooth and shining; metanotum delicately rugulose, apical portion vertical, bordered by a carina above and on the sides; nodes of pedicel smooth and shining; abdomen oval, narrowed anteriorly.

Lenght : W 3.5-4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Sikkim, Southern and Western India.

4. ***Aenictus laeviceps*** (Smith) (Fig. 8)

Typhlatta Laeviceps Fr. Smith, 1858 *J. Proc. Linn. Soc. Lond. Zool.*, **2** : 79.

Aenictus laeviceps, Wheeler & Wheeler, 1974, J. Kansas. Ent. Soc., **47**(2) : 166-172.

Material examined : 16 ex: 9 ex, India, Meghalaya, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. Mathew, '7 ex, India, Meghalaya, West Garo hills, Selbalgiri, Alt. 2000', 19.iii.88, Coll. V.T. Darlong.

Diagnostic characters : W. Dark castaneous brown, head oval, highly polished, smooth and shining, with lateral yellowish-white spots lower down on the sides of the head; mandibles finely striate at base; pronotum highly polished, smooth and shining; meso and metanotum and 1st node of pedicel punctate reticulate; abdomen and 2nd node of pedicel highly polished and shining.

Length : Worker 3.5-3.8 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills), Meghalaya, Assam. Elsewhere : Borneo; Myanmar.

5. ***Aenictus longi*** Forel

Aenictus longi Forel, 1901 *J. Bombay nat. Hist. Soc.*, **13** : 467, 470,♂ .

Aenictus longi, Wilson, 1964, *Pacific Insects,* **6**(3) : 483 .

Material examined : Nil.

Diagnostic characters : Male. Head, thorax and abdomen densely pubescent; thorax and abdomen more distantly punctured. Head without the eyes about as long as broad; mandibles long and somewhat obtuse at apex; the joints 2-9 of the flagellum of antennae thicker than long. Pedicel concave above with raised sides, tuberculate beneath. Pygidium smooth and shining, with a longitudinal impression and its posterior border medially emarginate.

Length : M. 7 mm.

Distribution : INDIA : Meghalaya (Garo Hills). Elsewhere : Burma, Pegu.

Remarks : Bingham (1903) reported this species from 'Garo Hills'.

6. ***Aenictus shillongensis*** sp. nov. (fig. 9)

Holotype worker : TL 2.92; HL 0.68; HW 0.55; CI 81; SL 0.58; SI 105; ThL 0.89.

Head smooth, polished and shining, broader anteriorly; mandibles triangular, masticatory margin with five indistinct denticles; pilosity fairly abundant, long, recumbent; antennae stout; thorax punctate-rugose, densely sculptured on the meso and metanotum; apical portion of metanotum concave, bordered by a carina; anterior node of pedicel viewed from above cylindrical, punctate, with an appendix beneath; abdomen smooth, polished and shining; legs stout. Colour reddish brown.

Paratype workers : TL 2.82-3.00; HL 0.66-0.68; HW 0.55-0.58; CI 81-85; SL 0.55-0.61; SI 100-105; ThL 0.89-0.92.

Similar to holotype.

Holotype worker : INDIA : Meghalaya, (East Khasi hills), Shillong, Risa Colony, 25.vii.75, Coll. R. Mathew.

Paratype workers : 6 exs, with the same collection data as the holotype.

Aenictus shillongensis comes closer to *punensis,* but can be differentiated by its mandibular construction and the sculpture of the thorax and that of the nodes of pedicel.

2. Genus ***Dorylus*** Fabricius 1793

Dorylus Fabricius, 1793, *Ent. Syst.* **2** : 365.

Dorylus; Brown, 1973, in *Tropical forest ecosystems in Africa and South America* 161-185.

Males, females and workers of this genus exhibit great variation in appearance and were for a long time classed in different genera. Males are wasp like insects which are attracted towards light and

are encountered inside houses at night during rainy season. Workers are without eyes and ocelli; pedicel is with a single joint.

7. ***Dorylus orientalis*** Westwood (Fig. 10)

Dorylus (Alaopone) orientalis Westwood, 1835, *Proc. Zool. Soc. Lond.*, **3** : 72.

Dorylus orientalis, Mathew, 1983, *Bull. zool. Surv. India*, **5**(1) : 125-127.

Material examined : 121 ex: 25 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 5.vii.75, Coll. R. Mathew; 25 ex, Risa Colony, 14.vii.75, R. Mathew; 15 ex, East Khasi hills, Mawphlang; 1 ex, Shillong, 3.x.76, Coll. M. S. Jyrwa; 5 ex, Shillong, Risa Colony, 17.vi.75, Coll. R. Mathew; 1 ex, Risa Colony, 6.vi.75, Coll. R. Mathew; 2 ex, Risa Colony, 20.vi.75, Coll. R. Mathew; 5 ex, Risa Colony, 25.vi.75, Coll. R. Mathew; 3 ex, Risa Colony, 14.vi.75, Coll. R. Mathew; 2 ex, Risa Colony, 22.vi.75, Coll. R. Mathew; 1 ex, Risa Colony, 18.vi.75, Coll. R. Mathew; 16 ex, Risa Colony, 17.vi.76, Coll. R. Mathew; 11 ex, East Khasi hills, Shillong, Lumparing, 25.ix.75, Coll. R. Mathew; 4 ex, East Khasi hills, Upper Shillong, 25.vi.75, Coll. M.S. Jyrwa.; 4 exs, Jaintia Hills, Garampani, 22.v.90, Coll. M.S. Shishodia and party.

Diagnostic characters : Worker. Reddish brown; head and thorax densely and abdomen lightly punctured; head rectangular, broader anteriorly than posteriorly; occiput deeply emerginate, a deeply inpressed median line or furrow down the front; thorax depressed and flat above; node of pedicel broader than long, transverse; abdomen depressed above.

Length : W. 5-6 mm.

Distribution : INDIA : (East Khasi hills & Jaintia hills), Meghalaya; whole of India. Elsewhere : Myanmar; Sri Lanka; Malay Peninsula; Borneo; Sumatra And Java.

II. Sub-family CERAPACHYINAE

Primarily tropicopolitan sub-family Cerapachyinae is intermediate between Dorylinae and Ponerinae. Elongate, slender and sub- cylindrical forms. Posterior surface of head usually with a distinct carina running ventrally from each dorsolateral corner. Pedicel of one segment. Sting developed.

Key to the genera of Cerapachyinae

1. Eyes remarkably large, lateral, placed below middle of head . . . . . ***Lioponera***

- Eyes small, lateral, placed about or above middle of head . . . . . ***Cerapachys***

3. Genus ***Lioponera*** Mayr, 1878

Lioponera Mayr, 1878, *Verh. zool.-bot. Ges. Wien*, **28** : 666.

Lioponera, Chapman and Capco, 1951, *Check list of ants of Asia*, **1**.

Diagnostic characters : Worker. Head ovato-rectangular; mandibles triangular, obsoletely dentate; antennal carinae short, prominent, close together, 12 jointed antennae, eye large, placed anteriorly close to the mandibles ; thorax transverse in front, truncate posteriorly, thoracic Suture obsolete; node of pedical square, transverse posteriorly ; abdomen long, constriction between the basal two segments very deep.

Key to the Species of Lioponera Mayr

1. Black, Shining; length 4 mm. . . . . *longitarsus*

Brownish red, smaller length 2.5-3 mm. . . . . *parva*

8. ***Lioponera longitarsus*** Mayr

Lioponera longitarsus Mayr, 1878, *Verh. zool.-bot. Ges. Wien*, **28** : 667.

Lioponera longitarsus; Chapman and Capco, 1951, *Check list of ants of Asia.* **1** : 327.

Material examined : 1 ex, India, Meghalaya, East Khasi hills, Old Barapani, 6.ix.79, Coll. R. Mathew.

Diagnostic characters : Worker. Black, shining; antennae, mandibles, thorax, pedicel and legs reddish brown; head thorax and abdomen with scattered punctures; thorax short, rectangular, pilosity sparse, short, erect and black.

Length : W. 4 mm.

Distribution : INDIA : (East Khasi Hills), Meghalaya; Western and Southern India; West Bengal.

9. ***Lioponera parva*** Forel

1900. *Lioponera longitarsus* var. *parva* Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 330. W, M

1903. *Lioponera parva,* Bingham, *Fauna Brit. India, Hym.*, **2** : 27, W,M.

1993. *Lioponera parva,* Tiwari *et al.*, *State Fauna Series* 3 : *Fauna of West Bengal*, Part **8** : 234.

Material examined : India : Meghalaya : East Khasi Hills, Shillong, Beshope's fall, 12 W, 29.iii. 1959, Coll. A.P. Kapur.

Diagnostic characters : Worker. Head, thorax and basal abdominal segment brownish red; rest of abdomen blackish; mandibles, antennae and legs testaceous. Head ovato-rectangular; mandibles triangular, comparatively large, masticatory margin broad; antennae 12-jointed; eyes round, proportionately very large. Thorax short, rectangular, transverse in front, truncate posteriorly, sides flat; legs shout, elongate, tarsi especially so. Pedicel one-jointed, with node nearly square, broader than long. Abdomen comparatively long, constriction between the basal two segments very deep.

Length : W. 2.5-3mm.

Distribution : INDIA : (East Khasi Hills), Meghalaya, Tamil Nadu, Uttar Pradesh and West Bengal.

4. Genus ***Cerapachys*** Fred. Smith 1857

Carapachys Smith, 1858, *J. Proc. Linn. Soc. Lond. Zool.*, **2** : 74.

Cerapachys Brown, 1973, *in Tropical forest ecosystems in Africa and South America* 161-185.

Diagnostic characters : Elongate and narrow; antennae 11 or 12 jointed; thorax short, compressed; thoracic sutures indistinct; node of pedicel free; abdomen elongate, constriction between the basal two segments deep.

Key to the species of Cerapachys Fr. Smith.

1. Head, throx, and abdomen black, longer than 5 mm . . . . . *risii*

- Head in part, thorax and abdomen reddish brown, smaller species, less than 5 mm . . . *aitkeni*

10. ***Cerapachys risii*** Forel (Fig. 12)

Cerapachys risii Forel, 1892, *Grandidier, Hist. Nat. Phy. Madagascar,* **20** : 244.

Cerapachys (Cerapachys) risi; Chapman and Capco, 1951, *Checklist of ants of Asia*, **1** : 19.

Material examined : 13 ex; India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan.

Diagnostic characters : Worker. Black, almost smooth and shining; head and thorax sparsely but coarsely punctured, the pedicel more densely punctured and longitudinally coarsely furrowed or wrinkled; the whole insect covered with fine long erect yellowish hairs; posterior lateral angles of head acute; antennae 12 jointed; thorax strongly rounded and convex above, submargined anteriorly; posterior face of metanotum flat, bordered above and on the sides by a shining carina; apex of abdomen acute.

Length : W. 5.5-6.5 mm.

Distribution : INDIA : (East Khasi hills) : Meghalaya : Sikkim. Elsewhere : Myanmar; Malay Peninsula.

11. ***Cerapachys aitkeni*** Forel (Fig. 11)

Cerapachys aitkeni Forel, *J. Bombay Nat. Hist. Soc.*, **13** : 331 & 332.

Cerapachys aitkeni, Chapman and Capco, 1951 *Checklist of ants of Asia*, **1** : 327.

Material examined : 9 ex: India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 25.iv.84, Coll. C. Radhakrishnan.

Diagnostic characters : Worker. Reddish brown, shining; antennae, clypeus, mandibles, legs and the apex of abdomen reddish; head, thorax and abdomen covered with abundant short, erect, thick, yellowish hairs; head closely and somewhat irregularly cribrate; thorax with sparsely scattered shallow, punctures; node of pedicel and basal abdominal segment punctate shining; abdomen almost smooth and shining; posterior lateral angles of head acute; thorax convex and arched above, anteriorly submargined, posteriorly the basal portion of metanotum separated from the apical portion by a semicircular carina.

Length : W. 4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya : Karnataka : Western India.

III. SubFamily PONERINAE

Ponerinae comprises of a primitive but heterogeneous group. They are entomophagous. Colony size is small. Nests are in the soil or old logs, small and inconspicuous. The economic importance of the Ponerinae in the tropics can hardly be overestimated, since an estimated 80% of their food is termites (Wheeler & Wheeler, 1972).

Key to the genera of Ponerinae

1. Claws pectinate; mandibles linear or triangular, with or without teeth; clypeus unarmed or with a carina. . . . . ***Leptogenys***

- Claws simple 2

2. Mandibles articulated in the middle of the anterior margin of the head, when closed placed parallel to each other in front of the clypeus, when opened they lie in a straight line parallel to the anterior margin of the head. . . . . ***Odontomachus***

- Mandibles articulated differently 3

3. Mandibles very long, narrow, converging near the base where they are provided with a strong tooth beneath; eyes very large, placed near the base of mandibles. . . . . ***Harpegnathos***

- Mandibles differently shaped 4

4. Pronotum armed with two spines, anterior margin of clypeus arcuate, with numerous denticulations. . . . . ***Odontoponera***

- Pronotum unarmed, clypeal margin without denticulations 5

5. Posterior coxae armed with a spine; pro-mesonotal suture obsolete; antennal fossae short; antennae not ending in a club. . . . . ***Gnamptogenys***

- Posterior coxae unarmed 6

6. Node of pedicel with a pair of backwardly directed spines . . . . . ***Diacamma***

- Node of pedicel unarmed 7

7. Thoracic sutures distinct; pronotum more or less marginate . . . . . ***Pachycondyla***

- Thoracic sutures indistinct; anterior clypeal margin produced in the middle; abdomen curved inward. . . . . ***Proceratium***

5. Genus ***Gnamptogenys*** Roger, 1863

Gnamptogenys Roger, 1863, *Berl. ent. Z.* **7** : 131-214.

Gnamptogenys, Brown, 1973, In Tropical forest ecosystems in Africa and South America : 161-185.

Diagnostic characters : Worker. Antennae 12-jointed; head oval, mandibles triangular, masticatery margin broad, head posteriorly emarginate, the posterior lateral angles acutely produced; thorax short, broad, thoracic sutures indistinct; posterior coxae armed with a spine; node of pedicel single, constricted anteriorly and posteriorly; dentate beneath; head, thorax and base of abdomen always coarsely rugose-punctate, punctures forming longitudinal ridges. A single species reported from Meghalaya.

12. ***Gnamptogenys bicolor*** (Emery) (Fig. 13)

Ectatomma bicolor, 1889, *Ann. Mus. Civ. Gen.* **27** : 403.

Stictoponera menadensis bicolor, Chapman and Capco, 1951, *Checklist of ants of Asia*, 327.

Material examined : 11 ex; 1 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 5 ex, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, Nongkhyllem Reserve forest, Lai-lad, 23.i.82, Coll. C. Radhakrishnan; 2 ex, Nongkhyllem Reserve Forest, Nongpoh, 19.x.82, Coll. R. Mathew; 1 ex, Nongkhyllem Reserve Forest, Nongpoh, 28.x.82, Coll. R. Mathew; 1 ex, Nongkhyllem Reserve Forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan.

Diagnostic characters : Worker. Head, thorax, legs, pedicel and apex of abdominal segments ferruginous red; abdomen black; eyes of moderate size, placed laterally; 1st joint of flagellum longer than 2nd; mandibles obscurely and finely longitudinally striate; apical face of metanotum feebly denticulate; abdomen curved.

Length : W. 5.5-6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Assam: Elsewhere; Myanmar; China And Malay Peninsula.

6. Genus ***Proceratium*** Roger, 1863

Proceratium Roger, 1863, *Berl. ent. Z.*, 7 : 131-214.

Proceratium, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : Worker. Antennae 12-jointed; anterior margin of clypeus with or without projection in the middle; thorax without dorsal sutures; abdomen curved inward; females winged.

13. ***Proceratium williamsi*** sp. nov. (Figs. 14, 15)

Holotype worker : TL 2.92; HL 0.68; HW 0.68; CI 100; SL 0.42; SI 62; PW 0.47; ThL 0.79.

Head as long as broad, occipital margin round; the median clypeal margin produced in the middle, mandibles tridentate; eyes very minute, placed about the middle of the head laterally; antennae stout; thorax round, thoracic sutures not distinct; apical portion of metanotum concave, bordered on either side by a carina; node of pedicel broad, broader than long, briefly petiolate in front, with a short appendix beneath; abdomen stout, convex; legs moderate; the whole insect densely punctate and with a silky gloss; hairs on body sparse, few on the mandibles at the base of the masticatory region; pubescence dense, golden yellow, almost covering the sculpture.

Colour : Reddish brown.

Female : TL 4.13-4.34; HL 0.92; HW 0.76; CI 83; SL 0.74; SI 97; PW 0.68; ThL 1.32; DE 0.16.

Head longer than broad; eyes prominent, placed about the middle of the head laterally; ocelli prominent; clypeal margin anteriorly not produced in the middle; mandibles with few longitudinal striae; masticatory margin broad, armed with ten to eleven small teeth, apical two prominent; sides of head straight, posterior margin round, frontal carinae raised, spatulate; clypeal region concave; clypeal concavity on either side with transverse striae, striae bent towards the mandibular base; erect to suberect hairs on body numerous; densely pubescent; the whole insect densely punctured.

Paratype workers : TL 2.87-2.89; HL 0.63-0.71; HW 0.68; CI 96- 108; SL 0.45; SI 66; PW 0.45-0.47; ThL 0.82. Similar to holotype.

Holotype worker : India : Meghalaya; East Khasi hills, Shillong, Risa Colony, 14.v.76, Coll. R. Mathew. Paratypes : 2 workers and 3 females with the same collection data as that of the holotype.

Remark : *Proceratium* is recorded for the first time from India. Chapman and Capco (1951) reported four species from Asia.

7. Genus ***Diacamma*** Mayr, 1862

Diacamma Mayr, 1862, *Verh. Zool, bot. Ges, Wien,* **12** : 718.

Diacamma, Brown, 1973, *In Tropical forest ecosystem in Africa and South America.* : 161-185.

Diagnostic characters : Worker. Antennae 12 jointed; mandibles broad, triangular, masticatory margin strongly toothed; thorax rounded; pedicel one-jointed, node of pedicel arched and convex in front, flat or concave posteriorly, armed with a pair of spines.

Key to the species of ***Diacamma*** Mayr

1. First abdominal segment striate, the striae in concentric arches from bck to front; nodal spines thick at base, pointing backwards in continuation of the upper surface of the node.... *rugosum*

- First abdominal segment not striate; node of pedicel very strongly laterally compressed, longer than broad..... *scalpratum*

14. ***Diacamma rugosum*** (Le Guillou) (Fig. 16)

Ponexa rugosum Le Guillou, 1841, *Ann. Soc. Ent. France,* **10** : 318.

Diacamma rugosum, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1** : 55.

Material examined : 60 ex: 11 ex, India, Meghalaya, East Khasi hills, Barapani, 21.vi.73, Coll. A. K. Ghosh; 8 ex, East Khasi hills, Old Barapani, 14.v.76, Coll. R. Mathew; 9 ex, East Khasi hills, Barapani, 24.vii.67, Coll. R.K. Varshney; 1 ex, East Khasi hills, Umshing, 23.viii.63, Coll. M.R. Rynth; 16 ex, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. Mathew; 2 ex, East Khasi hills, Shillong, 27.v.72, Coll. G.M. Yazdani; 4 ex, East Khasi hills, Shillong, Bishnupur, 24.v.81, Coll. C. Radhakrishnan; 1 ex, East Khasi hills, Nongpoh, 28.i.82, Coll. C. Radhakrishnan; 1 ex East Khasi hills, Old Barapani, 6.ix.79, Coll. R. Mathew; 3 ex, Old Barapani 30.xii.81, Coll. C. Radhakrishnan; 2 ex, West Khasi hills, Ranikor, 9.ii.87, Coll. V.T. Darlong; 2 ex, East Khasi hills, Lai-lad, 27.v.89, Coll. A. K. Karmakar. 16 exs., East Khasi Hills, Adi Basti, 2.ix.88, Coll. A. K. Hazra and Party; 16 exs., West Khasi Hills, Mongpahi Circuit House Compound, 28.ix.88, Coll. A.K. Hazra and Party.

Diagnostic characters : Worker. Bronzy-brown; head oval; mandibles punctured, dentate, clypeus tectiform; head above the antennae deeply and regularly striate, the striae oblique on the sides; pronotum with one to four transverse striae, surrounded by concentric striae; mentanotum striate; node of pedicel concentrically striate; abdomen elongate.

Length : W. 8-10 mm.

Distribution : INDIA : (East and West Khasi hills); Meghalaya; Assam; Karnataka; Maharashtra; Orissa; West Bengal. Elsewhere : Myanmar; Sri Lanka.

15. ***Diacamma scalpratum*** (Fred. Smith) (Fig. 17)

Ponera scalpratum Fred. Smith, 1858, *Cat. Hym. Brit. Mus.*, **6** : 84, pl. 6, figs. 21-22.

Diacamma scalpratum, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1** : 327.

Material examined : 25 ex, 2 ex, India, Meghalaya, East Khasi hills, Umran, 14.v.70, Coll. S. Biswas; 2 ex, Garo hills, Songsak, around district council IB, 17.xi.73, Coll. S. Biswas; 2 ex, East Khasi hills, Nongpoh, 27.v.72, Coll. G.M. Yazdani; 1 ex, Garo hills, Charikutty, 11 km. from Bajengdoba, 4.xi.73, Coll. S. Biswas; 1 ex, East Khasi hills, Shillong, Risa Colony, 6.vii.75, Coll. R. Mathew; 2 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 2 ex, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 1 ex, East Khasi hills, Nongpoh, 19.x.82, Coll. R. Mathew; 1 ex, East Khasi hills, Nongpoh, 28.x.83, Coll. R. Mathew; 2 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., (collected the day after burning jhum), 19.iii.88, Coll. V.T. Darlong; 2 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., 28.iv.88, Coll. V.T. Darlong; 3 ex, West Garo hills, Balphakram National Park, 12.v.88, Coll. V.T. Darlong; 4 ex, West Garo hills, Selbalgiri, 14.v.88, Coll. V.T. Darlong.

Diagnostic characters : Worker. Black, head rectangular, longitudinally striate, posterior lateral angles rounded; mandibles with 7 or 8 large teeth, with smaller teeth in between them; 2nd joint of flagellum of antennae longer than 1st; pronotum constricted anteriorly into a collar, the disc of pronotum with one or two transverse striae surrounded by concentric striae; mesonotum not striate; metanotum compressed, with concentric striae on the basal portion above, oblique striae on the sides; apical portion of metanotum margined and transversely striate.

Length : W. 15-18 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills), Meghalaya : Assam : Sikkim. Elsewhere : myanmar; tenasserim.

8. Genus ***Harpegnathos*** Jerdon, 1851

Harpegnathus, Jerdon, 1851, *Madras. Jour. Lit. & Sci.*, **18** : 116.

Harpegnathos, Brown, 1973, *In Tropical forest ecosystems in Africa and South America.* : 161-185.

Diagnostic characters : Worker. Head rectangular, mandibles longer than head, sickle-shaped; antennae 12 jointed; eyes large; thorax slightly laterally compressed; pro-mesonotal suture remarkably broad and shallow; mesometanotal suture obsolete; abdomen cylindrical, constriction between the basal two segments distinct, sting exserted.

16. ***Harpegnathos venator*** (Fred. Smith) (Figs. 18, 19)

Drepanognathus venator Fred. Smith, 1858, *Cat. Hym. Brit. Mus.*, **6** : 82.

Harpegnathos venator, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1** : 67.

Material examined : 2 ex, India; Meghalaya, East Khasi hills, Old Barapani, 14.v.76, Coll. R. Mathew.

Diagnostic characters : worker. Black; head and thorax closely coarsely cribrate punctate; abdomen finely densely reticulate punctate and with few shallow punctures; pilosity pale, sparse, short and erect.

Lenght : W. 16-18 mm.

Distribution : INDIA : (East Khasi hills); Meghalaya; Assam; Uttar Pradesh; Sikkim. Elsewhere : Myanmar.

Remark : When startled or disturbed, this species leap about in a characteristic manner.

9. Genus ***Leptogenys*** Roger, 1861

Leptogenys Roger, 1861, *Berl. ent. Zeit.*, **5** : 41.

Leptogenys, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : Worker. Head longer than broad; clypeus narrow, transverse, triangularly produced in the middle; eyes placed above the middle of the head; pedicel with a single joint, node squamiform or cubical; claws pectinate.

Subgenus ***Lobopelta*** Mayr

Lobopelta Mayr, 1862, *Verb. zool.-bot. Ges. Wien*, **12** : 733.

Key to the species of ***Leptogenys (Lobopelta)*** Roger

1. Node of pedicel compressed longitudinally, its upper margin marrow, obtuse 2

- Node of pedicel not compressed longitudinally, broader above, sub-cubical with anterior and posterior margins. 3

2. Medial joints of flagellum of antennae distinctly longer than broad . . . . . *processionalis*

- Medial joints of flagellum of antennae not longer than broad . . . . . *birmana*

3. Head more or less striate 4

- Head either punctured or smooth and shining, never striate 5

4. Clypeus not carinate . . . . . *kitteli*

- Clypeus more or less distinctly carinate or subcarinate . . . . . *diminuta*

5. Basal abdominal segment punctured 6

- Basal abdominal segment not punctured, smooth 8

6. Length over 9 mm . . . . . *binghami*

- Length 4-6 mm 7

7. Abdomen densely punctured . . . . . *punctiventris*

- Abdomen polished with few shallow punctures . . . . . *geanettei* sp. nov.

8. Antennae remarkably long, 2nd joint of flagellum much longer than 3rd . . . . . *assamensis*

- Antennae comparatively short; 2nd and 3rd joints of flagellum subequal . . . . . *peuqueti*

17. ***Leptogenys (Lobopelta) assamensis*** Forel (Fig. 20)

Lobopelta *assamensis* Forel, 1901, *J. Bombay Nat. Hist. Soc.*, **13** : 318.

Leptogenys (Lobopelta) assamensis, Chapman and Capco, 1951, Checklist of ants of Asia, **1** : 32.

Material examined : 18 ex : 1 ex, India, Meghalaya, East Khasi hills, Shillong, 3.vii.75, Coll. M. S. Jyrwa; 1 ex, Shillong, 7.vi.75, Coll. R. Mathew; 1 ex, Shillong, 24.vii.75, Coll. R. Mathew; 1 ex, Shillong, 26.vii.75, Coll. R. Mathew; 1 ex, Shillong, 10.ix.75, Coll. R. Mathew; 2 ex, Shillong, 26.ix.75, Coll. R. Mathew; 5 ex, Shillong, 27.vii.75, Coll. R. Mathew; 2 ex, Shillong, 17.vi.76, Coll. R. Mathew; 1 ex, East Khasi hills, Upper Shillong, 20.v.78, Coll. R. Mathew; 1 ex, Shillong, 26.vii.75, Coll. R. Mathew.

Diagnostic characters : Worker. Castaneous red, smooth and shining, the mandibles, flagellum of antennae and legs pale red; hairs on body soft, erect, abundant, pale reddish in colour; head elongate, as broad posteriorly as in front; mandibles not dentate, but with an acute curved point; antennal scape extending beyond the top of the head; 2nd joint of flagellum very long, nearly three times as long as the first; eyes large; node of pedicel strongly compressed; abdomen long and massive.

Length : W. 6.5-7 mm.

Distribution : INDIA : Meghalaya East Khasi hills

18. ***Leptogenys (Lobopelta) birmana*** Forel

Lobopelta birmana Forel, 1901, *J. Bombay Nat. Hist. Soc.*, **13** : 305, 310.

Leptogenys (Lobopelta) birmana, Tiwari *et al.*, 1994, *State Fauna Series 3 : Fauna of West Bengal*, Part **8** : 242.

Material examined : India : Meghalaya : Jaintia Hills, Garampani, Safai Basti, 12 ex, 3.x. 1988, coll. V.D. Srivastava and party.

Diagnostic characters : worker. Castaneous brown. Head short, massive, nearly square; mandibles robust, armed with four unequal teeth at apex and denticulate along inner margins; antennae short, scape not, or only slightly passing beyond the top of head, medial joints of flagellum not longer than broad. Pro-meso and meso- metanotal sutures of thorax deeply marked. Node of pedicel convex in front, flat posteriorly, upper margin narrow, rounded. Abdomen massive, constriction between basal two segment very prominent and broad.

Length : W. 7-8 mm; o 9 mm.

Distribution : INDIA : Meghalaya (Jaintia Hills), Assam, West Bengal. Elsewhere : Myanmar.

19. ***Leptogenys binghami*** Forel

Lobopelta binghami Forel, 1901, *J. Bombay Nat. Hist. Soc.* **13** : 310.

Leptogenys (Lobopelta) binghami, Chapman and Capco, 1951, *Checklist of the ants of Aisa*, **1** : 32.

Material examined : 3 ex : India, Meghalaya, West Khasi hills, Balat, 9.ix.86, Coll. M.R. Rynth.

Diagnostic characters : Worker. Black; head, thorax and basal segment of abdomen opaque, very finely and densely punctured, punctures coarser on the basal portion of metanotum and on the node of the pedicel; mandibles long, not dentate; clypeus medially carinate, its median lobe produced anteriorly; the apex truncate; 2nd joint of flagellum of antennae twice as long as first; thoracic sutures distinct, node of pedicel cubical; abdomen massive; pilosity abundant, short, erect and black.

Length : W. 9-10 mm.

Distribution : INDIA : (West Khasi hills); Meghalaya; Karnataka. Elsewhere : Myanmar; Tenasserim.

20. ***Leptogenys (Lobopelta) diminuta*** (Fred. Smith) (Fig. 21)

Ponera diminuta Fred. Smith, 1858; *Proc. Linn. Soc. Lond. Zool.* **2** : 69.

Leptogenys diminuta, Wilson, 1958, *Evolution.*, **12** : 24-36.

Leptogenys (Lobopelta) diminuta, Tiwari *et al.*, 1994, *State Fauna Series 3 : Fauna of West Bengal*, part **8.**

Material examined : 7 ex: 3 ex, India, Meghalaya, East Khasi hills, Mawsmai, 9.v.76, Coll. S. Khera; 1 ex, East Khasi hills, Shillong, 13.vii.78, Coll. R. Mathew; 3 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan.

Diagnostic characters : Worker. Black; head finely and closely striate, the striae longitudinal on the anterior portion, transverse on the front and forehead; thorax rugose, pronotum longitudinally

and rather coarsely striate on the disc, transversely striate anteriorly, node of pedicel and abdomen smooth and shining; mandibles finely longitudinally striate, ending in an acute curved point; clypeus triangular, medially vertically carinate; thorax constricted anteriorly into a neck; node of pedicel slightly broader posteriorly, truncate in front and behind.

Length : W. 6.5-7.5 mm.

Distribution : INDIA : (East Khasi hills); Meghalaya; throughout India, except the drier parts of Punjab and Central India.

21. ***Leptogenys (Lobopelta) kitteli*** Mayr (Fig. 22)

Lobopelta kitteli Mayr, 1870, *Verh. zool-bot. Ges. Wien*, **20** : 966.

Leptogenys kitteli, Mathew, 1984, Bull. zool. Surv. India, **6** (1- 3) : 307-308.

Leptogenys (Lobopelta) kitteli, Tiwari et al., 1994, *State Fauna Series 3 : Fauna of West Bengal,* Part **8**.

Material examined : 364 ex : 7 ex India, Meghalaya, East Khasi hills, Upper Shillong, 1.viii.76, Coll. R. Mathew; 2 ex, East Khasi hills, Shillong, Motinagar, 3.ix.76, Coll. R. Mathew; 25 ex, Shillong, 25.vii.75, Coll. R. Mathew; 15 ex, Shillong, Mawlai, 2.x.76, Coll. R. Mathew; 20 ex, East Khasi hills, Barapani, 24.vii.67, Coll. R. K. Varshney; 10 ex, Shillong, 23.vi.75, Coll. R. Mathew; 16 ex, Shillong, 12.iv.75, Coll. K. Deb; 25 ex, Shillong, Malki forest, 29.vii.75, Coll. R. S. Giri; 19 ex, Shillong, Nongthymmai, 4.viii.75, Coll. M. S. Jyrwa; 1 ex, East Khasi hills, Old Barapani, 14.v.76, Coll. R. Mathew; 5 ex, Shillong, Nongthymmai, 4.vii.72, Coll. R.S. Giri, 19 ex, Motinagar, 7.vii.72, Coll. R. S. Giri, 2 ex, Shillong, 17.v.75, Coll. R. Mathew; 1 ex, Shillong, 18.viii.75, Coll. R. Mathew; 14 ex, Shillong, 27.vii.75, Coll. R. Mathew; 14 ex, Shillong, 17.vii.75, Coll. R. Mathew; 47 ex, Shillong, 17.v.75, Coll. R. Mathew; 38 ex, Shillong, Lumparing, 29.vii.75, Coll. M. S. Jyrwa; 6 ex, Shillong, Mawlai, 2.x.75, Coll. R. Mathew; 5 ex, Shillong, 26.vii.75, Coll. R. Mathew; 6 ex, Shillong, 20.v.75, Coll. P. B. Thapa; 2 ex, Shillong, 24.vii.75, Coll. R. Mathew; 2 ex, East Khasi hills, Nongpoh, 19.x.82, Coll. R. Mathew; 2 ex, Nongpoh, 28.x.83, Coll. R. Mathew; 1 ex, East Khasi hills, Nongkhyllem Reserve forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan; 3 ex, Shillong, 20.v.77, Coll. P. B. Thapa; 1 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C. Radhakrishnan; 24 ex, West Khasi hills, Kyllang Rock base, 18.xi.86, Coll. C. Radhakrishnan; 2 ex, Jaintia hills, Nartiang, 7.v.87, Coll. C. Radhakrishnan; 7 ex, West Garo hills, Selbalgiri, Alt. 2000 ft. (collected the day after the burning of jhum), 19.iii.88, Coll. V.T. Darlong; 1 ex, Jaintia hills, 24 km before Garampani, 9.iii.88, Coll. K. P. Singh; 22 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., 28.iv.88, Coll. V.T. Darlong; 6 ex, West Garo hills, Tura, 30.iv.-5.v.79, Coll. J. K. Jonathan and party.

Diagnostic characters : Worker. Black; head and thorax finely longitudinally striate; mandibles linear, longitudinally striate; clypeus convex; thorax elongate, sutures distinct; node of pedicel rugose, abdomen smooth, shining and polished, sting exserted.

Length : W. 7-8.5 mm.

Distribution : INDIA : (East & West Khasi hills, West Garo hills, and Jaintia hills), Meghalaya; Assam; West Bengal; Along the foothills of Himalayas from Simla to Sikkim; Elsewhere : Myanmar; Tenasserim.

Remarks : Leptogenys kitteli forages in groups. They are seen shifting their nest sites often. They also carry nest mates, in a ventroventral position, on such occasions.

22. ***Leptogenys (Lobopelta) peuqueti*** Er. André

Lobopelta peuqueti André, 1887, *Rev. Ent.*, **6** : 292.

Leptogenys (Lobopelta) peuqueti, Chapman and Capco, 1951, *Checklist of the ants of Asia,* **1** : 38.

Material examined : 2 ex: 1 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 22.x.76, Coll. R. Mathew; 1 ex, Shillong, Golflinks, 6.ix.79, Coll. K. Deb.

Diagnostic characters : Worker. Black, smooth and shining; head oval, narrower posteriorly than in front; mandibles linear, not dentate; clypeus triangular, the median lobe strongly carinate; antennae long, scapa extending beyond the top of the head; head anteriorly with few punctures; 2nd joint of flagellum much longer than 1st; thorax narrow; metanotum compressed; node of pedicel strongly compressed, curved to the anterior end, posteriorly vertically truncate; abdomen elongate.

Lenght : W. 5-6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Elsewhere : Annam; Myanmar; Sri Lanka.

23. ***Leptogenys (Lobopelta) ocellifera*** (Roger) (Fig. 23)

Ponera ocellifera Roger, 1861, *Berl. Ent. Zeit.*, **5** : 13.

Leptoyenys (Lobopelta) processionalis, Tiwari *et al.,* 1993, *State Fauna Series* 3 : *Fauna of West Bengal,* part **8** : 29. (Syns.)

Material examined : 3 ex. India, Meghalaya, East Khasi hills, Lalsharai, 1.iv.82, Coll. S. Khongsit.

Diagnostic characters : Worker. Reddish brown; the whole insect smooth, polished and shining and with a few punctures; pilosity fairly abundant; head broader anteriorly; head anteriorly with few fine longitudinal striae; mandibles finely longitudinally striate, armed with four unequal teeth; clypeus sub-carinate; thoracic sutures well marked; metanotum broader posteriorly, apical portion truncate, smooth; node of pedicel convex in front, flat posteriorly; abdomen oval.

Length : W. 8-9 mm.

Distribution : INDIA : (East Khasi hills); Meghalaya; Kerala; Tamil Nadu.

24. ***Leptogenys (Lobopelta) punctiventris*** Mayr (Fig. 24)

Lobopelta punctiventris Mayr, Verh. zool-bot. Ges. Wien **28** : 666.

Leptogenys (Lobopelta) punctiventris, Tiwari *et al.*, 1993, *State Fauna Series* **3** : *Fauna of West Bengal*, part **8** : 30.

Material examined : 2 ex : 1 ex, India, Meghalaya, West Garo hills, Balphakram National Park, 12.v.88, Coll. V.T. Darlong; 1 ex, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew.

Diagnostic characters : Worker. Black; head, thorax and abdomen densely punctured; mandibles linear, not dentate, thorax stout, meso-metanotal suture obsolete; node of pedicel cubical, seen from above longer than broad; abdomen massive.

Length : W. 5-6 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills); Meghalaya; Sikkim; West Bengal.

25. ***Leptogenys jeanettei*** sp. nov. (Figs. 25, 26, 27)

Holotype worker : TL 6.00; HL. 1.47; HW 1.05; CI 71; SL 1.39; SI. 132; ThL 2.16.

Head densely punctured, giving it a striate appearance, glossy; antennae long, with few suberect hairs and abundant pubescence, scape reaching beyond the top of the head; clypeus anteriorly angularly produced, convex, strongly carinate in the middle; mandibles feebly triangular, masticatory margin without teeth, with few punctures; head longer than broad; hairs fairly abundant on head; eyes moderate, placed below the middle of the head; thorax densely punctate; pro-mesonotal suture wide; meso- metanotal suture marked by short, closely arranged, longitudinal striae; metanotum coarsely sculptured, sides with few longitudinal striae, apical portion of metanotum truncate, transversely striate; node of pedicel broader than long, less coarsely punctured; abdomen highly polished and shining, basal abdominal segments with few shallow punctures; the suture between the basal two abdominal segments marked by short, longitudinal striae; pilosity pale, fairly abundant on body, hairs on body erect to suberect, both long and short; legs moderate, pubescent; abdomen oval, sting exserted.

Colour : Black, the appendages reddish brown; the whole insect glossy.

Paratype workers : TL 6.00; HL 1.43-1.47; HW 1.00-1.05; CI 69-71; SL 0.79; SI 132-139; TH L 1.97-2.11.

Holotype worker : INDIA, Meghalaya, West Khasi hills, Balat, 9.ix.86, Coll. M.R. Rynth (Regd. No. A1/9711).

Paratype workers : 1 ex, with the same collection data as the holotype (Regd. No. A1/9712); 1 ex, India, Meghalaya, East Khasi hills, Lai-lad, 12.iii.87, Coll. V.T. Darlong (Regd. No. A1/10011).

Leptogenys jeanettei comes closer to *punctiventris*, but can be differentiated by its smooth abdomen and broader than long petiolar node.

10. Genus ***Odontoponera*** Mayr, 1862

Odontoponera Mayr, 1862, *Verh. zool-bot. Ges. Wien*, **12** : 717.

Odontoponera, Brown, 1973, *In Tropical forest ecosystems in Africa and south America*,: *161-185.*

Diagnostic characters : worker. Head quadrate, occiput emarginate, head, thorax and node of pedicel striate; posterior lateral angles rounded; mandibles powerful, strongly dentate; clypeus narrow, transverse anteriorly, posteriorly produced between the antennal carinae; antennae 12 jointed; eyes placed below middle of head; thorax massive, pronotum convex, anteriorly narrowed into a collar,. anterior lateral angles dentate; thoracic sutures distinct; apical portion of metanotum broad, flat, denticulate on sides; legs robust; pedicel one-jointed, node of pedicel cuneiform, emarginate above, flattened anteriorly and posteriorly; abdomen short. A single species.

26. ***Odontoponera transversa*** (Fred. Smith) (Fig. 28)

Ponera *transversa* Fred. Smith, 1857, *J. Proc. Linn. Soc. Lond. Zool.* **2** : 86.

Odontoponera transversa, Mathew, 1984, *Bull. zool. Surv. India* **6** (1-3) : 307-308.

Material examined : 55 ex: 10 ex, India, Meghalaya, East Khasi hills, Old Barapani, 14.v.76, Coll. R. Mathew; 3 ex, East Khasi hills, Shillong, 2.x.75, Coll. R. Mathew; 1 ex, East Khasi hills, Umtham, 25.iv.67, Coll. R. K. Varshney; 1 ex, East Khasi hills, Umsning, 23.viii.63, Coll. M.R. Rynth; 2 ex, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. Mathew; 2 ex, Jaintia hills, Garampani, 12.xii.75, Coll. S. K. Chanda; 1 ex, East Khasi hills, Nongpoh, 28.i.82, Coll. C. Radhakrishnan; 1 ex, East Khasi hills, Old Barapani, 30.xii.81, Coll. C. Radhakrishnan; 1 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K. P. Singh; 1 ex, East Khasi hills, Nongpoh, 19.x.82, Coll. R. Mathew; 2 ex, Nongkhyllem Reserve Forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan; 1 ex, West Khasi hills, 10 km. away from Mairang on Nongstoin road; 22.vii.86, Coll. R. Mathew; 1 ex, West Khasi hills, Balat, 9.ix.86, Coll. M. R. Rynth; 1 ex, East Khasi hills, Cherra-shella Road, 3.ix.86, Coll. K. P. Singh; 1 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C. Radhakrishnan; 1 ex, Jaintia hills, 2 km. from Raliang towards Garampani, 20.x.87, Coll. V.T. Darlong; 1 ex, Jaintia hills, 17 km. from Jowai near Mynso village, alt. 4300 ft., 5.i.88, Coll. A.K. Karmakar; 6 ex, West Garo hills, Selbalgiri, 2000 ft. (collected the day after burning the jhum), 19.iii.88, Coll. V.T. Darlong; 2 ex, East Khasi hills, 4 km. away from Lai-lad on the forest road to Patharkhma, 24 km. from Umling, 22.iv.88, Coll. A.K. Karmakar; 7 ex, West Garo hills, Selbalgiri, Alt, 2000 ft., 28.iv.88, Coll. V.T. Darlong; 2 exs Ri-Bhoi, 2.ix.'88, Coll. A. R. Lahiri & Party; 1 ex. East Khasi Hills, Holls of Umwai, 15.ix.88, Coll. A. R. Lahiri & party.

Diagnostic Characters : worker. Same as that mentioned under the Genus.

Length : W. 9-12 mm.

Distribution : INDIA : (East and West Khasi hills, West Garo hills); Jaintia hills & R. Bhoi; Meghalaya; the whole of India.

