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(ENTOMOLOGY SERIES)

VOL. XX

PART V

THE
INDIAN FOREST
RECORDS

**ENTOMOLOGICAL INVESTIGATIONS ON THE
SPIKE DISEASE OF SANDAL (22).**

FORMICIDAE (Hymen.)

BY
DURGADAS MUKERJI,

Calcutta University.



Published by Order of the Government of India.

DELHI: MANAGER OF PUBLICATIONS
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ABSTRACT.**Entomological Investigations on the Spike Disease of Sandal (22).**

FORMICIDÆ (Hymen.).

This paper lists thirty-four species of Formicidæ frequenting the foliage of sandal, *Santalum album* Linn., collected by the Forest Research Institute survey of the insect fauna of that tree in North Salem, Vellore, Madras, and Coorg forest divisions, South India.

Of the thirty-four species, 31 are found in Aiyur, 29 in Jawalagiri, 26 in Fraserpet and 18 in Kottur. A table shows the distribution and abundance of the various species.

One new species *Myrmica beesoni* (Fraserpet and N. Salem) and one new variety *Diacamma vagans* var. *doveri* (Fraserpet) are described.

INDIAN FOREST RECORDS

Vol. XX]

1934

[Part V

ENTOMOLOGICAL INVESTIGATIONS ON THE SPIKE DISEASE OF SANDAL (22).

FORMICIDAE

BY

DURGADAS MUKERJI,

Calcutta University.

A collection of 393 ants was sent to me at Calcutta and a total of 8,926 additional specimens has been identified by Mr. N. C. Chatterjee, B.Sc., F.R.E.S. of the Forest Research Institute, and four species not present in the consignment sent to me, have been added. The formicid fauna of Kottur has been worked out by Mr. Chatterjee and the distribution and abundance data prepared by him are also incorporated in this note.

This collection of ants was made in connection with the entomological investigations on the spike disease of sandal, *Santalum album* Linn., and consists of thirty-four species including a new species, and a new variety, and represents the following three subfamilies—Ponerinae, Myrmicinae, Camponotinae, the other two subfamilies, Dorylinae and Dolichoderinae being absent. The Ponerinae includes five of the species, the Myrmicinae seventeen, and the Camponotinae the rest. The specimens were collected during the period February 1930 to May 1931. The larger number of specimens belong to *Sima*, *Myrmicaria*, *Cremastogaster*, *Cataulacus*, *Camponotus* and *Polyrhachis*. It will be not out of place to mention that the Ponerini are well known for their predaceous and carnivorous habits, while some of the myrmicine genera such as *Cremastogaster*, *Myrmica*, *Monomorium*, contain many aphidicolous species, and a few of the species of the Camponotini, such as *Oecophylla smaragdina*, *Camponotus compressus*, are attendants of Coccidae, Membracidae, Fulgoridae, Psyllidae, etc.; again some of the species of the

genera *Sima*, *Cataulacus*, *Cremastogaster*, *Oecophylla*, *Camponotus*, and *Polyrhachis*, are arboreal ants and build nests in trees. In view of the association of the ants with other insects which live on plant juice the present collection is of interest in showing the ant population of a single species of tree. It may be noted, however, that although the specimens enumerated here are regularly found on sandal, most of them have a wide geographical distribution, and are not limited to any particular tree or locality.

[The localities mentioned in this paper are:—

COORG: North Coorg forest division, Sample plots Nos. 1 to 7 within five miles of Fraserpet, elevation about 2,770 feet.

MADRAS: North Salem forest division, Sample plots Nos. 15 to 21 Aiyur reserve, all within four miles of Aiyur, elevation about 2,850 feet. Denkanikota reserve forests, elevation about 2,900 feet, Devarbetta, 15 miles from Denkanikota, elevation about 3,240 feet, Sample plots Nos. 8 to 14 near Jawalagiri, 15 miles from Denkanikota, elevation about 3,050 feet; Noganur, 5 miles from Denkanikota, elevation about 2,900 feet, Uduparani 23 miles from Denkanikota, elevation about 3,090 feet (see map of North Salem District, Ind. For. Rec., XVII, pt. I, p. 4, 1932.)

Vellore forest division, Sample plots Nos. 22 to 28, Kottur Yelagiri, 5 miles from Jalarpet, elevation about 3,700 feet, C. F. C. B.]

Subfamily PONERINAE Lepeletier.

1. *Drepanognathus saltator* (Jerdon).

1851. *Harpegnathus saltator*, Jerdon, *Madr. jour. Litt. Sci.*, XVII, p. 117.

1903. *Drepanognathus saltator*, Bingham, *Faun. Brit. Ind. (Hymn.)*, ii, p. 50, fig. 29.

The examples of this species were collected from Aiyur, in April to October 1930, Jawalagiri, in May 1930, Noganur, in May 1930, and Fraserpet, in March, June, and October 1930. The total collected was 20 of which 5 occurred in Fraserpet, 13 in Aiyur, and the remainder in Noganur and Jawalagiri respectively.

2. *Lobopelta ocellifera* Roger.

1861. *L. ocellifera*, Roger, *Berl. ent. Zeit.*, V, p. 3.

1903. *L. ocellifera*, Bingham, *Op. cit.* p. 57, fig. 32.

1911. *L. ocellifera*, Emery, *Genera Insectorum*, V, p. 101.

Six specimens from Aiyur, during the months of October and December 1930; and 1 from Jawalagiri in April.

3. *Diacamma vagans* (Smith).

1861. *Ponera vagans*, Smith, *Jour. Linn. Soc.*, V. p. 103.
 1903. *Diacamma vagans*, Bingham, *Op. cit.*, p. 81, fig. 43.
 1911. *D. vagans*, Emery, *Op. cit.*, p. 67.

Nine specimens, 7 of which were collected from Aiyur, in April and July 1930; 1 from Jawalagiri, in March 1930, 1 on *unspiked sandal* in February (N. C. C.)

var. *doveri* nov.

It is interesting to note that the striae on the basal abdominal segment, as pointed out by Bingham, are variable in this species. In the collection there is a single specimen obtained from Fraserpet in which the striae are not arranged as in a typical specimen in concentric lines, but those in the first abdominal segment run in a longitudinal direction and are faintly impressed, while those on the second abdominal segment are completely effaced. It thus differs from the variety *burmanum* Emery, in which there are a few partially obsolete longitudinal striae in the middle of the second abdominal segment. Further the specimen is black in colour, and lacks the greenish bronze tint characteristic of the species. I therefore consider this specimen to be a new variety, and have called it variety *doveri*.

Locality: COORG, Fraserpet, 7. VIII 30 (F.R.I. Sandal Insect Survey).

4. *Bothroponera sulcata* (Frauenf.)

1867. *Ponera sulcata* Frauenf., *Verh. Zool. bot. Ges. Wien.*, xvii, p. 441.
 1900. *Bothroponera sulcata* Forel, *Journ. Bomb. N. H. Soc.*, XIII, pp. 323 and 326.
 1903. *Bothroponera sulcata* Bingham, *Op. cit.*, p. 98.

1 specimen was collected at Aiyur in August 1930. (N. C. C. det.)

5. *Bothroponera rubiginosa* (Emery).

1889. *Ponera rubiginosa* Emery; *Mus. Civ. Gen.*, xxvii, p. 498.
 1900. *Bothroponera rubiginosa* Forel; *Jour. Bomb. N. H. Soc.*, XIII, p. 323.
 1903. *Bothroponera rubiginosa* Bingham; *Op. cit.*, p. 99.

1 specimen was collected at Aiyur in May 1930. (N. C. C. det.)

Subfamily MYRMICINAE Lepeletier.**6. *Sima rufonigra* (Jerdon).**

1851. *Eciton rufonigra*, Jerdon, *Op. cit.*, XVII, p. III.
 1903. *Sima rufonigra*, Bingham, *Op. cit.*, p. 108.
 1921. *S. rufonigra*, Emery, *Op. cit.*, p. 23.