11. Genus ***Pachycondyla*** Fred Smith, 1858

Pachycondyla Smith, 1858, Cat. Hym. Brit. Mus. **5** : 107.

Pachycondyla, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185

Diagnostic characters: worker. Head rectangular, depressed, mandibles broad, strongly dentate; antennae 12 jointed; clypeus narrow, produced backwards in the middle to between the base of the antennae; thorax convex and rounded anteriorly, slightly or deeply compressed posteriorly; node of pedicel one-jointed; abdomen massive.

27. ***Pachycondyla amblyops*** (Emery)

Ponera amblyops Emery, 1887, *Ann. Mus. Civ. Stor. Nat. Genova* **25** : 434.

Pachycondyla (Pseudoponera) amblyops Emery, 1901, *Ann. Soc. Ent. Belg.*, **45**:42

Pseudoponera amblyops, Chapman and Capco, 1951, *Checklist of ants of Asia*, 1:74.

Material examined : 22 ex: 4 ex, India, Meghalaya, East Khasi hills, Old Barapani, 14.v.76, Coll. R. Mathew; 13 ex, Old Barapani, 23.iv.77, Coll R. Mathew; 1 ex, East Khasi hills, Mawpat, 19.v.79, Coll. R. Mathew; 1 ex, East Khasi hills, Cherra- Shella road, Alt. 2000 ft., 3.ix.86, Coll. K.P. Singh; 1 ex, West Khasi hills, 25 km. South West of Nongstoin on Syrkon road, 29.i.89, Coll. K.P. Singh; 2 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan.

Diagnostic characters: worker. Brownish yellow with a silky texture, covered with a fine golden pubescence; pilosity fairly abundant; head and thorax finely and densely punctured, opaque; head rectangular, mandibles longitudinally striate with 4 or 5 teeth; eyes small, concolorous with the surface of the head, placed below the middle of the head; clypeus narrow with a slightly produced median lobe; thorax broad and convex anteriorly, compressed posteriorly; basal portion of metanotum obliquely truncate, node of pedicel convex in front, concave posteriorly, thick at base and dentate beneath; abdomen cylindrical.

Length: W. 6 mm.

Distribution : INDIA : (East and West Khasi hills); Meghalaya; Assam; Sikkim; Elsewhere : Myanmar; Tenasserim; Malay Peninsula.

Remarks : Very few individuals are observed in their nests.

12. Genus ***Ectomomyrmex*** Mayr, 1867

Ectomomyrmex Mayr, 1867, *Tijdschr. v. Ent.*, **10** : 84, pls., fig., W.

Diagnostic Characters : worker. Head depressed, emarginate posteriorly, with the outlive of the sides of the head from front arched; mandibles broadly triangular, masticatory margin dentate, apical tooth long acute and slightly curved; narrow clypeus acutely produced upwards in the middle to between the base of antennae; antennae 12-jointed, long, cylindrical. Throx Short rounded and convex above; pro-mesonotal suture well-marked; a wide distinct suture between epimeron and episternum of mesothorax; meso-metanotal suture barely indicated above. Node of pedicel high, on a level with thorax, very convex and rounded in front. Abdomen massive, elongate.

Key to the species of ***Ectomomyrmex*** Mayr

1. Node of pedicel convex in front; upper portion of the posterior face bevelled off towards the front. 2

- Node of pedicel not bevelled, flat and truncate anteriorly and posteriorly. . . . . *leeuwenhoeki*

2. Abdomen finely and closely punctured, opaque, not shining. . . . . *astuta*

- Abdomen smooth, highly polished and shining . . . . . *javana materna*

28. ***Ecotomomyrmex astuta*** (Fred. Smith)

Pachycondyla astutus Fred.Smith, 1858, *Cat. Hym. Brit. Mus.*, **6** : 107

Ecotomomyrmex sundaicus, Mayr, 1867, *Tijds. v. Ent.*, **10** : 85.

Ecotomomyrmex astutus, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1** : 61.

Meterial examined : 46 ex: 4 ex, India, Meghalaya, east Khasi hills, Shillong, Botanical garden, 14.vi.74, Coll. M.S. Jyrwa; 3 ex, East Khasi hills, Upper Shillong, 1.viii.76, Coll. R. Mathew; 1 ex, East Khasi hills, Mawlai, 2.x.75, Coll. R. Mathew; 1 ex, East Khasi hills, Shillong 4.xii.76, Coll.M.S. Jyrwa; 1 ex, East Khasi hills, Shillong, Nongthymmai, 9.vii.75, Coll. M.S.Jyrwa; 3 ex, Upper shillong, 1.viii.76, Coll. R. Mathew; 1 ex, Shillong, fruit Garden 18.vi.75, Coll. R. Mathew; 1 ex, Shillong Peak, 1.i.77, Coll. R. Mathew; 4 ex, Shillong, Sericulture garden, 25.ix.75, Coll. R. Mathew 1 ex, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. Mathew; 1 ex, Shillong, 3.xii.74, Coll. M.S. Jyrwa; 3 ex, Shillong 7.viii.76, Coll. M.S. Jyrwa; 3 ex, East Khasi hills, Mawpat, 19.iv.79, Coll. R. Mathew; 2 ex, Shillong, 30.x.75, Coll. M.S. Jyrwa; 2 ex, East Khasi hills, Pynursla, 17.viii.81, Coll. C. Radhakrishnan; 4 ex, East Khasi hills, Laitkor, 10.vii.74, Coll. R.S. Giri; 2 ex, Jaintia hills, Shangpung, 6.xii.75, Coll. S.K. Chanda; 2 ex, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. Mathew; 1 ex, Shillong, 17.v.77, Coll. R. Mathew 2 ex, East Khasi hills, Nongkhyllem Reserve forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 1 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C. Radhakrishnan, 2 ex, West Khasi hills, 25 km. South of Nongstoin on Syrkon Road, 29.i.87, Coll. K.P. Singh.

Diagnostic characters: worker. Black, mandibles, tibiae and tarsi of legs reddish; head finely and closely striate, the striae diverging posteriorly from a medial line; head emarginate, occiput smooth and shining; thorax convex, pronotum narrowed anteriorly to form a neck, with concentric

striae;meso and metanotum closely longitudinally striate; node of pedicel striate in front, rugose above; abdomen finely and closely punctured.

Length: W. 12.5 - 13 mm.

Distribution : INDIA : (East and West Khasi hills); Jaintia hills; Meghalaya; Assam; Elsewhere: Myanmar; Tenasserim; China; Malaya.

29. ***Ectomomyrmex javana materna*** Forel

Ectomomyrmex javana maternus Forel, 1901, *J. Bombay nat. Hist. Soc.*, **13** : 321, W.

Ectomomyrmex javana materna, Tiwari *et al.*, 1994, *State Fauna Series* 3 : *Fauna of West Bengal,* Part *8*:240 (Syns.).

Material examined : INDIA : Meghalaya : East Garo hills, Williamnagar, 1 W, 27.v. 1990, coll. M.S. Shishodia and party.

Diagnostic characters: worker. Black; mandibles, antennae and legs reddish brown. Head very finely and closely striate; mandibles with 7 teeth. Thorax with the pronotum striate concentrically. Node of pedicel convex in front, transversely striate in the middle. Abdomen shining

Length: W. 8.5 - 9 mm.

Distribution : INDIA : Meghalaya (East Garo Hills), Assam, West Bengal. Elsewhere : Burma, China, Hong Kong, Maymyo.

30. ***Ectomomyrme leeuwenhoeki*** (Forel) (Fig. 29)

Ponera leeuwenhoeki Forel, 1886, J. Asiat. Soc. Bengal, **55** : 244.

Ectomomyrmex leeuwenhoeki, Chapman and Capco, 1951, *Check List of Ants of Asia,* **1** : 62.

Pachycondyla leeuwenhoeki, Mathew, 1984, *Bull. zool. Surv. India,* **6** (1-3) : 307.

Material examined : 15 ex: 1 ex, India, Meghalaya, East Khasi hills, Shillong, 23.viii.75, Coll. R. Mathew; 2 ex, Shillong, 7.v.75, Coll. R. Mathew; 3 ex, West Garo hills, Tura Peak, 27.ii.65, Coll. A.S. Rajagopal; 1 ex, Shillong, 12.v.77, Coll. R. Mathew; 1 ex, East Khasi hills, Mawphlang, 2.v.86, Coll. V.T. Darlong; 2 ex, West Garo hills, Balphakram National Park, 12.ii.87, Coll. V.T. Darlong; 1 ex, East Khasi hills, Lai-lad Forest, 12.iii.87, coll. V.T. Xaviong; 1 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., (Collected the day after burning the jhum), 19.iii.88, Coll. V.T. Darlong; 3 ex, East Khasi hills, Umtru, Alt. 900 ft., 26.iv.88, Coll. A.K. Karmakar; 1 ex, West Garo hills, Balphakram National Park, 12.v.88, Coll. V.T. Darlong.

Diagnostic characters: worker. Black, antennae, femora, tibia and tarsi of legs brownish-red; head coarsely longitudinally striate; thorax coarsely striate, the striae on pronotum concentric; apical portion of metanotum concave, transverly striate; node of pedicel coarsely punctured and rugose,

posteriorly with a few transverse striae; basal abdominal segment coarsely and finely punctured, the remaining segments shining.

Length : W. 7-8 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills); Meghalaya; Assam; Kerala; West Bengal. Elsewhere : Myanmar; Tenasserim.

13. Genus ***Brachyponera*** Emery, 1901

Euponera, Subg. *Brachyponera* Emery, 1901, *Ann. Soc. Ent. Belg.*, **45** : 43

Brachyponera, Bingham, 1903, *Fauna Brit India, Hym.*, **2** : 101; Wilson, 1958, *Bull. Mus. Comp. Zool. Harvard, Cambridge*, Mass. **119** : 347 (Syns.)

Diagnostic characters : worker. Head without mandibles broadly oral, broader posteriorly than in front, the sides flattened; mandibles triangular; clypeus narrow, produced posteriorly into an angle between the antennal carinae; eyes large. Thorax narrower than head; mesonotum gibbous;metanotum strongly compressed and emarginate at mesometanotal suture, from there broadening to the apex, apical face very broad and shaped to allow the anterior face of node of pedicel closing over it. Pedicel one-jointed; node somewhat thick, rounded above. Abdomen massive.

Key to the Species of ***Brachyponera*** Emery

1. Node of pedicel armed with a number of blunt processes on its posterior margin . . . . *rufipes*

- Node of pedicel unarmed 2

2. Joints of flagellum of antennae distinctly longer than broad; length over 5 mm. . . . . nigrita

- Joints of flagellum of antennae, basal and apical excepted, as broad as or broader than long; length under 4 mm. - . . . . . *luteipes*

31. ***Brachyponera luteipes*** (Mayr) (Fig. 30)

Ponera luteipes Mayr, 1862, *Verh. zool.-bot. Ges. Wein*, **12** : 72.

Euponera (Brachyponera) luteipes, Chapman and Capco, 1951, *Check List of Ants of Asia*, **1** : 63.

Pachycondyla luteipes (Mayr), Mathew, 1983, *Bull. zool. Surv. India*, **5** (1) : 125-127.

Brachyponera luteipes, Tiwari *et al*, 1994, *State Fauna Series 3 : Fauna of West Bengal*, Part **8** : 26 (Syns).

Material examined : 48 ex: 4 ex, India, Meghalaya, East Khasi hills, Shillong, 12.iii.76, Coll. R.S.Giri; 2 ex, East Khasi hills, Mawsmai, 9.v.76, Coll. S. Khera; 1 ex, East Khasi hills, Shillong, 19.v.75, Coll. R. Mathew; 10 ex, East Khasi hills, Upper Shillong, 3.xi.75, Coll. R. Mathew; 3 ex, Shillong, 5.xii.79, Coll R. Mathew; 3 ex, West Khasi hills, Shella, 25.ix.81, Coll. C. Radhakrishnan; 4

ex, Shillong, 10.v.75, Coll. R. Mathew; 6 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 5 ex, East Khasi hills, Mawpat, 16.iv.79, Coll. S.G. Patil; 1 ex, East Khasi hills, Pynursla, 6.viii.81, Coll. C. Radhakrishnan; 6 ex, West Khasi hills, 10 km. north of Nongkhlaw near Mawiang village, 20.ii.87, Coll. A.K. Karmakar; 3 ex, Jaintia hills, 2 km. from Raliang towards garampani, 20.x.81, Coll. V.T. Darlong.

Diagnostic characters: worker. Black, shining; mandibles, flagellum of antennae, legs and apex of abdomen testaceous brown; head, thorax and abdomen finely reticulate punctate, covered with a fine silky whitish pubescence; eyes small, placed below the middle of the head; mandibles finely punctured; clypeus with anteriorly produced medial lobe; thorax massive; metanotum truncate; node of pedicel flat enteriorly and posteriorly; abdomen massive.

Length: W. 3.5-4 mm.

Distribution : INDIA : (East and West Khasi hills, Jaintia hills), Meghalaya; throughout India, Elsewhere Myanmar; Sri Lanka; Malaya.

32. ***Brachyponera nigrita*** (Emery)

Ponera nigrita Emery, 1894, *Ann. Mus. Civ. Stor. Nat.* **24** : 459.

Brachyponera nigrita Bingham, 1903, *Fauna Brit. India, Hymenoptera*, **2** : 102.

Euponera (Brachyponera) nigrita, Chapman and Capco, 1951, *Check List of Ants of Asia*, **1**:64.

Material examined: 10 ex, India, Meghalaya, East Khasi hills, Shillong, 22.vii.63, Coll. S.N. Prasad.

Diagnostic characters: worker. Black, shining; the mandibles, flagellum of antennae and legs reddish brown; head nearly square, mandibles finely punctured; eyes not very small, placed above the middle of head on the sides; thorax broad, pronotum convex, mesonotum gibbous; abdomen massive.

Length: W. 5.5 - 6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Sikkim; Elsewhere : *Myanmar; Tenasserim.*

14. Genus ***Bothroponera*** Mayr, 1862

Bothroponera Mayr, 1862, *Verh. zool-bot. Ges. Wien*, **12** : 717

Diagnostic characters : worker. Head without mandibles quadrangular; mandibles broad, triangular, masticatory margin armed with 7 or 8 teeth; clypeus transverse, arched anteriorly; antennae 12- jointed, flagellum gradually thickening towards apex. Thorax comparatively broad, rounded above, metanotum obliquely truncate at apex, pro-mesonotal suture well-marked. Node of pedicel seen from the front oval or rounded. Abdomen massive; sting powerful, exserted.

33. ***Bothroponera rufipes*** (Jerdon) (Fig. 31)

Ponera rufipes Jerdon, 1851, *Madras Jour. Lit. Sc.* **17** : 102.

Pachycondyla (Bothroponera) rufipes, Emery, 1911, *Genera Insect.*, **118** : 76.

Bothroponera rufipes, Chapman and Capco, 1951, *Check List of Ants of Asia*, **1**: 50.

Pachycondyla rufipes; Mathew, 1984, *Bull. Zool. Surv. India,* **6** (1-3) : 307-308.

Bothroponera rufipes, Tiwari *et al*, 1994, *State Fauna Series* 3 : *Fauna of West Bengal*, Part **8** : 21.

Material examined : 20 ex: 1 ex, India, Meghalaya, East Khasi hills, Laitkor, 10.vii.74, Coll. R.S. Giri; 1 ex, East Khasi hills, Shillong, 1.viii. 76, Coll. R. Mathew; 4 ex, Jaintia hills, Garampani, Kupli river bed, 3.vi.75, Coll. B. Rani; 1 ex, Jaintia hills, 3 km. West of Garampani IB, 12.xii.75, Coll. S.K. Chanda; 1 ex, East Khasi hills, Mawpat, 16.vii.71, Coll. R.S. Pillai; 1 ex, Shillong, 0.5 km. from Band stand towards Happy Valley, 18.ix.75, Coll. M. Vasanth; 4 ex, Shillong, 3.v.68, Coll R.K. Varshney; 1 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, East Khasi hills, Nongpoh, 19.x.82, Coll. R. Mathew; 1 ex, Nongpoh, 28.x.83, Coll. R. Mathew; 1 ex, Jaintia hills, 90 km. away from Shillong towards Khanduli, 7.v.87, Coll. C. Radhakrishnan; 1 ex, West Garo hills, Balphakram National Park, 12.v.88. Coll. V.T. Darlong; 1 ex, West Garo hills, Selbalgiri, 14.v.88. Coll. V.T. Darlong.

Diagnostic characters: worker. Black, the mandibles, antennae, legs and apical abdominal segments castaneous red; head, thorax and node of pedicel coarsely punctured, cribrate; basal two abdominal segments rugose with longitudinal ridges, the apical segments finely punctured; mandibles longitudinally striate and with some shallow punctures, dentition often worn and obsolete; eyes small; thorax broad, convex, apical face of metanotum concave, smooth and shining, margined on the sides and above, node of pedicel convex and rounded above, posteriorly concave, smooth and shining, spinous processes on the posterior margin above irregular; abdomen massive, constriction between the basal two segments distinct; pilosity reddish-yellow, abundant.

Length: W. 13 - 15 mm.

Distribution : INDIA : (East and West Khasi hills, West Garo hills), Jaintia hills, Meghalaya; Assam; Southern and Western India; West Bengal; Elsewhere Myanmar; Sri Lanka; Tenaserim.

15. Genus ***Odontomachus*** Latreille

Odontomachus Latr. 1804, *Nouv. Dict. Hist. Nat.* **24** : 179.

Odontomachus, Brown, 1973, *In Topical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Head rectangular, long, massive and emarginate; mandibles long, linear and straight, usually with three teeth at the terminal end; articulated in the middle anterior

margin of the head; antennae 12-jointed; eyes small, placed laterally below the middle of the head; pedicel one- jointed, the node conical and terminating in a spine above; abdomen oval, sting exserted.

Key to the species of ***Odontomachus*** Latreille

1. Small species, size less than 5 mm 2
- Large species, size more than 5 mm 3
2. Metanotum bidentate . . . . . *myops*
- Metanotum not bidentate . . . . . *punctiventris*
3. The whole head finely and delicately striate. . . . . *haematodus*
- The whole of the head not striate 4
4. Innermost of the three apical teeth on the mandibles narrow, twice as long as broad . . *rixosus*
- Innermost of the three apical teeth on the mandible broad, as broad as long 5
5. Head posteriorly deeply emarginate, almost bilobed . . . . . *punctulatus*
- Head posteriorly slightly emarginate, not bilobed . . . . . *monticola*

34. ***Odontomachus haematodus*** (Linnaeus)

Formica haematodes Linne, 1758, Syst. *Nat. Ed.* **10** i: 582.

Odontomachus haematodus, Brown, 1976, *Studia Ent.* **19** (1-4) : 67-171.

Material examined : 7 ex, India, Meghalaya, East Khasi hills, Shillong, 16.vi.79, Coll. R. Mathew.

Diagnostic characters : worker. Dark brown, with a silky gloss; head, thorax and node of pedicel finely striate, abdomen smooth and shining; head broad, dentition obsolete, the inner most of the apical teeth broad, very short, emarginate, Occiput smooth and polished; thorax anteriorly produced into a neck, striae on pronotum concentric, that on the metanotum transverse; node of pedicel convex anteriorly, flat posteriorly; abdomen with few punctures.

Length: W. 9 - 11 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Assam; Kerala; Tamil Nadu; Sikkim. Elsewhere : Sri Lanka.

35. ***Odontomachus monticola*** Emery (Figs. 32, 33)

Odontomachus monticola Emery, 1891, *Ann. Soc. Ent. Fr.* **60** : 560.

Odontomachus monticola, Mathew, 1983, *Bull. zool. Surv. India,* **5** (1) : 125-127.

Odontomachus monticola, Tiwari *et al.,* 1994, *State Fauna Series* **3** : *Fauna of West Bengal,* Part **8** : 30.

Material examined : 12 ex, India, Meghalaya, East Khasi hills, Shillong, 17.vii.76, Coll. R. Mathew.

Diagnostic characters : worker. Dark or reddish brown; head broader anteriorly; mandibles robust, apical teeth large, the inner margins of the mandibles with 7 or 8 small teeth; thorax with concentric striae on pronotum; meso and metanotum with transverse striae.

Length : W. 11 - 13 mm.

Distribution : INDIA : (East Khasi hills and Garo hills), Meghalaya. Elsewhere : Myanmar; Siam.

36. ***Odontomachus Punctulatus*** Forel

Odontomachus punctulatus Forel, 1900, J. *Bombay Nat. Hist. Soc.,* **12** : 58.

Odontomachus punctulatus, Brown, 1976, *Studia Ent.* **19** (1-4) : 67-171

Material examined : 42 ex : 4 ex, India, Meghalaya, East Khasi hills, Shillong, 1.v.76, Coll. M. Vasanth; 3 ex, Shillong, 3.viii.75, Coll. R. Mathew; 1 ex, Shillong, 17.viii.75, Coll. M. Vasanth; 2 ex, Shillong, 6.ix.75, Coll. M. Vasanth; 2 ex, Shillong, 5.viii.75, Coll. R. Mathew; 6 ex, Shillong, 18.vii.75, Coll. R. Mathew; 1 ex, Jaintia hills, Shangpung. 7.xii.75, coll. S.K. Chanda; 2 ex, Shillong, 7.viii.75, coll. R. Mathew; 4 ex, Shillong, 9.viii.75, coll. R. Mathew; 1 ex, Shillong, 5.viii.75, coll. R. Mathew; 2 ex, Shillong, 13.viii.77, coll. Auarius; 1 ex, Jaintia hills, Caraspani, Kopili Damside, 14.iii.70, coll. S.K. Talukdar: 2 ex, Shillong, 17.vii.75, coll, R. Mathew; 2 ex, West Garo hills, Arbela IB compound, 7.iii.75, coll. S. Biswas; 1 ex, Shillong, 6.vii.75, coll. R. Mathew; 1 ex, Shillong, 20.ix.75, coll. R. Mathew; 1 ex, Shillong, 8.vii.75, coll. R. Mathew; 1 ex, Shillong, 2.vii.75, coll. R. Mathew; 1 ex, Shillong, 17.vii.75, coll, R. Mathew; 1 ex, Shillong, 10.x.75, coll. R. Mathew; 3 ex, Jaintia hills, 90 Kms. away from Shillong towards Khanduli, 7.v.87, coll. C. Radharishnan.

Diagnostic character : Worker. Dark brown; head deeply emarginate, broader anteriorly; mandibles robust, the apical tooth long, curved; eyes placed below the middle of the head, laterally; thorax coarsely striate.

Length : W. 12-13. mm.

Distribution : INDIA : East Khasi hills, West Garo hills, Jaintia hills, Meghalaya; Assam; Sikkim. Elsewhere Myanmar.

37. ***Odontomachus rixosus*** Fred. Smith (Figs. 34, 35)

Odontomachus rixosus Fred. Smith, 1857, *J. Proc. Linn. Soc. Lond. Zool.*, **2** : 67.

Odontomachus rixosus, Brown, 1976, *Studia Ent.*, **19** (1-4) : 67-171.

Material examined : 1 ex, India, Meghalaya, East Khasi hills, Shillong, 7.vi.77, Coll. R. Mathew.

Diagnostic characters : worker. Light brown : head narrower posteriorly, striae on the posterior region effaced; without the silky gloss; node of pedicel convex anteriorly, smooth; abdomen smooth and shining.

Length: W. 10-11.5 mm.

Distribution : INDIA : (East khasi hills), Meghalaya; Assam: Elsewhere : Myanmar.

16. Genus ***Anochetus*** Mayr, 1861

Anochetus Mayr, 1861, *Europ. Formicid.* : **53.**

38. ***Anochetus myops*** Emery

Anochetus myops Emery, 1893, *Rev. Suisse Zool.*, **1** : 201.

Anochetus myops, Chapman and Capco, 1951, *Checklist of the ants of Asia, Manila*, **1** : 40

Material examined : 2 ex, India, Meghalaya, East Khasi hills, Old Barapani road, 14.v.76, Coll. R. Mathew,

Diagnostic characters : worker. Brownish yellow; head very broad and short, widely emarginate posteriorly, anteriorly striate, rest of the head with minute punctures; mandibles short, broadening towards the apex where it is furnished with three, long, acute teeth, eyes very small; thorax punctured, shining, metanotum truncate at apex; node of pedicel conical, smooth, shining and rounded above; abdomen smooth, polished and shining.

Length : W. 4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar.

39. ***Anochetus punctiventris*** Mayr

Anochetus punctiventris Mayr, 1878, *Verh. zool.-bot. Ges. Wien*, **28** : 659.

Anochetus punctiventris, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1** : 41. *Manila.*

Anochetus punctiventris; Tiwari *et. al.* 1994, *State Fauna Series* **3** : *Fauna of West Bengal*, Part **8** : 21.

Material examined : 2 ex, India, Meghalaya, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew.

Diagnostic characters : worker. Brownish, abdomen darker; head convex in front, closely and regularly punctured, the punctures finer and more sparse on the mandibles; the preapical inner margin of the mandibles minutely serrate; thorax densely punctured, obliquely truncate posteriorly; apical portion of metanotum margined at the sides; node of pedicel smooth; basal abdominal segment densely punctate in front.

Length : W. 3.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Western and Southern India; Sikkim and West Bengal.

IV. SUBFAMILY PSEUDOMYRMECINAE

This is a small subfamily primarily of tropics. Exclusively arboreal in habitat these nest in plant cavities. Only one genus in the Oriental region.

17. Genus *Tetraponera* Fred. Smith, 1852

Eciton, Jerdon, 1857, Madras Jour. L. S., **17** : 111.

Tetraponera, Brown, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : Worker. Elongate, head more or less rectangular, truncate anteriorly; clypeus narrow, bent vertically downwards; antennae 12-jointed; eyes large, placed a little to the front of the head; thorax elongate, constricted in the middle, thoracic sutures distinct; pedicel elongate, with two nodes, petiolate; abdomen narrow, attenuate at apex; sting exserted. 7.xii.75, Coll. S.K. Chanda; 2 ex, Shillong, 7.viii.75, Coll. R. Mathew; 4 ex, Shillong, 9.viii.75, Coll. R. Mathew; 1 ex, Shillong, 5.viii.75, Coll. R. Mathew; 2 ex, Shillong, 13.viii.77, Coll. Aquarius; 1 ex, Jaintia hills, Garampani, Kopili Damside, 14.iii.70, Coll. S.K. Talukdar; 2 ex, Shillong, 17.vii.75, Coll. R. Mathew; 2 ex, West Garo hills, Arbela IB compound, 7.iii.75, Coll. S. Biswas; 1 ex, Shillong, 6.vii.75, Coll. R. Mathew; 1 ex, Shillong, 30.ix.75, Coll. R. Mathew; 1 ex, Shillong, 8.vii.75, Coll. R. Mathew; 1 ex, Shillong, 2.vii.75, Coll. R. Mathew; 1 ex, Shillong, 17.vii.75, Coll. R. Mathew; 1 ex, Shillong, 10.x.75, Coll. R. Mathew; 3 ex, Jaintia hills, 90 kms. away from Shillong towards Khanduli, 7.v.87, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Dark brown; head deeply emarginate, broader anteriorly; mandibles robust, the apical tooth long, curved; eyes placed below the middle of the head, laterally; thorax coarsely striate.

Length : W. 12 - 13.5 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills, Jaintia hills), Meghalaya; Assam; Sikkim. Elsewhere : Myanmar.

Key to the species of ***Tetraponera*** Fred. Smith

1. Ocelli present . . . . . *rufonigra*

- Ocelli absent 2

2. Ist node of pedicel longer than its preceding petiole 3

- Ist node of pedicel as long as its preceding petiole; much narrower than 2nd node . . . . *nigra*

3. In profile metanotum distinctly very much higher than pro- mesonotum . . . . . *aitkeni*

- In profile metanotum not higher than pro-mesonotum . . . . . *allaborans*

40. ***Tetraponera aitkeni*** (Forel) (Fig. 36)

Sima aitkeni Forel, 1902, *Rev. Suisse Zool.*, **10** : 245

Tetraponera (Tetraponera) aitkeni, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1** : 78

Material examined : 5 ex: 2 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 2 ex, East Khasi hills, Kyrdem Kulai, 25.ix.84, Coll. J.P. Sati.

Diagnostic characters: worker. Black, smooth and shining, and with few punctures; mandibles, antennae, anterior node of pedicel and margins of abdominal segments reddish yellow; head rectangular; mandibles with few striae, smooth, shining; eyes large, occupying nearly one third the length of head; pronotum margined, nearly square; deeply emarginate at the mesometanotal suture; metanotum convex, Ist node of pedicel longer than the preceding petiole, petiolate posteriorly; 2nd node as broad as long, not petiolate; abdomen oval.

Length: W. 3.7 mm.

Distribution: INDIA : (East Khasi hills), Meghalaya; Karnataka.

41. ***Tetraponera allaborans*** (Walker) (Fig. 37)

Sima allaborans Walker, 1859, *Ann. Mus. Nat. Hist.* **4**(3) : 375

Tetraponera allaborans, Hung *et. al.* 1972. *Ann. Entomol. Soc. Amer* **65**(5) : 1023-12025.

Tetraponera (Tetraponera) allaborans, Tiwari *et. al.* 1994, *State Fauna Series 3: Fauna of West Bengal*, Part **8** : 36.

Material examined: 23 ex: 10 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 4 ex, East Khasi hills, Shillong, Botanical garden, 31.iii.79, Coll. R. Mathew; 4 ex, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, Shillong, 10.v.75, Coll. R. Mathew; 3 ex, East Khasi hills, Nongpoh, 28.i.82, Coll. C. Radhakrishnan; 1 ex, East Khasi hills, Lai-lad, 27.v.87, Coll. A. K. Karmakar.

Diagnostic characters: worker. Black, polished and shining; mandibles, antennae reddish yellow, head rectangular; mandibles obscurely longtudinally striate and punctured; thorax anteriorly flat; the pronotum nearly square, submargined, narrowed anteriorly to a neck; thorax emarginate at the meso-metanotal suture; abdomen elongate, oval.

Length: W. 5-6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; West Bengal. Elsewhere : China; Formosa; Java; Myanmar; Philippines; Singapore; Srilanka; Sumatra.

42. ***Tetraponera nigra*** (Jerdon)

Eciton nigra Jerdon, 1851, *Madras Jour. Lit. Sc.*, **17** : 112.

Tetraponera (Tetraponer) nigra, Chapman and Capco, 1951, *Checklist of the ants of Asia,* **1** : 81.

Tetraponera (Tetraponera) nigra, Tiwari *et al.* 1994, *State Fauna series* **3**: *Fauna of West Bengal*; Part **8** : 37.

Material examined: 5 ex, India, Meghalaya, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew.

Diagnostic characters: worker. Black, finely and moderately punctured, shining, antennae and legs reddish brown; head rectangula; clypeus narrow, its anterior margin transverse, not medially dentate, thorax deeply emarginate at the meso-metanotal suture; metanotum raised; nodes of pedicel petiolate infront, abdomen elongate.

Length: W. 7-8 mm.

Distribution: INDIA : (East Khasi hills), Meghalaya, South India Elsewhere : Borneo; Philippines.

43. ***Tetraponera rufonigra*** (Jerdon) (Fig. 38)

Eciton rufonigra Jerdon, 1851, *Madras Jour. Lit. Sc.*, **12** : 111.

Tetraponera rufonigra, Mathew, 1984, *Bull. zool. Surv. India,* **6** (1- 3) : 307.

Tetraponera (Tetraponera) rufonigra, Tiwari *et al.* 1994, *State Fauna Series 3: Fauna of West Bengal,* Part **8** : 37.

Material examined: 44 ex: 1 ex, India, Meghalaya, East Khasi hills, Nayabungalow, 21.iv.77, Coll. S.G. Patil; 1 ex, Garo hills, Songsak District Council IB compound, 17.xi.73, Coll. S. Biswas; 8 ex, Garo hills, Darugiri, Songsak road, 10.iv.73, Coll. S. Biswas; 1 ex, Garo hills Mongchalma, 18.ii.75, Coll. S. Biswas; 1 ex, East Khasi hills, Nongpoh, 19.x.82, Coll. R. Mathew; 1 ex, Garo hills, Songsak, 24.i.82, Coll. C. Radhakrishnan; 3 ex, Garo hills, Rongrengiri, 13.xi.78, Coll. K.P. Singh; 6 ex, East Khasi hills, Shillong, 6.v.75, Coll. R. Mathew; 1 ex, East Khasi hills, Malki, 23.ix.75, Coll. M.S. Jyrwa; 2 ex, East Khasi hills, Nongpoh, 28.i.82, Coll. C. Radhakrishnan; 2 ex, West Khasi hills, Balat, 9.ix.86, Coll. M.R. Rynth; 8 ex, West Garo hills, Balphakram sanctuary, 12.xi.87, Coll. V.T. Darlong; 1 ex, East Khasi hills, Umtru, Alt. 900 ft., 26.iv.88, Coll. A.K. Karmakar; 8 ex, East Khasi hills, Lai-lad, 16.v.89, Coll. Y.P. Sinha; 1 ex, West Garo hills, Kherapara I.G. 14.x.88, Coll. K.K. Roy and Party; 6 ex, East Garo hills, Songsak, 5-6.v.79, Coll. J.K. Jonathan and party.

Diagnostic characters: worker. Orange-red or orange-yellow; head, 2nd joint of pedicel, abdomen and legs black; head, legs, 2nd joint of pedicel and the abdomen minutely and closely punctured, not opaque, shining; head rectangular, mandibles coarsely obsoletely striate; Ocelli present; pronotum broad, anterior lateral angles dentate; abdomen oval, sting exserted.

Length : W. 10.5-13 mm.

Distribution: INDIA : (East and West Khasi hills, East and West Garo hills), Meghalaya; throughout India. Elsewhere : Cambodia; China; Myanmar; Singapore; Srilanka; Sumatra; Java.

Remarks : Very commonly distributed throughout Meghalaya.

Subfamily MYRMICINAE

Subfamily Myrmicinae constitutes the largest subfamily of Formicidae. They are a cosmopolitan group, heterogeneous in both anatomy and habits, and ranging from primitive to highly specialized forms. Both the harvesters and fungus-growers belong to this subfamily. It also includes most of the social parasites, which in extreme cases have lost their worker caste.

Key to the genera of Myrmicinae.

1. Antennae 12-jointed 2
- Antennae with less than 12 joints 3
2. Head, including the mandibles, heart-shaped in full face view with sides strongly convex; metanotum armd with a pair of spines. . . . . ***Rhoptromyrmex***
- Without these characters 4
3. Antennae with 11 joints 10
- Antennae with less than 11 joints 11
4. Erect hairs on body trifid or multifid . . . . . ***Triglyphothrix***

- Erect hairs on body simple 5

5. Flagellum of antennae scarcely thickened towards apex, without distinct club 6

- Flagellum of antennae with distinct club 7

6. Calcaria of posterior pair of legs pectinate; . . . . . *Myrmica*

- Calcaria of posterior pair of legs not pectinate; metanotum armed with two spines. . . . . *Aphaenogaster*

7. Clypeus bicarinate . . . . . *Monomorium*

- Clypeus not bicarinate 8

8. Tibiae with simple calcaria 9

- Tibiae without calcaria . . . . . *Cardiocondyla*

9. Workers monomorphic . . . . . *Tetramorium*

- Workers dimorphic . . . . . *Pheidole*

10. Abdomen viewed in profile flat above, triangular beneath, apex of triangle pointing downwards . . . . . *Trigonogaster*

- Abdomen viewed in profile more or less convex above, not triangular beneath 12

11. Antennae 9-jointed 17

- Antennae with less than 9-joints 18

12. Lateral margins of head and thorax denticulate and spiny . . . . . *Cataulacus*

- Lateral margins of head and thorax not denticulate and spiny 13

13. Pedicel attached to dorsal surface of abdomen . . . . . *Crematogaster*

- Pecidel attached to middle of front or to ventral surface of abdomen 14

14. Pronotum armed with spines . . . . . *Lophomyrmex*

- Pronotum unarmed 15

15. Club of antennae 2-jointed . . . . . *Pheidologeton*

- Club of antennae 3-jointed 16

16. Antennal furrows present . . . . . *Tetramorium*

- Antennal furrows absent . . . . . *Myrmecina*

17. Antennal furrows present . . . . . *Meranoplus*

- Antennal furrows absent . . . . . *Carebara*

18. Antennae 7-jointed . . . . . *Myrmicaria*

- Antennae 6-jointed . . . . . *Strumigenys*

18. Genus ***Rhoptromyrmex*** Mayr, 1901

Rhoptromyrmex Mayr, 1901, *Annln naturh. Mus. Wien.*, **16** : 1-30.

Rhoptromyrmex , Bolton, 1976, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** : 281-379.

Dignostic characters: worker. *Rhoptromyrmex* is a small genus of tetramoriine ants containing only six species of which two are in the Oriental and Indo-Australian regions. Characters that separate this genus from the other tetramoriines are their typical shape of head and the absence of antennal scrobes. Only one species distributed in Meghalaya.

44. ***Rhoptromyrmex wroughtoni*** Forel (Fig. 55)

Acidomyrmex wroughtoni Forel, 1902, *Rev. Suisse Zool.*, **10** : 231.

Rhoptromyrmex wroughtoni, Datta and Raychaudhuri, 1983, *AKITU N. Ser.*, **56** : 1-14.

Material examined : 78 ex : 3 ex, India, Meghalaya, East Khasi hills, Shillong, 29.x.76, Coll. R. Mathew; 3 ex, Shillong, 29.iv.78, Coll. R. Mathew; 4 ex, Shillong 25.ix.75, Coll. R. Mathew; 1 ex, East Khasi hills, Nongkhyllem Reserve Forest, Nongpoh, 19.x.82, Coll. C. Radhakrishnan; 4 ex, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 4 ex, Shillong 27.vi.75, Coll. R. Mathew; 5 ex, Shillong, 29.iv.78, Coll. R. Mathew; 4 ex, Shillong, 13.x.78, Coll. Aquarius Mathew; 5 ex, Nongpoh, 28.i.82, Coll. C. Radhakrishnan; 8 ex, Shillong, 18.vi.75, Coll. R. Mathew; 12 ex, Shillong, 29.iv.75, Coll. R. Mathew; 5 ex, Nongpoh, 28.i.82, Coll. C. Radhakrishnan; 3 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C. Radhakrishnan; 17 ex, Nongpoh, 6.xii.86, Coll. R. Mathew.

Diagnostic characters : worker. Brownish yellow; head and thorax with fine, close longitudinal striae; anterior margin of median portion of clypeus projecting; antennae with 3-jointed club; mandibles with 2 apical teeth; metanotal spines diverging; nodes of pedicel regulose; abdomen smooth, polished and shining.

Length : W. 2.5 mm.

Distribution : INDIA : (East and West khasi hills), Meghalaya; Karnataka. Elsewhere : Australia; China; Indonesia; Malaya; Philippines; Taiwan; Thailand; Cape York Peninsula.

19. Genus: ***Triglyphothrix*** Forel, 1890

Triglyphothrix, Forel, *Ann. Soc. Ent. Belge*, **34**, C.R. : 106.

Triglyphothrix, Bolton, 1976, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** : 281- 379.

Diagnostic characters : worker. Mandibles with three apical teeth, the third smaller than the second and followed by a row of three or four small or minute denticles; Eyes large, placed at or infront of the middle of the sides of the head; clypeus convex, with a median longitudinal carina; antennal furrows or scrobes present; thoracic sutures indistinct; metapleural lobes present; pilosity dense.

Key to the species of ***Triglyphothrix*** Forel

1. Node of pedicel in dorsal view strongly antero-posteriorly compressed, transverse, distinctly broader than long; hairs on basal abdominal tergite universally and conspicuously branched trifid. . . . . *Walshi*

- Node of pedicel in dorsal view not antero-posteriorly compressed, not transverse, generally as long as broad or very slightly broader than long; hairs on basal abdominal tergite universally simple or bifid or a mixture of simple and branched hairs. . . . . *lanuginosa*

45. ***Triglyphothrix lanuginosa*** (Mayr)

Tetramorium *lanuginosa* Mayr, 1870, *Verh. zool-bot-Ges. Wien.*, **20** : 972.

Triglyphothrix lanuginosa, Bolton, 1976, *Bull. Br. Mus. nat. Hist.* (Ent), **34** (5) : 281-379.

Material examined : 10 ex, India, Meghalaya, West Khasi hills, Balat river bed, 9.ix.86, Coll. M.R. Rynth.

Diagnostic characters : worker. Yellowish-brown, head, thorax and nodes of pedicel finely reticulate-rugose; basal abdominal segment smooth and shining; mandibles, antennal furrows well developed; metanotal spines long and acute, longer than the metapleural lobes, and somewhat upcurved.

Length : W. 2.2-3 mm.

Distribution : INDIA : (West Khasi hills, Garo hills), Meghalaya; Assam; Kerala; Maharashtra; Orissa; West Bengal, Elsewhere : Nepal; Srilanka; Myanmar; Philippines; Solomon Is; West Malaysia; Borneo; Australia; England; Germany; Japan; Lebanon; Sey Chelles is; Singapore; New Guinea; Mauritius; Mexico.

Remarks : An accomplished tramp-species with a world wide distribution.

46. ***Triglyphothrix walshi*** Forel

Triglyphothrix walshi Forel, 1890, *Ann. Soc. Ent. Belg.*, **34**:107.

Triglyphothrix walshi, Bolton, 1976, *Bull. Br. Mus. nat. Hist.* (Ent.), **34** (5) : 281-379.

Material examined : 3 ex, India, Meghalaya, East Khasi hills, Shillong, 28.xi.75, Coll. R. Mathew.

Diagnostic characters : worker. Light brown; head, thorax, pedicel and basal half of abdomen finely and closely reticulate-rugose; basal abdominal segment finely longitudinally striate; antennal furrows strongly developed; thorax short and broad; pronotal angles sharp, giving the species a square shouldered appearance; metanotal spines acute, longer than the metapleural lobes. Node of pedicel in dorsal view strongly antero - posteriorly compressed, transverse, distinctly broader than long; pilosity dense, uniform.

Length : W. 2.3-2.8 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Arunachal pradesh; Kerala; Orissa; Tamil Nadu; West Bengal; Western India. Elsewhere : China; Philippines; Sri Lanka; Singapore.

20. Genus ***Myrmica*** Latreille, 1804

Myrmica Latr., 1804 *Nouv. Dict. d' Hist. Nat.*, **24** : 179.

Myrmica Latreille, Datta and Raychaudhuri, 1983, *AKITU N. Ser.*, **56** : 1-14.

Diagnostic characters : worker. Antennae 12-jointed, head more or less oval; mandibles broad, masticatory region dentate; thorax convex, pro-mesonotal suture not distinct, meso-metanotal suture distinct; metanotum with a pair of long, curved spines; Ist node of pedicel petiolate anteriorly, 2nd node globose or subglobose; abdomen oval.

Only one species reported here.

47. ***Myrmica margaritae*** Emery (Fig. 39)

Myrmica margaritae Emery, 1889, *Ann. Mus. Civ. Stor. Nat. Genova, 27*:502.

Myrmica margaritae, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1**:127.

Material examined : 20 ex; 1 ex, India, Meghalaya, East Khasi hills, Mawphlang, 19.xii.75, Coll. S. Biswas; 2 ex, Mawphlang, 19.iv.79, Coll. Asket Singh; 4 ex, Mawphlang, 6.v.79, Coll. R. mathew; 11 ex, Mawphlang, 2.ix.81, Coll. M.R. Rynth; 2 ex, Mawphlang, 2.v.86, Coll. V.T. Darlong.

Diagnostic characters : worker. Brownish-black; head and thorax with broken, irregular, longitudinal coarse striae; mandibles finely striate; eyes prominent; metanotal spines long, slender, slightly curved downwards; nodes of pedicel coarsely sculptured, abdomen globose, smooth, polished and shining.

Length : W. 5-5.25 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Tenasserim.

Remarks : Reported, so far, only from the sacred forest of Mawphlang.

21. Genus *Aphaenogaster* Mayr, 1853.

Aphaenogaster Mayr, 1853, *Verh. zool.-bot. Ges. Wien*, **3** : 107.

Aphaenogaster, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Head elongate; mandibles sub- triangular, masticatory margin dentate, antennae 12-jointed, club of flagellum formed of apical 4 joints; thorax elongate, meso-metanotal suture distinct; metanotum with short spines; pedicel with two nodes, anterior node petiolate in front; andomen convex.

Key to the species *Aphaenogaster* Mayr

1. Pronotum distinctly laterally bituberculate . . . . . *rothneyi*
- Pronotum not laterally bituberculate 2
2. Head and thorax coarsely, very closely striate-recticulate, punctured and rugose . . . . *schurri*
- Head and thorax very slightly and sparsely sculptured, shining 3
3. Pro-and-mesonotum forming one continuous convexity, mesonotum anteriorly not raised into a transverse ridge or crest; pedicel proportionately little shorter. . . . . *Sagei*
- Pro-and-mesonotum not forming one continuous convexity, pro-mesonotal suture distinct, anterior margin of mesonotum behind the suture raised into a ridge or crest; pedicel a little longer. . . . . .*Smythiesi*

48. *Aphaenogaster rothneyi* (Forel)

Stenamma *rothneyi* Forel, 1902, *Rev. Suisse Zool.* **10** : 224.

Aphaenogaster (Attomyrma) rothneyi, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1** : 327.

Material examined : 2 ex, India, Meghalaya, East Khasi hills, Shillong, 27.vii.75, Coll. R. Mathew.

Diagnostic characters : worker. Brown; head and thorax finely reticulate, striate, metanotum more coarsely and transversely sculptured; abdomen, smooth, polished and shining; mandibles striate at base, metanotum elongate, rounded above, metanotal spines thick at base, acute at apex; Ist node of pedicel conical, petiolate anteriorly and posteriorly, abdomen subglobose.

Length: W. 5.5 - 6.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Central India; Sikkim; West Bengal; North-West Himalayas.

49. ***Aphaenogaster sagei*** (Forel)

Stenamma (Aphaenogaster) sagei Forel, 1902, *Rev. Suisse Zool.* **10** : 221 F,M.

Aphaenogaster (Attomyrma) sagei, Chapman and Capco, 1951, Check List of Ants Asia, **1**: 132.

Material examined : India : Meghalaya : East Khasi hills, Upper Shillong, 4 -W, 11.ix.1988, Coll. A.R. Lihiri and party.

Diagnostic characters : worker. Shining polished black, legs lighter in colour. Head without mandibles somewhat rectangular; mandibles broadly triangular, finely longitudinally striate with three large acute teeth at the apex of masticatory margin; frontal area very distinct; antennae long and filiform. The pro-and mesonotum forming a single convexity, having a distinct suture; meso-metanotal suture deep; two triangular short spines at the apex of the basal portion of metanotum. Ist node of pedicel rounded above, sloped posteriorly with a short petiole in front; 2nd node longer than broad. Abdomen longer than broad.

Length : W. 5-6 mm; F. 6mm; M. 5.3 mm.

Distribution : INDIA : Meghalaya (East Khasi Hills); the Himalayas. Elsewhere : Tibet.

50. ***Aphaenogaster schurri*** (Forel) (Fig. 40)

Stenamma schurri Forel, 1902, *Rev. Suisse Zool.* **10** : 223.

Aphaenogaster schurri, Mathew, 1983, *Bull. zool. Surv. India,* **5** (1) 125-127.

Material examined : 11 ex: 5 ex, India, Meghalaya, East Khasi hills, Shillong, 1.viii.76, Coll. R. Mathew; 2 ex, Shillong, 23.viii.76, Coll. R. Mathew; 2 ex, East Khasi hills, Laitkor, 8.xii.82, Coll. R. Mathew; 2 ex, Shillong, 28.x.81, Coll. R. Mathew.

Diagnostic characters : worker. Brownish-black; head and thorax very coarsely longitudinally rugose striate, the striae broken and irregular, mandibles finely and closely longitudinally striate, thoracic sutures distinct; 1st node of pedicel conical, 2nd node broad, rounded above, abdomen smooth, polished and shining.

Length : W. 5.5 - 5.6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Central India; Elsewhere: Myanmar.

51. ***Aphaenogaster smythiesi*** (Forel) (Fig. 41)

Stenamma smythiesi Forel, 1902, *Rev. Suisse Zool.,* **10** : 222.

Aphaenogaster (Attomyrma) smythiesi, Collingwood, 1970, *Khumbu Himal,* Bd. 3, Lfg. 3, 371-388.

Material examined : 26 ex: 6 ex, India Meghalaya, East Khasi hills, Upper Shillong, 1.viii.76, Coll. R. Mathew; 1 ex, East Khasi hills, Shillong, 3.viii.75, Coll. R. Mathew; 6 ex, East Khasi hills, Mawphlang, 18.v.79, Coll. P.T. Cherian; 7 ex, Shillong 19.ii.79, Coll. R. Mathew; 1 ex, Shillong, 5.xii.79, Coll. Aquarius Mathew; 2 ex, East Khasi hills, Shillong, Botanical garden, 31.iii.79, Coll. R. Mathew; 3 ex, Mawphlang, 2.v.86, Coll. V.T. Darlong, 23 ex, East Khasi hills, Cherrapunjee, 24.vii.79, Coll. J.K. Jonathan and party.

Diagnostic characters : worker. Brownish-black; smooth, polished and shining; head with a few indistinct striae anteriorly; thorax emarginate at the meso-metanotal suture; metanotum with few indistinct striae; metanotal spines broad at base, short and acute; Ist node of pedicel petiolate in front, 2nd node longer than broad; abdomen broadly oval.

Length : W. 4.5 - 5.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; North-West Himalayas.

22. Genus ***Monomorium*** Mayr, 1855

Monomorium Mayr, 1855, *Verh. zool-bot. Ges. Wien*, **5** : 452.

Monomorium, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Antennae 11 or 12 jointed, head rectangular, mandibles narrow; clypeus bicarinate; thorax long and narrow; pro-mesonotal suture obsolete; pedicel with two nodes, Ist node petiolate in front; abdomen oval, truncate or emarginate anteriorly.

Key to the species of ***Monomorium*** Mayr.

1. Head more or less rugulose, opaque. 2
- Head not rugulose, but more or less smooth and shining. 3
2. Colour yellowish, abdomen posteriorly black; head not emarginate posteriorly. . . . *pharaonis*
- Colour brown all over. 4
3. Head nearly square, almost as broad as long. . . . . *aberrans*
- Head rectangular, distinctly longer than broad 5
4. Antennae extending beyond the top of head . . . . . *longi*
- Antennae not reaching the top of head . . . . . *schurri*
5. 2nd node of pedicel broader than Ist . . . . . *floricola*

- 2nd node of pedicel not broader than Ist . . . . . *minutum*

52. ***Monomorium aberrans*** Forel

Monomorium aberrans Forel, 1902, *Rev. Suisse Zool.*, **10** ; 209.

Monomorium aberrans, Ettershank, 1966, *Aust. J. Zool.*, **14** : 73-171.

Material examined : 7 ex, India, Meghalaya, East Khasi hills, Nongpoh, 11.iv. 78, Coll. K.P. Singh.

Diagnostic characters : worker. Reddish yellow; abdomen dark brown; the whole insect smooth and shining; head as broad as long, emarginate posteriorly; mandibles finely longitudinally striate, clypeus bicarinate; antennae extending beyond the top of the head; thorax convex anteriorly, emarginate at the meso-metanotal suture; basal portion of metanotum rectangular, posterior lateral angles subdentate, apical portion obliquely truncate; abdomen oval.

Length : W. 3.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Central India.

53. ***Monomorium floricola*** (Jerdon)

Atta floricola Jerodon, 1851, *Madras Jour. Lit. Sc.*, **17** : 107.

Monomorium floricola, Ettershank 1966, *Aust. J. Zool.* **14**: 73-171.

Monomorium floricola, Tiwari *et. al.*, 1994, *State of Fauna Series 5 : Fauna of West Bengal*, part **8** : 46.

Material examined : 25 ex: 3 ex, India, Meghalaya, East Khasi hills, Kyrdem Kulai, 25.ix.81, Coll. J.P. Sati; 8 ex, East Khasi hills, Shillong, 28.xi.75, Coll. R. Mathew; 14 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., 28.iv.88, Coll. V.T. Darlong, 80 ex, East Garo hills, 6.vi.90, Coll. M.S. Shishodia and party.

Diagnostic characters : worker. Head and abdomen black, thorax yellow; smooth, polished and shiningl head rectangular, occiput slightly emarginate; mandibles narrow with 4 teeth; clypeus convex, placed below the middle of the head; thorax long, basal portion of metanotum rectangular; abdomen oval.

Length : W. 1.5 - 2 mm.

Distribution : INDIA : (East Khasi hills, East and West Garo hills), meghalaya; throughout India.

54. ***Monomorium longi*** Forel (Fig. 46)

Monomorium longi Forel, 1902, *Rev. Suisse Zool.*, **10** : 211.

Monomorium longi, Mathew, 1984, *Bull. zool. Surv. India* **6** (1-3) : 307- 308.

Material examined : 27 ex : 11 ex, India, Meghalaya, Jaintia hills, 14.xii.75, Coll. S.K. Chanda; 6 ex, East Khasi hills, Shillong, 28.xi.75, Coll. R. Mathew; 9 ex, Shillong, 13.x.78, Coll. Aquarius Mathew; 1 ex, East Khasi hills, Nongkhyllem reserve forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Reddish brown: Head, thorax and nodes of pedicel finely and densely rugulose, opaque; abdomen smooth and shining; head rectangular, mandibles opaque, finely sculptured; clypeus raised in the middle, carrinae obsolete; thorax emarginate at the meso-metanotal suture; metanotum submargined at base; abdomen elongate, oval.

Length : W. 2.5 - 3 mm.

Distribution : INDIA : (East Khasi and jaintia hills), Meghalaya:Assam.

55. ***Monomorium minutum*** Mayr

Monomorium minutum Mayr, 1855, *Verh. zool.- bot. Ges. Wien,* **5** : 453.

Monomorium minutum, Ettershank, 1966, *Aust. J. Zool.* **14** : 73-171.

Material examined : 5 ex: India, Meghalaya, West Garo hills, Selbalgiri, 28.iv.88, Coll. V.T. darlong.

Diagnostic characters : worker. Reddish brown, abdomen black, smooth, polished and shining; antennae 12 jointed, scape not extending beyond the top of the head; eyes large, placed in the middle of the head; meso-metanotal suture emarginate; nodes of pedicel subequal, Ist node petiolate anteriorly, 2nd node transverse, broader than long; abdomen oval.

Length: W. 1.5-2 mm.

Distribution : INDIA : (West Garo hills), Meghalaya; Kerala; Elsewhere.: China: Southern Europe; Africa; America; Sri Lanka.

56. ***Monomorium Pharaonis*** (Linnaeus)

Formica pharaonis Linnaeus, 1758, *Syst. Nat.,* **I** *: 580.*

Monomorium pharaonis, Wheeler et al., 1994, *Great Lakes Entomol.,* **26** (4) : 297-310.

Material examined : 4 ex: India, Meghalaya, East Khasi hills, Lumparing, 25.ix.81, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Reddish yellow, abdomen posteriorly black; head, thorax and nodes of pedicel densely and minutely rugulose, granulate, abdomen smooth and shining;

pro-mesonotum distinctly longer than broad, head posteriorly not emarginate; Ist node anteriorly with a petiole, 2nd node globose, abdomen oval, truncate anteriorly, smooth and shining.

Length : W. 2.5-3 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; throughout India. Elsewhere : Tropical Regions Of Both Hemispheres.

57. ***Monomorium schurri*** Forel

Monomorium schurri Forel, 1902, *Rev. Suisse Zool.*, **10** : 212.

Monomorium schurri, Ettershank, 1966, *Aust. J. Zool.*, **14** : 73-171.

Material examined : 3 ex: India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 28.xi.75, Coll. R. Mathew.

Diagnostic characters : worker. Dark brown; the flagellum of the antennae, the 2nd node of the pedicel, and the articulations of the abdominal segments pale yellow; head, thorax and node of pedicel very finely rugulose, abdomen smooth and shining; head may appear as longitudinally striate in certain lights; pronotum transversely striate, abdomen elongate, oval.

Length : W. 2.2 - 2.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, South India, the Nilgiris.

23. Genus ***Cardiocondyla*** Emery, 1869

Cardiocondyla Emery, 1869, *Ann. Acc. Asp. Nat. Naples, Era* **2**, ii : 20.

Cardiocondyla, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Head broadly oval, mandibles broad, masticatory margin with 5 teeth, antennae 12-jointed, thorax short and stout; metanotum armed with 2 spines; 1st node of pedicel cylindrical, 2nd node very much broader than long; abdomen oval.

Only one species reported from Meghalaya.

58. ***Cardiocondyla nuda*** (Mayr)

Leptothorax nuda Mayr, 1866, *Stitz,. Akad. Wiss. Wien.*, **53** : 508.

Cardiocondyla nuda, Chapman and Capco, 1951, *Checklist of the ants of Asia* **1** : 83.

Material examined : 4 ex, India, Meghalaya, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew.

Diagnostic characters ; worker. Head, thorax, legs and pedicel reddish yellow, abdomen black; head, thorax and pedicel finely granulate, abdomen polished and shining; head massive; mandibles minutely punctured; pronotum antero-laterally submargined; metanotum cubical; the basal portion long, about twice as long as the truncate face of the apical portion; 2nd node of pedicel three times broader than the first node, abdomen oval.

Length : W. 2.5-3 mm.

Distribution: INDIA : (East Khasi hills), Meghalaya, Sikkim, West Bengal. Elsewhere: Malaysia; Sri Lanka.

24. Genus ***Tetramorium*** Mayr, 1855

Tetramorium, Mayr, 1855, *Verh. zool-bot. Ges. Wien*, **5** : 423.

Tetramorium, Bolton, 1977, *Bull. Br. Mus. nat. Hist. (Ent.)* **36** (2) : 67-151.

Diagnostic characters: worker. Antennae 11 or 12 jointed; mandibles with tree teeth apically, the third smaller than the second and followed by a row of 3-7 small or minute denticles; frontal carinae strongly developed, thoracic sutures indistinct; metanotum with a pair of spines, metapleural lobes acute or dentiform; anterior node of pedicel petiolate in front, abdomen oval.

Key to the species of ***Tetramorium*** Mayr

1. Antennae 11 - jointed 2

- Antennae 12 - jointed 3

2. First node of pedicel longer than broad . . . . . *tortuosum*

- First node of pedicel as broad as, or broader than long . . . . . *smithi*

3. Pronotal angles sharp in dorsal view giving the specimen a 'Square-shouldered' appearance . . . . . *bicarinatum*

- Pronotal angles rounded 4

4. Base of first abdominal segment projecting forward as a pair of blunt teeth or horns . . *mixtum*

- Base of first abdominal segment not projecting forward as horns 5

5. Colour yellow or yellowish-brown . . . . . *simillium*

- Colour dark brown to black 7

6. Anterior clypeal margin entire 7

- Anterior clypeal margin not entire, slightly notched in the middle . . . . . *browni sp. nov.*

7. Smaller, total length below 3 mm . . . . . *barryi*

- Larger, total length above 3 mm . . . . . *christiei*

59. ***Tetramorium barryi*** Mathew (Fig.56)

Tetramorium barryi Mathew, 1980, *Oriental Ins.*, **14** (4) : 425-427.

Tetramorium barry, Mathew, 1983, *Bull. zoll. Surv. India*, **5** (1) : 125-127.

Material examined : 47 ex: 5 ex, India, Meghalaya, East Khasi hills, Shillong, Botanical garden, 31.iii.79, Coll. R. Mathew; 1 ex, Shillong, 16.viii.78, Coll. R. Mathew; 1 ex, Shillong, Botanical garden, 14.ix.79, Coll. R. Mathew; 4 ex, Shillong 30.iii.80, Coll. R. Mathew; 2 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan; 5 ex, Shillong, 28.x.81, Coll. R. Mathew; 9 ex, Shillong, 14.vii.81, Coll. R. Mathew; 7 ex, Shillong, 17.vi.75, Coll. R. Mathew; 13 ex, Shillong, 15.iv.77, Coll. R. Mathew.

Diagnostic characters : worker. Dark brown: Head longer than broad, occipital border slightly emerginate, the sides mildy convex; eyes placed about the middle of the head, anterior clypeal margin entire; mandibles finely striate; frontal carinae distinct, reaching almost to the occipital border; antennal scrobes distinct; propodeal spines about the size of the metapleural teeth, which are broader and acute; node of petiole with a few faint striae dorso-laterally; head and thorax reticulate rugose; nodes of petiole and abdomen smooth and shining.

Length : W. 2.3 -2.6

Distribution: INDIA : (East Khasi hills), Meghalaya.

60. ***Tetramorium bicarinatum*** (Nylander) (Fig. 57)

Myrmica bicarinata Nylander, 1846, *Acta. Soc. Scient. fenn.* **2**, : 1041-1062.

Tetramorium bicarinatum, Datta and Ray Chaudhuri, 1983, *AKITU N. Ser.* **56** : 1-14.

Material examined : 22 ex: 5 ex, India, Meghalaya, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew; 1 ex, East Khasi hills, Old Barapani road, 6.x.79, Coll. R. Mathew; 2 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, East Khasi hills, Shillong, Risa Colony, 28.ix.81, Coll. R. Mathew; 4 ex, West Garo hills, Tura, May 78, Coll. M. Kamal; 1 ex, Shillong, Risa Colony, 5.viii.75, Coll. R. Mathew; 8 ex, Shillong, Risa Colony, 3.viii.75, Coll. R. Mathew.

Diagnostic characters : worker. Orange yellow; abdomen deep brown or black; head with scattered irregular longitudinal striae with cross meshes, behind the eye rugo-reticulate; mandibles densely and finely longitudinally striate; median portion of clypeus with three longitudinal carinae of about equal strength; frontal carinae strong; pronotal angles sharp, giving it a 'square- shouldered appearance; metanotal spines long, slightly up-curved; metapleural lobes elongate, triangular and upcurved; basal abdominal tergite faintly costulate.

Length : W. 3.4-4.5 mm.

Distribution : INDIA : (East Khasi and West Garo hills), Meghalaya; Arunachal Pradesh; Assam; Karnataka; Andaman Islands. Elsewhere : China; Bhutan; Myanmar; Pakistan; Sri Lanka; Malaysia; Sumatra; Taiwan; Philippines; Britain; Australia; Brazil; Peru; U.s.a.; Holland; Colombia.

61. ***Tetramorium browni*** sp. nov. (Figs. 58,59)

Holotype worker : TL 2.97; HL O. 74; HW O.61; CI 82; SL O.55; SI 90; PW O.53; Th L O.71.

Head excluding the mandibles longer than broad, the occipital border emarginate, the sides convex; compound eyes moderate, placed more towards the lower half of the head; maximum diameter of the eye 0.11; anterior clypeal margin feebly notched in the middle, not entire; mandibles finely longitudinally striate, masticatory margin broad, with 6-7 unequal teeth; frontal carinae distinct, reaching almost to the occiput; antero-lateral angles of pronotum round; metanotal spines longer than the metapleural teeth, divergent and slightly upturned; metapleural teeth broad, acute; dorsum of head between the frontal carinae with not less than ten longitudinal rugae; dorsum of thorax reticulate rugose; sides of thorax with few diagonal striae; nodes of pedicel oval, subequal, smooth and shining; anterior node petiolate in front; abdomen smooth, polished and shining; all dorsal surfaces with numerous erect or suberect hairs of varying length; antennae and legs densely pubescent.

Colour Dark brown, abdomen darker, almost black; the appendages a shade lighter.

Paratype workers : TL 2.65-3.28; HL 0.66-0.76; HW 0.58-0.63; CI 82-90; SL 0.53-0.56 SI 90-95; PW 0.45-0.53; Th L 0.79-o.84.

Similar to holotype; colour varies from reddish brown to dark brown.

Holotype : worker : INDIA : Meghalaya, East Khasi hills, Pynursla, 6.viii.81, Coll. R. Mathew; Paratypes : 13 workers with the same collection data as the holotype.

Tetramorium browni belongs to the *bicarinatum* group of *Tatramorium* and can be distinguished by its round pronotal angles, unsculptured nodes of pedicel and moderate size of the metanotal spines.

62. ***Tetramorium christiei*** Forel

Tetramorium christiei Forel, 1902, *Rev. Suisse Zool.*, **10** : 232.

Tetramorium christiei, Datta and Ray Chaudhuri, 1983, *AKITU N. Ser.*, **56** : 1- 14.

Material examined : 8 ex: 1 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 14.ix.79, Coll. R. Mathew; 4 ex, Risa Colony, 8.v.80, Coll. R. Mathew; 3 ex, Upper Shillong, 9.viii.75, Coll. R. Mathew; 12 ex, Jaintia hills, Shangpang, 13.iii.91, Coll. K.K. Ray and Party.

1701 ZSI/2000—21B

Diagnostic characters : worker. Blackish brown, Mandibles striate, anterior clypeal margin entire; frontal carinae long; antennal scrobes or furrow feeble but distinct, metanotal spines shorter than the triangular metapleural lobes; head finely longitudinally striate, reticulate on the occiput, thorax reticulate-rugulose, hairs on body numerous; abdomen oval, truncate anteriorly.

Length : W. 3-3.5 mm.

Distribution : INDIA : (East Khasi hills and Jaintia hills), Meghalaya; Sikkim; West Bengal. Elsewhere: Bhutan.

63. ***Tetramorium mixtum*** Forel

Tetramorium mixtum Forel, 1902, *Rev. Suisse Zool.*, **10** : 236.

Tetramorium mixtum, Bolton, 1977, *Bull. Br. Mus. nat. Hist.* (Ent.), **36** (2) : 67-151.

Material examined : 1 ex, India, Meghalaya, East Khasi hills, Shillong, 29.vii.76, Coll. R. Mathew.

Diagnostic characters : worker. Light to dark brown; mandibles striate; head, thorax and petiole longitudinally rugulose with some reticulation posteriorly on the head, thorax and the petiole; abdomen smooth, shining, basal abdominal segment very concave behind the 2nd node of petiole, its antero-lateral corners projecting forward as a pair of blunt teeth or horns.

Length : W. 3-3.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Kerala; Tamil Nadu.

64. ***Tetramorium simillimum*** (Fred. Smith) (Fig. 60)

Myrmica *simillimum* Fred. Smith, 1851, *List. Brit. Anim. Brit. Mus.*, **6** : 118.

Tetramorium simillimum, Bolton, 1977, *Bull. Br. Mus. nat. Hist. (Ent.)*, **36** (2) : 67-151.

Material examined : 8 ex: 6 ex, India, Meghalaya, East Khasi hills, Shillong, 29.vii.76, Coll. R. Mathew; 1 ex, West Khasi hills, Balat,9.ix.86, Coll. M.R. Rynth; 1 ex, Jaintia hills, Nartiang, 5.ix. 86, Coll. V.T. Darlong.

Diagnostic characters : worker. Reddish yellow, abdomen light brown, head finely and quite densely longitudinally rugulose, the spaces between the rugulae filled with a fine dense reticulate-punctulation or granulation; mandibles faintly striate; antenna; furrows broad and shallow; antennal furrows densely and finely reticulate-punctulate; thorax and pedicel finely longitudinally rugulose, spaces between the rugulae densely punctulate; abdomen smooth, polished and shining.

Length : W. 2-2.5 mm.

Distribution : INDIA : (East & West Khasi hills and Jaintia hills), Meghalaya; Assam; Punjab; Elsewhere : Sri Lanka; Seychelles; Mauritius; Malaysia; Java; Borneo; Philippines; Solomon Islands; New Guinea; Australia; Hawaii; Japan; Great Britain; Puerto Rico; Trinidad.

65. ***Tetramorium smithi*** Mayr (Fig. 61)

Tetramorium smithi Mayr, 1878, *Verh. zool-bot. Ges. Wien,* **28** : 645-686.

Tetramorium smithi, Bolton, 1977, *Bull. Br. Mus. nat. Hist. (Ent.),* **36** : 67-151.

Material examined : 16 ex: India, Meghalaya, East Khasi hills, Shillong, Botanical garden 30.v.76, Coll. R. Mathew.

Diagnostic characters : worker. Light to mid brown; head and thorax longitudinally rugose and with scattered gross meshes which are indistinct; nodes of the pedicel above and abdomen smooth and shining; mandibles smooth and shining, frontal carinae extending beyond the posterior margin of eyes, antennal furrows shallow, broad and long enough to accomodate the antennal scapes; antero- lateral margins of pronotum sharply angulate; metanotal spines short, sub-triangular, acute; node of pedicel rectangular.

Length : W. 2.6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Assam; Kerala; Maharashtra; West Bengal; Elsewhere.: Bhutan; Myanmar; Thailand; Vietnam; Malaysia; Borneo; Sulawesi.

66. ***Tetramorium*** sp.

Material examined : India : Meghalaya : West Garo Hills, Bokangiri, North of Phulbari, 7oo, 30.x.1988, Coll. K.K. Ray and party; East Garo Hills, Nisangram, 2 km. West of Dinadubi F.R.H., 2 W, 12.v 1979, Coll. S.B. Roy and R.N. Tiwari.

25. Genus ***Xiphomyrmex*** Forel

Xiphomyrmex Forel, 1887, *Mittheil, Schweiz. Ent. Ges.*, **7** : 385.

67. ***Xiphomyrmex tortuosum*** (Roger)

Tetramorium tortuosum Roger, 1863, *Berl. Ent. Zeit.*, **7** : 181.

Xiphomyrmex tortuosus, Chapman and Capco, 1951, *Check List of the ants of Asia,* **1** :180.

Material examined : India: Meghalaya: 1 ex, East Garo hills, North of Darugiri, 17.v.79, Coll. S.B. Rou and R.0N. Tiwari

Distribution : INDIA: Meghalaya (East Garo hills). Elsewhere: Sri Lanka.

Diagnostic characters : worker. Chestnus red, abdomen brown, legs lighter; head and thorax longitudinally striate-recticulate; pilosity fairly abundant and long. Head without mandibles elongate, trapezoidal, longer than broad; masticatory margin of mandibles broad, dentate; clypeus almost flat,

posterior margin well defined between the bases of antennae; antennal carinae produced posteriorly almost to the top of the head; eyes large. Thorax elongate, broad anteriorly; meso- and metanotum narrowing posteriorly; sutures almost obsolete; spines on posterior lateral angles of basal portion of metanotum slender, acute pointing divergently backwards, Ist node of pedicel longer than broad; 2nd node broader than long. Abdomen oval.

Length : W. 3-3.5 mm.

26. Genus ***pheidole*** Westwood, 1840.

Pheidole Westwood, 1841, *Arm. Maq. Nat. Hist.* **6** : 87.

Pheidole, Datta & Raychaudhuri, 1983, *AKITU N. Ser.* **56** : 1-14.

Diagnostic characters : Harvester ants, exhibiting great polymorphism; worker major forms have enormously large head with deep emargination dividing the head posteriorly almost into two lobes; mandibles strong, with or without teeth; antennae 12 jointed; eyes moderate or small, no ocelli; thorax convex; metanotum with a pair of spines or teeth; pedicel two-jointed; abdomen oval.

Key to the species of ***Pheidole*** Westwood Based on Soldiers

1. Club of flagellum of antennae formed of the apical four joints. 2

- Club of flagellum of antennae formed of the apical three joints 3

2. Light reddish-brown, head enormous, clypeus not carinate . . . . . *smythiesi*

- Very dark brown, almost black; head proportionately much smaller, clypeus medially carinate . . . . . .*bhavanae*

3. First joint of pedicel with a projection or appendis beneath 4

- First joint of pedicel with no projection or appendix beneath 5

4. Head posteriorly smooth and shining, not sculptured . . . . . *lamellinoda*

- Head posteriorly more or less sculptured . . . . . *malinsi*

5. Pro-and mesonotum not forming a single convexity; transverse mesonotal furrow and ridge or carina, or at any rate the later always present. 11

- Pro-and mesonotum forming a single convexity, transverse mesonotal furrow obsolete . . . 6

6. Head only as broad as long . . . . . *sagei*

- Head distinctly longer than broad 7

7. Occiput smooth and shining 8

- Occiput more or less sculptured 9

8. Occipital emargination narrow and deep, lateral lobes broad and rounded . . . . . *pronotalis*

- Occipital emargination broad and shallow, lateral lobes narrow and angular . . . *wood-masoni*

9. Head anteriorly beneath bidentate . . . . . *watsoni*

- Head anteriorly beneath not dentate 10

10. Frontal grooves for reception of scapes of antennae absent . . . . . *mus*

- Frontal grooves for reception of scapes of antennae present . . . . . *parva*

11. Head below vertex vertically truncate, forming a flat plane with the clypeus . . . . . *capellini*

- Head below vertex normally developed, not truncate 12

12. Frontal grooves for reception of scape of antennae obsolete . . . . . *constanciae*

- Frontal grooves for reception of scape of antennae distinct 13

13. Pronotum convex, lateral tubercles quite or nearly obsolete 14

- Pronotum convex, lateral tubercles sometimes obtuse but always distinct 16

14. Medial portion of clypeus opaque, longitudinally striate . . . . . *jucunda*

- Medial portion of clypeus smooth and shining 15

15. Frontal grooves for reception of scape not well-marked, coarsely longitudinally striate within . . . . . *feae*

- Frontal grooves for reception of scape more distinct, finely sculptured within . . . . . *roberti*

16. Abdomen sculptured . . . . . *striativentris*

- Abdomen not sculptured, smooth and shining . . . . . *allani*

68. ***Pheidole allani*** Bingham

Pheidole allani Bingham, 1903, *Faun. Brit. Ind.* Hymenoptera, **2**:264

Pheidole (Pheidole) allani, Chapman and capco, 1951, *Checklist of the ants of Asia,* **1** : 139.

Material examined : 15 ex; India, Meghalaya, East Khasi hills, Shillong, 16.vi.75, Coll. R. Mathew.

Diagnostic characters : Reddish brown; head coarsely longitudinally striate, occiput and lateral lobes smooth; pronotum in front and metanotum transversely striate; the sides of the thorax irregularly closely rugulose, granulate; head as long as broad, occipital emargination moderate and wide; mandibles smooth and shining; clypeus transverse anteriorly; pronotum flat in front, lateral tubercles

fairly well-marked; transverse mesonotal furrow shallow, the ridge thick, basal portion of metanotum short, flat, slightly raised; metanotal spines short, erect and stout; 1st node of pedicel transverse and emarginate above. 2nd node rounded above; abdomen almost circular, depressed.

Length : 4 4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere. Myanmar.

69. ***Pheidole bhavanae*** Bingham

Pheidole bhavanae Bingham, 1903, Faun. Brit. Ind. *Hymenoptera* **2** : 506.

Ceratopheidole bhavanae, Collingwood, 1970, *KHUMBU HIMAL, Bd.* 3, Lfg. **3**, 371-388.

Material examined : 5 ex, India, Meghalaya, East Khasi hills, Upper Shillong, 1.viii.76, Coll. R. Mathew; 39 ex, East Khasi hills, Shillong, 29.iii.59, Coll. A.P. Kapur; 1 ex, Shillong, Lalchand Basti, 25.vii.63, Coll. V.D. Srivastava; 12 ex, Shillong, 8 miles, 5.iii.91, Coll. S.K. Ghosh and party; 10 ex, Shillong, Polo Hills Forest, near Monsa, 10.iv.91, Coll. S.K. Ghosh and party.

Diagnostic characters : Dark brown, shining; head a little longer than broad and broader posteriorly than in front, longitudinally striate, reticulate on the lateral lobes; occipital emargination deep and wide, lateral lobes pointed; no antennal groove; thorax rounded anteriorly without lateral tubercles; transverse mesonotal groove and ridge well marked; basal portion of metanotum laterally margined; metanotal spines strong and erect; 1st node of pedicel cuneiform, 2nd node globose, laterally slightly tuberculate; abdomen smooth and shining.

Length : 4.5 mm.

Distribution : East Khasi hills, Meghalaya; Sikkim.

70. ***Pheidole capellinii*** Emery

Pheidole capellinii Emery, 1887, *Ann. Mus. Civ. Gen.* **25**:463.

Pheidole capellinii, Bingham, 1903, *Faun. Brit. Ind. Hymenoptera* **2**:246

Material examined : 1 ex, India, Meghalaya, West Khasi hills, Ranikor, 9.ii.87, Coll. V.T. Darlong.

Diagnostic charactes: Reddish; head longer than broad, feebly striate in front, reticulate on the lateral lobes; head below vertex and the clypeus remarkably flat, forming a plane; mandibles broad, massive, striate at base; clypeus anteriorly slightly emarginate in the middle; antennal grooves well marked; pronotum attenuate in front, the lateral tubercles prominent; transverse mesonotal groove shallow, ridge well marked; metanotal spines short; nodes of pedicel broader than long; abdomen oval.

Length : 4 5.5-6 mm.

Distribution : INDIA : (West Khasi hills), Meghalaya. Elsewhere : Java; Tenasserim.

71. ***Pheodole constanciae*** Forel

Pheidole constanciae Forel, 1902, *Rev. Suisse Zool.* **10**:176 & 194

Pheidole constanciae, Mathew, 1983, *Bull. zool. Surv.* Indian **5** (1) : 125- 127.

Material examined : 5 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 13.x.78, Coll. Aquarius.

Diagnostic characters : Reddish brown; head anteriorly somewhat coarsely longitudinally striate, reticulate posteriorly on the lateral lobes; mandibles smooth and shining; clypeus transverse anteriorly, medially incised; no antennal groove; pronotum coarsely sculptured; 1st node of pedicel cuneate, upper margin transverse, 2nd node about twice as broad as long; abdomen circular.

Length : S. 5-5 mm.

Distribution : INDIA : (East Khasi hill)s, Meghalaya; Tamil Nadu.

72. ***Pheidole feae*** Emery

Pheidole feae Emery, 1894, *Ann. Mus. Civ. Gen.*, **34**:469.

Pheidole feae, Bingham, 1903, *Fauna Brit. India, Hym.*, **2** : 260.

1951. *Pheidole feae,* Chapman and capco, *Monoqr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 141.

Material examined : INDIA : Meghalaya: Jaintia Hills, Jowai, 9oo (minor) and 3, 23.ix.1988, Coll. V.D. Srivastava and party.

Diagnostic characters : Light yellowish red all over; flagellum of antennae, legs and abdomen more yellowish; pilocity pale reddish yellow, abundant. Head rectangular, broader posteriorly, longitudinally striate; mandibles massive, obsoletely dentate; clypeus medially smooth, anteriorly emarginate in the middle; antennae slender, short; eyes small, lateral, placed well below the middle of head. Thorax short; pro- and mesonotum not forming a single convexity; transverse mesonotal groove broad and shallow; metanotal spines short, acute erect. Pedicel short, spuamiform, 1st node petiolate in front, petiole laterally dentate; 2nd node transverse. Abdomen convex, smooth and shining.

Length :S. 3.5-4 mm; W. 2.5 mm, F. 4.5 mm.

Distribution : INDIA : Meghalaya (Jaintia Hills). Elsewhere: Tenasserim, Karennee.

73. ***Pheidole jucunda*** Forel

Pheidole jucunda Forel, 1885, *Jour. Asiat. Soc. Bengal* **54**, 2 : 179

Pheidole (Pheidole) jucunda, Chapman and Capco, 1951, *Check list of the ants of Asia*, **1**:144.

Pheidole (Pheidole) Jucunda, Tiwari et.al., 1993, *State Fauna Series* **3**:Fauna of West Bengal part **8**:50

Material examined : INDIA, Meghalaya, 1 ex, East Khasi hills, Shillong, Risa Colony, 29.vii.76, Coll. R. Mathew.

Diagnostic characters : Brownish red; head coarsely longitudinally striate; thorax finely but obscurely transversely sculptured; abdomen smooth; occipital emargination deep and wide; mandibles minutely obscurely striate and with few punctures; antennal groove deep and coarsely sculptured within; pronotum convex and elongate, lateral tubercles indistinct; transverse mesonotal groove and ridge well-marked; basal portion of metanotum rectangular, laterally margined; metanotal spines stout, short and acute; 1st node of pedicel squamiform, transverse above; 2nd node sculptured, laterally obtusely cone- shaped; abdomen oval.

Length : 4-4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Sikkim; West Bengal; Western India. Elsewhere : Sri Lanka.

74. ***Pheidole lamellinoda*** Forel

Pheidole lamellinoda Forel, 1902, *Rev. Suisse Zool.* **10**:166, 186.

Pheidole (Pheidole) lamellinoda, Chapman and capco, 1951, *Chicklist of the ants of Asia*, **1**:144

Material examined : INDIA, Meghalaya, 4 ex, East Khsai hills, Old Barapani road, 14.v.76, Coll. R. Mathew.

Diagnostic characters : Light reddish brown; smooth polished and shining; head anteriorly finely longitudinally striate; thorax on the sides sparsely punctured; mandibles sparsely punctate, masticatory margin with two indistinct blunt teeth at apex; clypeus medially incised anteriorly; no antennal groove; antennae short; pronotum convex above, laterally tuberculate; metanotal spines short and erect; 1st node of pedicel with an appendix beneath; 2nd node convex above, laterally angular; abdomen broadly oval, convex.

Length: 4.5-5 mm.

Distribution : East Khasi hills, Meghalaya; Central and Western India.

75. ***Pheidole malinsii*** Forel

Pheidole malinsii Forel, 1902, *Rev. Suisse. Zool.* **10**:167, 187.

Pheidole (Pheidole) malinsii, Chapman and capco, 1951, *Checklist of the ants of Asia,* **1**:145.

Material examined : INDIA, Meghalaya, 25 ex, East Khasi hills, Shillong, Motinagar, 3.xii.76, Coll. R.S. Giri.

Diagnostic characters : Dark brown; pilosity erect and abundant; head longitudinally striate posteriorly, reticulate on the lateral angles; Clypeus carinate in the middle, anterior margin incised in the middle; mandibles shining, with scattered punctures; antennal groove the length of the scape; scape falling short of the top of the head by about half its own length; thorax coarsely transversely striate; pronotum tuberculate antero- laterally; mesonotum with a transverse groove and ridge; metanotum smooth and shining above; metanotal spines short and erect; 1st node of pedicel cuneiform, spined beneath; 2nd node transversely finely striate, about twice as broad as long; abdomen broadly oval, the basal segment finely longitudinally striate.

Length : 4.5-5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Sikkim; Elsewhere : Sri Lanka.

76. ***Pheidole mus*** Forel (Fig.42)

Pheidole mus Forel, 1902, *Rev. Suisse. Zool.* **10**:174, 191.

Pheidole (Pheidole) mus, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1**:146.

Pheidole (Pheidole) mus, Tiwari et. al. 1993, *State Fauna Series* **3**:*Fauna of west Bengal*, part **8**:50 (Syns.)

Material examined : INDIA, Meghalaya, 6 ex, Jaintia hills, 17 km. from Jowai, 14 km. from Passi on way to Mynso village, Alt. 4300', 5.i.88, Coll. A.K. Karmakar.

Diagnostic characters : Reddish brown; head longer than broad, finely and densely longitudinally striate; mandibles minutely punctured; no antennal groove; antennae short; thorax transversely striate; pronotum laterally tuberculate, metanotal spines stout and acute; abdomen oval.

Length : 2 mm.

Distribution : Jaintia hills, Meghalaya; Karnataka; West Bengal.

77. ***Pheidole parva*** Mayr

Pheidole parva Mayr, 1865, Novara Reise. Formicid. : 98, o. pl., figs.

Pheidole parva, Chapman and Capco, 1951, *Monogr. Inst. Sci. Tech., Manila* (Check List Ants Asia), **1** : 147.

Material examined : INDIA: Meghalaya: West Khasi Hills, Nongstion, near Civil Hospital, 2II : W and 3, 25.ii.1985, Coll. A.R. Lahiri and party.

Diagnostic characters : S. Head, thorax and pedicel reddish brown, the later two lighter in colour; abdomen brown; mandibles, antennae and legs dark yellow; body moderately covered with short, soft, semierect pale hairs. Head very much longer than broad, longitudinally striiate; clypeus not emarginate anteriorly; antennae short. Thorax finely reticulate-punctate; pronotal tubercle distinct;pro-

and mesonotum forming a single convexity; metanotum short. Pedicel comparatively long; 1st node squamiform with no appendix beneath; 2nd node transverse. Abdomen short, smooth and shining.

Length : S. 3-3.2 mm.; W. 1.5-2 mm.; F. 4-4.5 mm.; M. 2.8-3.2 mm.

Distribution : INDIA : Meghalaya (West Khasi Hills), Western India. Elsewhere : Burma, Sri Lanka.

78. ***Pheidole pronotalis*** Forel

Pheidole pronotalis Forel, 1902, *Rev. Suisse Zool.* **10**:175, 190.

Pheidole (Pheidole) pronotalis, Chapman and capco, 1951, *Checklist of the ants of Asia*, **1**:148

Material examined : INDIA, Meghalaya, 25 ex: East Khasi hills, Shillong, Fruit Garden, 6.iii.76, Coll. M.S. Jyrwa.

Diagnostic characters : Reddish brown, head narrow and long, longitudinally striate; occipital emargination deep, lateral lobes smooth and shining; antennal furrow long and deep enclosing part of flagellum as well; thorax emarginate at the meso-metanotal suture; pronotum laterally tuberculate; metanotal spines short and erect; abdomen smooth, polished and shining.

Length : 3.5-4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Sikkim. Elsewhere : Sri Lanka.

79. ***Pheidole roberti*** Forel

Pheidole roberti Forel, 1902, *Rev. Suisse Zool.* **10** : 183, 198.

Pheidole (Pheidole) roberti, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1**:149.

Pheidole (Pheidole) roberti, Tiwari, et. al. 1993 *State Fauna series* **3**:Fauna of West Bengal, Part **8**:5 (Syn)

Material examined : 4 ex, India, Meghalaya, East Khasi hills, Upper Shillong, 1.v,iii.76, Coll. R. Mathew.

Diagnostic characters : Reddish; head longitudinally finely striate,. the striae breaking into reticulations posteriorly; thorax finely transversely striate, finely punctured on the sides; pedicel slightly sculptured; abdomen smooth and shining; head longer than broad; mandibles smooth, polished and shining; clypeus emarginate in the middle; antennae short; thorax gibbous anteriorly; pronotum without lateral tubercles; transverse mesonotal groove and ridge well marked; metanotum narrow, metanotal spines long and acute; 1st node of pedicel squamiform, 2nd node from above transversely oval; abdomen oval.