165 specimens were collected from Aiyur throughout the year 1930; 295 from Jawalagiri throughout the year; 75 from Fraserpet, through-

out the year ; 1 on *unspiked sandal* in March (N. C. C.) ; 19 from Kottur in January, February, May-September, and December ; 3 from Denkanikota in June ; 3 from Noganur in May ; and 1 from Uduparani in May 1930.

7. *Sima nigra* (Jerdon).

1851. *Eciton nigra*, Jerdon, *Op. cit.*, XVII, p. 112.

1903. *Sima nigra*, Bingham, *Op. cit.*, p. 110.

The species was represented by 662 specimens, of which 342 were obtained from Jawalagiri, collected throughout the year 1930 ; 262 from Aiyur, collected throughout the year ; 47 from Fraserpet throughout the year ; 3 from Kottur in February, April and December ; 1 from Denkanikota in May, 1 on *unspiked sandal* in February (N. C. C.) ; and 7 from Devarbetta in March 1930.

8. *Sima allaborans* (Walker).

1859. *Pseudomyrma allaborans*, Walker, *A. M. N. H.* (3), IV, p. 375.

1903. *Sima allaborans*, Bingham, *Op. cit.*, p. 113.

The collection contained 143 examples, of which 38 were from Aiyur, throughout the year 1930 ; 76 from Fraserpet throughout the year ; 25 from Jawalagiri, in practically all the months of the year ; 2 from Kottur in May ; and 2 from Uduparani in May on *unspiked sandal* (N. C. C.).

9. *Myrmicaria brunnea* Saunders.

1841. *M. brunnea*, Saunders, *Trans. Ent. Soc.*, III, p. 57.

1903. *M. brunnea*, Bingham, *Op. cit.*, p. 118.

420 specimens of this species were collected from Aiyur, throughout the year 1930 ; 7 from Jawalagiri in May-July and October-November ; 2 from Kottur in January ; 3 from Denkanikota, in June ; 1 from Devarbetta in March ; and 1 from Uduparani in May.

10. *Cataulacus taprobanae* Smith.

1853. *C. taprobanae*, Smith, *Trans. Ent. Soc.*, Ser. 2, II, p. 225.

1903. *C. taprobanae*, Bingham, *Op. cit.*, p. 123.

52 examples of this species were collected from Aiyur throughout the year ; 157 examples from Jawalagiri throughout the year ; 144 examples from Fraserpet, throughout the year ; 41 examples from Kottur in most months of the year ; 2 examples from Devarbetta in

March and May; 1 example from Noganur in May on *Dodonaea viscosa*, (N. C. C.); 1 example from Uduparani in May, 1 on *unspiked sandal* in January (N. C. C.). It occurred in the night collections also.

11. *Cremastogaster brunnea* subspecies *rabula* Forel.

1878. *C. subnuda*, Mayr. *Verh. Zool.-bot. Ges. Wien*, XXVIII, pp. 680 and 682.

1902. *C. subnuda*, St., *rabula*, Forel, *Journ. Bomb. Nat. Hist. Soc.* XIV, p. 648.

1903. *C. subnuda*, Bingham, *Op. cit.* p. 129.

1922. *C. (Acrocoelia) brunnea*, subspecies *rabula*, Emery, *Op. cit.* VI, p. 149.

397 specimens were collected from Aiyur, throughout the year; 32 specimens from Fraserpet in February to April, July and October; 113 specimens from Jawalagiri in March-April, 4 on *Dodonaea viscosa* in June, 1 on *Zizyphus oenophia* in June (N. C. C.); 2 specimens from Denkanikota in May on *D. viscosa* (N. C. C.); 2 specimens from Devarbetta in March, 1 on *D. viscosa* in June, (N. C. C.); 1 from Noganur in May on *D. viscosa* (N. C. C.); and 1 from Uduparani in May.

12. *Cremastogaster wroughtoni* Forel.