Length : 4.5-5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Karnataka; Sikkim.

80. ***Pheidole sagei*** Forel

Pheidole sagei Forel, 1902, *Rev. Suisse Zool.* **10**:174, 192, W

Pheidole sagei, Chapman and Capco, 1951, *Monogr, Inst. Sci. Tech. Manile* (Check List Ants Asia), 1:149.

Material examined : India: Meghalaya: East Khasi hills, Shillong, 1 W, 7.iv.1959, Coll. A.P. Kapur.

Diagnostic characters : Ferruginous red, abdomen brown. Head nearly square, sides somewhat convex, posterior half sculptured; clypeus carinate and emarginate; scape of antennae short; a wide transverse impression on the vertex. Pro-and mesonotum forming a single convexity; pronotum with some transverse striae. First joint of pedicel with no projection or appendix beneath. Abdomen posteriorly smooth.

Length : S. 2.5 mm, W. 1.8 mm.

Distribution : INDIA: Meghalaya: (East Khasi hills), North-West Himalayas (Dharamsala).

81. ***Pheidole smythiesi*** Forel (Fig. 43)

Pheidole smythiesi Forel, *Rev. Suisse Zool.* **10** (1902) 185.

Ceratopheidole smythiesi, Mathew, 1983, *Bull. zool. Surv. India* **5** (1) : 125- 127.

Material examined : 19 ex: 1 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 14.vi.75, Coll. R. Mathew; 11 ex, West Garo hills, Selbalgiri, Alt. 2000', (collected the day after burning of the jhum) 19.iii.88, Coll. V.T. Darlong; 7 ex, West Garo hills, Selbalgiri, Alt. 2000', 28.iv.88, Coll. V.T. Darlong; 12 ex, East Khasi hills, 5.iii.91, Coll. K.K. Roy and Party.

Diagnostic characters : Light reddish brown and slightly shining; head enormously large, much broader than long, deeply emarginate posteriorly, anteriorly finely longitudinally striate, the striae breaking into punctures and shallow reticulations posteriorly; mandibles sparsely striate, clypeus longitudinally striate; antennae short, scape reaching bearly half way to the top of the head, club formed of apical four joints; eyes small, placed in the lower third of the sides of the head; pronotum convex anteriorly, mesonotum widely and deeply transversely sulcate and with a transverse carina; metanotum short, longitudinally sulcate, metanotal spines stout and acute; 1st node of pedicel transverse above, 2nd node rounded above, much broader than long, slightly angularly produced at the sides; abdomen broadly oval.

Length : 6 -8.5 mm.

Distribution : INDIA : (East Khasi and West Garo hills), Meghalaya; Assam. Elsewhere : Singapore.

82. ***Pheidole striativentris*** Mayr

Pheidole striativentris Mayr, 1878, *Verh. zool-bot. Ges. Wien* **28** : 675, 678.

Pheidole (Pheidole) striativentris, Chapman and Capco, 1951, *Checklist of the ants of Asia, Manila,* **1**:150.

Material examined : 15 ex, India, Meghalaya, East Khasi hills, Upper shillong, 1.viii.76, Coll. R. Mathew.

Diagnostic characters : Reddish brown; head longitudinally coarsely striate, transversely striate on the front of the lateral lobes, breaking into reticulations on the apex; occipital emargination deep; antennal grooves shallow, finely and delicately sculptured within; thorax stout, transversely striate; pronotum convex in front, slightly laterally tuberculate, metanotal spines long and acute; 1st node of pedicel cuneate, transeverse above, 2nd node twice as broad as long,laterally cone-shaped, punctured above, abdomen anteriorly finely and closely striate, posteriorly shining.

Length : 4 -4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; throughout India.

83. ***Pheidole watsoni*** Forel

Pheidole watsoni Forel, 1902, *Rev. Suisse Zool.* **10**:171.

Pheidole (Pheidole) watsoni, Chapman and Capco, 1951, *Checklist of the ants of Asia* **1**:152.

Material examined : 15 ex: 3 ex, India, Meghalaya, East Khasi hills, Shining, Risa Colony, 28.vii.76, Coll. R. Mathew; 7 ex, Upper Shillong, 1.viii.76, Coll. R. Mathew; 5 ex, Risa Colony, 7.v.77, Coll. R. Mathew.

Diagnostic characters : Reddish brown; head anteriorly longitudinally straite, striae breaking down into reticulations on the lateral lobes, bidentate beneath; thorax and abdomen shining; mandibles slightly punctured, shining; antennae short, antennal groove indistinct; thorax gibbous anteriorly; pronotum somewhat flat above and bituberculate; basal portion of metanotum horizontal, flat and shining; metanotal spines short, acute and erect; 1st node of pedicel squamiform, petiolate in front, 2nd node somewhat rhombiform; abdomen oval.

Length : 3 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, West Bengal. Elsewhere:Sri Lanka; Myanmar.

84. ***Pheidole wood-masoni*** Forel

Pheidole wood-masoni Forel, 1885, *Asiat. Soc. Bengal,* **54**:180

Pheidole (Pheidole) wood-masoni, Chapman and Capco, 1951, *Chicklist of the ants of Asia*, 1:152.

Pheidole (Pheidole) wood-masoni, Tiwari et.al., 1994, *State fauna series* 3:*Fauna of West Bengal*, part **8**:52.

Material examined : 2 ex: India, Meghalaya, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew.

Diagnostic characters : Light yellow, abdomen brown; head twice as long as broad; mandibles smooth, sparsely punctured, with two acute teeth at apex; clypeus narrow and transverse; antennal carinae short; no antennal; groove; head anteriorly finely striate, posteriorly sparsely punctured; pronotum laterally tuberculate; metanotal spines short and erect; abdomen oval.

Length : 2.5-4 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; spreed sparingly through continental India. Elsewhere : Sri Lanka.

85. ***Pheidole*** sp.

Material examined : India: Meghalaya: East Khasi Hills, Shillong, Polo Hills Forest (1450m.) 12oo(minor), 11.iv.1991, Coll. S.K. Ghosh and party.

27. Genus ***Trigonogaster*** Forel, 1890.

Trigonogaster Forel, 1890, *Ann. Soc. Ent. Belg*, **34**, *C.R.P.* cviii.

Trigonogaster, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : o. Head in side view truncate; mandibles narrow, armed with 4 teeth; antennae 11-jointed; metanotum armed with two strong recurved spines; petiole articulated to the abdomen by the whole of its posterior face; abdomen viewed from the side triangular, flat above, the apex of the triangular below.

86. ***Trigonogaster recurvispinosa*** Forel (Fig.50)

Trigonogaster recurvispinosa Forel, 1890, *Ann. Soc. Ent.* Belg. **34**:110.

Trigonogaster recurvispinosa, Ettershank, 1966, *Aust. J. Zool.* **14** : 73-171.

Material examined : 4 ex: 3 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, Umtasor, 31.iii.84, Coll. C. Radhakrishnan.

Diagnostic characters : Yellowish; head, thorax and abdomen extremely finely and closely punctured, opaque; head rectangular, very slightly emarginate posteriorly; mandibles striate; eyes

lateral, a little to the front; pro-mesonotum forming a single convexity; 1st node of pedicel with a long petiole anteriorly.

Length : o. 2 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Maharashtra. Elsewhere: China.

28. Genus ***Cataulacus*** Fred.Smith, 1853.

Cataulacus Smith, 1853, *Trans. Ent. Soc. Ser.* **2** (2):225.

Cataulacus; Brown, 1993, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : Head broad, somewhat flat, transverse or emarginate posteriorly, posterior lateral angles prominent, dentate or spinous; sides of the head deeply grooved to contain the folded antennae; mandibles broad, armed with 4 or 5 teeth; antennae 10-jointed; thorax constricted posteriorly, the basal portion of the metanotum with spines; the sides and apex of the thorax more or less vertical and concave, the margins of the head and thorax denticulate; pedicel with nodes more or less globose; abdomen broadly oval.

Key to the species of ***Cataulacus*** Fred. Smith

- Head, thorax and abdomen with more or less irregularly scattered raised acute granular tubercles above as well as on margins of head and thorax . . . . . *simoni*

- Head and thorax with a few granular tubercles on margins; abdomen without raised tubercles. . . . . *taprobanae*

87. ***Cataulacus taprobanae*** Fred. Smith (Fig.62)

Cataulacus taprobanae Smith, 1853, *Trans. Ent. Soc. ser.* **2** (2):225

Cataulacus (Cataulacus) taprobanae, Chapman and Capco, 1951 *Checklist of the ants of Asia*, **1** : 86.

Material examined : India, Meghalaya, 9 ex: 1 ex, East Khasi hills, Kyrdemkulai, 25.xi.81, Coll. J.P. Sati; 1 ex, East Khasi hills, Nongpoh, 23.i.82, Coll. C. Radhakrishnan; 1 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 3 ex, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, Nongpoh, 19.x.82, Coll. R. Mathew; 2 ex, Nongkhyllem Reserve Forest, Lai-lad, 27.v.87, Coll.A.K. Karmakar.

Diagnostic characters : worker. Black, appendages yellowish-red; head, thorax and abdomen with sparse, short, white bristly hairs; head and thorax coarsely striate; abdomen more finely and regularly striate; margins of head and thorax with minute denticulations, lateral angles of head produced, dentate, a small tooth, not very prominent, below the eye on each side of the head; pro-mesonotal shield very convex; the lateral metanotal spines short, horizontal, directed backwards

and slightly divergent; apical portion of metanotum slightly concave, obscurely transversely striate; nodes of pedicel more coarsely sculptured than the thorax and abdomen.

Length : W. 4 -4.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Sri Lanka; Java.

88. ***Cataulacus simoni*** Emery

Cataulacus simoni Emery, 1893, *Ann. Soc. Ent. Er.* **62**:248.

Cataulacus (Cataulacus) simoni, Devi & Singh, 1987, *Entomon* **12** (4), 309- 313.

Material examined : 3 ex, India, Meghalaya, East Khasi hills, Old Barapani road, 14.v.76, Coll. R. Mathew.

Diagnostic characters : worker. Black; opaque, densely punctured, appendages reddish; head longitudinally rugulose reticulate; the sides of the head in front of the eyes and the posterior angles with an acute tooth; pronotum infront coarsely reticulate; remainder of the thorax longitudinally rugose; abdomen ovate.

Length : W. 3.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere: Sri Lanka.

29. Genus ***Crematogaster*** Lund, 1831.

Crematogaster Lund, *Ann. Sc. Nat. xxiii* (1831), P. 132.

Crematogaster, Lund, Datta & Raychaudhuri, 1983, *AKITU N. Ser* **56**:1-14.

Diagnostic characters : worker. Head more or less square; mandibles with 4 teeth; antennae 11-jointed; pedicel with two joints; apex of pedicel attached to the upper basal surface of the 1st abdominal segment, abdomen more or less cordate.

Remarks : Many species of this genus make huge carton nests on trees.

Key to the species of ***Crematogaster*** Lund

1. Head smooth and shining 2

- Head entirely sculptured 3

2. Club of flagellum of antennae 2-jointed . . . . . *biroi*

- Club of flagellum of antennae 3-jointed 4

3. Metanotal spines shorter than metanotum 8

- Metanotal spines longer than metanotum 9

4. Pronotum sculptured 5

- Pronotum not sculptured 6

5. Eyes elongate . . . . . *hodgsoni*

- Eyes round . . . . . *anthracina*

6. Basal level portion of metanotum sculptured, pronotum convex, not tuberculate . . . . walshi

- Basal level portion of metanotum smooth; pro-mesonotal suture obsolete 7

7. Metanotal spines short, shorter than the length of the basal level portion of metanotum *politula*

- Metanotal spines long, longer than basal level portion of metanotum . . . . . *travancorensis*

8. Metanotal spines thick at base, apex directed backwards and inwards . . . . . *rothneyi*

- Metanotal spines slender, apex directed backwards and outwards; first flattened joint of pedicel with the sides rounded, not angular. . . . . *artifex*

9. Pronotum longitudinally striate, first flattened joint of pedicel with the sides strongly arched, nearly semicircular. . . . . *flava*

- Pronotum reticulate; first flattened joint of pedicel as broad as long, the sides angular in the middle. . . . . *rogenhoferi*

89. *Crematogaster anthracina* Fred. Smith

Crematogaster anthracina Fred.Smith, 1857, *J. Proc. Linn. Soc. Lond. Zool.* **2** : 75.

Crematogaster (Nametocrema) anthracina, Chapman and Capco, 1951, *checklist of the ants of Asia*, 1:95.

Material examined : 15 ex, India, Meghalaya, East Khasi hills, Shillong, Tripura Castle Road, 23.ii.76, Coll. S.K. Goswami.

Diagnostic characters : worker. Reddish brown to black, smooth, polished and shining, the sides of the head and antennal hollows slightly longitudinally striate; the thorax and pedicel above finely rugulose; mandibles finely rugulose, opaque; clypeus strongly convex in the middle, the transverse anterior margin depressed and bent inwards; antennae short, scape not reaching the top the head; eyes placed about the middle of the head laterally; pronotum broad, convex and rounded anteriorly; mesonotum somewhat flat, rounded anteriorly; meso-metanotal suture deeply impressed; the basal portion of the metanotum horizontal, broadening posteriorly; metanotal spines divergent; 1st node of pedicel flat anteriorly, transversely oval, 2nd node slightly raised and longitudinally sulcate.

Length : W. 3.5 -4 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar; Sri Lanka; Tenasserim; Borneo; Malaya.

90. ***Crematogaster artifex*** Mayr

Crematogaster artifex Mayr, 1878, *Verh. zool-bot. Ges. Wien*, **28** : 681 & 684.

Crematogaster (Acrocoelia) dohrni Sub.sp. *artifex,* Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1** : 90.

Material examined : 1 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 23.viii.75, Coll. R. Mathew.

Diagnostic characters : worker. Reddish brown; pilosity abundant; head finely longitudinally striate; thorax and pedicel more or less coarsely rugose-reticulate; mesonotum finely longitudinally striate; abdomen smooth; thorax convex; pronotum rounded in front; pro-mesonotal sutures distinct; meso-metanotal sutures deeply impressed; metanotal spines long, pointing backwards and upwards; apical portion of metanotum smooth; 1st node of pedicel flat above, rounded at the sides, narrowed posteriorly; 2nd node slightly raised, longitudinally grooved; abdomen broad.

Length : W. 3.2 - 5.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : China; Myanmar; Tenasserim; Malaya.

91. ***Crematogaster biroi*** Mayr

Crematogaster biroi Mayr, 1892, *Term. Fuzetek* **20**:428.

Crematogaster biroi, Mathew, 1983, *Bull. zool. Surv. India* **5** (1) : 125- 129.

Material examined : 2 ex, India, Meghalaya, East, Khasi hills, Shillong, Spread Eagle Falls, 5.viii.76, Coll. M.S. Jyrwa.

Diagnostic characters : worker. Bright pale yellow; head, thorax and abdomen very minutely and delicately punctured; head slightly longer than broad; occiput transverse; mandibles armed with 4 acute teeth; scape of antennae just reaching the top of the head, club of flagellum formed of two joints; thorax proportionately short, pro-mesonotal suture obsolete; meso-metanotal suture deeply impressed; basal portion of metanotum short, apical portion concave; metanotal spines long, curved inwards and slightly downwards; 1st node of pedicel flat above, semicircular anteriorly and arched at the sides.

Length : W. 1.8-2.3 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Karnataka; Sikkim; Uttar Pradesh. Elsewhere : Sri Lanka.

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92. ***Crematogaster flava*** Forel (Fig.44)

Crematogaster flava Forel, 1887, *J. Asiat. Soc. Bengal* **55** : 248

Crematogaster flava, Devi & Singh, 1987, *Entomon* **12** (4) : 309-313.

Crematogaster flava, Tiwari et. al., 1994, *State Fauna series* **5**:*Fauna of West Bengal,* part **8**:42.

Material examined : 26 ex: 1 ex, India, Meghalaya, Jaintia hills, Garampani, Opposite Kopili river, 27.i.75, Coll. A.K. gHOSH; 25 ex, East Khasi hills, Old Barapani Road, 23.iv.77, Coll. R. Mathew. 2 ex, East Garo hills, Songsak, 6.v.91, Coll. J.K. Jonathan and party; 5 ex, West Garo hills, Darangiri, 30.iv.79, Coll. J.K. Jonathan and party.

Diagnostic characters : worker. Pale yellow, abdomen brown; head, thorax and abdomen finely and delicately granulate and with a silky shining appearance; head broader than long, occiput transverse; mandibles stout; Clypeus convex, its anterior margin transverse and bent inwards; thorax short, pronotum longitudinally striate; basal portion of metanotum longitudinally striate; metanotal spines long and slender; 1st node of pedicel flat above, broad, 2nd node tri-tuberculate; abdomen cordate, short and broad.

Length : W. 2.5-3 mm.

Distribution : INDIA : (East Khasi, East and West Garo hills and Jaintia hills), Meghalaya; Assam; Kerala; Orissa; Sikkim.

93. ***Crematogaster hodgsoni*** Forel

Crematogaster hodgsoni Forel, 1911, *Rev. Suisse Zool,* **10**:204.

Crematogaster (Acrocoelia) hodgsoni, Chapman and Capco, 1951 *Checklist of the ants of Asia,* **1**:91.

Material examined : 9 ex, India, Meghalaya, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew; 11 ex, East Khasi hills, Lacthyra, cherrapunjee, 16.9.88, Coll. A.R. Lahiri and party.

Diagnostic characters : worker. Dark reddish brown, abdomen darker, appendages a shade lighter; head smooth, slightly shining, a few obsolete striae on the cheeks, clypeus and above the antennal hollows; pronotum reticulate, mesonotum and basal portion of the metanotum longitudinally striate, rugulose; pedicel and abdomen smooth but dull, very minutely reticulate; eyes slightly elongate; mandibles longitudinally striate and with a few scattered punctures; clypeus convex, anterior margin transverse, slightly turned inwards; antennae comparatively long; pronotum laterally bituberculate, mesonotum concave, margined; metanotal spines thick at base, acute at the apices, which are slightly curved inwards; abdomen broad, subcordate.

Length : W. 3.5-4 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar; Tenasserim.

94. ***Crematogaster politula*** Forel

Crematogaster subnuda Mayr, race *politula Forel* 1902, *Rev. Suisse Zool*; **10**:207.

Crematogaster politula; Datta & Raychaudhuri, 1983, *AKITU N. Ser. 56* : 1-14.

Material examined : 2 ex: 1 ex, India, Meghalaya, East Khasi hills, Shillong, 1.viii.79, Coll. R. Mathew; 1 ex, Shillong, Risa Colony, 5.xii.79, Coll. Roselind.

Diagnostic characters : worker. Light chestnut-red; head, tthorax and abdomen smooth and shining, very minutely, but sparsely punctured; head slightly longer than broad, the cheeks convex; mandibles punctured; antennae long, scape extending beyond the top of the head by about one-fifth its own length; pronotum broad, flat above, rounded infront, laterally somewhat angular; pro-mesonotal suture obsolete, meso-metanotal suture distinct; metanotal spines thick at base, short, acute; 1st node of pedicel flat above, broad, subtriangular; 2nd node with a short petiole infront, posteriorly longitudinally grooved with two equal rounded tubercles; abdomen cordate.

Length W. 3-3.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Assam. Elsewhere :Myanmar.

95. ***Crematogaster dohrni rogenhoferi*** Mayr

Crematogaster rogenhoferi Mayr, 1878, *Verh. zool-Bot. Ges. Wien*, **28**:681 & 683.

Crematogaster (Acrocoelia) dohrni subsp. *rogenhoferi* Mayr, Chapman and Capco 1951, Checklist of ants of Asia.

Crematogaster dohrni rogenhoferi, Tiwari et. al. 1993, *State Fauna series* **3**:*Fauna of west Bengal*, part **8**:42.

Material examined : 92, ex: 54 ex, India, Meghalaya, East Khasi hills, Nongpoh forest, 6.iii.86, Coll. R. Mathew; 34 ex, West Khasi hills, 25 km. South West of Nongstoin on Syrkon Road, 29.o.87, Coll. K.P. Singh; 1 ex, West Khasi hills, 15 km North of Nonghlaw on Guwahati Road, 20.ii.87 Coll. A.K. Karmakar; 1 ex, East Khasi hills, Nongkhyllem Reserve Forest, Lai-lad, 27.v.87, Coll. A.K. Karmakar; 2 ex, Jaintia hills, 27 km from Jowai near Mynso village, 5.i.88, Coll. A.K. Karmakar; 11 ex, east Garo hills, Daru Giri, 17.v.79, Coll. S.B. Roy & Party.

Diagnostic characters : worker. Reddish brown abdomen darker brown to black; head finely longitudinally rugulose, clypeus slightly convex, anteior margin slightly squarely produced; scape of antennae reaching the top of head; ocelli distinctl thorax longitudinally rugose, pronotum somewhat flat; mesonotum margined at the sides and constricted; basal portion of metanotum longitudinally striate, apical portion concave, smooth and shining, nodes of pedicel rugulose above; 1st node of pedicel flat above, sides angular in the middle, 2nd node with three tubercles; abdomen elongate, basal segment minutely reticulate- punctate, opaque, apical segments shining.

Length : W. 3.5-4.5 mm.

Distribution : INDIA : (East & west Khasi hills, East Garo hills and Jaintia hills), Meghalaya; Assam; Kerala; Maharashtra; Sikkim; West Bengal; Western India. Elsewhere: Myanmar; Sri Lanka; Sumatra; Tenasserim.

96. ***Crematogaster rothneyi*** Mayr (Fig.45)

Crematogaster rothneyi Mayr, 1902, Verh. Zool-bot. Wien, **28:**

Crematogaster (Acrocoelia) rothneyi, Chapman & Capco, 1951, of ants of Asia, **1**:93.

Crematogaster rothneyi, Tiwari et. al., 1994, *State Fauna series* **3**:*Fauna of West Bengal, part* **8**:42.

Material examined : 22 ex: 4 ex, India, Meghalaya, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. mathew; 1 ex, Old barapani, 6.ix.79, Coll. R. Mathew; 4 ex. East Khasi hills, Shella, 25.ix.81, Coll. C. Radhakrishnan; 7 ex, east Khasi hills, Kyrdem Kulai, 2.vi.78, Coll. s. Biswas; 1 ex, East Khasi hills, Nongkhyllem Reserve Forest, Nongpoh, 28.x83, Coll. R. Mathew; 4 ex, West Khasi hills, 9.ix.86, Coll. M.R. Rynth; 1 ex, West Garo hills, Selbalgiri, 14.v.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Rufo-ferruginous, abdomen fuscous brown to black; pilosity fairly abundant; head, thorax and pedicel opaque, abdomen smooth and shining; head longitudinally striate; eyes large, prominent; mandibles striate; thorax finely and very closely reticulate-punctate, rugulose, submargined along the sides; pronotum somewhat flat above, rounded anteriorly; mesonotum slightly concave, meso-metanotal suture very distinct; basal portion of metanotum transversely rectangular, longitudinally striate; metanotal spines long and stout, divergent, apical portion of metanotum finely minutely punctured, shining; 1st node of pedicel flat above, narrow posteriorly, sides rounded, 2nd node tri-tuberculate in dorsal view, pedicel rugulose above, abdomen cordate.

Length : W. 3-3.5 mm.

Distribution : East and West Khasi and West Garo hills, Meghalaya; Maharashtra; Sikkim; West Bengal.

97. ***Crematogaster travancorensis*** Forel

Crematogaster travancorensis Forel, 1902, *Rev. Suisse Zool,* **10**:200.

Crematogastor (Oxygyne) travancorensis, Chapman & Capco, 1951 *Checklist of ants of Asia*, **1**:101.

Material examined : 7 ex. India, Meghalaya, East Khasi hills, Old Barapani Road, 23.iv.77, Coll. R. Mathew.

Diagnostic characters : worker. Black; sides of head and antennal hollows striate; pro-mesonotal suture lightly impressed; metanotal spines slender, a little longer than the basal face of the metanotum; 1st node of pedicel flat above; abdomen cordate.

Length : W. 3-3.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Kerala.

98. ***Crematogaster walshi*** Forel

Crematogaster walshi Forel, 1902, *Rev. Suisse Zool,* **10** : 205.

Crematogaster (Orthocrema) walshi, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1**:99

Material examined : 17 ex: 2 ex, India Meghalaya, Garo hills, Aravali forest, 5.iii.75, Coll. S. Biswas; 2 ex, East Khasi hills, Old Barapani Road, 14.v.76, Coll. R. Mathew; 13 ex, West Khasi hills, 15 km. North of Nongkhlaw on Guwahati Road, 20.ii.87, Coll. A.K. Karmakar.

Diagnostic characters : worker. Dark piceous, smooth and shining, pilosity fairly abundant; head rectangular, occiput transverse; mandibles longitudinally striate; anterior margin of clypeus transverse; antennae short, scape not reaching the top of the head; basal portion of metanotum short, longitudinally striate; metanotal spines short; node of pedicel broad and flat anteriorly, narrowed posteriorly; 2nd node raised, longitudinally divided by a broad groove; abdomen short and broad.

Length : W. 3-3.5 mm.

Distribution : INDIA : (East and West Kashi and Garo hills), Meghalaya; Orissa; Sikkim; West Bengal.

99. ***Crematogaster*** sp.

Material examined : India: Meghalaya: Jaintia Hills, Jowai, 13 FF, 4.iii.1991, Coll.K.K. Ray and party.

30. Genus : ***Lophomyrmex*** Emery, 1892.

Lophomyrmex Emery, 1892, *Ann. Mus. Civ. Gen.* **22**:114

Lophomyrmex, Datta & Raychoaudhuri, 1983, *AKITU N. Ser., 56*:1-14.

Diagnostic characters : worker. Pronotum, in side view, raised above the head, anterior lateral angles furnished with spines or teeth; metanotum armed with two long spines; antennae with 11 joints. Species of this genus tunnel up their paths, like many species of Pheidole.

Key to the species of ***Lophomyrmes*** Emery

1. Pronotum unarmed. . . . . *bedoti*

- Pronotum armed with 2 spines or teeth. 2

2. Nodes of pedicel sculptured. . . . . *quadrispinosus*

- Nodes of pedicel smooth. . . . . *burmanus*

100. ***Lophomyrmex bedoti*** Emery (Fig. 48)

Lophomyrmex bedoti Emery, 1893, *Rev. Suisse Zool.* **1** : 192.

Lophomyrmex bedoti, Datta and Raychaudhuri, 1983, *AKITU N. Ser.*, **56** : 1- 14.

Material examined : 65 ex: 7 ex, India, Meghalaya, East Khasi hills, Old Barapani, 23.iv.77, Coll. R. Mathew; 3 ex, East Khasi hills, Nongpoh, 10.x.82, Coll. R. Mathew; 3 ex, West Khasi hills, Balat, 9.ix.86, Coll. M.R. Rynth; 46 ex, Jaintia hills, 90 km away from Shillong towards Khanduli, 7.v.87, Coll. C. Radhakrishnan; 4 ex, West Garo hills, Selbalgiri, 14.v.88, Coll. V.T. Darlong; 2 ex, West Garo hills, Balphakram National park, 12.v.88, Coll. V.T. Darlong; 18 ex, East Khasi hills, Umwal, 15.ix.88, Coll. A.R. Lahiri & Party.

Diagnostic characters : worker. Yellowish brown; head longer than broad, slightly convex, much broader posteriorly than in front, sides convex; antennae long, scape extending to the top of the head; eyes large, situated about the middle of the sides of the head; pronotum unarmed; metanotal spines erect; 1st node of pedicel petiolate in front, 2nd node broader than the 1st node; abdomen oval, slightly truncate anteriorly; on the whole shining.

Length : W. 2-2.5 mm.

Distribution : INDIA : (East and West Khasi and West Garo and Jaintia hills), Meghalaya; Sikkim. Elsewhere : Myanmar; Sumatra.

101. ***Lophomyrmex burmanus*** Emery

Lophomyrmex burmanus Emery, 1893, *Rev. Suisse Zool.*, **1** : 192.

Lophomyrmex burmanus, Datta and Raychaudhuri, 1983, *AKITU N. Ser.*, **56** : 1-14.

Material examined : 5 ex, 1 ex, Meghalaya, East Khasi hills, Old Barapani Road, 6.ix.79, Coll. R. Mathew; 4 ex, Khasi hills, Nonglhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Reddish brown, head and abdomen darker, appendages a lighter shade; mandibles armed with 4 or 5 teeth, the apical two strongl pilosity reddish yellow, fairly abundant; eyes placed about the middle of the head on lateral sides; pronotum raised, antero-laterally margined; metanotal spines broad at base, long and divergent; 2nd node of pedicel broader than the first; abdomen oval; on the whole shining.

Length : W. 3-3.5 mm.

Distribution : East Khasi hills, Meghalaya. Elsewhere : Myanmar.

102. ***Lophomyrmex quadrispinosus*** (Jerdon) (Fig.49)

Ocodoma quadrispinosus Jerdon, 1851, *Madras J. Lit. Sc.,* **17** : 111.

Lophomyrmex quadrispinosus, Devi and Singh, 1987, *Entomon.,* : **12** (4), 309-313.

Lophomyrmex quadrispinosus, Tiwari *et al.*,1994, *State Fauna series 3* : *Fauna of West Bengal,* Part **8** : 43.

Material examined: 10 ex: 4 ex, India Meghalaya, East Khasi hills, Nongpoh, 28.i.82, Coll.C. Radhakrishnan; 3 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll.K.P. Singh; 1 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C. Radhakrishnan; 2 ex, West Garo hills, Selbalgiri, 14.v.88, Coll. V.T. Darlong; 1 ex, East Khasi hills, Umwai, 15.ix.86, Coll. A.R. Lahiri & party.

Diagnostic characters : worker. Reddish brown; head and thorax anteriorly smooth and shining; mandibles striate at base; antennae long, scape reaching the top of the head; eyes small, lateral, placed about the middle of the head;pronotal spines short, a slight transverse carina between them; mesonotum with a prominent transverse carina about the middle, generally bidentate; metanotal spines long and slightly cirved; nodes of pedicel punctured and opaque, abdomen oval.

Length : W. 3-3.5 mm.

Distribution : INDIA : (East and West Khasi and West Garo hills), Meghalaya; Karnataka; Kerala Orissa; Sikkim; Uttar Pradesh; West Bengal.

31. Genus ***Pheidologeton*** Mayr, 1862

Pheidologeton Mayr, 1862, *Verh. zool.-bot. Ges. Wien,* **12** : 750.

Pheidologeton, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : *A comparative reivew* : 161-185.

Diagnostic characters : Soldier. Closely resembles pheidole. Antennae 11-jointed, Club of antennae formed of 2 joints; thorax massive and gibbous.

103. ***Pheidologeton affinis*** (Jerdon)

Ocodoma affinis Jerdon, 1851, *Madras. Lit. Sc.,* **17** :110.

Pheidologeton affinis, Ettershank, 1966, *Aust. J. Zool.,***14** : 118.

Pheidologeton affinis, Tiwari, *et al.*,1994, *State Fauna series 5* : *Fauna of West Bengal,* Part **8** : 52.

Material examined : 1 ex, India, Meghalaya, West Khasi hills, Shella, 25.vii.81, Coll. C. Radhakrishnan; 30 ex. West Khasi hills, Nogstion, 24.ix.86, Coll. A.R. Lahiri & party; 10 ex, East Garo hills, Nisangram, 12.v.91, Coll. S.B. Roy & R.N. Tiwari.

Diagnostic characters : soldier. Reddish brown, polished and shining, the mandibles black, the antennae and legs yellowish red; head anteriorly and thorax on the sides longitudinally striate, the posterior lobes of the head in front, the pronotum anteriorly and the basal portion of the metanotum transversely striate; ocellus absent; 1st node narrow above, conical and not emarginate, abdomen broadly oval.

Length : S. 5-11 mm.

Distribution : INDIA : (West Khasi hills & East Garo hil)ls, Meghalaya; Assam; Kerala; Maharashtra; West Bengal. Elsewhere : Myanmar; Sri Lanka; Tenasserim.

32. Genus ***Myrmecina*** Curtis, 1829.

Myrmecina Curtis, *Brit. Ent.*, **4** : 226.

Myrmecina, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Myrmecina, Tiwari, 1994, *Rec. Zool. Surv.* India, **94** (2-4) : 151.

Diagnostic characters : worker. Antennae 11-jointed; clypeus bicarinate; mandibles indistinctly dentate; thoracic stutres obsolete; metanotum with a pair of spines; pedicel with 2 nodes; 1st node quadrate without a petiole in front; abdomen oval.

104. ***Myrmecina striate*** Emery (Fig. 51)

Myrmecina striata Emery, 1889, Ann. Mus. Civ. Stor. Nat. Genova, **27** : 500.

Myrmecina striate, Chapman and capco, 1951, *Checklist of the ants of Asia*, **1** : 118.

Material examined : 25 ex: 18 ex., India, Meghalays, East Khasi hills, Shillong, Risa Colony, 18.v.79, Coll. R. Mathew ; 4 ex, Risa Colony , 28.x.81, Coll. R. Mathew .

Diagnostic characters : worker. Black, the mandibles, the antennae , the legs, the sides of the abdomen, the apical marginh of the basal and the whole of the remainhing abdominal segments reddish yellow; head, thorax above and on the sides, and the nodes of the pedicel above longitudinally channeled; antero/lateral angles of lpronotum produced; pro-msonotum convex,sides vertical; metanotal spines divergent, pointing backwards and slightly upwards; abdomen highly polished and shining.

Length : W. 3.75 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar.

Remarks : Specimens of this species were colected from humus.

33. Genus ***Meranoplus*** Fred. Smith, 1853

Meranoplus Smith,1854, *Trans. Ent. Soc. Ser.*, (2) **2** : 224.

Meranoplus, Brown, 1973, *In Tropical forest ecosystesms in Africa and South America* : 161-185.

Diagnostic characters : worker. Head trapezoidal; sides of head deeply grooved for the reception of the antennae; mandibles with 4 teeth; antennae 9-jointed; eyed promiment ;pedicel with 2 nodes; abdomen cordate.

Key to the species of ***Meranoplus*** Fred. Smith.

1. Mesonotum armed posteriorly with two long acute spines. . . . . *bicolor*
- mesonotum armed posteriorly with comparatively shorter teeth. 2
2. Abdomen finely reticulate, subopaque. . . . . *rothneyi*
- Abdomen higly polished, smooth and shining. . . . . *laeviventris*

105. ***Meranoplus bicolor*** (Guérin) (Fig .52)

Cryptocerus bicolor Guérin, 1845, *Inconogr. Regne. Anim. Insect,* **7** : 425.

Meranoplus bicolor, Devi and Singh, 1987, *Entomon.,* **12** (4) : 309-313 .

Meranoplus becolor, Tiwari *et al.*, 1994 , *State Fauna Series 3* : *Fauna of West Bengal*, Part **8** : 44

Meterial examined : 14 ex, India, Meghalaya, East Khasi hills, Umran, 12.ix.67, Coll. R.K. Varshney; 2 ex, East Khasi hills, Lai-lad, 27.v.87, Coll. A.K. Karmakar; 2 ex, East Khasi hills, Umtru, Alt. 900', 26.iv.88, Coll. A.K. Karmakar; 22 ex, East Garo hills, Dianadubi, 9-10.v.79, Coll. S.B. Roy & R.N. Tiwari; 1 ex, West Garo hills, Anogiri, 6.x.88, Coll. K.K. Roy & party.

Diagnostic characters : worker. Ferruginous red, abdomen black; head thorax and the 2nd node of pedicel coarsely sculptured, cribrate; abdomen closely and finely reticulate, head longer than broad; mandibles narrow, obscurely striate; promesonotal shield about as broad as long, with the anterior angles prominent and acute, the sides posteriorly with a small incision, and beyond that produced backwards into a long, somewhat laminate spine, on each side overhanging the metanotum; metandotum vertical, slightly concave, with a carina on each side ending above in an acute spine; 1st node of pedicel smooth with its apex bevelled; 2nd node globose; abdomen cordate.

Length: W. 4-5 mm.

Distribution : INDIA : (East Khasi hills, East and West Garo hills), Meghalaya; Continental and Insular India.

Remarks : Slow moveing species. They feign dead when touched.

106. ***Meranoplus rothneyi*** Forel (Fig. 53)

Meranoplus rothneyi Forel, 1902, *Rev. Suisse Zool.*, **10** : 241.

Meranoplus rothneyi, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1** : 113.

Meranoplus rothneyi, Tiwari *et al.*,1994, *State Fauna series 3 :Fauna of West Bengal*, part **8** : 44.

Material examined : 7 ex: 1 ex, India, Meghalaya, East Khasi hills, Shillong, Risa Colony, 18.iv.76, Coll. R. Mathew, 1 ex, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathewl; 5 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., 28.iv.88, Coll. V.T. Darlong, 4 ex, R1-Bhoi, hongoh., 28.ix.88, Coll. A.K. Lahiri & party.

Diagnostic characters : worker. Brownish; pro-mesonotum nearly square, margined laterally with a lamellate border; metanotum bordered laterally by carinae which are armed in the middle with a slender pointed spine longer than half the metanotum; transversely striate; abdomen finely reticulate, subopaque.

Length : W. 2.5-2.8. mm.

Distribution : INDIA : Meghalaya; (East Khasi R1-Bhoi and west Garo hills), Kerala. Elsewhere : China.

107. ***Meranoplus laeviventris*** Emery (Fig. 54)

Meranoplus laeviventris Emery, 1889, *Ann. Mus. Civ. Stor. Nat. Genova*, **27** : 506.

Meranoplus laeviventris, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1** : 113

Material examined : 8 ex: 3 ex, India Meghalaya, East Khasi hills, Naga bunglow, 21.iv.77, Coll. S.G. Patil; 4 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. c. Radhakrishnan; 1 ex, east Khasi hills, Old Barapani Road, 14.v.76, coll. R. Mathew.

Diagnostic characters : worker. Dark, reddish-ferruginous, abdomen brown; antennae short and stout, antennal groove deep; pro- mesonotal shield armed with six stout spinous teeth; head pro-mesonotal shield and nodes of pedicel coarsely sculptured, rugose; metanotum smooth and shining, slightly concave, bicarinate, the carinae ending above in slender spines pointing backwards; abdomen smooth and shining.

Length : W. 3.5-4 mm.

Distribution : INDIA : (East Khasi hills), Meghalya. Elsewhere : Myanmar; Tenasserim.

34. Genus ***Carebara*** Westwood, 1840

Carebara Westwood, 1841, *Ann. Mag. Nat. Hist.*, **6** : 46.

Carebara Westwood, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Antennae 9-jointed, the club of flagellum formed of apical 2-jointed; eyes and ocelli absent; promesonotal suture obsolete, meso-metanotal suture distinct; pedicel 2 jointed; abdomen oval.

108. ***Carebara lignata*** Westwood (Fig. 47)

Carebara lignata Westwood, 1841, *Ann. Mag. Nat. Hist.* **6** : 86.

Carebara lignata Collingwood, 1970, *Khumbu Himal, Bd. 3*, Lfg. **3** 371-388.

Material examined : 4 ex: 3 ex, India, Meghalaya, East Khasi hills, Shillong, Bishnupur, 24.v.81, Coll. C. Radhakrishnan; 1 ex, West Garo hills, Selbalgiri, Alt. 2000', 28.iv.88, Coll. V.T. Darlong.

Diagnostic characters : worker. pale yellow, masticatory margin of mandibles brown; head finely and closely, sides of the thorax more sparsely punctate; thorax nearly as broad as the head; nodes of pedicel rounded above, abdomen oval.

Length : W. 2.5 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills), Meghalaya; Assam. Elsewhere : Indo-china; Malaysia; Sumatra; Tenasserim.

Remarks : Males and females are large winged forms having no similarity with the worker forms.

35. ***Strumigenys*** Fred. Smith, 1860

Strumigenys Smith, *Jour. Ent.*,**1** : 72.

Strumigenys, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Head more or less cordate, the anterior portion narrowed, mandibles very long, the shaft linear, slender; turned inwards at the apex and tridentate; antennae 6-jointed, the flagellum folded back into the antennal grooves; thorax convex anteriorly, slightly and widely emarginate at the mesonotum; with pair of spines; nodes of pedicel sub-ovate; abdomen broadly oval.

109. ***Strumigenys godeffroyi*** Mayr

Strumigenys godeffroyi Mayr, 1866, *Sitzb. ber. Akad. Wiss. Wien,* **53** : 516.

Strumigenys (Strumigenys) godeffroyi, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1** : 108.

Material examined : 23 ex: 6 ex, India Meghalaya, East Khasi hills, Shillong, 27.v.76, Coll. R. Mathew, 15 ex, Shillong, 17.viii.75, coll. R. Mathew; 1 ex, Shillong, 20.vi.75, Coll. R. Mathew; 1 ex, Shillong, 18.vi.79, Coll. R. Mathew.

Diagnostic characters : worker. Pale reddish yellow; head and thorax somewhat coarsely and very closely punctate-reticulate and opaque; punctures on the thorax less deep than on the head; abdomen smooth and shining with the base above convered with short longitudinal striae; the innermost of the three mandibular teeth long and spiniform; antennal scape not reaching much beyond the level of the eyes.

Length : W. 2.5-3 mm.

Distribution : INDIA : Meghalaya; (East Khasi hills), Western and Southern India. Elsewhere : Malaysia; Myanmar.

36. Genus ***Myrmicaria*** Saunders, 1841

Myrmicaria Saunders, 1841, *Trans. Ent. Soc.* **3** :57

Myrmicaria Saunders, Brown, 1973, *In Tropical forest ecosystems in Africa and south America* : 161.

Diagnostic characters : worker. Antennae 7-jointed; clypeus broad, arched in front; mandibles armed with 4 teeth; eyes prominent, placed on the sides of the head; pronotum more or less globose, anterior lateral angles above and below marked by distinct tubercles or spines; mesonotum ending posteriorly in a more or less thick, transverse carina often subdentate at the lateral angles; metathorax cubical, the basal and apical faces subequal, margined by a carina, posterior lateral angles of the basal portion armed with an acute oblique spine; 1st node petiolate anteriorly and posteriorly; abdomen subglobose.

110. ***Myrmicaria brunnea*** Saunders

Myrmicaria brunnea Saunders, 1841, *Trans. Ent. soc. London,* **3** : 57.

Myrmicaria brunnea; Chapman and Capco, 1951, *Checklist of ants of Asia* **1** : 124.

Myrmicaria brunnea, Tiwari *et al.*, 1994, *State Fauna Series* **3**:*Fauna of West Bengal*, Part **8** : 47.

Material examined : 1 ex : India, Meghalaya, East Khasi hills, Shillong, 5.viii.75, Coll R. Mathew.

Diagnostic characters : worker. Reddish brown, shining; head and thorax longitudinally striate; mandibles finely and closely striate; nodes of pedicel smooth or only slightly rugulose; pilosity long and abundant; abdomen smooth and polished.

Length : W. 5.5-8 mm.

Distribution : INDIA : Meghalaya, (East Khasi hills), throughout India. Elsewhere : Indo-china; Java; Sumatra; Sri Lanka.

37. Genus: ***Vollenhovia*** Mayr, 1865

Vollenhovia Mayr, 1865, *Novara Reise, Formicid.* : **21**, w.