1902. *C. wroughtoni*, Forel, *Rev. Suisse Zool.* X, p. 206.

1903. *C. wroughtoni*, Bingham, *Op. cit.*, p. 128, fig. 57.

1922. *C. (Paracrema) wroughtoni*, Emery, *Op. cit.*, p. 156.

1,363 specimens were collected from Aiyur, throughout the year, 72 specimens were found in Fraserpet, in February to June and September to November; 201 specimens from Jawalagiri throughout the year; 12 specimens in June on *Dodonaea viscosa* (N. C. C.); 39 specimens from Kottur during January to July; 2 specimens from Denkanikota in May; 10 specimens from Devarbetta in March, 3 specimens in June on *D. viscosa* (N. C. C.); 1 specimen from Noganur in May on *D. viscosa* (N. C. C.) and 5 specimens from Uduparani in January on *unspiked* and *spiked sandal* (N. C. C.).

13. *Cremastogaster rogenhoferi* Mayr.

1878. *C. rogenhoferi*, Mayr. *Verh. Zool.-bot. Ges. Wien*, XVIII, p. 681.

1903. *C. rogenhoferi*, Bingham, *Op. cit.*, pp. 141 and 683.

1 example from Aiyur in April, 1930; 15 examples from Fraserpet, in February to April and July; 2 on *unspiked sandal* in February (N. C. C.); and 9 examples from Jawalagiri during March, April, and October.

14. *Cremastogaster perelegans* Forel.

1902. *C. perelegans*, Forel, *Rev. Suisse Zool.*, X, p. 202.

1903. *C. perelegans*, Bingham, *Op. cit.*, p. 142.

This species was represented by 3 specimens obtained from Fraserpet, in February and July 1930, 1 on *unspiked sandal* in February (N. C. C.); 2 specimens from Jawalagiri in March and July; and 3 specimens from Aiyur also in March and July.

15. *Cremastogaster contemta* Mayr.

1878. *C. contemta*, Mayr, *Op. cit.*, XXVIII, pp. 681 and 685.

1903. *C. contemta*, Bingham, *Op. cit.*, p. 130.

274 specimens of this species were found together with other species of *Cremastogaster*, in Aiyur, throughout the year; 9 specimens from Fraserpet in February and March; 60 specimens from Jawalagiri in March to July; 5 specimens on *Dodonaea viscosa* in May-June, 1 specimen on *Zizyphus oenophia* in June (N. C. C.); 2 specimens from Kottur in January; 16 specimens from Devarbetta in March; 1 specimen from Noganur in May on *D. viscosa* (N. C. C.); and 1 specimen from Uduparani in January on *unspiked sandal* (N. C. C.).

16. *Cremastogaster rothneyi* Mayr.

1878. *C. rothneyi*, Mayr, *Op. cit.*, pp. 681 and 685.

1903. *C. rothneyi*, Bingham, *Op. cit.*, p. 140.

12 examples of this species were collected from Jawalagiri, in January, March to May; 10 examples from Fraserpet in February to May, and July to September; 113 examples from Aiyur throughout the year, 2 examples on *unspiked sandal* in February and April (N. C. C.); 1 example from Devarbetta in June on *Dodonaea viscosa* (N. C. C.).

17. *Triglyphothrix walshi* Forel.

1890. *Triglyphothrix walshi* Forel. *Ann. Soc., Ent. Belge*, XXXIV, C. R. p. CVII.

1903. *Triglyphothrix walshi*, Bingham, *Op. cit.*, p. 172.

This species was represented in the collection by 5 specimens obtained from Aiyur during January, April, July and December (N. C. C. det.).

18. *Triglyphothrix obesa* (Er. André).

1887. *Tetramorium obesa*, Er. André, *Rev. d'Ent.* VI, p. 294.

1903. *Triglyphothrix obesa*, Bingham, *Op. cit.*, p. 173.

A single specimen was collected from Jawalagiri, during June 1930; and 2 from Fraserpet in April.