111. ***Vollenhovia*** sp.

Material examined : India: Meghalaya: East Khasi Hills, Shillong, 6 W, 29.iii.1959, Coll. A.P. Kapur and party.

Distribution : INDIA : Meghalaya, (East Khasi Hills).

VI. SUBFAMILY DOLICHODERINAE

Clypeus produced upward between the frontal carinae; antennae 12- jointed; pedicel 1-jointed; cloacal opening a vertral transverse slit; sting vestigial; when irritated the workers expel the secretion of the anal glands which becomes resinous in contact with air and gives off a characteristic aromatic odour.

Key to the species of ***Dolichoderinae***

1. Clypeus with an oval side process overlapping the base ofd the mandibles on each side. . . . . *Liometopum*

- Clypeus without such side processes 2

2. Base of abdomen gibbous, overhanging the pedicel; anal orifice inferior 3

- Base of abdomen not gibbous, not overhanging the base of pedicel 4

3. Pedicel with a small, low, but distinct node inclined obliquely forward . . . *Bothriomyrmex*

- Pedicel without a distinct node . . . . . *Tapinoma*

4. Metanotum laterally compressed, with a basal face more or less horizontal, and an apical face truncate, vertical, often concave. . . . . .*Dolichoderus*

- Metanotum not laterally compressed, rounded, its basal face passing into the obliquely truncate sloping apical face by a more or less rounded curve. . . . . *Iridomyrmex*

38. Genus ***Liometopum*** Mayr 1861

Liometopum Mayr, 1861, *Europ. Form.* :38.

Liometopum, Brown 1973, *In Tropical forest ecosystems in Africa and South America , 161-185.*

Diagnostic characters : worker. Antennae 12-jointed; mandibles broad, with 8-10 teeth, apical ooth long, acute and curved; clypeus triangular, rounded posteriorly and extending to between the antennal carinae, laterally it extends in little oval processes over the basal portion of the mandibles, its anterior margin transverse; thoracic sutures well marked; node of pedicel oval erectl abdomen broadly oval.

112. ***Liometopum lindgreeni*** Forel (Fig.66)

Liometopum lindgreeni Forel, 1902, *Ann. Soc. Ent. Belg.*,**46**:293.

Liometopum lindgreeni, Mathew, 1983, *Bull. zool.Surv. India* **5** (1) : 125- 127.

Material examines : 9 ex: 7 ex, India Meghalaya, East Khasi hills, Shiilong, 4.viii.77, Coll. K.K. Deb; 2 ex, East Khasi hills, Nongkhyllem reserve Forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan, 3 ex, East Garo hills, Songsok, 6.v.79, Coll. J.K. Jonathan and party.

Diagnostic characters : worker. Reddish yellow, abdomen brownish; pilosity spares, more on abdomen, pubescene dense and decumbent, giving the insect an opaque appearance.

Length : W. 4.5-5 mm.

Distribution : INDIA : (East Khasi hills & East Garo hill)s, Meghalaya; Assam. Elsewhere : Myanmar.

39. Genus ***Bothriomyrmex*** Emery, 1869

Bothriomyrmex Emery, 1865, *Ann. Mus. Zool. Univ. Nap.*, **5**:117.

Bothriomyrmex, Brown, 1973, *In Tropical forest ecosystems Africa and in South America*, 161-185.

Diagnostic characters : W. Broader in proportion to its length, head nearly square; mandibles narrow, when closed, hidden under the anterior margin of the clypeus, which is not incised; antennae 12-jointed; thoracic sutures distinct; node of pedicel distinctly raised and not flattened on the pedicel.

113. ***Bothriomyrmex myops*** Forel

Bothriomyrmex myops Forel, 1895, *Jour. Bo...b Nat. Hist. Soc. 9* : 761.

Bothriomyrmex myops, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:187.

Material examined : 11 ex, India, Meghalaya, East Khasi hills, Shillong, Motinagar forest, 23.viii.75, Coll. R. Mathew.

Diagnostic characters : worker. Pale yellowish, abdomen slightly brownish; head proportionately large, convex anteiorly; mandibles broad, punctured; clypeus widely subtriangular, anterior margin transverse; antennae short, scape barelu reaching the top the head; eyes small; thorax

short and broad; node of piedicel very low, strongly inclined forward; abdomen large and massive, very convex in front.

Length : W. 1.5-2 mm.

Distribution : INDIA : (East Khashi hills), Meghalaya; Sikkim; Western India.

Remarks : Forages in the forest floor.

40. Genus ***Iridomyrmex*** Mayr, 1862

Iridomyrmex Mayr, 1862, *Verh. zool.-bot. Ges. Wien*, **12**:702.

Iridomyrmex, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Mandibles broad, armed with 7-8 teeth; Clypeus convex, anteriorly transverse; antennae long, scape extending beyond the top of the head; thorax, convex, mesonotum somewhat cylindrical; metanotum more or less raised, convex and gibbous; node of pedicel slightly inclined forward; abdomen short, broadly oval.

114. ***Iridomyrmex anceps*** (Roger)

Formica anceps Roger, 1863, *Berl. ent. Zeitschr.*, **7**:164.

Iridomyrmex anceps, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:188.

Iridomyrmex anceps, Tiwari *et al.*,1994, *State Fauna Series* **3**:*Fauna of West Bengal,* part **8**.

Material examined : 88 ex: 31 ex, India Meghalaya, Jaintia hills, Shangpung, 8.xii.75, Coll. S.K. Chanda; 2 ex, East Khasi Hills, Nongkhyllem Reserve Forest, Umtasor, 19.i.83, Coll. C. Radhakrishnan; 6 ex, Jaintia hills, Garampani, 21.i.83, Coll. C. Radhakrishnan; 3 ex, East Khasi hills, Cherrapunjee, 16.xii.82, Coll. Raj Tilak; 4 ex, Jaintia hills, Nartiang, 5.ix.86, Coll. V.T. Darlong; 1 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C. Radhakrishnan; 41 ex, Jaintia hills, 24 km. before Garampani; 9.iii.88, Coll. K.P. Singh.

Diagnostic characters : W. Greyish; pubescence fine, silky and somewhat abundant; node of pedicel slightly inclined to the front.

Length : W. 3.5-4.5 mm.

Distribution : INDIA : (East and West Khasi hills, Jaintia hills), Meghalaya; Assam; throughout India excepting Punjab. Elsewhere : Myanmar; Tennaserim; Malaya; Java.

Remarks : Very fast moving insects.

41. Genus *Dolichoderus* Lund, 1831.

Dolichoderus Lund, 1831, *Ann. Sc. Nat.* **23**:130.

Dolichoderus, Brown, 1973, *In Tropical forest ecosystems in Africa and South America*: 161-185.

Diagnostic characters : Mandibles broad, with 10-12 small teeth; Clypeus convex, anterior margin transverse; antennae 12-jointed; thorax laterally compressed; pronotum convex or flat; thorax emarginate at the mesometanotal suture; pedicel with a single joint.

Key to the species of *Dolichoderus* Lund.

1. Mesonotum longitudinally sulcate above 2
- Mesonotum not longitudinally sulcate above; thorax coarsely punctate . . . . . *sundari*
2. Head, thorax and abdomen with erect hairs 3
- Head, thorax and abdomen without erect hairs, but with abundant silky pubescence . . *fuscus*
3. Head finely punctured, pubescent and opaque; thorax very coarsely rugose . . *bituberculatus*
- Head smooth and shining, not opaque 4
4. Head and thorax reddish yellow; abdomen black . . . . . *taporbanae*
- Head, thorax and abdomen concolourus . . . . . *affinis*

115. *Dolichoderus affinis* Emery

Dolichoderus affinis Emery, 1889, *Ann. Mus. Civ. Stor. Nat. Genova.*, **27**:508.

Dolichoderus (Hypoclinea) affinis, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:181.

Material examined : 68 ex: 3 ex, India, Meghalaya, West Garo hills, Anogiri, 22.iii.75, Coll. S. Biswas; 15 ex, East Khasi hills, Umran, 12.ix.67; Coll. R.K. Varshney; 25 ex, Jaintia hills, Nartiang, 7.v.87, Coll. C. Radhakrishnan; 25 ex, West Garo hills, Selbalgiri, Alt. 2000', 28.iv.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Reddish brown to dark brown, head shining, very finely closely punctate; apical tooth of mandibles acute and slightly curved; eyes placed above the middle of the head; pronotum slightly flat and anteriorly margined; mesonotum raised, somewhat flat, indistinctly medially sulcate; metanotum slightly convex, and sloping from back to front, its apical portion truncate and concave; the whole thorax irregularly but very distinctly punctured wrinkled and sculptured; abdomen smooth and shining.

Length : W. 3.5-4 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills, Jaintia hills), Meghalaya; Assam. Elsewhere : Myanmar; Siam; Tenasserim.

116. ***Dolichoderus bituberculatus*** Mayr (Fig.63)

Dolichoderus bituberculatus Mayr, *Verh. zool.-bot. Ges., Wien.*,**12** (1862), 705.

Dolichoderus (Hypoclinea) bituberculatus, Chapman and Capco, 1951 *Checklist of ants of Asia*, **1** :182.

Dolichoderus bituberculatus, Tiwari *et. al.*,1994, *State Fauna Series* **3**:*Fauna of West Bengal*, part **8**:35.

Material examined: 30 ex: 25 ex, India, Meghalaya, Jaintia hills, Garampani, 12.xii.75, Coll. S.K. Chanda; 5 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrsihnan.

Diagnostic characters : W. Black, head convex in front and on sides; mandibles triangular, masticatory margin broad, the teeth minute; eyes flat; head denesely punctured and opaque; thorax very coarsely cribrately punctured and wrinkled; pronotum more or less flat and margined anteriorly mesonotum longitudinally sulcate, the sides raised into tubercles, more marked in some specimens than others; apical portion of metanotum truncate, inwardly curved and concave, the sides of metanotum flat, smooth, margined above and posteriorly; node of the pedicel and abdomen smooth and shining.

Length : W 3-3.5 mm

Distribution : INDIA : (East Khasi hills, Jaintia hills), Meghalaya; Sikkim; Western India. Elsewhere : Myanmar; Tenasserim; Malaya; Java.

117. ***Dolichoderus fuscus*** Emery

Dolichoderus feae race *fuscus*, Emery, *Ann. Mus. Civ. Stor. Nat. Genova*; **27** (1895), 509.

Dolichoderus (Hypoclinea) feae subsp. Fusca, Chapman and Capco 1951, *Checklist of ants of Asia*, 1:183.

Material examined : 4 ex, India, Meghalaya, East Khasi hills, Pynursla, 17.vii.87, Coll. C. Radhakrishnan.

Diagnostic Characters : W. Head, thorax and abdomen dark fuscous brown; head finely and closely reticulate punctate, subopaque; thorax irregularly punctured and wrinkled, longidtudinally and obliquely striate on the sides.

Length : W. 6.5-7 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar And Tenasserim.

118. ***Dolichoderus sundari*** sp.nov. (Fig.64,65)

Holotype Worker : TL 4.00; HL 0.87; HW 0.87; CI 100; SL 0.68; SI 78; PW 0.58; Th L 1.05.

Head massive, with the mandibles cordate, the sides convex and round; antennae long, reaching back the top of head; clypeus region with short longitudinal striae, anterior clypeal margin not entire, feebly impressed in the middle; mandibles broad, shagreened; masticatory margin with ten to twelve minute teeth, apical two prominent; eyes large, placed about the middle of the head towards the front; pronotum concave; promesonotal suture distinct; mesonotum feebly raised; thorax emarginate at the meso- metanotal suture; basal portion of metanotum flat, apical portion truncate, concave, the concavity smooth and shining; the node of pedicel scale like, inclined forward; abdomen convex, massive; head, abdomen and node of pedicel smooth, polished and shining; thorax coarsely punctate; hairs on body numerous.

Colour : Head, thorax, node of pedicel and abdomen pitch black, the mandibles, antennae and legs brownish yellow, legs a lighter shade.

Paratype Workers : TL 3.24-3.95; HL 0.79-0.87; HW 0.79-0.87; CI 97-100; SL 0.66-0.68; SI 78-86; PW 0.55-0.58; Th L 1.05.

Similar to holotype

Holotype Worker : India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, 28.i.82, Coll. R. Mathew. Paratypes: 9 workers with the same collection data as the holotype.

Dolichoderus sundari comes closer to *sulcaticeps* and is distinguishable from it by the former's smaller size and structure and sculpture of the thorax.

Remarks : The type specimens were collected from within a wild fruit of a creeper in the reserve forest.

119. ***Dolichoderus taprobanae*** (Fred. Smith)

Formica taprobanae Fred.Smith, 1858, *Cat. Hym. Brit. Mus.*,**6** : 13.

Dolichoderus (Hypoclinea) taprobanae, Chapman and Capco 1951, *Checklist of ants of Asia,* 1:185.

Material examined : 9 ex, India Meghalaya, East Khasi hills, Pynursla, 17.vii.81, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Brownish red; abdomen black; head smooth and shining; thorax laterally compressed; pronotum anteriorly margined, convex, mesonotum longitudinally sulcate; meso-metanotal emargination deep, well-marked; apical portion of metanotum truncate, slightly concave.

Length : W. 2.5-3.3 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, throughout India.

120. ***Dolichoderus*** sp.

Material examined : India: Meghalaya: West Garo hills, Tura, On the way to Tura peak (700m.) 9 ww + 1o, 1.v. 1979, Coll. J.K. Jonathan and party.

Distribution : INDIA : (West Garo hills), Meghalaya.

42. Genus ***Tapinoma*** Foerster, 1850.

Tapinoma, Foerest, 1850, *Hym. Stud. i* : p. 43.

Tapinoma foerster, Brown, 1973, *In Tropical forest ecosystems in Africa and South America*, 161-185.

Diagnostic characters : worker. Antennae 12-jointed; clypeus broad anterior margin not incised; eyes large, lateral, placed a little to the front; thoracic sutures distinct; pedicel with the node flat, strongly inclined to the front; abdomen oval, the basal segment gibbous, overhanging the node.

Key to the species of ***Tapinoma*** Foerster

- Antennae long, the scape extending beyond the top of the head . . . . . *melanocephalum*
- Antennae short, the scape not extending beyond the top of the head . . . . . *indicum*

121. ***Tapinoma indicum*** Forel

Tapinoma indicum Forel, 1895, J. Bomb. Nat. Hist. Soc.,**9** : 472

Tapinoma indicum, Chapman and Capco, 1951, *Checklist of the ants of Asia*, 1:193.

Material examined : 35 ex; 15 ex, India Meghalaya, East Khasi hills, Shillong, 24.viii.75, Coll. R. Mathew; 20 ex, Jaintia hills, Nartiang, 7.v.87, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Black; head, thorax and abdomen somewhat smooth, with a few scattered erect hairs; pubescence white; head longer than broad, oval; mandibles triangular, masticatory margin with numerous minute teeth; clypeus convex, anterior margin transverse or slightly arched; thoracic sutures distinct, thorax slightly constricted at the meso-metanotal suture.

Length : W. 1.5-2 mm.

Distribution : INDIA : (East Khasi hills, Jaintia hills), Meghalaya; throughout India.

122. ***Tapinoma melanocephalum*** (Fabricius)

Formica melanocephalum Fabricius, 1793, *Ent. syst.*,**2**:353.

Tapinoma melanocephalum, Mathew, 1983, *Bull. zool. Surv. India*, **5** (1) : 125-127.

Material examined : 16 ex : 6 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.i.83, Coll. C. Radhakrsihnan; 10 ex, East Khasi hills, Shillong, Risa Colony, 8.vii.79, Coll. R. Mathew.

Diagnostic characters : worker. Reddish or brownish yellow all over; pilosity entirely wanting; thorax proportionately much broader in front, posteriorly laterally compressed; thoracic suture distinct.

Length : W. 1.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Western India.

43. Genus: ***Technomyrmex*** Mayr

Technomyrmex Mayr, 1870, *Ann. Mus. Civ. Ges.* **2**:147

123. ***Technomyrmex*** sp.

Material examined : India: Meghalaya: East Garo Hills, Bamandanga, east of Phulbari, 5 ww, 27.x.1988, Coll. K.K. Ray and party.

Distribution : INDIA : (East Garo hills), Meghalaya.

VII SUB-FAMILY FORMICINAE

Formicinae is morphologically the most highly developed of all ants, their habits are diverse and exhibit specialized form of social behaviour. Diet is largely vegetarian and they show great predilection for sugary substances. The species of Oecophylla, Polyrhachis and Camponotus build silk nests on leaves using their larvae as silk-producing shuttles. This subfamily also has making ants and true social parasites. Workers have single jointed pedicel; vestigial sting; and an acidopore, ciliated round the margin.

Key to the genera of Formicinae

1. Antennae 12-jointed 2
- Antennae 11-jointed 3
2. Maxillary palpi 5-jointed . . . . . ***Oecophylla***
- Maxillary palpi 6-jointed 4
3. Metanotum and node of pedicel bispinous or bidentate . . . . . ***Acantholepis***
- Metanotum and node of pedicel without spines or teeth 7
4. Antennae inserted at a perceptible distance from posterior margin of clypeus 5

- Antennae inserted immediately above posterior margin of clypeus, almost touching it 6

5. Thorax and or node of pedicel with spines or teeth . . . . . ***Polyrhachis***

- Thorax and node of pedicel without spines or teeth . . . . . ***Camponotus***

6. Antennal and clypeal hollows confluent, eyes small, ocelli absent . . . . . ***Pseudolasius***

- Antennal and clypeal hollows not confluent . . . . . ***Paratrechina***

7. Mesonotum not constricted nor impressed in front . . . . . ***Anoplolepis***

- Mesonotum constricted or impressed . . . . . ***Plagiolepis***

44. Genus ***Oecophylla*** Fred.Smith, 1860

Oecophylla Smith, 1861, *J. Linn. Soc.* **5**:101.

Oecophylla, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Dimorphic; head slightly broader posteriorly; mandibles long, masticatory margin very broad, apical tooth acute and curved; clypeus strongly convex; antennae 12-jointed; eyes large, ocelli absent; thorax elongate; pronotum narrowed anteriorly into a collar; mesonotum constricted, saddle shaped in side view; metanotum rounded above, gibbous; thoracic sutures distinct, pedicel scarcely nodiform; abdomen short oval.

124. ***Oecophylla smaragdina*** (Fabricius)

Formica smaragdina Fabricius, 1775, *Syst. Ent.*:828, Worker,pl., bigs.

Oecophylla smaragdina, Greenslade, 1971, *J. appl.Ecol.,* **8** : 323-352

Oecophylla smaragdina, Tiwari *et.al.*,1994, *State Fauna Series* **3**:*Fauna of West Bengal*, part **8**:67.

Material examined : 180 ex: 50 ex, India, Meghalaya, Garo hills, Rengsengiri, 13.xi.73, Coll. S. Biswas; 28 ex, Garo hills, Naphok bil, 8 km. east of Songsak, 12.iv.73, Coll. S. Biswas; 11 ex, East Khasi hills, Nongpoh, 6.xii.86, Coll. R. mathew; 8 ex, West Garo hills, Balphakram Sanctuary, 12.xi.87, Coll. V.T. Darlong; 56 ex, East Khasi hills, Lai-lad, Alt. 1000', 12.iii.87, Coll. V.T. Darlong; 56 ex, East Khasi hills, Lai-lad, Alt. 1000',12.iii.87, Coll. V.T. Darlong; 27 ex, Lai-lad, 16.v.89, Coll. Y.P. Singha; 10 ex west Garo hills, Tura, 3.v.75, Coll. J.K. Jonathan and party; 15 ex, Ri-Bhoi, Nagthymme, 2.ix.88, Coll. A.R. Lahiri and party; 14 ex, East Garo hills, Wiliiam Nagar, 11.iii.91, Coll.B.C. Das and party.

Diagnostic characters : worker. Yellowish or orangish red; head, thorax, legs, node of pedicel and abdomen dull, sub-opaque.

Length : W. 9.5-11 mm.

Distribution : INDIA : (East Khasi, West Garo hills, East Garo hills and Ri-Bhoi), Meghalaya; throughout India. Elsewhere : China Myanmar; Sri Lanka; New Britain.

45. Genus ***Pseudolasius*** Emery, 1866

Pseudolasius Emery, 1886, *Ann. Mus. Civ. Gen.* **24**:244

Pseudolasius, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters: worker. Mandibles with 4 teeth; antennae 12- jointed; clypeus convex in middle, anterior margin transverse; clypeal and antennal hollows confluent; eyes small, ocelli absent; head square, deeply emarginate posteriorly pronotum rounded, convex; viewed from above mesonotum circular; metanotum obliquely truncate, the basal portion much shorter than the oblique apical portion; thoracic sutures distinct; node of the pedicel quadrangular, slightly emarginate above, posteriorly fitting into a hollow in the abdomen; abdomen short, broad and convex, somewhat gibbous in front; dimorphic.

125. ***Pseudolasius familiaris*** (Fred.Smith)

Formica familiaris Fred.Smith, 1860, *J. Proc. Linn. Soc.Lond. Zool.* **4** suppl. 68.

Pseudolasius familiaris, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:204.

Material examined : 6 ex, India, Meghalaya, East Khasi hills, Cherra-Shella Road, Alt. 2000', 3.ix.86, Coll. K.P. Singh.

Diagnostic characters : worker. Reddish yellow, abdomen reddish brown; head, thorax and abdomen very minutely but closely reticulate- punctate, and covered copiously with minute piligerous tubercles; pubescence silky and dense on the abdomen.

Length : W. 6-7 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Sikkim. Elsewhere : Java; Myanmar.

46. Genus: ***Myrmecocystus*** Wesmael

Myrmecocystus Wesmael, 1838, *Bull. Acad. Sc. Brux.*, **5**:770.

126. ***Myrmecocystus setipes*** Forel

Myrmecocystus viaticus, race *setipes* Forel, 1894, *Journ. Bombay Nat. Hist. Soc.*, **8** : 401, w.

Myrmecocystus setipes, Tiwari *et al.*, 1994, *State Fauna Series* 3 : *Fauna of West Bengal*, Part **8** : 278.

Material examined : India: Meghalaya: West Garo hills, Darangiri, 14 ww, 30.iv.1979, Coll. J.K. Jonathan and party; West Garo hills, Tura, 5oo, 2.v.1979, Coll. J.K. Jonathan.

Diagnostic characters : worker. TL 10-12mm. Head, thorax, legs and node of pedicel dark red, abdomen black. Head without the mandibles quadrangular; the sides straight; mandibles large, strongly dentate, apical tooth remarkbly long, curved and acute; antennae 12-jointed. Thorax viewed from the side constricted in the middle, saddle-shaped, sutures well-marked. Pedicel one- jointed, node rounded, not much raised; abdomen somewhat short, oval.

Distribution : INDIA : Meghalaya (West Garo Hills),Punjab, West Bengal, Central India. Elsewhere : Parsia.

47. Genus ***Acantholepis*** Mayr, 1861.

Acantholepis Mayr, 1861, *Eur. Form.*,P. 42.

Acantholepis, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : worker. Clypeus broad and high, sharply carinate down the middle; antennae 11-jointed, scape extending beyond the top of the head; eyes moderate, ocelli distinct; thorax constricted at the mesonotum; thoracic sutures distinct; metanotum obtusely dentate on each side; pedicel single jointed, node dentate or spinous; abdomen broadly oval.

Key to the species of ***Acantholepis*** Mayr

1. Scape of antennae remarkably long, extending more than half its length beyond the top of the head. . . . . *frauenfeldi*

- Scape of antennae shorter, extending beyond the top of the head by not more than one third of its length. 2

2. Head, thorax and abdomen abundantly pilose; head highly polished, shining; head and abdomen black . . . . . *capensis*

- Head, thorax and abdomen smooth, without hairs except at the apex of the abdomen . . *simplex*

127. ***Acantholepis capensis*** Mayr

Acantholepis capensis Mayr, 1862, *Verh-zool. Bot. Ges. Wien*, **12**:699.

Acantholepis capensis, Majer, 1976, *J. appl. Ecol.*,**13**:145-155.

Material examined : 1 ex, India, Meghalaya, East Khasi hills, Shillong, 28.vi.75, Coll. R. Mathew.

Diagnostic characters : worker. Black, shining; pilosity abundant; mandibles small, when closed hidden under the clypeus; metanotum finely sculptured; node of pedicel emarginate and bidentate; abdomen oval, rapidly narrowing towards apex.

Length : W. 2.3-3.3 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Central India; Maharashtra; Himalayas. Elsewhere : Sri Lanka; Africa.

128. ***Acantholepis frauenfeldi*** Mayr

Acantholepis frauenfeldi Mayr, 1855, *Verh. zool-bot. Ver. Wien*, **5**:378.

Acantholepis frauenfeldi, Wheeler & Wheeler, 1968, *Ann. Ento- mol. Soc. Amer.* **61** (1) : 205-222.

Acantholepis frauenfeldi; Tiwari *et.al.*,1994, *State Fauna series* 3:*Fauna of West Bengal*, part **8**:69.

Material examined : 1 ex, India, Meghalaya, East Khasi hills, Shillong, Nongthymmai, 12.iii.76, coll. R.S. Giri.

Diagnostic characters : worker. Brownish, abdomen dark brown; head, thorax and abdomen smooth and shining mandibles narrow, curved, with the apical tooth long and acute; clypeus convex, with a faint transverse subapical furrow parallel to its anterior margin; pronotum from above appears almost circular; mesonotum strongly constricted; metanotal teeth thick and broad at base, obtuse; node of pedicel seen from above pentagonal, the upper border slightly emarginate; with a tooth at its lateral angles; abdomen oval.

Length : W. 2.5-3 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; West Bengal; throughout continental India. Elsewhere : Europe; Africa.

129. ***Acantholepis capensis simplex*** Forel

Acantholepis simplex Forel, 1892, *Ann. Soc. Ent. Belge*, **36**:43

Acantholepis capensis subsp. *simplex*, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1**:210.

Acantholepis capensis simplex; Tiwari *et al.*,1994, *State Fauna Series* 3:*Fauna of West Bengal*, part **8**:68 (Syns.)

Material examined : 5 ex: 1 ex, India, Meghalaya, East Khasi hills, Nongpoh, 28.x.83, Coll. R. Mathew; 4 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 31.iii.84, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Black; entirely without pilosity or pubescence; mandibles acutely dentate; scape of antennae extending little beyond the top of the head; node of pedicel slightly emarginate above, lateral angles of the margin above not spinous or dentate.

Length : W. 2 mm.

Distribution : INDIA : East Khasi hills, Meghalaya; Orissa; Northern India. Elsewhere : Arabia; Africa.

48. Genus ***Anoplolepis*** Santschi, 1914

Plagiolepis, Subgen. *Anoplolepis*, Santschi, 1914, *Vox. Alluand and Jeannel, Afr. or Hym :* 123.

Anoplolepis, Brown, 1973, In Tropical forest ecosystems in Africa and South America, 161-185.

Diagnostic characters : o. Antennae 11-jointed; mandibles narrow with 5 teeth, apical tooth long and acute; clypeus large, convex, carinate, anterior margin arched and partially covering the mandibles; mesonotum not constricted.

130. ***Anoplolepis longipes*** (Jerodon)

Formica longipes Jerdon, 1851, *Madras Jour. Lit. Sc.*, **17**:122.

Anoplolepis longipes, Devi & Singh, 1987, *Entomon.*,**12** (4) : 309-313.

Anoplolepis longipes, Tiwari *et al.*,1994, *State Fauna series* 3:*Fauna of West Bengal*, part **8**:69.

Material examined : 24 ex: 2 ex, India, Meghalaya, Jaintia hills, Rotachara, 24.i.75, Coll. A.K. ghosh; 1 ex, East Khasi hills, Shillong, Bishnupur, 24.v.81, Coll. C. Radhakrishnan; 21 ex, East Khasi hills, 4 km. away from Lai-lad on the forest road to Patharkhma, 22.iv.88, Coll. A.K. Karmakar.

Diagnostic characters : worker. Light yellow to orange-yellow, abdomen brown; head, thorax and abdomen very minutely and closely reticulate-punctate, shining; metanotum rounded, convex and gibbous; node of pedicel thick, low rounded above, abdomen oval.

Length: W. 3.5-4.5 mm.

Distribution : INDIA : (East Khasi hills, Jaintia hills), Meghlaya; throughout India. Elsewhere : Myanmar; sri lanka.

49. Genus ***Plagiolepis*** Mayr, 1861

Plagiolepis Mayr, 1861, *Eur. Form.*, p. 42.

Plagiolepis, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* 161-185.

Diagnostic characters : worker. Antennae 11-jointed; clypeus carinate; thorax often saddle shaped at the mesonotum; metanotum unarmed, rounded; node of pedicel inclined inclined infront, not emarginate above; ocelli absent.

131. ***Plagiolepis dichroa*** Forel

Plagiolepiis dichroa Forel, 1902, *Rev. Suisse. Zool.* **10**:235.

Plagiolepis dichroa, Chapman and Capco, 1951, *Checklist of the ants of Asia*, **1**:213.

Plagiolepis dichroa, Tiwari *et.al.*,1994, *State Fauna series* **3**:*Fauna of West Bengal* , part **8**:70

Material examined: 15 ex, India, Meghalaya, East Khasi hills, Old Barapani Road, 14.v.76, Coll. R. Mathew.

Diagnostic characters : worker. Yellowish, head light or dark brown; head thorax and abdomen smooth and shining, head much broader posteriorly and proportionately more narrowed anteriorly; metanotum transversely concave down the middle.

Length : W. 2 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Sikkim; West Bengal.

50. Genus ***Paratrechina*** Motschoulsky 1863

Paratrechina Motschoulsky, 1863, *Bull. Soc. Imp. Nat. Moscou* **36**:13

Paratrechina, Brown, 1973, I*n Tropical forest ecosystems in Africa and South America* 161-185.

Diagnostic characters : worker. Head slightly longer than broad, emarginate posteriorly; eyes large, placed about the middle of the head; antennae 12-jointed; pedicel one jointed.

132. ***Paratrechina longicornis*** Latreille

Formica longicornis Latreille, 1802, *Nat. Hist. Fourmis*, 113.

Paratrechina longicornis, Devi & singh, 1987, *Entomon* **12** (4) : 309-313.

Paratrechina longicornis, Tiwari *et.al.*, 1994, *State Fauna Series* **3**:*Fauna of West Bengal*, part **8**:67

Material Examined : 12 ex: 2 ex, India, Meghalaya, West Khasi hills, Balat, 9.ix.86, Coll. M.R. Rynth; 7 ex, East Khasi hills, Nongkhyllem Reserve Forest, Lai-lad, Alt. 1000 ft., 12.iii.87, Coll. V.T. Darlong; 3 ex, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrishnan.

Diagnostic characters : worker. Dull coppery brown; pilosity abundant all over; eyes large, prominent; mandibles small, with 5 or 6 teeth; clypeus convex, rounded, thoracic sutures distinct, thorax lightly emarginate at the mesonotum; abdomen anteriorly gibbous.

Length : W. 2.5-3 mm.

Distribution : INDIA : (East and West Khasi hills), Meghalaya throughout India.

51. Genus ***Camponotus*** Mayr, 1861

Camponotus Mayr, 1861, *Eur. Form.* p. 35.

Camponotus, Brown, 1973, *In Tropical forest ecosystems in Africa and South America* 161-185.

Disgnostic characters : worker. Antennae 12-jointed; clypeus trapeziform; eyes large; ocelli absent; head may or may not be obliquely and rather sharply truncate anteriorly beyond the clypeus; thorax posteriorly more or less compressed, sutures distinct; pedicel one jointed; abdomen broadly oval; dimorphic.

Key to the spicel of ***Camponotus*** Mayr

1. Head anteriorly obliquely and rather sharply truncate from just beyond the base of the clypeus 2
- Head differently formed 3
2. Head, thorax and abdomen entirely black 4
- Head black and red, with a yellow spot on each side of the base of abdomen . . . . . *cotesii*
3. Thorax viewed in side view, forming a regular continuous arch 5
- Thorax viewed in side view, not forming a regular arch 6
4. Pubscence thin and grey . . . . . *stricta*
- Pubescence dense and yellow . . . . . *pubescens*
5. Head, thorax and abdomen black 7
- Head, thorax and andomen not all black; abdomen with dense silky pubscence; clypeus with a distinct medial lobe produced anteriorly. . . . . *rufoglausus*
6. Metanotum armed with horizontal, laminate spines . . . . . *selene*
- Metanotum unarmed 9
7. Tibiae of legs prismatic 8

- Tibiae of legs compressed, not prismatic; pubescense yellowish, length over 9 mm . . . *paria*

8. Large species, length over 17-21 mm . . . . . *angusticollis*

- Smaller species, length 11-16 mm . . . . . *compressus*

9. Metanotum raised, rounded above and gibbous 10

- Metanotum not raised; its basal portion horizontal, flat; apical portion excavate; node of pedicel thick, globose . . . . . *sericeus*

10. Antero lateral angles of pronotum dentate . . . . . *wasmanni*

- Antero lateral angles of pronotum not dentate 11

11. Thorax posteriorly and node of pedicel coarsely punctured, cribrate . . . . . *holosericeus*

- Thorax posteriorly and node of pedicel finely reticulate- punctate, rugulose . . . . *camelinus*

133. ***Camponotus cotesii*** (Forel)

Colobopsis cotesii Forel, 1893, *Jour. Bomc. Nat. Hist. soc.* **7:** 438.

Camponotus (Colobopsis) cotesii, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1** :223.

Material examined : 4 ex, India, Meghalaya, Jaintia hills, Khanduli, 7.v.87, Coll.C. Radhakrishnan.

Diagnostic characters : worker. Black and shining; the truncated portion of head, including the base of the clypeus, antennae and the front of the mandibles reddish; base of abdomen with two spots; a line along the base of the 2nd abdominal segment; head above coarsely rugose; thorax widely emarginate at the meso- metanotal suture; metanotum rounded, raised, node of pedicel notched above,abdomen massive.

Length : W. 8 mm.

Distribution : INDIA : (Jaintia and Garo hills), Meghalaya.

134. ***Camponotus pubescens*** (Mayr)

Colobopsis pubescens Mayr, 1862, *Verh. zool bot. Gesell. Wien* **12** : 691.

Camponotus (Colobopsis) pubescens, Chapman and capco, 1951, *Checklist of ants of Asia,* **1**:226.

Material examined : 3 ex, India, Meghalaya, West Garo hills, Balphakram National Park, 12.v.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Black; head large, convex, posterior margin of the truncate portion coarsely longitudinally striate; clypeus medially vertically carinate; thorax cylindrical, not sloping or emarginate; pubescence thick, yellowish, hiding the sculpture.

Length : W. 10-11 mm.

Distribution : INDIA : (West Garo hills), Meghalaya. Elsewhere : JAva; Sumatra; Philippines.

135. ***Camponotus strictus*** (Jerdon)

Formica stricta Jerdon, 1851, *Madras. J. Lit. Sc.* **17:** 123.

Camponotus (colobopsis) strictus, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:227

Material examined : 1 ex, India, Meghalaya, West Khasi hills, 7 km. north of Nongkhlaw, 20.ii.87, Coll. A.K. Karmakar.

Diagnostic characters : worker. Black; head massive, little narrower anteriorly than posteriorly; anterior truncated portion of the head depressed, thus the basal portion of clypeus bent downwards and inwards; the cheeks on either side of the depressed portion acutely ridged and coarsely obliquely striate; lower portion of head above truncation longitudinally striate; apical portion of metanotum obliquely truncate.

Length : W. 11-12 mm.

Distribution : INDIA : (West Khasi hills), Meghalaya, Kerala. Elsewhere : Borneo; Myanmar.

136.***Camponotus angusticollis*** (Jerdon)

Formica angusticollis Jerdon, 1851, *Madras. Jour. Lit. Sc.* **17:** 120.

Camponotus (Dinomyrmex) angusticollis, Collingwood, 1970, *KHUMBU. HIMAL, Bd. 3*, Lfg. 3, 371-388.

Componotus angusticollis, Tiwari *et.al.* 1994, *State Fauna Series* **5**:*Fauna of West Bengal*, Part **8**:58.

Material examined : 1 ex, India, Meghalaya, West Garo hills, Selbalgiri, Alt. 2000', 28.iv.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Black; opaque; head subtriangular; occipital angles widely emarginate, prominent; mandibles with 6 teeth; clypeus with a very prominent vertical carino, and a broad median lobe, transverse in front, very shortly produced; thorax elongate, narrow, node of pedicel thick, anteriorly flat at base, above convex, upper margin transverse and notched; posteriorly flat and truncate; abdomen massive.

Length : W. 17-21 mm.

Distribution : INDIA : (West Garo hills), Meghalaya; Assam. Elsewhere : Myanmar.

137. ***Camponotus camelinus*** (Fred.Smith)

Formica Camelina Fred.Smith, 1857, *J. Proc. Linn. Soc. Lond. Zool.* **2** : 57.

Camponotus camelinus, Mathew, 1984, *Bull. zool. Surv. India,* **6** (1-3) : 307- 308.

Material examined : 5 ex: 1 ex, India Meghalaya, east Khasi hills, Nongkhyllem Reserve Forest, Nongpoh, 19.x.82, Coll. R. Mathew; 1 ex, Nongkhyllem Reserve Forest, Lai-lad, 23.i.82, Coll. C. Radhakrishnan; 1 ex, Nongpoh, 28.x.83, Coll. R. Mathew; 1 ex, West Garo hills, Selbalgiri, Alt. 2000', 28.iv.88, Coll. V.T. Darlong; 1 ex, West Garo hills, Balphakram National Park, 12.v.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Black; pilosity abundant, erect; head, thorax and abdomen minutely reticulate-puncate and with minute scattered tubercles; head oval; occiput constricted and narrowed into a neck; mandibles with 7 teeth; clypeus with a median vertical carina, median lobe of clypeus broad and slightly produced, its anterior margin waved; node of pedicel rounded; abdomen massive.

Length : W. 14-15 mm.

Distribution : INDIA : (East Khasi and West Garo hills), Meghalaya; Sikkim. Elsewhere : Myanmar; Tenasserim; Singapore; Sumatra.

138. ***Camponotus compressus*** (Fabricius) (Fig.67)

Formica compressus Fabricius, 1787, *Mant. Insect* **I**:307.

Camponotus compressus, Mathew, 1984, *Bull. zool. Surv. India* **6** (1- 3) : 307-308.

Camponotus compressus, Tiwari *et.al.* 1994, *State Fauna Series* **3** : *Fauna of west Bengal*, part **8**:59.

Material examined : 2 ex: 1 ex, India, West Khasi hills, Balat,9.ix.86, Coll. M.R. Rynth; 1 ex, East Khasi hills, Cherra- Shella Road, Alt. 2000', 3.ix.86, Coll. K.P. Singh. 1 ex, East Garo hills, Dianadubi, 6-13.v.79, Coll. S.B. roy and R.N. Tiwari; 5 ex, Jaintia hills, Narliang, 11.iii.91, Coll. K.K. Roy and Party.

Diagnostic characters : worker. Black, opaque, very finely and densely reticulate-punctate, the pedicel and base of abdomen sometimes shining, mandibles with 7 teeth; clypeus medially vertically carinate, the middle portion anteriorly rectangularly produced into a lobe; eyes placed above the middle of the head, more to the front; thorax anteriorly produced into a collar; node of pedicel transverse, convex infront, flat posteriorly; abdomen broad and massive.

Length : W. 11-16 mm.

Distribution : INDIA : (East, West Khasi hills, East Garo hills and Jaintia hills), Meghalaya; Assam; Southern India. Elsewhere : Borneo; Myanmar; Sri Lanka; Philippines; Russia; Arabia; Africa.

139. ***Camponotus holosericeus*** Emery (Fig.68)

Camponotus holosericeus Emery, 1889, *Ann. Mus. Civ. Stor. Nat. Genova* **27** : 515.

Camponotus (Myrmosaulus) holosericeus, Chapman and capco, 1951, *Checklist of the ants of Asia*, **1**:238.

Material examined : 2 ex, India, Meghalaya, East Khasi hills, Old Barapani Road, 14.v.76, Coll. R. Mathew.

Diagnostic characters : worker. Black; pubescence silky, recumbent, shining and yellowish; erect hairs few; head, thorax and abdomen very finely and closely reticulate-punctate with widely spaced shallow punctures; mandibles with 6 teeth; clypeus medially vertically carinate, median lobe slightly produced; thorax emarginate at the meso-metanotalsuture; the metanotum gibbous; node of pedicel convex on both sides; abdomen broad and short.

Length : W. 15 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar; Tenasserim.

140. ***Camponotus paria*** Emery

Camponotus micans race *paria* Emery, 1889, *Ann. Mus. Civ. Stor. Nat. Genova*, **27**:513.

Camponotus rufoglaucus race *paria,* Forel 1892, *J. Bombay. Nat. Hist. Soc.*, **7**:226-238.

Camponotus paria, Bingham 1903. *Fauna. Brit. India*, Hymenoptera, **2**:364.

Camponotus (Myrmosericus) rufoglaucus subsp. paria; Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:238.

Material examined : 6 ex, India Meghalaya, East Khasi hills, Upper Shillong, 1.viii.76, Cool. R. Mathew.

Diagnostic characters : worker. Black; clypeus produced in the middle, its lateral angles rounded, with a notch or emargination in the middle; pilosity dense, silky and equally spread.

Length : W. 9-10 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Assam; throughout India. Elsewhere : Myanmar; Sri Lanka.

141. ***Camponotus rufoglaucus*** (Jerdon)

Formica rufoglauca Jerdon, 1851, *Madras J. Lit. Sc.* **17**: 124.

Camponotus (Myrmosericus) rufoglaucus, Collingwood, 1970, *KHUMBU HIMAL, Bd. 3,* Lfg. 3, 371-388.

Material examined : 6 ex: 2 ex, India, Meghlaya, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew; 3 ex, East Khasi hills, Shillong, 24.v.81, Coll. C. Radhakrishnan; 1 ex, West Garo hills, Selbalgiri, Alt. 2000', collected the day after burning the jhum, 19.iii.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Head and thorax dred, abdomen brown, covered with close fine, silky pilosity; head widely emarginate, mandibles with 7 teeth; clypeus carinate, its median lobe anteriorly produced; abdomen large and massive.

Length : W. 9-10 mm.

Distribution : INDIA : (East Khasi and West Garo hills), Meghalaya; Assam; Delhi; Central India; Kerala. Elsewhere : Myanmar; Sri Lanka.

142. ***Camponotus selene*** (Emery)

Polyrhachis selene Emery, 1889, *Ann. Mus. Civ. Stor. Nat. Genova* **27** (1889), 516.

Camponotus (Orthonotomyrmex) selene, Chapman and capco, 1951, *Checklist of ants of Asia,* 1:242.

Camponotus selene, Mathew, 1983, *Bull. zool. Surv. India,* **5** (1) : 125-127.

Material examined : 21 ex; 3 ex, India Meghlaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P.Singh; 2 ex, East Khasi hills, Shillong, 16,vii.81, Coll. R. Mathew; 2 ex, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 3 ex, Shillong, Botanical Garden, 31.iii.79, Coll. R. Mathew; 4 ex, East Khasi hills, Mawpar, 16.iv.79, Coll. S.G. Patil; 7 ex, East Khasi hills, Nongpoh, 6 xii.86, coll. R. Mathew; 4 ex, East Khasi hills, Shillong, Polo-Bazar, 7.iv.91, Coll. S.K. Ghosh and party.

Diagnostic characters : worker. Black, opaque; head and thorax finnely abdomen minutely and more finely rugulose; clypeus convex with a medial vertical carina, its anterior margin strongly arched and rounded; anterior lateral angles of pronotum pointed; pronotum much broader than long; mesonotum flat, transversely oval; basal portion of metanotum posteriorly forked into two backwardly pointing laminate, inwardly curved spines or lobes node of pedicel thick, conical, raised in the middle, above transversely grooved; abdomen comparatively massive.

Length : W. 3-4 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar; Tenasserim.

Remarks : Nests are observed in rotten tree trunks. Its is a slow moving species and feigns dead when disturbed.

143. ***Camponotus sericeus*** (Fabricius) (Fig.69)

Formica sericeus Fabricius, 1798, *Suppl. Ent. Syst.* 279.

Camponotus sericeus, Basalingappa et.al. 1986, *Entomon* **11** (2) : 101-106.

Camponotus sericeus, Tiwari *et.al.* 1994, *State Fauna Series* **3**:*Fauna of West Bengal*, Part **8**:61.

Material examined : 5 ex, India, Meghalaya, East Khasi hills, Old Barapani Road, 14.v.76, Coll. R. Mathew.

Diagnostic characters : worker. Black, opaque; head and thorax granulate; mandibles with 5 teeth; clypeus broad, the anterior border broadly emarginate in the middle; thorax broad in front, strongly compressed posteriorly, emarginate at the meso-metanotal suture; basal portion of metanotum horizontal, flat, the sides margined; apical portion of metanotum concave; node of pedicel rounded, knob-like; abdomen globose, with dense recumbent silky golden pubescence.

Length : W. 8-10 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, throughout India. Elsewhere : Myanmar; Sri Lanka; Africa.

144. ***Camponotus wasmanni*** Emery (Fig.70)

Camponotus wasmanni Emery, 1893, *Rev. Suisse Zool.* **1**:224.

Camponotus (Orthonotomyrmex) wasmanni; Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:248.

Material examined : 12 ex: 3 ex, India, Meghalaya, East Khasi hills, Old Barapani Road, 23.iv.77, Coll. R. Mathew; 1 ex, Jaintia hills, Shangpung, 7.xii.75, Coll. S.K. Chanda; 4 ex, Old Barapani, 30 xii.81, Coll. C. Radhakrsihnan; 1 ex, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew; 3 ex, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 19.v.82, Coll. C. Radhakrsihnan.

Diagnostic characters : worker. Black, thickly covered with erect hoary white pubescence; mandibles bright castaneous red; head thorax and abdomen closely finely reticulate-punctate; head broadly triangular; clypeus with a prominent vertical carina and a very shortly produced median lobe; thorax short and dbroad, lateral angles of pronotum dentate; thoracic sutures distinct; narrow emargination at the meso-metanotal suture; node of pedicel knob-like; abdomen broadly oval.

Length : W. 11-13 mm.

Distribution : INDIA : (East,Khasi and Jaintia hills), Meghalaya; throughout India; Sikkim.

52. Genus ***Polyrhachis*** Fred.Smith, 1858.

Polyrhachis Fred.Smith, 1858, *J. Proc. Linn. Soc. Lond. Zool.*,**2**:58.

1701 ZSI/2000—24B

Polyrhachis, Brown, *In Tropical forest ecosystems in Africa and South America* : 161-185.

Diagnostic characters : o. Head more or less orbicular; thorax and or pedicel armed with spines or teeth.

Key to the species of ***Polyrhachis***

1. Thorax wholly unarmed, pedicel with 4 subequal spines or teeth . . . . . *rastellata*

- Thorax armed with spines or teeth 2

2. Thorax more or less rounded above, the sides not margined along their whole length 3

- Thorax more or less flat above, the sides margined along their whole length 12

3. Pronotum with a short tooth on each side; mesonotum and metanotum unarmed . . *laevissima*

- Pronotum with short tooth or spine on each side; metanotum with a spine on each side 4

4. Pronotum with a short tooth . . . . . *ceylonensis*

- Pronotum with a spine on each side 5

5. Pubescence soft, erect and abundant . . . . . *furcata*

- Pubescence short, silky and recumbent, or sparce and erect, or entirely absent 6

6. Basal portion of metanotum distinctly margined laterally 7

- Basal portion of metanotum not margined laterally 8

7. Pro-and metanotal spines subequal . . . . . *abdominalis*

- Metanotal spines nearly twice the length of pronotal spines . . . . . *mutata*

8 Pubescence spares, almost entirely wanting . . . . . *armata*

- Pubescence dense, silky and recumbent 9

9. Abdomen red . . . . . *bicolor*

- Abdomen black 10

10. Pubescence silvery . . . . . *tibialis*

- Pubescence bronzy yellow or golden 11

11. Two small teeth between spines of node of pedicel . . . . . *dives*

- Three small teeth between spines of node of pedicel . . . . . *affinis*

12. Pronotum with a short spine or tooth . . . . . *punctillata*

- Pronotum with a long spine 13

13. Node of pedicel armed with 4 short subequal spines . . . . . *convexa*

- Node of pedicel with 2 long spines on upper angles, and two short lateral spines or teeth on sides. 14

14. Lateral spines or teeth truncate at apex 15

- Lateral spines or teeth pointed at apex 16

15. Pubescence very dense . . . . . *proxima*

- Pubescence spares . . . . . : *intermedia*

16. Pubescence absent or very sparse . . . . . *striata*

- Pubescence fairly present 17

17. Pubescence moderately dense . . . . . *illaudata*

- Pubescence very dense . . . . . *mayri*

145. ***Polyrhachis abdominalis*** Fred.Smith

Polyrhachis abdominalis Fred.Smith, 1858, *Cat. Hym. Birt. Mus.* **6**:63.

Polyrhachis (Myrmhopla) abdominalis, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1**:283.

Material examined : 2 ex: 1 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Lai-lad, 23.i.82, Coll. C. Radhakrishnan; 1 ex, West Khasi hills, 33 km. from Nongstoin on Syrkon Road, Alt. 2400', 8.iv.87, Coll. J.R.B. Alfred.

Diagnostic characters : worker. Head, thorax, legs and node of pedicel black, abdomen fuscous red; head, thorax and abdomen finely granulate; thorax elongate, metanotum flat, infront of the spines and between them slightly concave; pronotal spines slender, pointing forwards; metanotal spines broad and flat at base; modal spines wide spread; abdomen globose.

Length : W. 8-9 mm.

Distribution : INDIA : (East and West Khasi hills), Meghalaya. Elsewhere : Myanmar; Sumatra; Tenasserim.

146. ***Polyrhachis affinis*** Smith

Polyrhachis affinis Smith, 1858, *Cat. Hym. Brit. Mus.*,**6**:63.

Polyrhachis (Myrmhopla) affinis, Chapman and Capco, 1951, *CheckList of Ants of Asia*, **1** :284.

Material examined : India : Meghalaya : East Khasi hills, Cherrapunjee (1300m.), 1o, 25.iv.1979, Coll. J.K. Jonathan and party; Jaintia Hills, Garampani, on the bank of Kapil river, 9oo, 4.x.1988, Coll. V.D. Srivastava and party.

Diagnostic characters : worker. Black, with dense, bronzy, golden recumbent pubescence. Head short and broad, cheeks convex; Clypeus medially vertically carinate. Thorax convex, pronotal spines pointing forward, outward; metanotal spines erect, divergent. Node of pedicel high, flat and truncate in front with three short obtuse teeth between two laterally placed spines. Abdomen short and broad.

Length : W. 4.5 mm.

Distribution : INDIA : Meghalaya (East Khasi Hills, Jaintia Hills). Elsewhere : Burma.

147. ***Polyehachis armata*** (Le Guillou)(Fig.71)

Formica armata Le Guillou, 1841, *Ann. Soc. Ent. France,* **10**:313.

Polyrhachis (Myrmhopla) armata, Chapman and Capco, 1951, *Checklist of ants of Asia* 1:285.

Material examined : 18 ex: 5 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, Umtasor, 19.v.82, Coll. C. Radhakrishnan, 1 ex, East Khasi hills, Nongkhyllem Reserve Forest, Nongpoh, 19.x.82, Coll. R. Mathew; 3 ex, Nongpoh, 28.x.83, Coll. R. Mathew; 1 ex, Nongpoh, 25.iv.80, Coll. C. Radhakrishnan; 5 ex, Lai-lad, Alt. 1000 ft., 12.iii.87, Coll. V.T. Darlong; 2 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., 28.iv.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Black; head, thorax and node of pedicel coarsely punctured; abdomen, granulated opaque; head narrowed posteriorly thoracic and pedicel spines stout, subequal; node of pedicel anterio- laterally with a vertical tooth, posteriorly with widespread, curved spines; globose.

Length : W. 9-11 mm.

Distribution : INDIA : (East and West Khasi hills, West Garo hills), Meghalaya; Assam. Elsewhere : Myanmar; Borne; Jana; Philippines; Tenasserim.

148. ***Polyrhachis bicolor*** Fred.Smith (Fig.72)

Polyrhachis bicolor Fred.Smith, 1858, *Cat. Hym. Brit. Mus.,* **6**:65.

Polyrhachis (Myrmhopla) bicolor, Chapman and capco, 1951, *Checklist of ants of Asia*, **1**:286.

Material examined : 2 ex, India, Meghalaya, East Khasi hills, Kyrdem Kulai, 25.ix.81, Coll. J.P. Sati.

Diagnostic characters : W. Head, thorax and node of pedicel black, antennae, mandibles, legs and abdomen reddish; pubescence long and dense, hiding the sculpture; thoracic spines short, slender and acute; node of pedicel, at its lateral angles, with slender erect spines.

Length : W. 5-6 mm.

Distribution : INDIA : (East Khasi hills,) Meghalaya; West Bengal; Elsewhere : Myanmar; Philippines.

149. ***Polyrhachis ceylonensis*** Emery

Polyrhachis hippomanes race *ceylonensis* Emery, (in Forel, 1893) *Jour. Bombay N. Hist. Soc.*, **8**:22.

Polyrhachis hippomanes sub.sp. *ceylonensis,* Mathew, 1984, *Bull. zool. Surv. India,* **6** (1-3) : 307-308.

Material examined : 12 ex: 5 ex, India, Meghalaya, East Khasi hills, Shillong, Golflinks, 23.v.79, Coll. K.K. Deb; 7 ex, Shillong, Botanical garden, 31.iii.79, Coll. R. Mathew.

Diagnostic characters : worker. Black; the flagellum of antennae, the femorae, tibiae and tarsi of the legs reddish yellow; the mandibles and scape of the antennae fuscous red; head and thorax finely, abdomen minutely, reticulate punctate; pronotum with a short tooth pointing outwards; metanotum with two short erect spines at the posterior lateral angles; node of pedicel with two wide spreading spines.

Length : W. 5-6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Sri lanka.

150. ***Polyrhachis convexa*** Roger

Polyrrhachis convexa Roger, 1863, *Berl. ent. Zeitschr.* **7**:153.

Polyrhachis (Myrma) Convexa, Chapman and Capco, 1951, *Checklist of ants of Asia*, **1**:270.

Material examined : 3 ex, India Meghalaya, East Khasi hills, Mawpat, 17.iv.76, Coll. S.G. Patil.

Diagnostic characters : worker. Black; very finely rugulose; pubescence recumbent, glistening grey; thorax in lateral view, strongly arched, pronotal spines acute; mesonotum unarmed; basal portion of metanotum with two short erect points at its posterior lateral angles, a slight carina between them; apical portion of metanotum deeply concave; node of pedicel biconvex, armed with four short subequal spines spaced equidistantly; abdomen short, globose.

Length : W. 5.5-6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Sri Lanka.

151. ***Polyrhachis dives*** Fred.Smith (Fig.73)

Polyrhachis dives Fred.Smith, 1858, *J. Proc. Linn. Soc. Lond. Zool.* **2** : 64.

Polyrhachis dives, Hung et.al. 1972, *Ann. Entomol. Soc. Amer.* **65** (5) : 1023.

Material examined : 373 ex: 23 ex, India, Meghalaya, East Khasi hills, Old Barapani Road, 14.v.76, Coll. R. Mathew; 5 ex, East Khasi hills, Mawiong, 7.xii.67, Coll. B.K. Tikader; 7 ex, East Khasi hills, Umsning, 26.ii.70, Coll. G.M. Yazdanil 5 ex, Old Barapani Road, 23.iv.77, Coll. R. Mathew; 25 ex, Garo hills, Remgiri, 25.ix.73, Coll. S. Biswas; 11 ex, East Khasi hills, cherrapunjee, 17.v.77, Coll. H. Khajuria; 1 ex, West Khasi hills, Nongkhlaw, 1.xii.77, Coll. K.R. Rao; 81 ex, West Khasi hills, Nongstoin, 27.ix.77, K.R. Rao; 5 ex, Jaintia hills, Shangpung, 6.xii.75, Coll. S.K. Chanda; 2 ex, West Garo hills, Tura, May 78, Coll. M. Kamal; 6 ex, East Khasi hills, Umran, 9.vii.81, Coll. R. Mathew; 2 ex, Garo hills, Rongrengiri, 13.xii.78, Coll. K.P. Singh; 1 ex, West Khasi hills, Sonapahar, 30.x.86, Coll. C. Radhakrishnan; 20 ex, West Khasi hills, Kyllang Rock, 19.ix.86, Coll. C. Radhakrishnan; 35 ex, West Khasi hills, 7 km. North east of Nongstoin, 7.i.87, Coll. A.K. Karmakar; 64 ex, West Khasi hills, 25 km. South west of Nongstoin on Syrkon Road, 29.i.87, Coll. K.P. Singh; 69 ex, West Khasi hills, 2 km. north of Nongkhlaw, 20 ii. 87, Coll. A.K. Karmakar; 4 ex, Jaintia hills, 27 km. from Jowai, near Mynso village, 5.i.88, Coll. A.K. Karmakar; 2 ex, West Garo hills, Selbalgiri, Alt. 2000', 19.iii.88, Coll. V.T. Darlong; 5 ex, West Garo hills, Balphakram National Park, 12.v.88, Coll. V.T. Darlong. 8 ex. East Garo hills, Darugiri, 14-20.v.79, Coll. S.B. Roy & R.N. Tiwari; 6 ex, East Garo hills, William Nagar, 9.iii.91, Coll. B.C. Das and party.

Diagnostic characters : worker. Black; pubescence golden yellow, dense and recumbent; spares on the head, dense on thorax and abdomen hiding the sculpture; pronotal spines pointing forward, outward and slightly bent downward; metanotal spines erect, divergent, their apices slightly bent outward; node of pedicel laterally with two wide spreading spines and with two median, short, obtuse teeth.

Length : W. 6-7 mm.

Distribution : INDIA : (East and West Khasi hills, East and West Garo hills, Jaintia hills), Meghalaya. Elsewhere : China; Java; Indo-china; Japan; New Guinea; Sumatra; Philippines; Formosa; Borneo; Malay.

152. ***Polyrhachis furcata*** Fred.Smith

Polyrhachis furcata Fred.Smith,1858, *Cat. Hym. Brit. Mus.,* **6**:64.

Polyrhachis (Myrmhopla) furcata, Chapman and capco, 1951, *Checklist of ants of Asia,* **1**:290.

Material examined : 10 ex, 4 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Lasi-lad, 23.i.82, Coll. C. Radhakrishnan; 1 ex, Nongkhyllem Reserve Forest, Umtasor,

19.v.82, Coll. C. Radhakrishnan; 3 ex, Lai-lad, 12.iii.87, Coll. V.T. Darlong; 2 ex, Lai-lad, 27.v.87, Coll. A.K. Karmakar.

Diagnostic characters : worker. Black, apical half of the flagellum of the antennae, legs and abdomen castaneous, head and abdomen polished and shining, thorax and node of pedicel coarsely punctured; pronotal spines pointing forward and outward and curved slightly downward; metanotal spines longer than the pronotal spines, erect and slightly curved backwards; node of pedicel with two long spines, their apical half curved backwards, downward and slightly outward.

Length : W. 5-6 mm.

Distribution : INDIA : (East Khasi hills), Maghalaya, Assam. Elsewhere : Borneo; Myanmar; Tenasserim.

153. ***Polyrhachis illaudata*** Walker (Fig.74)

Polyrhachis illaudata Walker, 1859, *Ann. Mag. Nat. Hist.,(3)* **4**: 373.

Polyrhachis illaudata, Mathew, 1984, *Bull. zol. Surv. India* **6** (1-3) : 307.

Material examined : 13 ex, 2 ex, India, Meghalaya, East Khasi hills, Umsning, 23.vii.63, Coll. S.N. Prasad; 4 ex, East Khasi hills, Old Barapani Road, 30.xii.81, Coll. C. Radhakrishnan; 3 ex, East Khasi hills, Shillong, Laban, 14.xi.85, Coll. B. Rani; 4 ex, East Khasi hills, Umran, 9.vii.89, Coll. R. Mathew.

Diagnostic characters : worker. Black and stout; covered with dense, golden, recumbent pubescence; erect hairs abundant; thorax short, strongly arched, broader anteriorly; pro-meso and meso-metanotal sutures distinct; pronotal spines broad at base, pointing forward and outward; a sharp transverse carina, with its lateral points subdentate separates the basal portion of metanotum from the oblique concave apex; node of pedicel biconvex, with a pair of spines diverging outwards on its upper lateral angles and a pair of short, mucronate teeth on tis sides; abdomen massive; pilosity abundant, the teeth on the lateral sides of the node broader at base.

Length : W. 9.5-10.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya, Karnataka, kerala; Sikkim; west Bengal. Elsewhere : Myanmar; Sri Lanka; Tenasserim; Java; Sumatra; Borneo; China; Philippines.

154. ***Polyrhachis intermedia*** Forel

Polyrhachis mayri race *intermedia* Forel, 1886, *J. Asiat. Soc. Benal,* **55** : 242.

Polyrhachis (Myrma) mayri sub.sp intermedia; Chapman and 1951, Checklist of ants of Asia, 1:272.

Material examined : 2 ex: 1 ex, India Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.xii.82, Coll. K.P. Singh; 1 ex, East Khasi hills, Kyrdemkulai, 25.ix. 81, Coll. J.P. Sati.

Diagnostic characters : worker. Black and stout; thorax short, narrowed posteriorly; pronotal spines broader at base, pointing forwards, outwards, and downward; metanotal carina not prominent, basal portion of metanotum laterally dentate; pubescence sparse, not hiding the sculpture, node of pedicel biconvex; upper lateral angles with two longspines pointing backward, outward and downward, laterally with two short curved pointed spines, a very minute spine in the middle of the upper margin of the node.

Length : W. 8-9 mm.

Distribution : East Khasi hills, Meghalaya; Assam. Elsewhere : Myanmar.

155. ***Polyrhachis laevissima*** Fred.Smith (Fig.75)

Polyrhachis laevissima Fred.Smith, 1858, *Cat. Hym. Brit. Mus.*,**6**:64.

Polyrhachis (Cyrtomyrma) laevissima, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1**:264.

Polyrhachis laevissima, Tiwari *et.al.*,1994, *State Fauna Series* 3:*Fauna of West Bengal,* part **8**:62 (syns.).

Material examined : 14 ex: 3 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. singh; 2 ex, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 3 ex, West Garo hills, Tura, May, 78, Coll. M. Kamal; 3 ex, East Khasi hills, Shillong, Bishnupur, 25.iv.81, Coll. C. Radhakrishnan; 3 ex, West Khasi hills, Ranikor, 9.ii.87, Coll. V.T. Darlong; 6 ex, East Garo hills, Darugiri, 17.v.79, Coll. S.B. Roy and R.N. Tiwari.

Diagnostic characters : worker. Black, polished and shining, legs red, thorax in lateral view strongly arched and gibbous; lateral angles of pronotum with a short tooth; pro-mesonotal suture distinct; meso-metanotal suture indistinct; node of pedicel biconvex, upper margin emarginate in the middle, lateral angles pointed.

Length : W. 6-7 mm.

Distribution : INDIA : (East and West Khasi hills, East Garo hills and West Garo hills), Meghalaya; Assam; Orissa; west Bengal. Elsewhere : Java; Borneo; Siam; Singapore; Myanmar; Tenasserim.

156. ***Polyrhachis mayri*** Roger

Polyrhachis mayri Roger, 1863, *Verz. Formicid.* :7, M.

Polyrhachis mayri, Tiwari *et al.* 1994, *State Fauna Series* **3** : *Fauna of West Bengal*, Part **8** : 276 (Syns.).

Material examined : India : Meghalaya : East Garo Hills, Darugiri, 2oo, 14-20.v.1979, Coll. S.B Roy and party.

Diagnostic characters : worker. Black, with dense golden recumbent pubescence. Head from in front very broadly oval, almost circular; clypeus convex, anterior margin arched. Thorax strongly arched, wide anteriorly, narrowing posteriorly rapidly; promeso and meso-metanotal sutures distinct, pronotal spines broad at base, slender and acute at apex, pointing almost borizontally forwards and outwards. Node of pedicel broad, cuneiform biconvex, two spines at upper lateral angles and below their bases on each side of the node is a short laterally pointed acute tooth or spine. Abdomen very massive, broadly oval.

Length : W. 9.5-10.5 mm.; M. 11-12 mm.

Distribution : INDIA : Meghalaya (East Garo hills), West Bengal. Elsewhere : Borneo, Burma, China, Java, Philippines, Sri Lanka, Sumatra.

157. ***Polyrhachis mutata*** Fred.Smith (Fig.76)

Polyrhachis mutata Fred. Smith, 1858, *Cat. Hym. Brit. Mus.*, **6**:64.

Polyrhachis (Myrmhopla) mutata, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1**:293.

Material examined : 6 ex; 2 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, East Khasi hills, Nongkhyllem Reserve forest, Lai-lad, 23.i.82, Coll. C. Radhakrishnan; 1 ex, Nongkhyllem Reserve forest, Nongpoh, 19.x.82, Coll. R. Mathew; 2 ex, Lai-lad, 27.v.87, Coll. A.K. Karmakar.

Diagnostic characters : worker. Black, shining; head and thorax minutely rugulose-granulate and opaque, abdomen more finely so; mandibles striate armed with five teeth; pronotal spines pointing forward, outward and slightly downward; metanotal spines broader at base, much larger than the pronotal spines; metanotum margined laterally and concave; node of pedicel with two wide spread spines which are almost the length of the pronotal spines.

Length : W. 7-8 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya. Elsewhere : Myanmar; Sumatra; Tenasserim.

158. ***Polyrhachis proxima*** Roger (Fig.77)

Polyrhachis proxima Roger, 1863, *Berl. ent. Zeit,* **7**:155.

Polyrhachis (Myrma) proxima, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1**:274.

Material examined : 4 ex: 2 ex, India, Meghalaya, East Khasi hills, Old Barapani Road, 14.v.76, Coll. R. Mathew; 1 ex, West Garo hills, Songsak, 17.xi.73, Coll. S. Biswas; 1 ex, West Garo hills, Selbalgiri, Alt. 2000 ft., (collected the day after burning of the jhum), 19.iii.88, Coll. V.T. Darlong.

Diagnostic characters : worker. Black, covered with dense golden shining pubescence; thorax strongly arched; lateral nodal spines bimucronate; abdomen massive, broadly oval.

Length : W. 8-9 mm.

Distribution : INDIA : (East Khasi hills, West Garo hills), Meghalaya. Elsewhere : Java; China; Singapore; Myanmar; Sri Lanka; Sumatra.

159. ***Polyrhachis punctillata*** Roger (Fig.78)

Polyrhachis punctillata Roger, 1863, *Berl, ent. Zeitschr.*, 7:152.

Polyrhachis (myrma) punctillata Roger, Chapman and Capco, 1951, *Checklist of ants of Asia*, 1:275.

Material examined : 2 ex, India Meghalaya, East Khasi hills, Old Barapani Road, 23.iv.77, Coll. R. Mathew.

Diagnostic characters : worker. Black; minutely rugulose; pubescence, thin, fine and silky; thorax convex, narrowed posteriorly; laterally incised at the pro-meso and meso-metanotal sutures; anterior lateral angles of pronotum with a tooth on either side; basal portion of metanotum trapezoidal, the posterior lateral angles with a very short erect tooth, the bases jointed by a slight carina; apical portion of metanotum concave; node of pedicel biconvex, laterally with two small spines, upper margin emarginate.

Length : W. 5-6 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Karnataka. Elsewhere: Java; Sri Lanka; Myanmar.

160. ***Polyrhachis rastellata*** Latreille (Fig.79)

Polyrhachis rastellata Latreille, 1802, *Hist. Nat. Fourm.*:130.

Polyrhachis (Cyrtomyrma) rastellata Latreiille, Chapman and Capco, 1951, *Checklist of ants of Asia*, 1:265.

Material examined : 12 ex: 2 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Signh; 7 ex, Umtasor, 19.v.82, Coll. C. Radhakrishnan; 1 ex, Nongkhyllem Reserve Forest, Nongpoh, 19.x.82, Coll. R. Mathew; 1 ex, Umtasor, 31.iii.84, Coll. C. Radhakrishnan; 1 ex, Umtasor, 19.i.83, Coll. C. Radhakrishnan; 3 ex, East Khasi hills, Cherrapunjee, 15.ix.88, Coll. A.R. Lahiri and party.

Diagnostic characters : worker. Black, the coxae, femorae and tibiae of the legs red; head, thorax and abdomen smooth, polished and shining; thorax in lateral view strongly arched and gibbous anteriorly; pro-mesonotal sutures distinct; meso-metanotal sutures obsolete; node of pedicel armed with four subequal acute teeth or spines; the median two close together and vertical.

Length : W. 5-6.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Karnataka; Maharashtra. Elsewhere : Myanmar; Siam; Sumatra; Borneo; Tenasserim.

161. ***Polyrhachis striata*** Mayr

Polyrhachis striata Mayr, 1862, *Verh. zool.-bot.Ges. Wien,* **12**:686.

Polyrhachis (Myrma) striata Mayr, Chapman and Capco, 1951, *Chacklist of ants of Asia,* 1:278.

Material examined : 2 ex; 1 ex, India, Meghalaya, East Khasi hills, Nongkhyllem Reserve Forest, Umtasor, 24.ix.82, Coll. K.P. Singh; 1 ex, East Khasi hills, Kyrdemmkulai, 25.ix. 81, Coll. J.P. Sati.

Diagnostic characters : worker. Black; head, thorax and node of pedicel longitudinally striate; abdomen very finely punctured, rugulose; pronotal spines long, broad at base, pointing forward, outward and slightly curved downwards; basal portion of metanotum transversely submargined; apical portion concave, transversely striate; node of pedicel biconvex, armed on its upper lateral angles with two stout erect, slightly divergent spines as long as the pronotal spines; and on the sides beneath the base of the above with a short, acute, laterally pointed tooth; abdomen massive.

Length : W. 9.5-10 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Assam;Sikkim. Elsewhere :Borneo; China; Indo-china; Java; Sumatra; Myanmar.

162. ***Polyrhachis tibialis*** Fred.Smith (Fig.80)

Polyrhachis tibialis Fred.Smith, 1858, *Cat. Hym. Brit. Mus.,* **6**:63.

Polyrhachis (Myrmhopla) tibialis Fr.Smith, Chapman and Capco, 1951, *Checklist of ants of Asia,* **1**:298.

Polyrhachis tibialis, Tiwari *et.al.*,1994, *State Fauna Series* **3**:*Fauna of West Bengal,* Part **8**:63 (Syns.).

Material examined : 17 ex; 12 ex, India, Meghalaya, East Khasi hills, Umran, 14.iii.72, Coll. S. Biswas; 12 ex, India, Meghalaya, East Khasi hills, Sumer, 17.iii.77, Coll. S. Biswas; 1 ex, East Khasi hills, Nongpoh, 28.i.82, Coll. C. Radhakrishnan; 2 ex, East Khasi hills, Lai-lad, 1 km. from Tasku

village, 27.v.87, Coll. A.K. Karmakar; 1 ex,, East Khasi hills, Shillong, 29.iii.59, Coll. A.P. Kapur and party.

Diagnostic characters : worker. Black; legs castaneous red; pubescence fine, dense, silky, silvery and hiding the sculpture; thorax convex, pronotal spines short, acute, pointing forwards; metanotal spines straight, pointing backwards, a somewhat distinct ridge between them across the metanotum; node of pedicel biconvex, with two short teeth on its middle margin, laterally with two long wide spreading spines curved to the shape of the abdomen.

Length : W. 4-5.5 mm.

Distribution : INDIA : (East Khasi hills), Meghalaya; Karnataka; West Bengal. Elsewhere Myanmar; Tenasserim.

163. ***Polyrhachis*** sp.

Material examined : India : Meghalaya : East Garo Hills, Darugiri, 2-w, 20.v.1979, Coll. S.B. Roy and party. East Khasi Hills, Shillong, Polo Bazar, 1 w, 7.iv.1991, Coll. S.K. Ghosh and party.

Distribution : INDIA : East Garo hills and East Khasi hills.

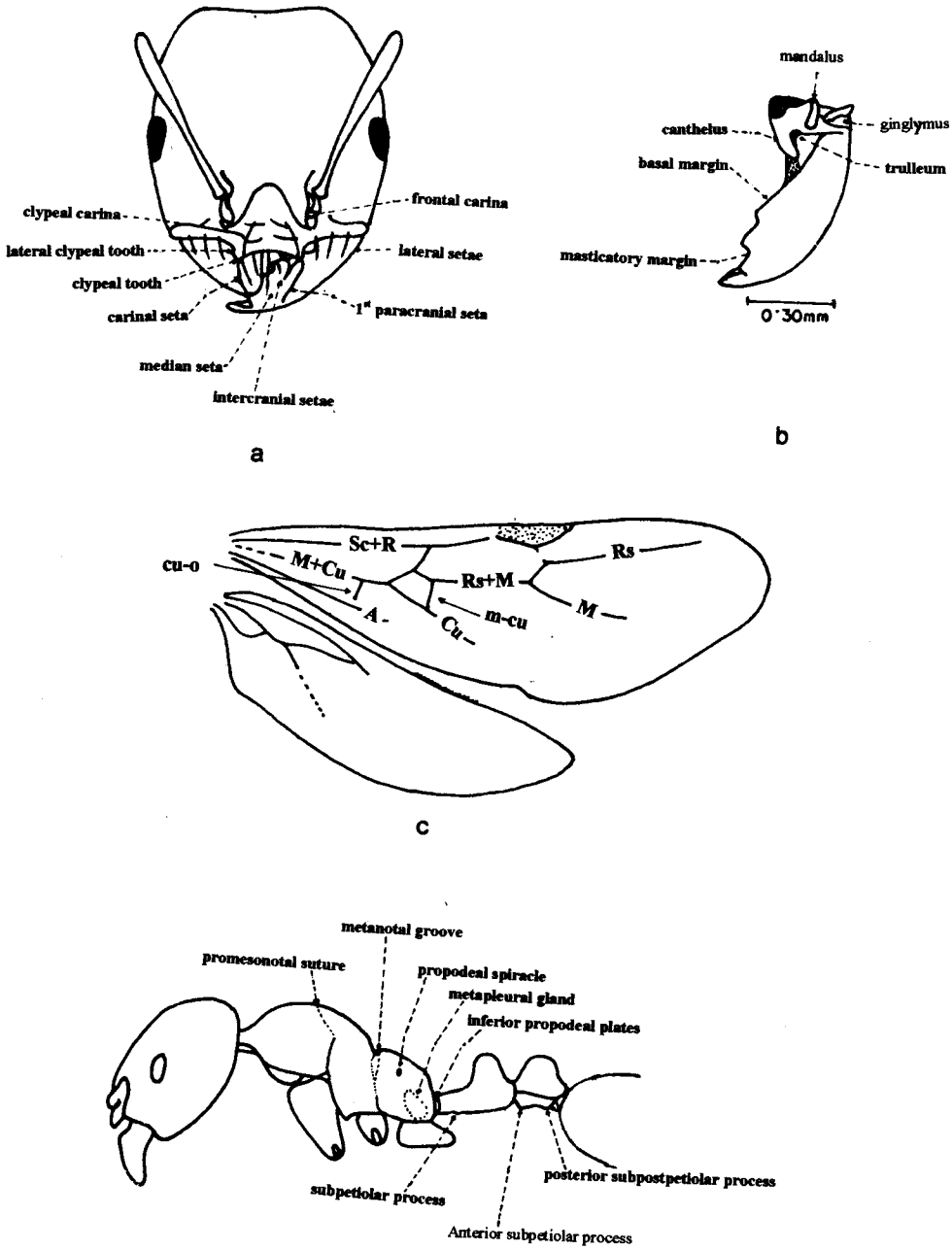


Figure 1. a - Head of a typical ant (*Solenopsis* sp worker) showing various parts; b - Mandible of *Solenopsis* sp worker; c- Wing venation of fore and hind wings of *Solenopsis* sp female; d - body parts of a typical ant (*Solenopsis* sp worker).

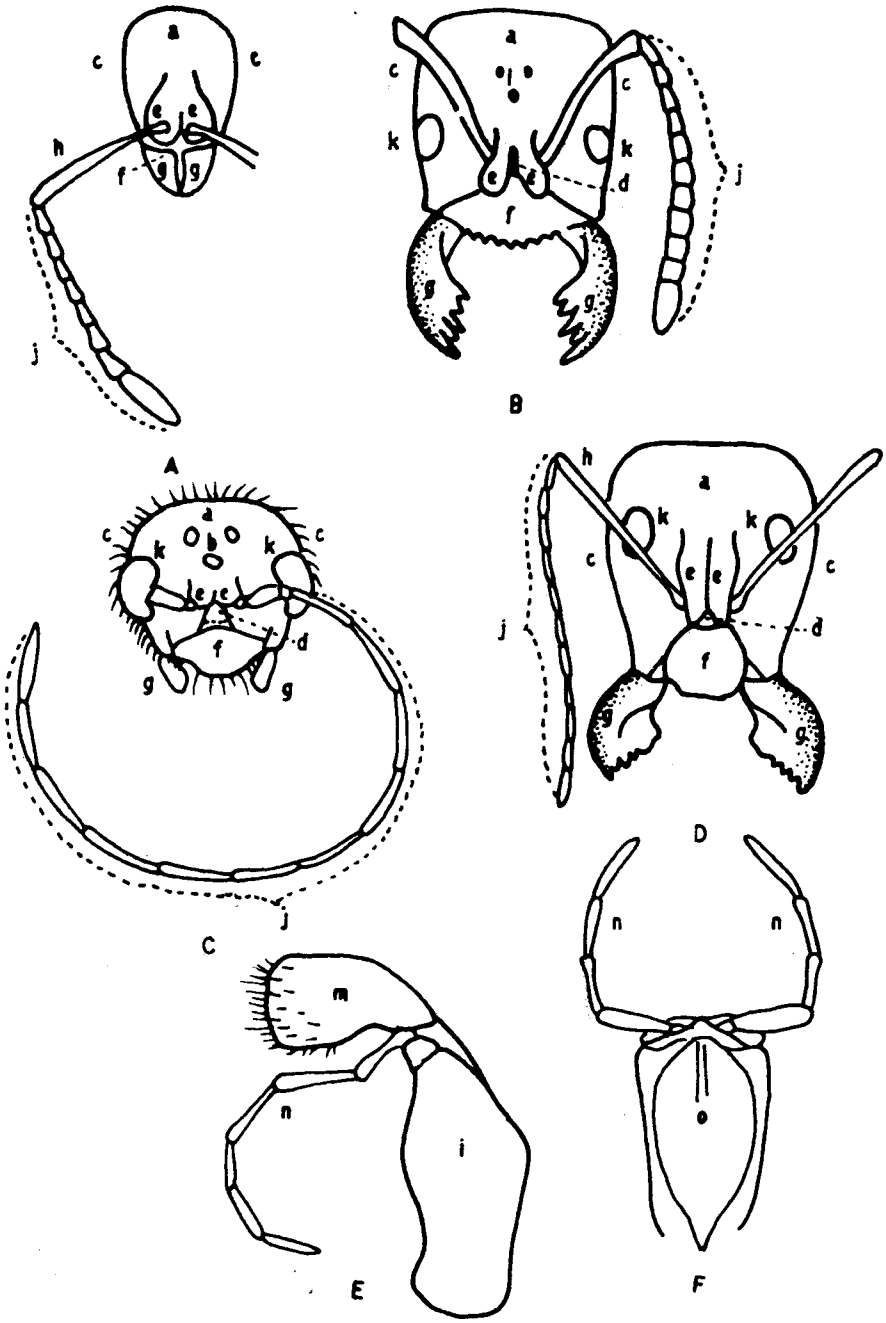


Figure 2. A - Head of Dorylinae worker; B - Head of a Ponerinae female; C - Head of a Ponerinae male; D - Head of a Camponotinae worker; E - Mouth parts (Maxilla) of Camponotinae; F - Mouth parts (Labium) of Camponotinae. a, vertex; b, ocelli; c, sides of head; d, frontal area; e, antennal carinae; f, clypeus; g, mandible; h, scape; j, flagellum; k, compound eye; l, stipes; m, galea; n, palpus (palpi); o, ligula.

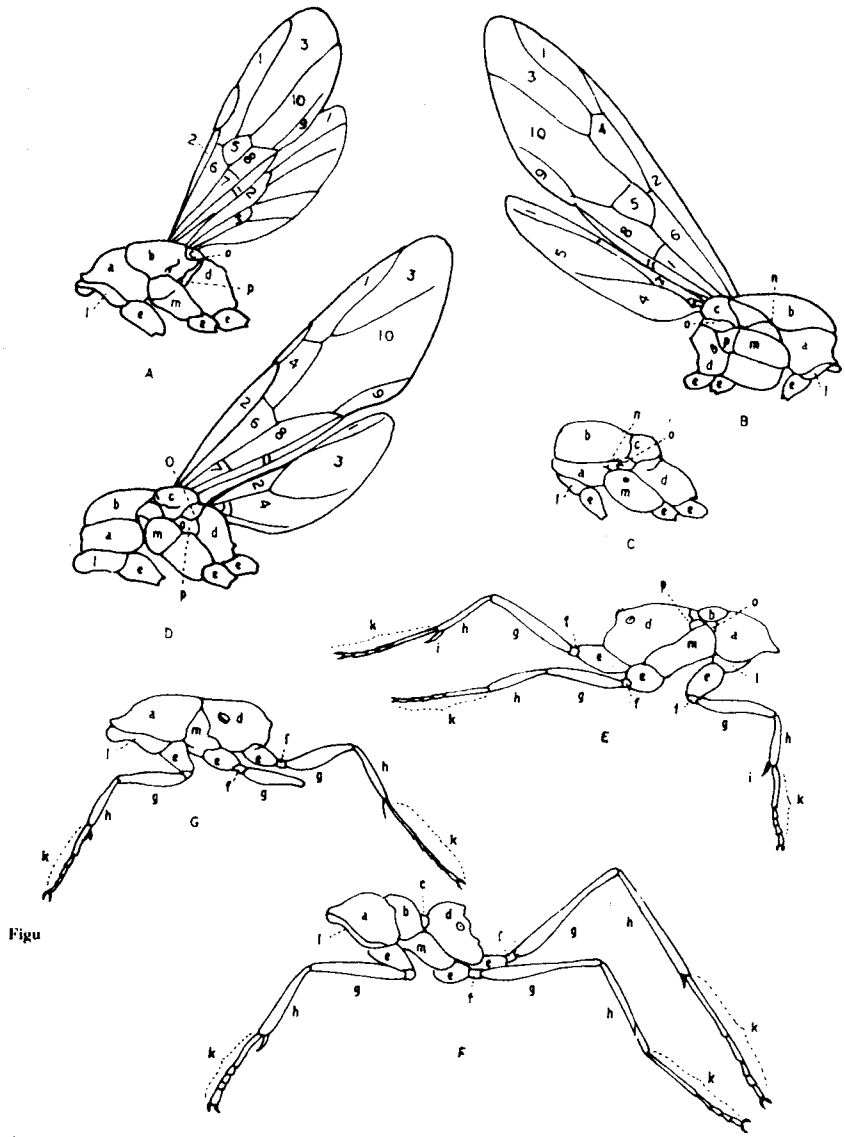


Figure 3. A - Thorax and wings of Ponerinae female; B - Thorax and wings of Myrmecinae femlae; C - Thorax of Ponerinae male; D - Thorax and wings of Camponotinae female; E - Thorax of Ponerinae worker; F- THorax and legs of Dolichoderinae worker; G - Thorax and legs of Drylinae worker. a - pro-thorax; b, meso-thorax; c, scutellum;d, median segmant; l, pro-pleurae; m, meso-pleurae; p,meta-pleurae;f, trochanters; g, femora.

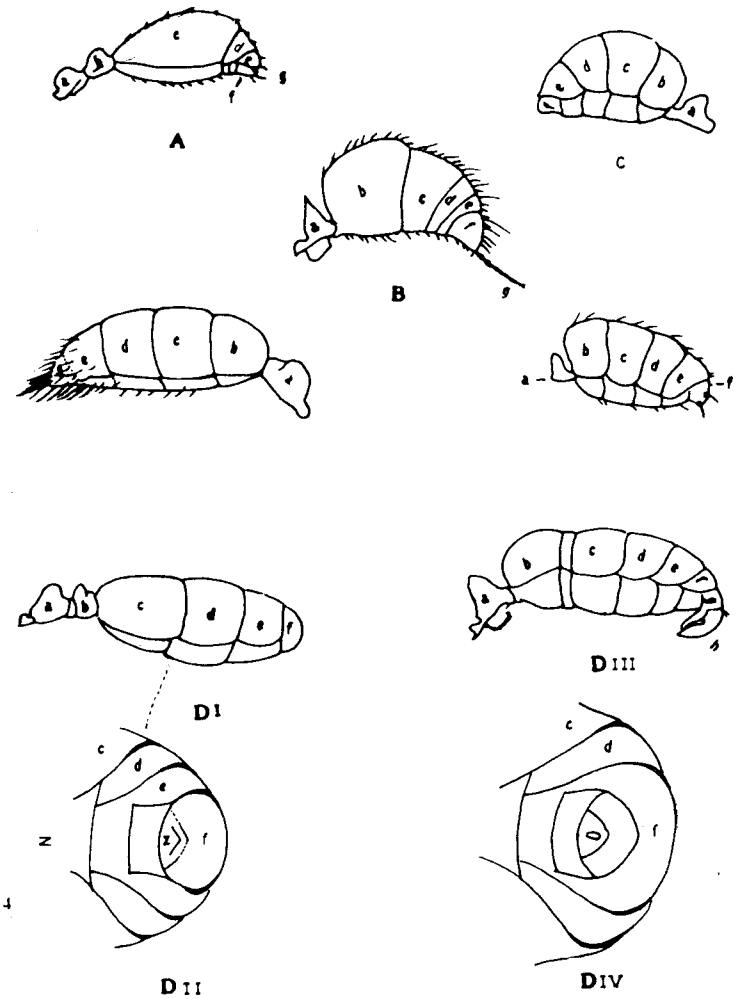
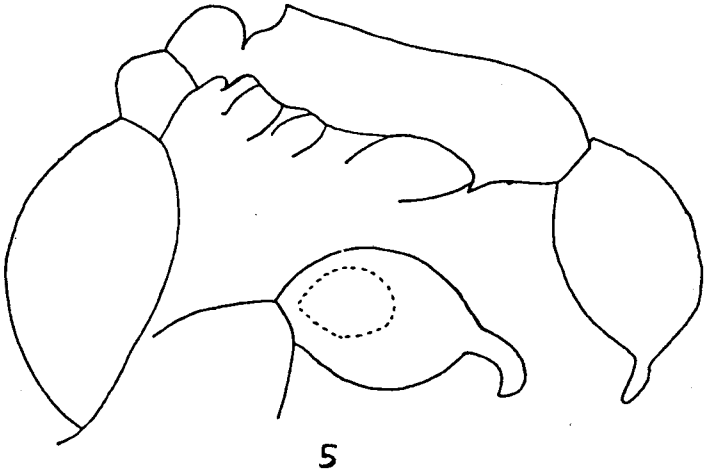


Figure 4

Figure 4. A- Abdomen of Darylinae worker; B - Abdomen of Ponerinae worker; C - Abdomen of Dolichoderinae worker; D (i) & (ii) - Abdomen of Myrmecinae; (iii) - Abdomen of Ponerinae male; (iv) - Abdomen of camponotinae female; E - Abdomen of Caponotinae worker.