19. Triglyphothrix decamera Forel.1902. *Triglyphothrix decamera* Forel, *Rev. Suisse Zool.*, X, p. 240.1903. *Triglyphothrix decamera* Bingham, *Op. cit.*, p. 174.

The collection contained 12 examples, of which 4 were collected at Aiyur, in May, July, and August ; 3 at Fraserpet, in March, April, and August ; 2 at Jawalagiri in April and October ; and 3 at Kottur in April, May and November (N. C. C. det.).

20; Monomorium destructor (Jerdon).1851. *Atta destructor*, Jerdon, *Madr. Jour. Litt. Sci.*, XVII, p. 105.1903. *Monomorium destructor*, Bingham, *Op. cit.*, p. 209.

A single specimen was obtained from Aiyur, during March 1930.

21. Pheidole rhombinoda Mayr.1878. *P. rhombinoda*, Mayr, *Op. cit.* XXVIII, pp. 675 and 678.1903. *P. rhombinoda*, Bingham, *Op. cit.*, p. 250.

5 specimens were collected in Aiyur, during January, May, August October and December 1930 ; 1 specimen at Jawalagiri in March, 1 specimen in June on *Zizyphus oenopia* (N. C. C.) ; and 1 specimen at Noganur in May on *Dodonaea viscosa* (N. C. C.).

22. Myrmica beesoni, sp. nov.

(Fig. 1.)

Worker :—

Head a little longer than broad, the middle region of the head when viewed from above more or less flat, the sides and the posterior region of the head sloping down ; eyes, lateral and placed about the middle of the head ; antennal fossa wide and shallow ; the scape of the antenna not reaching the posterior extremity of the head ; the flagellum a little longer than the scape, the last three joints forming a club shorter than the rest of the flagellum ; clypeus rounded posteriorly, the middle portion not produced transversely ; frontal area depressed. The sides of the pronotum anteriorly rounded, the anterior portion of the pronotum produced into a short flat neck ; pro-meso, notal suture obsolete, the meso-meta notal suture not distinct, the thorax emarginate at the meso-meta notal suture, the metathorax shorter than either the prothorax or the mesothorax ; the metanotal spines stout and directed upwards and backwards. The pedicel long, the first node with a petiole in front longer than the node itself, and globose, the second node subglo-

bose and much broader than the first node. Abdomen oval and longer than the pedicel. Legs long, femur cylindrical and inflated in the middle region.

Head and thorax reticulate rugose, the longitudinal rugosity prominent on the head and the pronotum, on the meso and metanotum coarse; clypeus longitudinally striate; nodes sulcate-rugose; the basal segment of the abdomen longitudinally striate, the remaining segment smooth and shining.

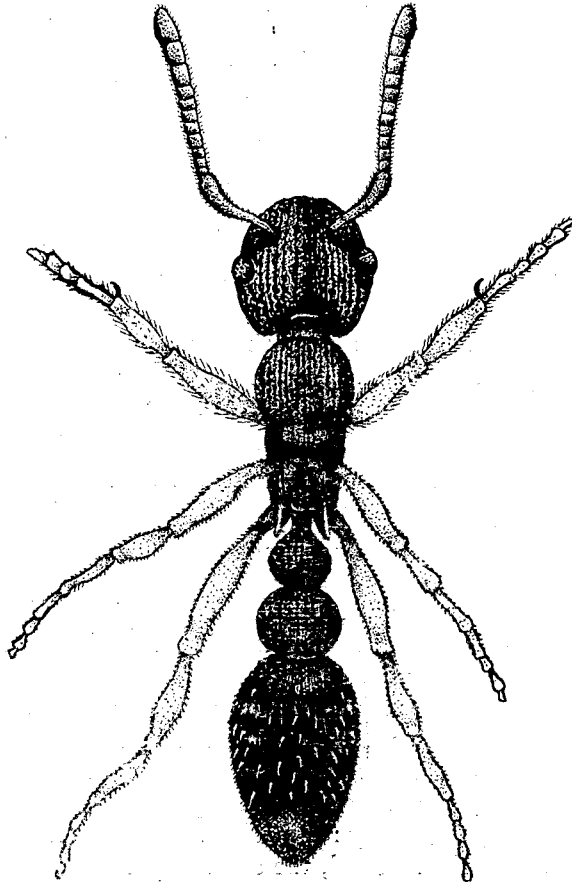


FIG. 1. *Myrmica beesoni* sp. nov. (from a drawing by the author.)