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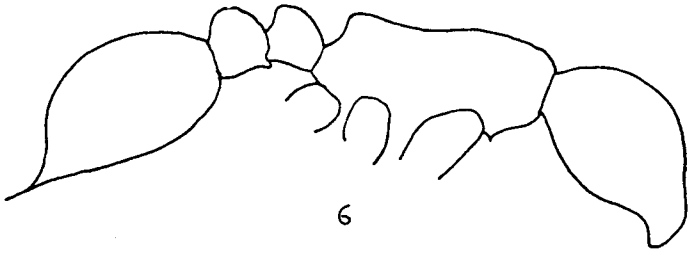

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Fig. 5. *Aenictus binghami* Forel (5x10)

Fig. 6. *Aenictus brevicornis* (Mayr) (5x10)

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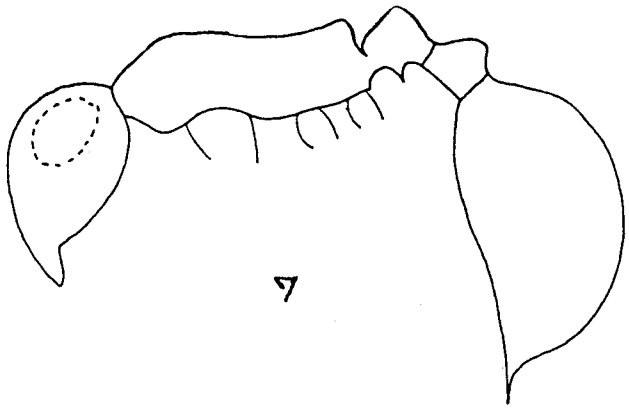
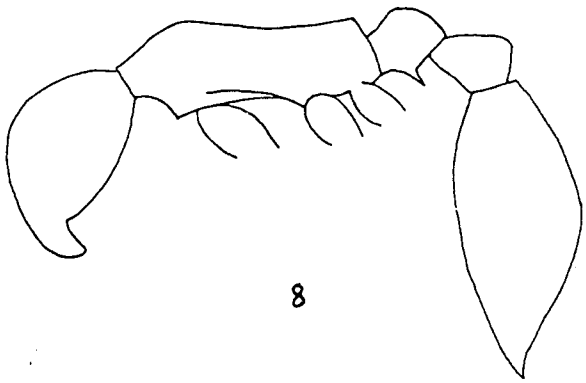




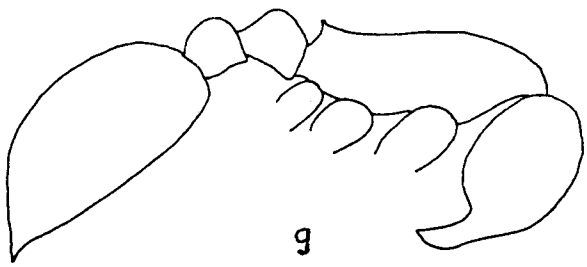
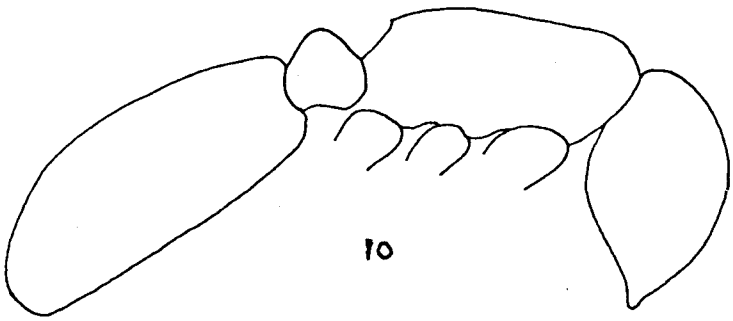


Fig. 7. *Aenictus fergusoni* Forel (5x10)

Fig. 8. *Aenictus laeviceps* (Fred. Smith) (5x10)

Fig. 9. *Aenictus shillongensis* sp. nov. (5x10)



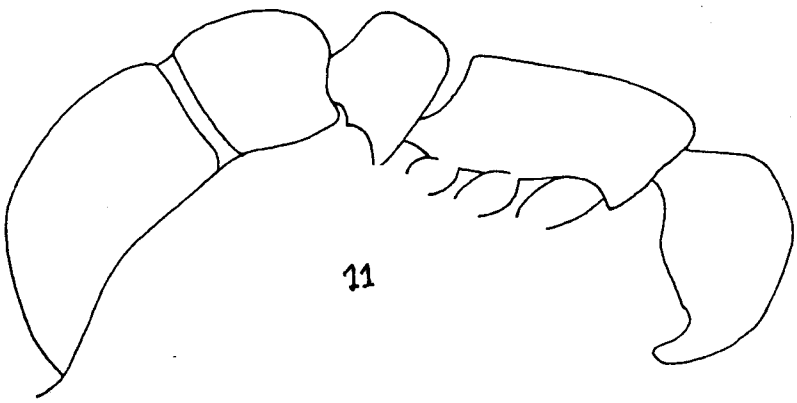
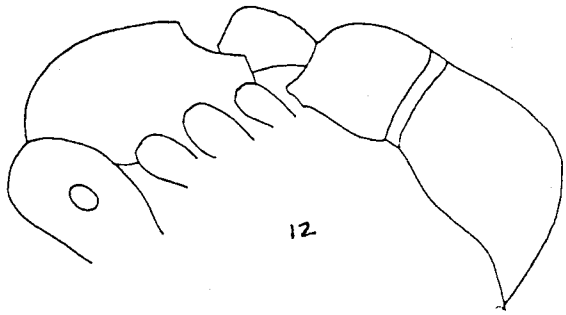
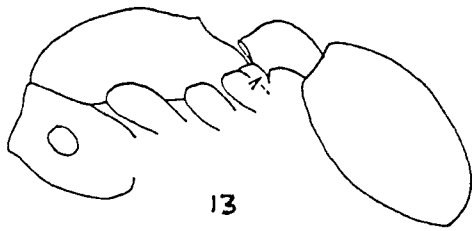


Fig. 10. *Dorylus orientalis* Westwood (5x10)

Fig. 11. *Cerapachys aitkenii* Forel (5x10)





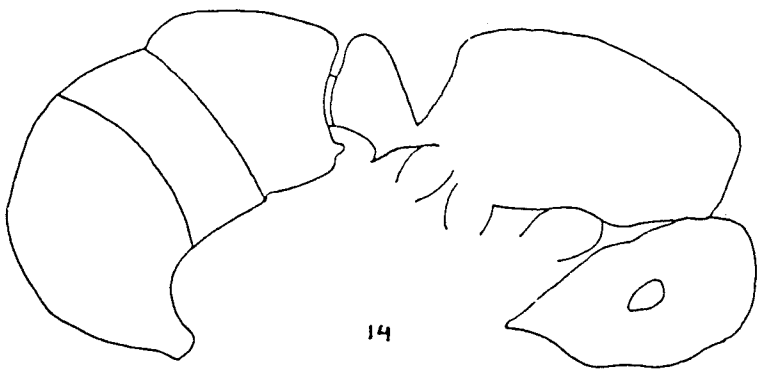
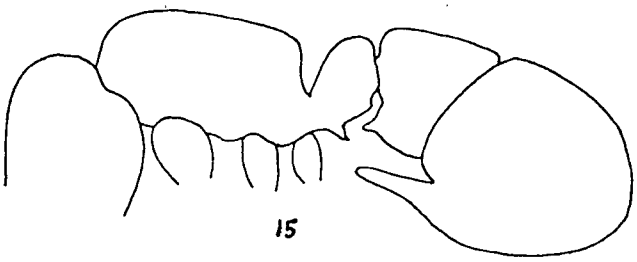
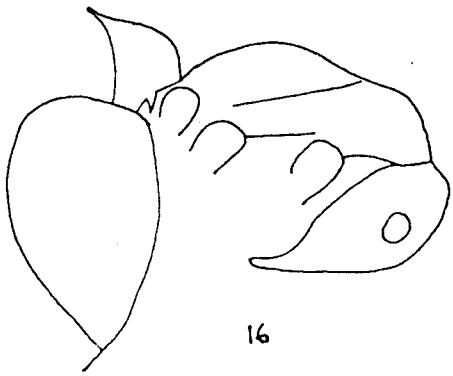


Fig. 12. *Cerapachys risii* Forel (2.5x10)

Fig. 13. *Gnamptogenys bicolor* (Emery) (2.5x10)

Fig. 14. *Proceratium williamsi* sp. nov. F. (5x10)





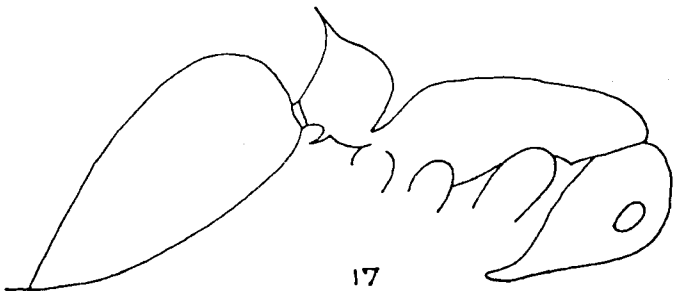
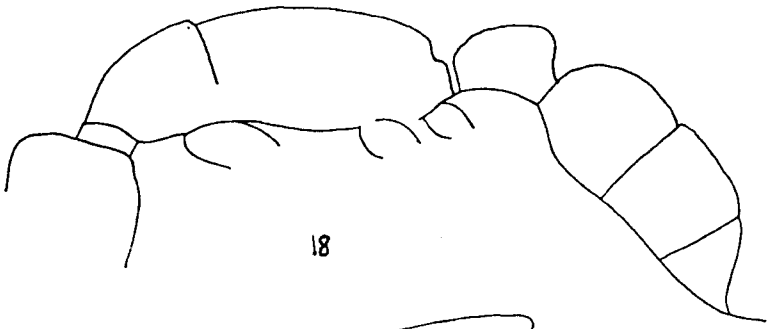
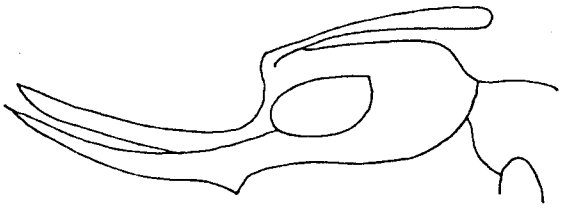


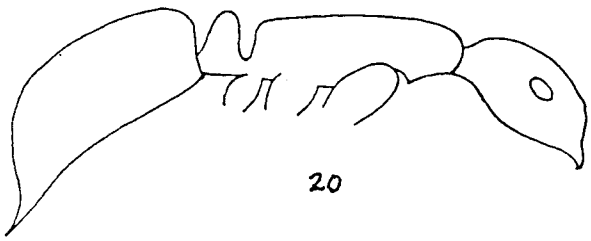
Fig. 15. *Proceratium williamsi* sp.nov. (5x10)

Fig. 16. *Diacamma rugosum* (Le Guillou) (1.6x10)

Fig. 17. *Diacamma scalpratum* (Fred. Smith) (1x10)







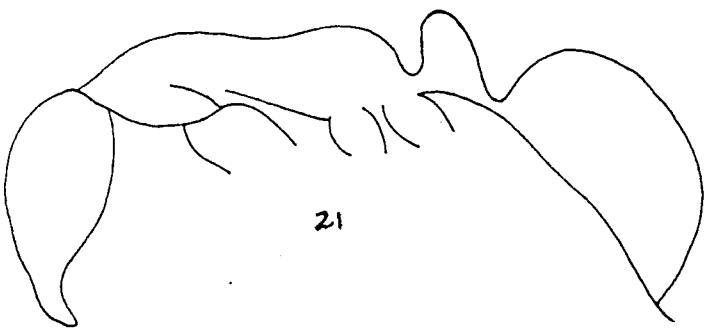
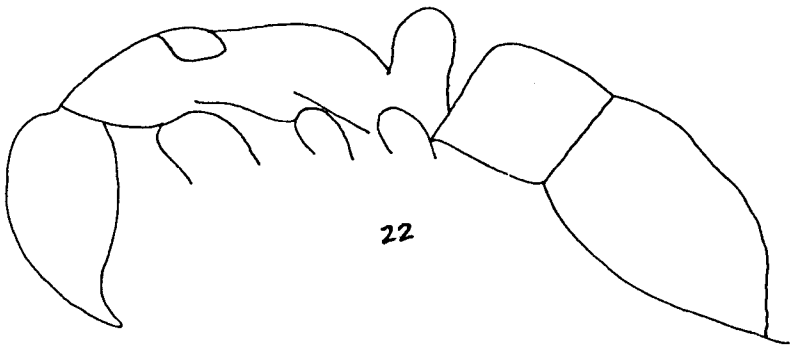


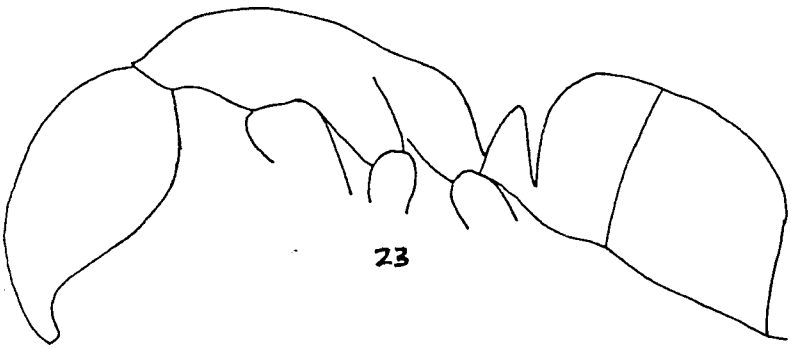
Fig. 18. *Harpegnathos venator* (Fred Smith) (1.6x10)

Fig. 19. *Harpegnathos venator* (Fred Smith) (1.6x10)

Fig. 20. *Leptogenys (Lobopelta) assamensis* Forel (2.5x10)

Fig. 21. *Leptogenys (Lobopelta) diminuta* (Fred Smith) (2.5x10)





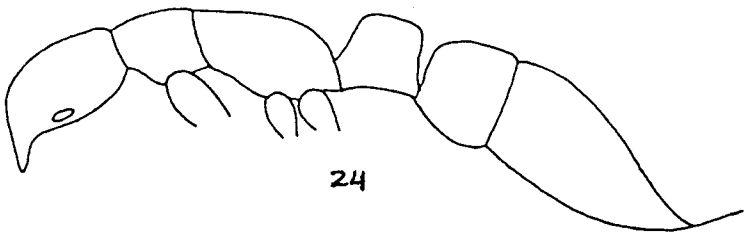
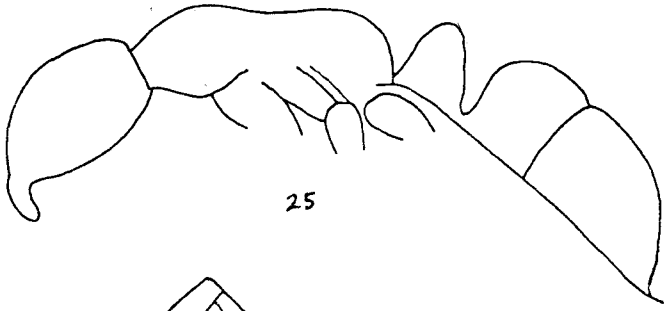
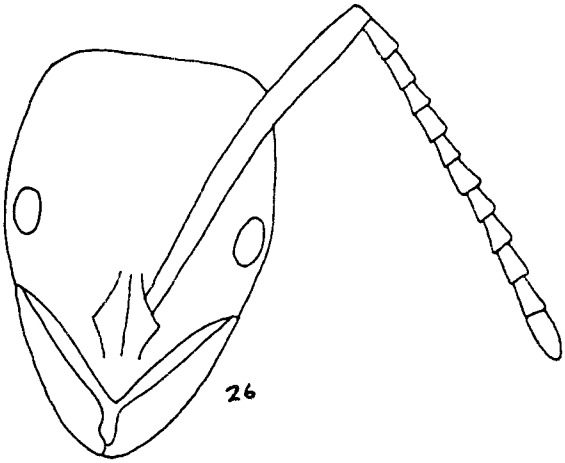


Fig. 22. *Leptogenys (Lobopelta) kitteli* Mayr (2.5x10)

Fig. 23. *Leptogenys (Lobopelta) processionalis* Jerdon (2.5x10)

Fig. 24. *Leptogenys (Lobopelta) punctiventris* Mayr (2.5x10)





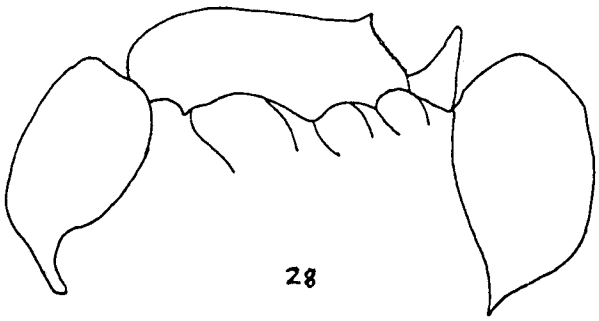
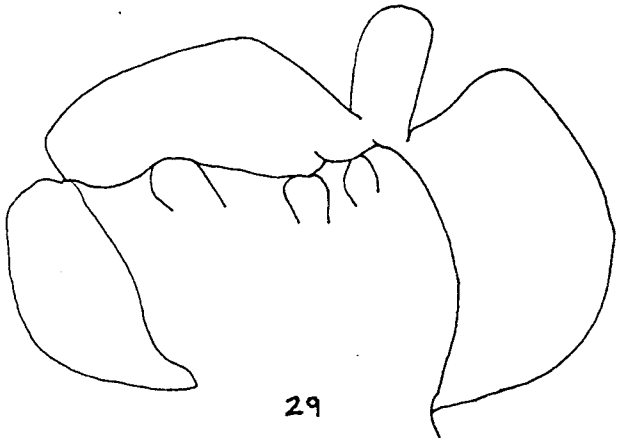


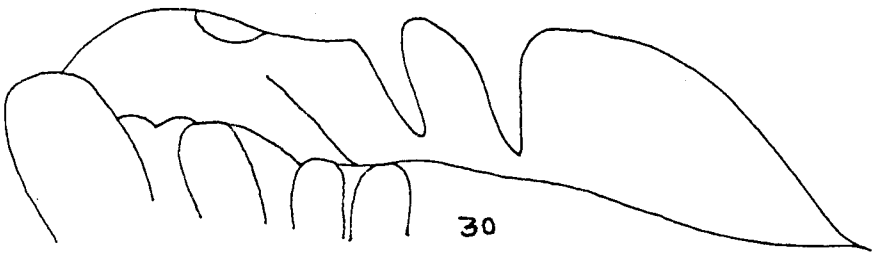
Fig. 25. *Leptogenys jeanettei* sp. nov. (2.5x10)

Fig. 26. *Leptogenys jeanettei* sp. nov. (2.5x10), Head front view.

Fig 27. *Leptogenys jeanettei* sp.nov. (2.5x10), mandible

Fig. 28. *Odontoponera transversa* (Fred Smith) (1.6x10)





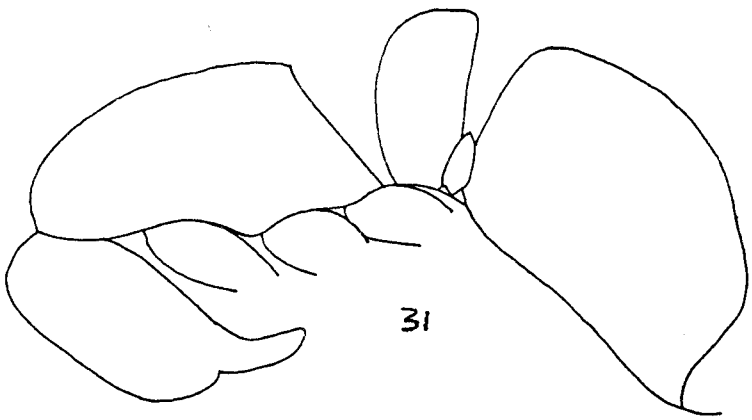
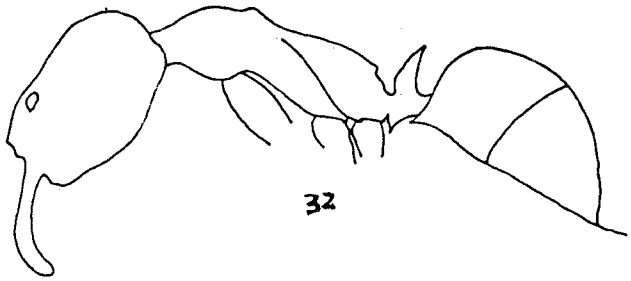
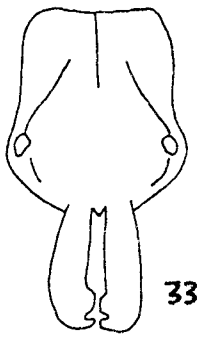


Fig. 29. *Pachycondy leeuwenhoeki* (Forel) (2.5x10)

Fig. 30. *Brachyponera luteipes* (Mayr) (5x10)

Fig. 31. *Bothroponera rufipes* (Jerdon) (1.6x10)





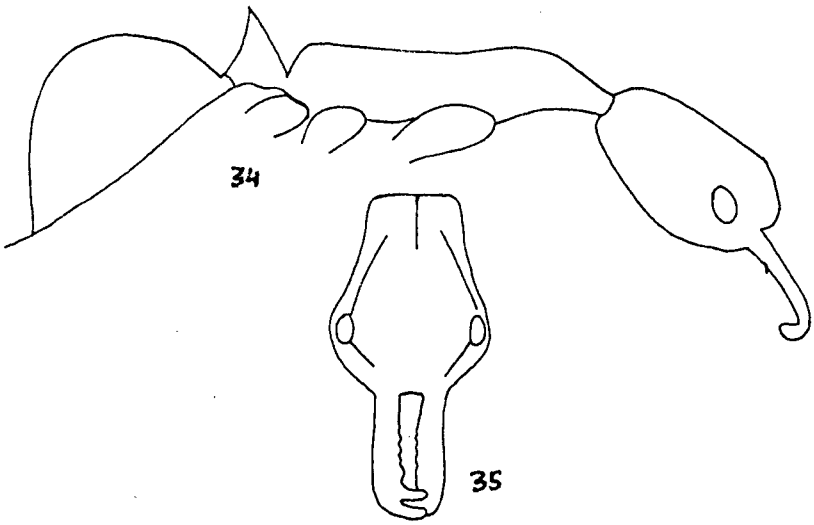
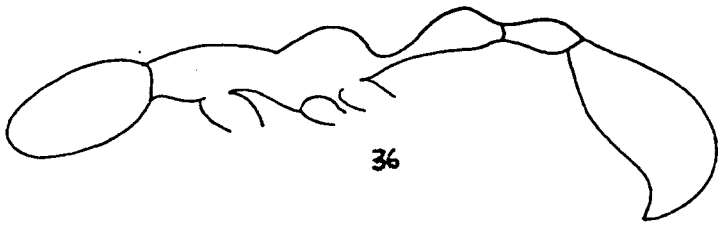


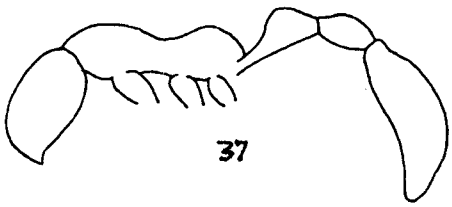
Fig. 32. *Odontomachus monticola* Emery (1.6x10)

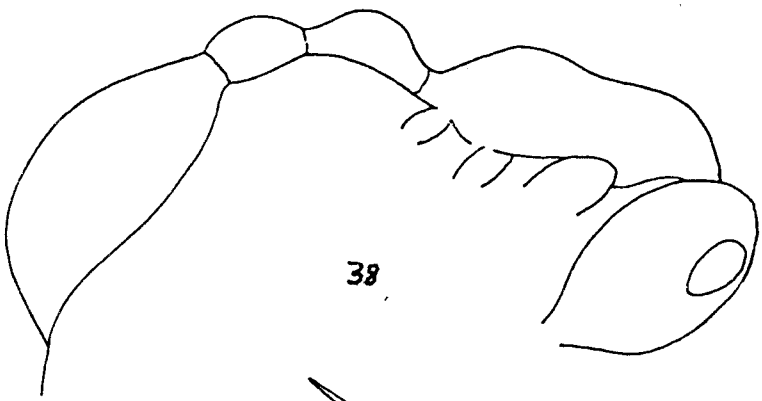
Fig. 33. *Odontomachus monticola* Emery (1.6x10), Head front view.

Fig. 34. *Odontomachus rixosus* Fred. Smith (1.6x10)

Fig. 35. *Odontomachus rixosus* Fred. Smith (1.6x10), Head front view.







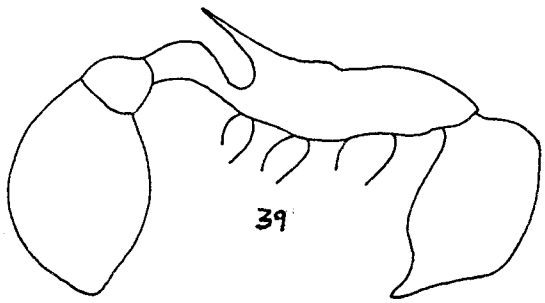
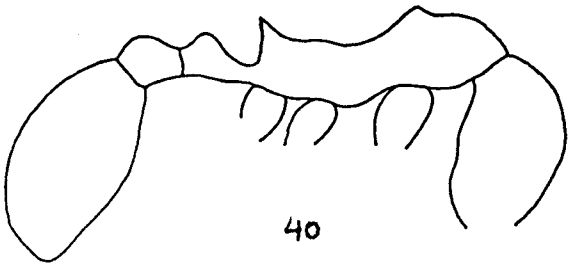


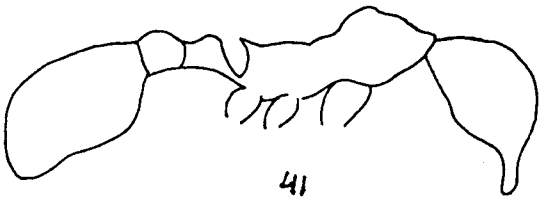
Fig. 36. *Tetraponera aitkenii (Forel) (2.5x10)*

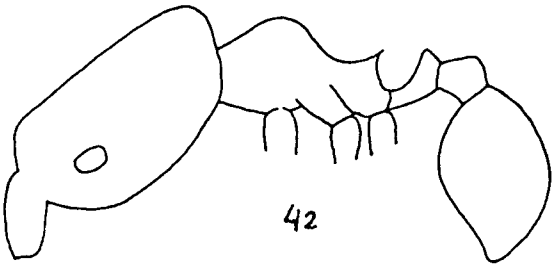
Fig. 37. *Tetraponera allaborans* (Walker) (2.5x10)

Fig. 38. *Tetraponera rufonigra* (Jerdon) (2.5x10)

Fig. 39. *Myrmica margaritae* Emery (2.5x10)







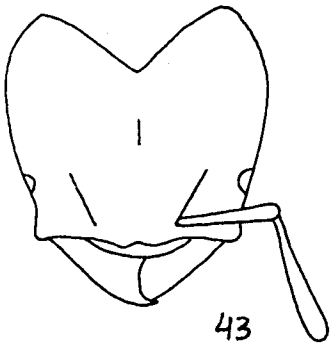
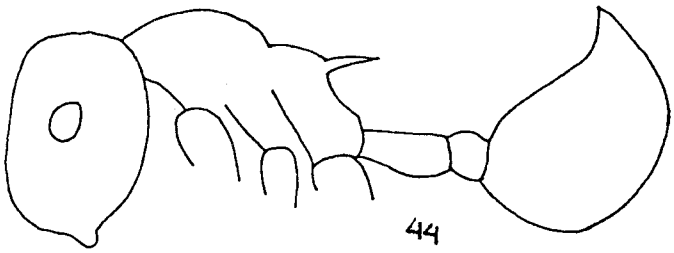


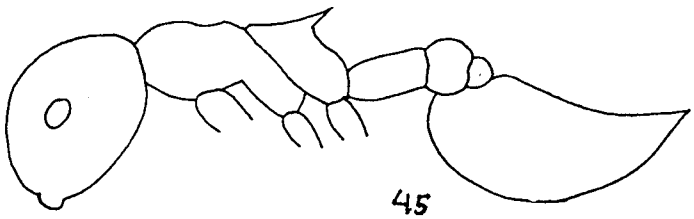
Fig. 40. *Aphaenogaster schurri* Forel (2.5x10)

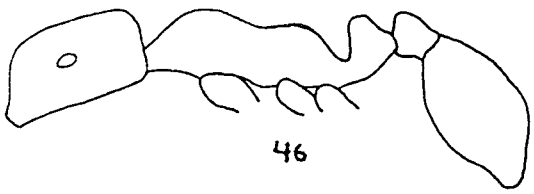
Fig. 41. *Aphaenogaster smythiesi* (Forel) (2.5x10)

Fig. 42. *Pheidole mus* Forel (5x10)

Fig. 43. *Pheidole smythiesi* Forel (1.6x10), Head front view.







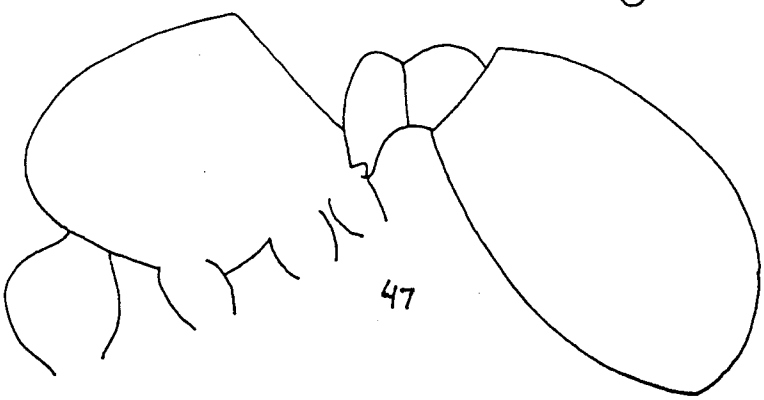
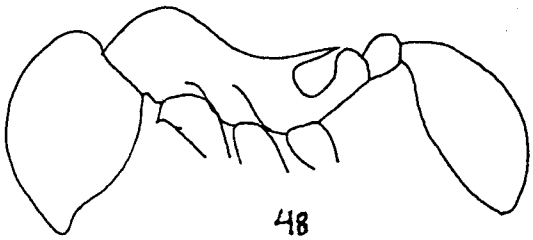


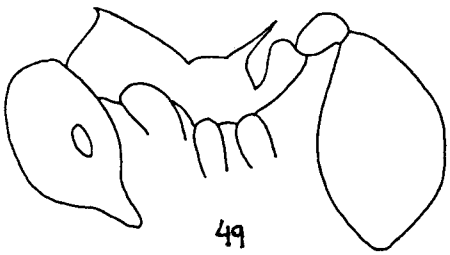
Fig. 44. *Crematogaster flava* Forel (5x10)

Fig. 45. *Crematogaster rothneyi* Mayr (5x10)

Fig. 46. *Monomorium longi* Forel (5x10)

Fig 47. *Carebara lignata* Westwood (1x10) F.





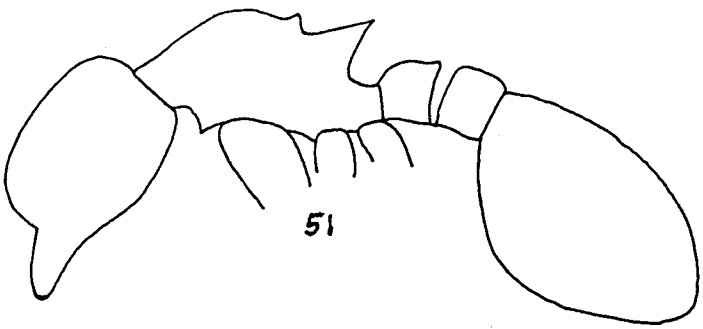
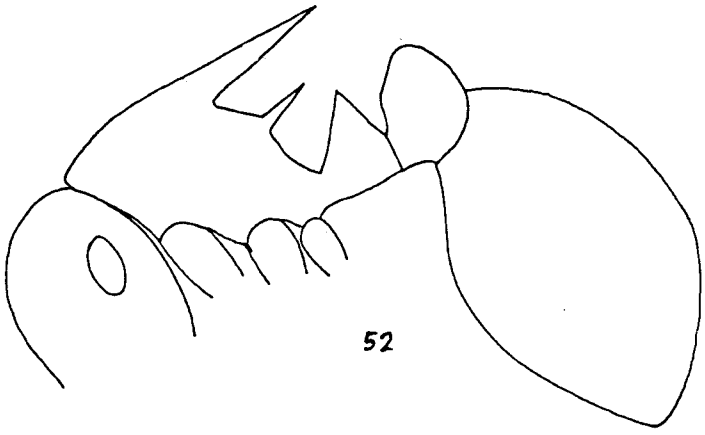


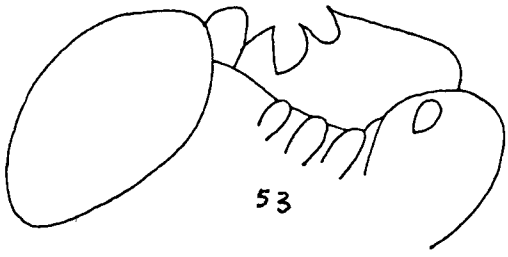
Fig. 48. *Lophomyrmex bedoti* Emery (5x10)

Fig. 49. *Lophomyrmex quadrispinosus* (Jerdon) (5x10)

Fig. 50. *Recurvidris recurvispinosa* Forel (5x10)

Fig. 51. *Myrmecina striata* Emery (5x10)





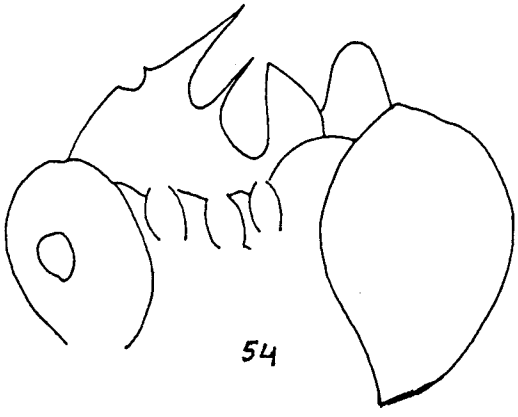
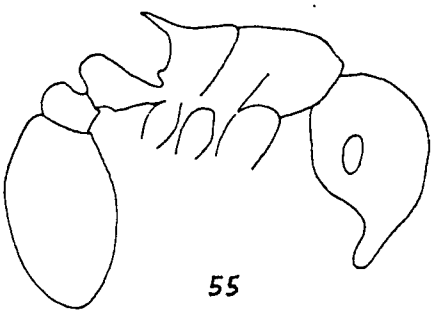
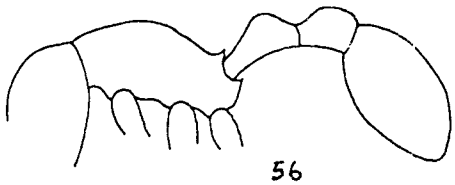


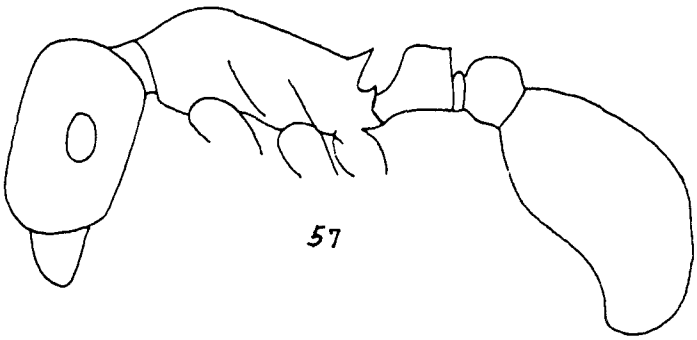
Fig. 52. *Meranoplus bicolor* (Guerin) (5x10)

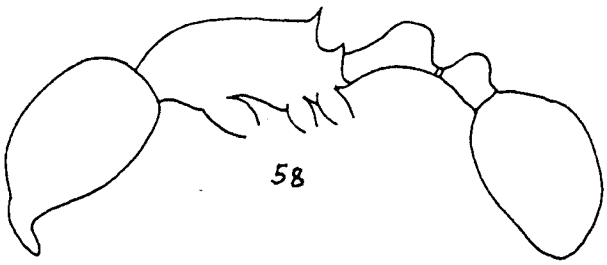
Fig. 53. *Meranoplus rothneyi* Forel (5x10)

Fig. 54. *Meranoplus laeviventris* Emery (5x10)









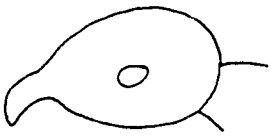


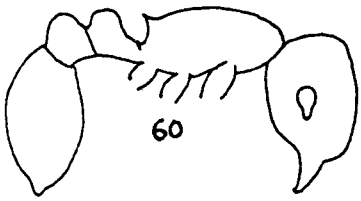
Fig. 55. *Rhoptromyrmex wroughtonii* Forel (5x10)

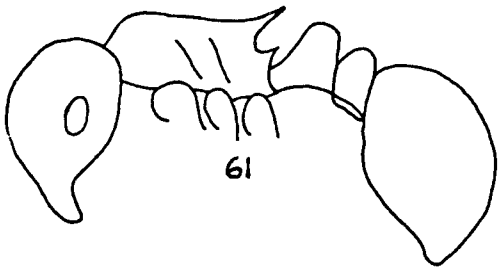
Fig. 56. *Tetramorium barryi* Mathew (5x10)

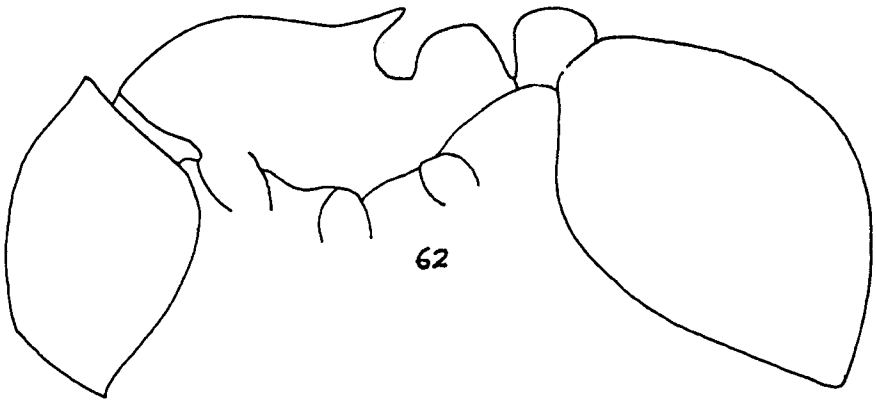
Fig. 57. *Tetramorium bicarinatum* (Nylander) (5x10)

Fig. 58. *Tetramorium browni* sp. nov. (5x10)

Fig. 59. *Tetramorium browni* sp. nov (5x10), Head front view.







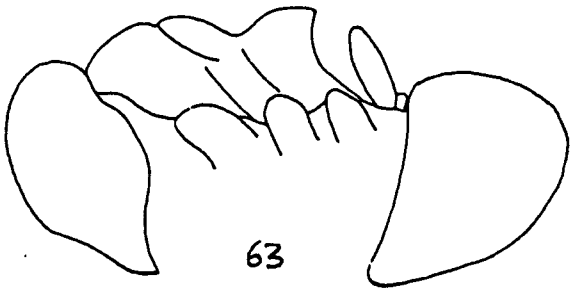


Fig. 60. *Tetramorium simillimum* (Fred. Smith) (5x10)

Fig. 61. *Tetramorium smithi* Mayr (5x10)

Fig. 62. *Cataulacus taprobanae* Fred. Smith (5x10)

Fig. 63. *Dolichoderus bituberculatus* Mayr (5x10)

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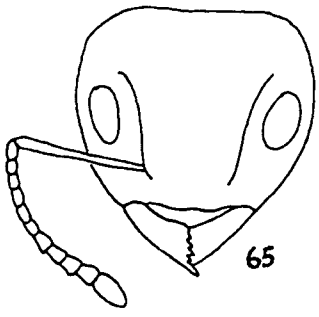


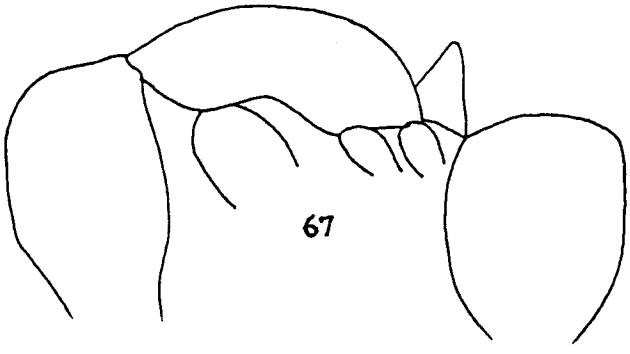
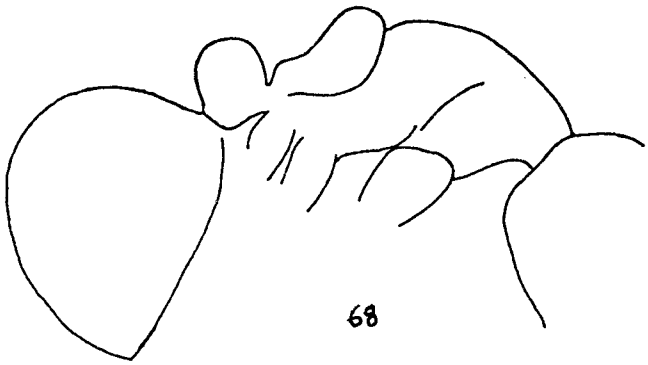


Fig. 64. *Dolichoderus sundari* sp.nov. (5x10)

Fig. 65. *Dolichoderus sundari* sp. nov. (5x10), Head front view.