Head, thorax, and nodes concolorous, brown in colour; the scape yellowish brown, flagellum a shade paler; femur and tibia yellow in colour; the middle region of the abdomen slightly shaded with fuscous.

Length 5-6 mm.

Described from several specimens collected from COORG: Fraserpet, 28-III, 18. V. Plots 4 and 7, 29-IX, 20. XI. 1930. MADRAS: North Salem Division, Aiyur, 5-14-1930 Jawalagiri, 5-VIII and 2-IX-1930, Plot 9.

Types in the British Museum of Natural History, London.

M. beesoni is distinguished from *M. ritae*, *margaritae* and *inezae*, in which the scape extends beyond the top of the head, by having the antenna shorter and the scape not reaching to the top of the head. It is distinct from *M. rufosa* which is black in colour, and from *M. smythiesi* which possesses a length of 3.5-4.5 mm.

Subfamily CAMPONOTINAE Forel.

23. *Oecophylla smaragdina* (Fabr.)

1775. *Formica smaragdina*, Fabricius, *Syst. Ent.*, p. 828.

1903. *Oecophylla smaragdina*, Bingham, *Op. cit.* p. 311, fig. 93.

1925. *O. smaragdina*, Emery, *Op. cit.*, p. 52.

562 specimens were collected from Aiyur, throughout the year. many winged female specimens were also obtained from the same locality during April and May; 11 specimens from Fraserpet during January-April and October; 37 specimens from Jawalagiri during February-June, August and October; 14 specimens from Kottur during January-June; 4 specimens from Devarbetta in March; and 1 specimen from Uduparani in May.

24. *Camponotus compressus* (Fabr.)

1787. *Formica compressus*, Fabricius, *Man. Ins.*, I, p. 307.

1892. *C. maculatus*, Fabr., race *compressus* (Fabr.), Forel, *Jour. Bomb. Nat. Hist. Soc.*, VII, pp. 229 and 240.

1903. *C. compressus*, Bingham, *Op. cit.*, p. 351, fig. 109.

1925. *C. (Tanaemyrmex) compressus*, Emery, *Op. cit.*, p. 98.

The collection contained 1509 specimens, of these 741 were collected from Aiyur, throughout the year; 2 on *unspiked sandal* in February and April, 2 on *spiked sandal* and *Dodonaea viscosa* in May (N. C. C.); 507 from Jawalagiri, throughout the year; 2 on *unspiked sandal* in April; 1 on *Dodonaea viscosa* in May, and 1 on *Zizyphus oenoplia* in June (N. C. C.); 213 from Fraserpet throughout the year, 2 on *unspiked sandal* in February and March (N. C. C.); 26 from Kottur during January to June and December; 3 from Denkanikota in June; 3 from Devarbetta in March-April; 6 from Noganur in June. 12 occurred in the night collections also.

*25. *Camponotus mitis* (Smith).1858. *Formica mitis* Smith, *Brit. Mus. Cat.*, VI, p. 20.1892. *Camponotus maculatus* race *mitis*, Forel, *Op. cit.*, pp. 230 and 242.1925. *Camponotus (Tanaemyrmex) variegatus*, Emery, *Op. cit.*, p. 95.

244 specimens were collected from Aiyur, throughout the year; 11 specimens from Fraserpet during March-May, July-August, October-November; 1 on *D. viscosa* in June (N. C. C.); 27 specimens from Jawalagiri during May-December; 11 specimens from Kottur during February, June and July; 39 specimens from Denkanikota in May-June; 3 on *unspiked sandal* in February, 2 on *spiked sandal* in June, 19 on *Dodonaea viscosa* in May-June (N. C. C.); 3 specimens from Noganur in May, 1 on *D. viscosa* in May (N. C. C.).