Fig. 66. *Liometopum lindgreeni* Forel (5x10), Head front view.

Fig. 67. *Camponotus compressus* Fabricius (1.6x10)



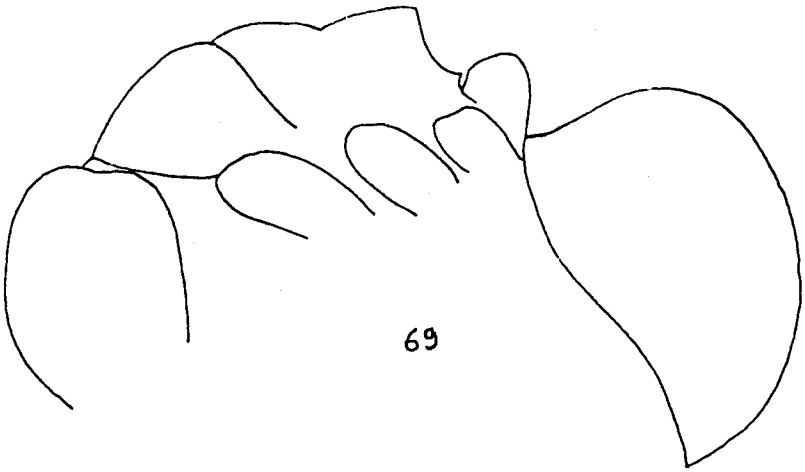
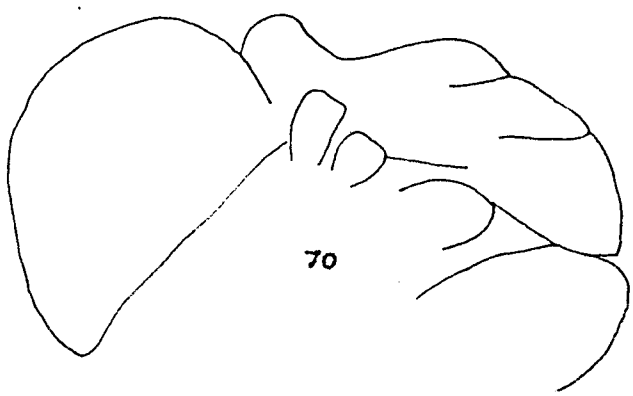
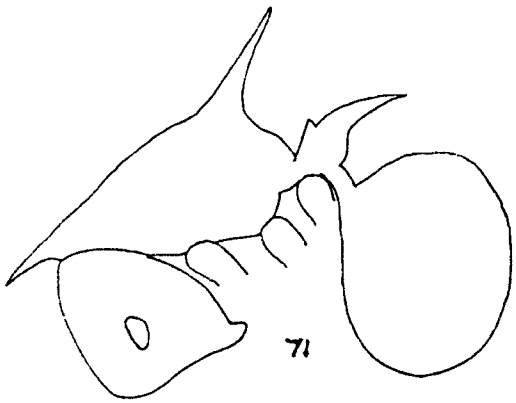


Fig. 68. *Camponotus holosericeus* Emery (2.5x10)

Fig. 69. *Camponotus (sericeus)* Fabricius (2.5x10)





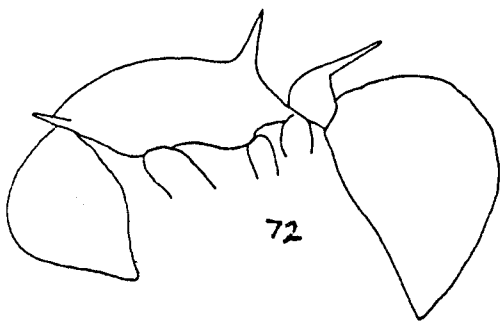
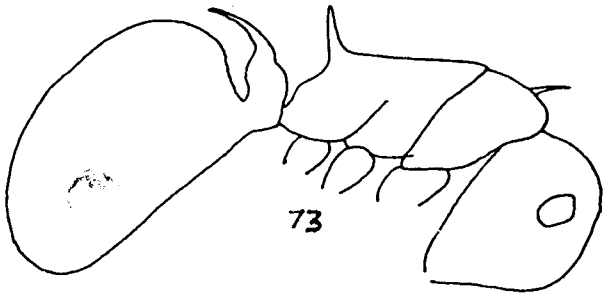
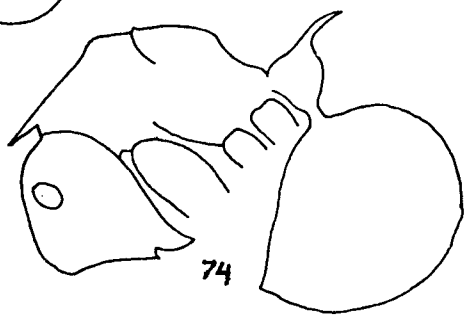


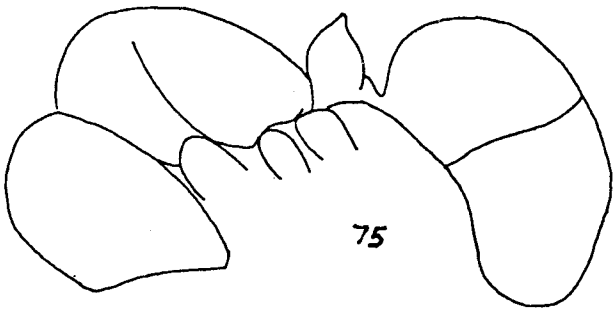
Fig. 70. *Camponotus wasmanni* Emery (2.5x10)

Fig. 71. *Polyrhachis armata* (Le Guillou) (1.6x10)

Fig. 72. *Polyrhachis bicolor* Fred. Smith (2.5x10)







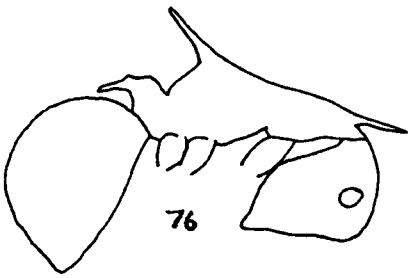
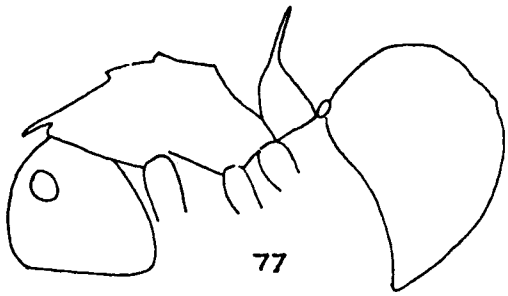


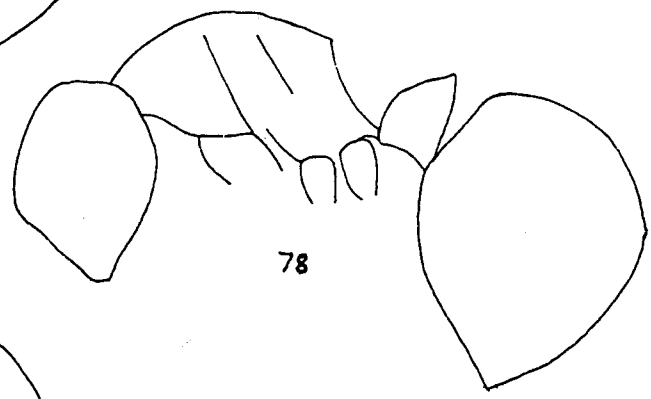
Fig. 73. *Polyrhachis dives* Fred. Smith (2.5x10)

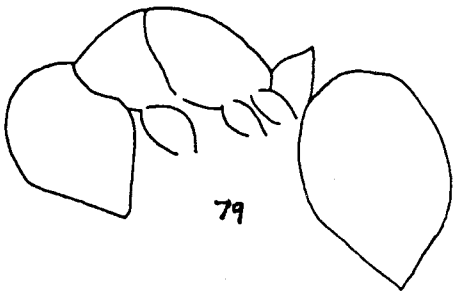
Fig. 74. *Polyrhachis illaudata* Walker (1.6x10)

Fig. 75. *Polyrhachis laevissima* Fred. Smith (2.5x10)

Fig. 76. *Polyrhachis mutata* Fred. Smith (1.6x10)







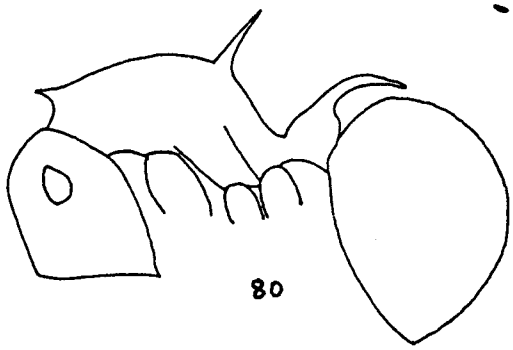


Fig. 77. *Polyrhachis proxima* Roger (1.6x10)

Fig. 78. *Polyrhachis punctillata* Roger (2.5x10)

Fig. 79. *Polyrhachis rastellata* Latrielle (2.5x10)

Fig. 80. *Polyrhachis tibialis* Fred. Smith (2.5x10)

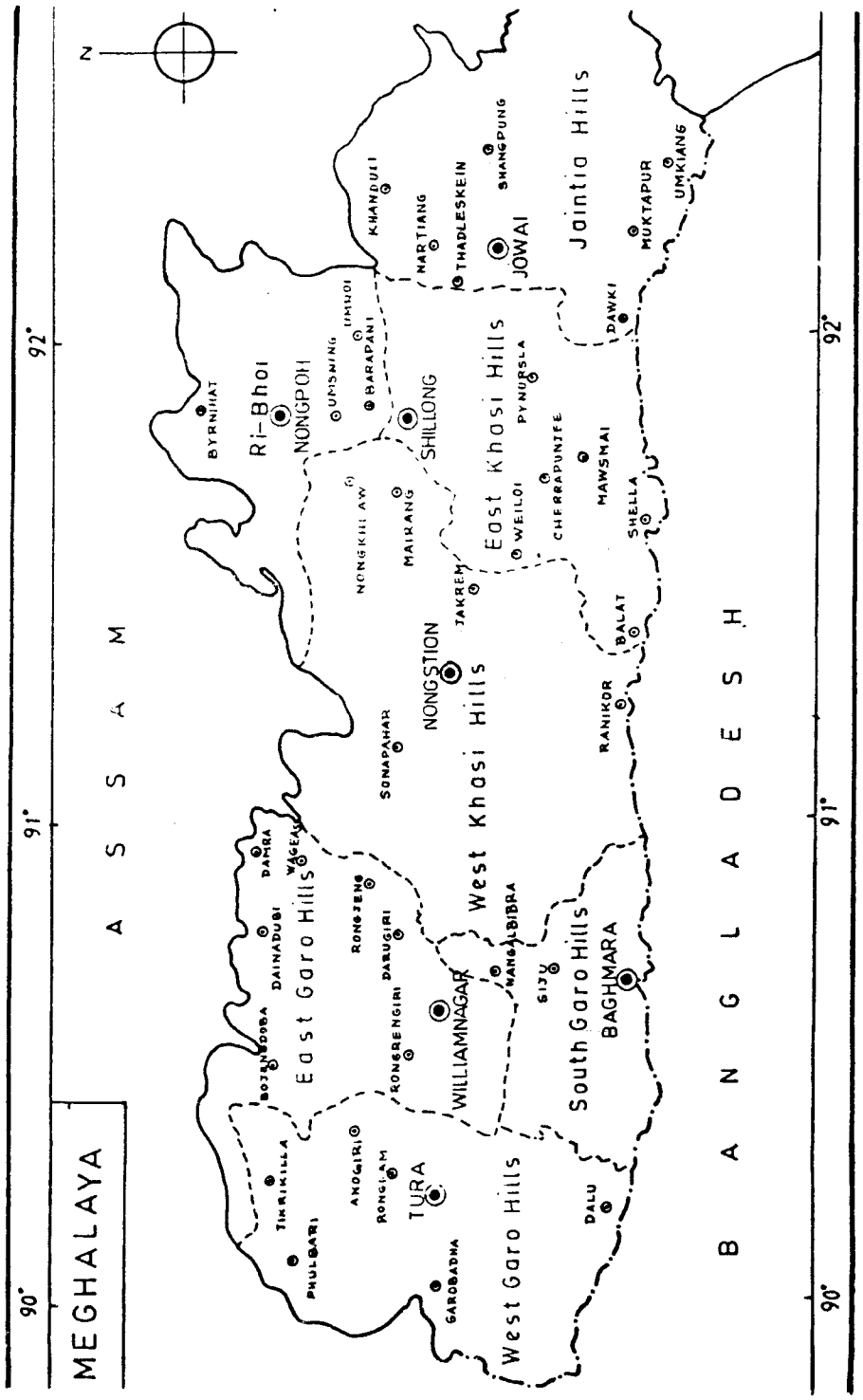

N
MEGHALAYA
A S S A M
B A N G L A D E S H
90°
91°
92°
Ri-Bhoi
NONGPOH
BYRNIHAT
UMSNING
BARAPANI
KHANDUI
SHILLONG
MAIRANG
NARTIANG
THADLESKEIN
SHANGPUNG
JOWAI
Jaintia Hills
MUKTAPUR
UMKIANG
DAWKI
East Khasi Hills
PYNURSLA
WEILOI
CHERRAPUNJEE
MAWSMAI
SHELLA
BALAT
RANIKOR
NONGSTION
SONAPAHAR
West Khasi Hills
DAMRA
WAGEALI
East Garo Hills
RONGTENG
DARUGIRI
DAINADUBI
BOJENDOBA
RONGRENGIRI
WILLIAMNAGAR
MANGALBIBRA
SIJU
South Garo Hills
BAGHMARA
TIKRIKILLA
ANOGIRI
RONGJAM
TURA
PHULBARI
GARODADHA
West Garo Hills
DALU

Fig. 81

FAUNA OF MEGHALAYA (INSECTA : HYMENOPTERA : FORMICIDAE)
DISTRICT-WISE DISTRIBUTION

	Name of the species	Name of the Districts						
		West Garo Hills	East Garo Hills	South Garo Hills	West Khasi Hills	East Khasi Hills	Ri-Bhoi	Jaintia Hills
		1	2	3	4	5	6	7
	FAMILY : FORMICIDAE							
	I Subfamily DORYLINAE Forel							
	1. Genus ***Aenictus*** Schuckard							
1.	*Aenictus binghami* Forel	+			+	+		
2.	*Aenictus brevicornis* (Mayr)					+		
3.	Aenictus fergusoni Forel					+		
4.	*Aenictus laeviceps* Smith	+				+		
5.	*Aenictus longi* Forel	+	+					
6.	*Aenictus shillongensis* sp. nov.					+		
	2. Genus ***Dorylus*** Fabricius							
7.	*Dorylus orientalis* Westwood					+		+
	II Subfamily CERADACHYINAE Forel							
	3. Genus ***Lioponera*** Mayr							
8.	*Lioponera longitarsus* Mayr					+		
9.	*Lioponera parva* Forel					+		
	4. Genus ***Cerapachys***							
10.	*Cerapachys risii* Forel					+		
11	.*Cerapachys aitkeni* Forel					+		

	1	2	3	4	5	6	7
III Subfamily PONERINAE Lepeletier							
5. Genus ***Gnamptogenys*** Roger							
12. Gnamptogenys bicolor Emery					+		
6. Genus ***Proceratium*** Roger.							
13. *Proceratium williamsi* sp. nov					+		
7. Genus ***Diacamma*** Mayr							
14. *Diacamma rugosum* (Le Guillou)				+	+		
15. *Diacamma scalpratum* (Fred. Smith)	+				+		
8. Genus ***Harpegnathos***							
16. *Harpegnathos venator* (Fred. Smith)					+		
9. Genus ***Loptogenys*** Roger							
17. *Leptogenys assamensis* Forel					+		
18. *Leptogenys birmana* Forel							+
19. *Leptogenys binghami* Forel				+			
20. *Leptogenys diminuta* (Fred. Smith)					+		
21. *Leptogenys kitteli* Mayr	+			+	+		+
22. *Leptogenys peuqueti* Er. Andre					+		
23. *Leptogenys ocellifora* (Rger)					+		
24. *Leptogenys punctiventris* Mayr	+				+		
25. *Leptogenys jeanettei* sp. nov.					+		
10. Genus ***Odontoponera*** Mayr							
26. Odontoponera transversa (Fred. Smith)	+			+	+	+	+
11. Genus ***Pachycondyla*** Fred Smith							
27. Pachycondyla amblyops (Emery)				+	+		
12. Genus ***Ectomomyrmex*** Mayr							

	1	2	3	4	5	6	7
28. *Ectomomyrmex astuta* (Fred. Smith)				+	+		+
29. *Ectomomyrmex gjvana materna* (Forel)		+					
30. *Ectomomyrmex leeuwenhoeki* (Forel)	+				+		
13. Genus ***Brachyponera*** Emery							
31. *Brachyponera luteipes* (Mayr)				+	+		+
32. *Brachyponera nigrita* (Emery)					+		
14. Genus ***Bothroponera*** (Mayr)							
33. *Bothroponera rufipes* (Jerdon)	+			+	+		+
15. Genus ***Odontomachus*** Latreilla							
34. *Odontomachus haematodos* (Linnaeus)					+		
35. *Odontomachus monticola* Emery	+	+			+		
36. *Odontomachus punctulatus* Forel	+				+		+
37. *Odontomachus rixosus* Fred Smith					+		
16. Genus ***Anochetus*** Mayr							
38. *Anochetus myops* (Emery)					+		
39. *Anochetus punctiventris* (Mayr)					+		
IV Subfamily PSEUDOMYRMECINAE Emery							
17. Genus ***Tetraponera*** Smith							
40. *Tetraponera aitkeni* (Forel)					+		
41. *Tetraponera allaborans* (Walker)					+		
42. *Tetraponera nigra* (Jerdon)					+		
43. *Tetraponera rufonigra* (Jerdon)	+	+		+	+		
V Subfamily MYARMICINAE Lepeletier							
18. Genus ***Rhoptromyrmex*** Mayr							
44. *Rhoptromyrmex wroughtonii* Forel				+	+		

		1	2	3	4	5	6	7
	19. Genus ***Triglyphothrix*** Forel							
45.	*Triglyphothrix lanuginosa* (Mayr)	+			+			
46.	*Triglyphothrix walshi* Forel					+		
	20. Genus ***Myrmica*** Latreille							
47.	*Myrmica margaritae* Emery					+		
	21. Genus ***Aphaenogaster*** Mayr							
48.	*Aphaenogaster* rothneyi (Forel)					+		
49.	*Aphaenagaster Sagei* (Forel)					+		
50.	*Aphaenogaster schurri* (Forel)					+		
51.	*Aphaenogaster smythiesi* (Forel)					+		
	22. Genus ***Monomorium*** Mayr							
52.	*Monomorium aberrans* Forel					+		
53.	*Monomorium floricola* (Jerdon)	+	+			+		
54.	*Monomorium longi* Forel					+		+
55.	*Monomorium minutum* Mayr	+						
56.	*Monomorium pharaonis* (Linnaeus)					+		
57.	*Monomorium schurri* Forel					+		
	23. Genus ***Cardiocondyla*** Emery							
58.	*Cardiocondyla nuda* (Mayr)							
	24. Genus ***Tetramorium*** Mayr							
59.	*Tetramorium barryi* Mathew					+		
60.	*Tetramorium bicarinatum* (Nylander)	+				+		
61.	*Tetramorium browni* sp. nov.					+		
62.	*Tetramorium christiei* Forel					+		+
63.	*Tetramorium mixtum* Forel					+		

	1	2	3	4	5	6	7
64. *Tetramorium simillimum* (Fred. Smith)				+	+		+
65. *Tetramorium smithi* Mayr					+		
66. *Tetramorium* sp	+	+					
25. Genus *Xiphomyrmex* Forel							
67. *Xiphomyrmex tortuosum* (Roger)		+					
26. Genus *Pheidole* Westwood							
68. *Pheidole allaoni* Bingham					+		
69. *Pheidole bhavanae* Bingham					+		
70. *Pheidole capellinii* Emery				+			
71. *Pheidole constanciae Forel*					+		
72. *Pheidole feae* Emery							+
73. *Pheidole jucunda* Forel					+		
74. *Pheidole lamellinoda* Forel					+		
75. *Pheidole malinsii* Forel					+		
76. *Pheidole mus* Forel							+
77. *Pheidole parva* Mayr				+			
78. *Pheidol pronotales* Forel					+		
79. *Pheidole roberti* Forel					+		
80. *Pheidole sagei* Forel					+		
81. *Pheidole smythiesi* Forel	+				+		
82. *Pheidole striativentris* Mayr					+		
83. *Pheidole watsoni* Forel					+		
84. *Pheidole wood-masoni* Forel					+		
85. *Pheidole* sp.					+		

	1	2	3	4	5	6	7
27. Genus *Trigonogaster* Forel							
86. *Trigonogaster recurvispinosa* Forel					+		
28. Genus *Cataulacus* Fred. Smith							
87. *Cataulacus taprobanae* Fred. Smith					+		
88. *Cataulacus simoni* Emery					+		
29. Genus *Crematogaster* Lund							
89. *Crematogaster anthracina* Fred. Smith					+		
90. *Crematogaster artifex* Mayr					+		
91. *Crematogaster biroi* Mayr					+		
92. *Crematogaster flava* Forel	+	+			+		+
93. *Crematogaster hodgsoni* Forel					+		
94. *Crematogaster politula* Forel					+		
95. *Crematogaster dohrni rogenhoferi* Mayr		+		+	+		+
96. *Crematogaster rothneyi* Mayr	+			+	+		
97. *Crematogaster travancorensis* Forel					+		
98. *Crematogaster walshi* Forel	+			+	+		
99. *Crematogaster* sp.							+
30. Genus *Lophomyrmex* Emery							
100. *Lophomyrmex bedoti* Emery	+			+	+		+
101. *Lophomyrmex burmanus* Emery					+		
102. *Lophomyrmex* quadrispinosus (Jerdon)	+			+	+		
31. Genus *Pheidologeton* Mayr							
103. *Pheidologeton affinis* (Jerdon)		+		+			
32. Genus *Myrmecina* Curtis							
104. *Myrmecina striate* Emery					+		

	1	2	3	4	5	6	7
33. Genus ***Meranoplus***							
105. *Meranoplus bicolor* (Guerin)	+	+			+		
106. *Meranoplus rothneyi* Forel	+				+	+	
107. *Meranoplus laeviventris* Emery					+		
34. Genus ***Carebara*** Westwood							
108. *Carebara lignata* Westwood	+				+		
35. Genus ***Strumigenys*** Fred. Smith							
109. *Strumigenys godeffroyi*					+		
36. Genus ***Myrmicaria*** Saunders							
110. *Myrmicaria brunnea* Saunders					+		
37. Genus ***Vollenhovia***							
111. *Vollenhovia* sp.					+		
VI Subfamily: DOLICHODERINAE Forel							
38. Genus ***Liometopum*** Mayr							
112. *Liometopum lindgreeni* Forel		+			+		
39. Genus ***Bothriomyrmex*** Emery							
113. *Bothriomyrmex myops* Forel					+		
40. Genus ***Iridomyrmex*** Mayr							
114. *Iridomyrmex anceps* (Roger)				+	+		+
41. Genus ***Dolichoderus*** Lund							
115. *Dolichoderus affinis* Emery	+				+		+
116. *Dolichoderus bituberculatus* Mayr					+		+
117. *Dolichoderus fuscus* Emery					+		
118. *Dolichoderus sundari* sp. nov.					+		
119. *Dolichoderus taprobanae* (Fred. Smith)					+		

	1	2	3	4	5	6	7
120. *Dolichoderus* sp.	+						
42. Genus ***Tapinoma*** Foerster							
121. *Tapinoma indicum* Forel					+		+
122. *Tapinoma melanocephalum* (Fabricius)					+		
43. Genus ***Technomyrmex***							
123. *Technomyrmex* sp.		+					
Subfamily FORMICINAE Lepeletier							
44. Genus ***Oecophylla*** Fred. Smith							
124. *Oecophylla smargdina* (Fabricius)	+	+			+	+	
45. Genus ***Pseudolasius*** Emery							
125. *Pseudolasius familiaris* (Fred. Smith)					+		
46. Genus ***Myrmecocystus*** Wesmael							
126. *Myrmecocystus setipes* Forel	+						
47. Genus ***Acantholepis*** Mayr							
127. *Acantholepis capensis* Mayr					+		
128. *Acantholepis frauenfeldi* Mayr					+		
129. *Acantholepis capensis simplex* Forel					+		
48. Genus ***Anoplolepis*** Santschi							
130. *Anoplolepis longipes* (Jerdon)					+		+
49. Genus ***Plagiolepis*** Mayr							
131. *Plagiolepis dichroa* Forel					+		
50. Genus ***Paratrechina*** Motschoulsky							
132. *Paratrechina longicornis* Latreille				+	+		
51. Genus ***Camponotus*** Mayr							
133. *Camponotus cotesii* (Forel)	+						+

	1	2	3	4	5	6	7
134. *Camponotus pubescens* (Mayr)	+						
135. *Camponotus strictus* (Jerdon)				+			
136. *Camponotus angusticollis* (Jerdon)	+						
137. *Camponotus camelinus* (Fred. Smith)	+				+		
138. *Camponotus compressus* (Fabricius)		+		+	+		+
139. *Camponotus holosericeus* Emery					+		
140. *Camponotus paria* Emery					+		
141. *Camponotus rufoglaucus* (Jerdon)	+				+		
142. *Camponotus selene* (Emery)					+		
143. *Camponotus sericeus* (Fabricius)					+		
144. *Camponotus wasmanni* Emery					+		+
52. Genus *Polyrhachis* Fred. Smith							
145. *Polyrhachis abdominalis* Fred. Smith				+	+		
146. *Polyrhachis affinis* Smith					+		
147. *Polyrhachis armata* (Le Guillou)	+			+	+		
148. *Polyrhachis bicolor* Fred. Smith					+		
149. *Polyrhachis ceylonensis* Emery					+		
150. *Polyrhachis convexa* Roger					+		
151. *Polyrhachis dives* Fred. Smith	+	+		+	+		+
152. *Polyrhachis furcata* Fred. Smith					+		
153. *Polyrhachis illaudata* Walker					+		
154. *Polyrhachis intermedia* Forel					+		
155. *Polyrhachis laevissima* Fred. Smith		+		+	+		
156. *Polyrhachis mayri* Roger		+					
157. *Polyrhachis mutata* Fred. Smith					+		

	1	2	3	4	5	6	7
158. *Polyrhachis proxima* Roger	+				+		
159. *Polyrhachis punctillata* Roger					+		
160. *Polyrhachis rastellata* Latreille					+		
161. *Polyrhachis striata* Mayr					+		
162. *Polyrhachis tibiatlis* Fred. Smith					+		
163. *Polyrhachis* sp.		+			+		

SUMMARY

The monograph deals with the ants (Family Formicidae:Hymenptera) collected from different districts of Meghalaya, India. Altogether 163 species pertaining to 52 genera and 7 subfamilies have been reported. Before the present work, a total of 4 species under 4 genera in 4 subfamilies only were known from the State (Bingham, 1903 Mathew 1980, 84) . The present paper also records 159 species under 52 genera and 7 subfamilies for the first time from Meghalaya. Keys to the identification of subfamilies, genera and species dealt within the monograph and diagnostic features of the species included, have been incorporated. The paper also includes 5 new species, described in detail and illustrated. A separate chart showing the distributional pattern, district-wise has been provided to show the distribution of the concerned species at a glance. Notes on topography, morphology and methodology have been provided to deliciate the basic concept of the family.

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REFERENCES

Alfred, J.R.B., 1995, Overview. *Fauna of Meghalaya* Part I.

Baroni Urbani, C. 1977a. Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums inBasel. Hymenoptera : Fam. Formicidae, Genus mayriella. *Entomological Basiliensia*, **2** : 411-414, illustr.

Baroni Urbani, C. 1977b. Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel. Hymenoptera : Fam. Formicidae, Gen. Stenamma con una nuova specie del Kashmir. Entomologica Basiliensia, **2** : 415-422, illustr.

Bingham, C. T. 1903. *Fauna of British India, including Ceylon and Burma. Hymenoptera : 2, Ants and Cuckoo Wasps.* 506 pp., 161 fig. pl. London.

Bolton, B. 1976. The ant tribe Tetramoriini, constituent genera, review of smaller genera and revision of *Triglyphothrix*, Forel. *Bull. Br. Mus. nat. Hist. (Ent)* **34** : 281-379, 73 figs.

Bolton, B. 1977. The ant tribe Tetramoriini (Hymenoptera : Formicidae). The genus *Tetramorium* Mayr in the Oriental and Indo-Australian regions and in Australia, *Bull. Br. Mus. Nat. Hist. (Ent)* **36** (2) : 67-151.

Bolton, B. 1978. The ant tribe Tetramoriini (Hymenoptera : Formicidae). Constituent genera, review of smaller genera and revision of Trigtyphothrix Forel. *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** (5) 1976 : 283-379, illustr.

Bolton, B. 1980. The ant tribe Tetramoriini (Hymenoptera : Formicidae). The genus Tetramorium Mayr in the Ethiopian Zoogeographical region. *Bull. Br. Mus. nat. Hist. (Ent.)*, **40** (3) : 193-384, illustr.

Bolton, B. 1987. A review of the Solenopsis genus-group and revision of Afro-tropical Monomorium Mayr (Hymenoptera:Formicidae). *Bull. Br. Mus. (Nat. Hist.) Entomol.*, **54**(3) : 263-4 illustr. (In English).

Bolton, B. 1988. A review Paratopula Wheeler, a forgotten genus of Myrmicine ants (Hymenoptera : Formicidae). *Entomol. Mon. Mag.*, **124** : 125-143, illustr. (In English)

Brown Jr. W.L. 1954. Remarks on the internal phylogeny and subfamily classification of the family Formicidae. *Insectes Sociaux, Paris*, **1** : 21-23, 1 fig.

Brown Jr. W.L. 1957. The Indo-Australian species of the ant genus Strumigenys Fr. Smith. *Psyche, Cambridge, Mass.* **63** (1956) 146.

Brown Jr. W.L. 1958. A review of the Ants New Zealand (Hymenoptera). *Acta Hymenopterologica*, **1**(1) : 1-50.

Brown Jr. W.L. 1959a. The Indo-Australian species of the ant genus Strumigenys F. Smith, *Psyche, Cambridge, Mass.* **65**(1958) : 81-89.

Brown Jr. W.L. 1959b. The Neotropical species of the ant genus strumigenys Fr. Smith : Group of emeryi Mann (Hymenoptera). *Ent. News, Lancaster*, **70** : 97-104.

Brown Jr. W.L. 1960. Contributions towards a reclassification of the Formicidae. III. Tribe Amblyoponini (Hymenoptera). *Bull. Mus. Comp. Zool. Harvard, Cambridge*, Mass., **122** : 145-230, 48 figs.

Brown, W.L. Jr. 1973. A comparison of the Hylean and Congo-West African rain forest and faunas. *In Tropical forest ecosystems in Africa and South America : A comparative review* : 161-185.

Brown, W.L. Jr. 1976. Contribution toward a reclassification of the Formicidae, Part VI. Ponerinae, Tribe Ponerini, sub tribe, Odontomachiti, Section A. Introduction, sub tribal characters, Genus *Odontomachus. Studia Ent.* **19** (1-4) : 69-171.

Chapman, J.W. & Capco, S.R. 1951. Checklist of the ants (Hymenoptera : Formicidae) of Asia, 327 pp., Republic of the Philippines, office of Economic Co-ordination, Institute of Science and Technology Manila.

Collingwood, C.A. 1970. Formicidae (Hymenoptera : Aculeata) from Nepal. *KHUMBU HIMAL, Bd. 3*, Lfg. 3, S. 371-388.

Datta, S.K. & Raychaudhuri, D. 1983. Taxonomy of the aphidocolous ants (Hymenoptera :Formicidae) of Sikkim and hilly areas of West Bengal (I) Sub family Myrmicinae. *AKITU N. Ser.* **56** : 1-14.

Devi, C.M. & Singh, T.K. 1987. Aphidocolous ants (Hymenoptera : Formicidae) in Manipur. *Entomon*, **12** (4) : 309-313.

Donisthorpe, H. 1942a. Notes on the subgenus Orthonotomyrmex Ashmead of Camponotus Mayr, and description of a new species (Hym.:Formicidae). *Ent. mon. Mag., London*, **78** : 248-251, 6 figs.

Donisthorpe, H. 1942b. Notes on the genus Pseudolasius Emery with the description of Pseudolasius karawajewi sp. n. (Hym.:Formicidae). *Proc. R. ent. Soc. London* (B), **11** : 166-169.

Emery, C. 1910. Hymenoptera, Fam. Formicidae, subfam. Dorylinae. *Genera Insect., Brussels*, Fasc. **102** : 1-33. 1pl.

Emery, C. 1911. Hymenoptera, Fam. Formicidae, subfam. Ponerinae. *Genera Insect., Brussels*, Fasc. **118** : 1-125, 3 pls.

Emery, C. 1912. Hymenoptera, Fam. Formicidae, subfam. Dolichoderinae. *Genera Insect., Brussels*, Fasc. **137**: 1-50, 2 pls.

Emery, C. 1921 Hymenoptera, Fam. Formicidae, subfam. Myrmicinae. *Genera Insect., Brussels*, Fasc. **174A**: 1-94, pls. i-vii.

Emery, C. 1922. Hymenoptera, Fam. Formicidae, subfam. Myrmicinae. *Genera Insect., Brussels*, Fasc. **174B** : 95-206.

Emery, C. 1925. Hymenoptera, Fam. Formicidae, subfam. Formicinae. *Genera Insect., Brussels*, Fasc. **183** : 1-302, 5 pls.

Ettershank, G. 1966. A generic revision of the World Myrmicinae related to *Solenopsis* and *Pheidologeton. Aust. J. Zool.* **14** : 73- 171, 141 figs.

Forel, A. 1900a. Les Formicides de l'empire des Indes et de Ceylan. Part VI. *J. Bombay Nat. Hist. Soc.*, **13** :52-65.

Forel, A. 1900b. Les Formicides de l'empire des Indes et de Ceylan. Part VII. *J. Bombay Nat. Hist. Soc.*, **13** : 303-332.

Forel, A. 1900c. Les Formicides de I;empire des Indes et de Ceylan. Part VIII *J. Bombay Nat. Hist. Soc.* **13** : 462-477.

Greenslade, P.J.M. 1971 Interspecific competition and frequency changes among ants in Solomon islands coconut plantations. *J. appl. Ecol.* **8** : 323-352.

Holldobler, B and Wilson, E.O. 1990. The Ants. *Harvard University Press, U.S.A.*, pp. 1-732.

Hung, A.C.G. Imai, H.T. & Kubota, M. 1972. The chromosomes of nine ant species (Hymenoptera : formicidae) from Taiwan, republic of China. *Ann. Entomol. Soc. Amer.* **65** (5) : 1023-1025.

Imai, H.T., Baroni Urbani, C., Kubota, M., Sharma, G.P., Narasimhanna, M.N., Das, B.C., Sharma, A.K., Sharma, A., Deodikar, G.B., Vaidya, V.G. and Rajasekarasetty, M.R. 1984. Karyological Survey of Indian ants. *Jpn. J. Genet.* **59** :1-32.

Jerdon, T.C. 1851. A Catalogue of the species of Ants found in Southern India. *Ann. Mag. Nat. Hist.*, **39** : 103-127.

Karawajew, W. 1926. Ameisen aus dem Indo-Australischen Gibiet. *Treubia*, Buitenzorg, **8**:413-445, 1 pl., 12 figs.

Karawajew, W. 1927. Ameisen aus dem Indo-Australischen Gebiet. III. *Trav. Mus. zool.* Fieff., 3:-52, 21 figs.

Karawajew, W. 1928. Ameisen aus dem Indo-Australischen Gebiet. IV. Ueber Ameisennester, hauptsachlich von Polyrhachis - *Arten. Trav. Mus. zool. Kieff.*, **5** : 3-24, 7 pls.

Kusnezov, N. 1954a. Bisolenopsis sea. Un nuevo generoy especie de hormigas y sus ralaciones con los generos vecinos (Hymenoptera, Formicidae). *Mem. mus. Entre Rios.* Parana no. **31** (1953) :1-44, 80 figs.

Kusnezov, N. 1954b. Phyletische Bedentung der Maxillarund Labialtaster der Amerisen. *Zool. Anz., Leipzig*, **153** : 28-38, 7 figs.

Macky, W. Lowrie, D., Fisher, A., Mackay, E. and Bornes, F. 1989. The ants of Los Alamos Country, New Mexico (Hymenoptera : Formicidae). 79-131, illustr. In : Trager, J.C. (Ed.) Advances in Myrmecology. *EJ. Brill., Leiden*, New York etc. (1988) : i-xxvii, 1-551 (In English).

Majer, J.D. 1976. The ant mossaic in Ghana Cocoa farms;further structural considerations. *J. appl. Ecol.* **13**:145-155.

Mathew, R. 1980. Description of a new species of ant (Hymenoptera : Formicidae) from the Khasi Hills, Meghalaya, *Oriental Ins.* **14** (4) :425-427.

Mathew, R. 1983. Studies on house-hold insect pests (Hymenoptera : formicidae) of Shillong, *Bull. zool. surv. India* **5**(1) : 125- 127.

Mathew, R. 1984. Some new records of ants (Hymenoptera : Formicidae) from Tripura, *Bull. zool. Surv. India* **6**(1-3) : 307- 308.

Menozzi, C. 1935. Formiche Indo-Australiane del genera Crematogaster Lund reccolts da W. Karawajew, *Konowia, Vienna*, **14** : 103-116, 7 figs.

Moglich, M. & Holldobler, B. 1974. Social carrying behaviour and division of labour during nest moving in ants *Psyche* **81** (2) : 219-236.

Motschoulsky, V. von. 1863. Essai d' un Catalogue des insectes de Ltle de Ceylon (Suite) *Bull. soc. Imp. Nat. Moscou* **36** (3) : 1- 153.

Mukherjee, D. 1927. Digestive & reproductive system of the male ant Dorylus labiatus Shuck. *J.Asiat. soc. Beng., Calcutta*, **22** : 87-90, 1 pl.

Rothney, G.A.J. 1889. Notes on Indian ants. *Trans. Ent. Soc.*, (1889) : 347-374.

Santschi, F. 1914. Formicides de 1' Afrique occidentale et australe du voyage de M. le Professeur F. Silvestri, *Boll. Lab. Zool. Gen. agrar, R. Sc. Sup. agric. Portici,* **8** : 309-385, 34 figs.

Smith, M.R. 1948. A new genus and species of Ant from India. *J.N.Y. Ent. Soc.*, **56** : 205-208.

Taylor, R.W. 1965. A monographic revision of the rare tropicolotitan ant genus Probolomyrmex Mayr (Hymenoptera : Formicidae). *Trans. R. ent. Soc. London*, **117** : 345-365, 35 figs.

Taylor, R.W. 1966. Notes on Indo-Australian ants of genus Simpone Forel (Hymenoptera-Formicidae). *Psyche, Cambridge*, **72**(1965) : 287-290.

Taylor, R.W. 1968. Notes on the Indo-Australian Basicerotine ants (Hymenoptera : Formicidae) *Aust. J. Zool.*, **16** : 333-348, 15 figs.

Tewary, R.N. & Maiti, P.K. 1976. Some new records of Ants from Arunachal Pradesh (Hymenoptera : Formicidae) *Newsl. zool. Surv. India* **2** (2) : 49-50.

Tewary, R.N. & Guha, D.K. 1977a. A new record of Polyrhachis (Campomyrma) hauxwelli Bingham (Hymenoptera : Formicidae) from India. *Newls. zool. Surv. India*, **2** (5) (1976) : 210.

Tewary, R.N., Guha, D.K. & Maity, P.K. 1977b. New records of Ponerine Ants from Arunachal Pradesh (Hymenoptera : Formicidae). *Newsl. zool. Surv. India*, **3** (3) : 131-133.

Tiwari, R.N. & Jonathan, J.K. 1986a. A new species of Liomyrmex Mayr from Andaman Islands (Hymenoptera : Formicidae). *Rec. zool. Surv. India*, **83** (1 &2) : 87-90.

Tiwari, R.N. & Jonathan, J.K. 1986b. A new species of *Metapone* Forel from Nicobar Islands (Hymenoptera : Formicidae). *Rec. zool. Surv. India*, **83** (1&2) : 149-153.

Tiwari, R.N.1994. Two new species of a little known genus *Myrmecina* Curtis (insecta : Hymenoptera : Formicidae) from Kerala, India. *Rec. zool. Surv.* India, **94**(2-4) : 151-158.

Tiwari, R.N, Kundu, B.G., Roychowdhury, S & Ghosh, S.N. 1994. Insecta : Hymenoptera : Formicidae. *State Fauna Series* 3 :*Fauna of West Bengal*, Part **8** : 209-288.

Tiwari, R.N. 1998. Taxanomic studies on Ants of Southern India (Insecta : Hymenoptera : Formicidae) *Memoirs zool. surv. Ind.* **18** : No4, : 1-96.

Tiwari, R.N. 1997. Fauna of Delhi (Insecta : Hymenoptera : Formicidae) *State Fauna Series zool. surv. Ind.* **6** : 441-451

Wheeler, G.C & Wheeler, J. 1968. The ant larvae of the subfamilies Formicinae (Hymenoptera : Formicidae) : Supplement. *Ann. Entomol. Soc. Amer.* **61**(1) : 205-222.

Wheeler, G.C. & Wheeler, J. 1972. The subfamilies of Formicidae. *Proc. Entomol. Soc. Washington* **74**(1) : 35-45.

Wheeler, G.C. & Wheeler, J. 1974. Ant larvae of the subfamily Dorylinae second supplement (Hymenoptera : Formicidae) *J. Kansas Entomol. Soc.* **47**(2) : 166-172.

Wheeler, G.C. & Wheeler, J. 1976. Supplementary studies on ant larvae : Ponerinae. *Trans. Amer. Entomol. Soc.* **102** : 41-64.

Wheeler, G.C. & Wheeler, J. 1974. Checklist of the ants of Michigan (Hymenoptera : Formicidae) *Great Lakes Entomol.* **26**(4):297-310.

Wheeler, G.C. & Wheeler, J. 1985. A simplified conspectus of the Formicidae. *Trans. Amer. Entomol. Soc.* **111** : 255-266.

Wilson, E.O. 1964. The true Army Ants of the Indo-Australian area (Hymenoptera : Formicidae : Dorylinae). *Pacific Ins.*, **6**(3) : 427- 483, Key, figs., des.

Wheeler, W.M. 1927. Ants collected by Professor F. Silvestri in Indo-China. *Bull. Lab. Zool. Portici*, **20**:83-106, 9 figs.

Wheeler, W.M. 1928. Zatapinoma, a new genus of ants from India. *Proc. New Engl. Zool. Cl., Cambridge*, Mass., **10** : 19-23, 3 figs.

Wilson, E.O. 1985. The beginning of Nomadic and group-predatory behaviour in the ponerine ants. *Evolution* **12** : 24-36.