This species occurred in the night collections also.

*26. *Camponotus variegatus* (Smith), var. *mitis* Emery.

The collection contained 57 specimens from Aiyur, caught in January, April-December 1930, 1 from Fraserpet in February; 21 from Jawalagiri, caught in April-December; 1 from Kottur in June, and 1 from Denkanikota also in June.

*27. *Camponotus maculatus* subspecies *mitis* var. *bacchus* Smith.

28 specimens were collected from Aiyur, during January, April to November 1930; 2 from Jawalagiri in October and December.

*[With regard to the nomenclature of the forms listed under serial numbers 25, 26, and 27, Mr. Durgadas Mukerji notes in litt "I grouped the specimens under the names *C. mitis*, *C. variegatus* var. *mitis*, *C. maculatus* subsp. *mitis* var. *bacchus* to ensure correctness of the identification as these specimens agreed with those named as such in the collection of the Indian Museum, Calcutta, although Emery (1925) in the *Genera Insectorum*, fasc. 183, put all of them as synonyms of *Camponotus variegatus* (Fred Smith). Emery's classification is based on the geographical range of this species and in view of the wide range of variation of this species it is difficult to say at present without examining a stable internal structure such as the fold of the gizzard, which I believe will throw much light on the question, whether these forms should be regarded as separate species or varieties or local races.

In view of Emery's remarks "Le nom de *C. variegatus* a été appliqué à tort et à travers par différents auteurs à des fourmis très diverses qui n'ont aucun rapport avec le *Formica variegata* de F. Smith" it would be better if they are shown under the specific name *variegata*, and at the same time the specimens which are differently named as above are allowed to retain the names given by me, since these have been identified by comparison with specimens named by eminent formicologists like Forel and Wheeler." C. F. C. B.]

28. *Camponotus sericeus* (Fabr.).1798. *Formica sericeus*, Fabricius, *Ent. Syst. Suppl.*, p. 279.1903. *Camponotus sericeus*, Bingham, *Op. cit.*, p. 376.1925. *C. (Orthonotomyrmex) sericeus*, Emery, *Op. cit.*, p. 125.

912 examples; 569 of these were collected from Aiyur, throughout the year, 1 on *unspiked sandal* in February (N. C. C.); 189 from Jawala-

giri throughout the year, 4 on *Dodonaea viscosa* in May-June, (N. C. C.); 81 from Fraserpet throughout the year; 8 from Kottur in January, February, April, June and July; 42 from Denkanikota in May-June, 12 on *Dodonaea viscosa* in May-June, 1 on *unspiked sandal* in February, (N. C. C.); 2 from Devarbetta in March, 1 on *D. viscosa* in June, (N. C. C.); 2 from Noganur in May.

A few of the Fraserpet specimens were peculiar in having the scape and flagellum deep red; while some of the other specimens had the head blood red in colour and these were found along with the typical species in the same season.

29. *Polyrhachis clypeata* Mayr.

1862. *P. clypeata*, Mayr, *Op. cit.*, XII, p. 683.

1903. *P. clypeata*, Bingham, *Op. cit.*, 411.

1925. *P. (Campomyrma) clypeata*, Emery, *Op. cit.*, p. 178.

276 specimens were collected from Fraserpet, throughout the year; 21 from Jawalagiri during January and May to December; 7 from Aiyur during March-August and December; 4 from Kottur during June-July; 1 from Daverbetta in March, and 2 from Noganur in May.

30. *Polyrhachis simplex* Mayr.

1872. *P. simplex*, Mayr, *Op. cit.*, p. 682.

1903. *P. simplex*, Bingham, *Op. cit.*, p. 394.

1925. *P. (Myrmhopla) simplex*, Emery, *Op. cit.*, p. 178.

2 specimens of this species were collected from Jawalagiri, in September-October 1930; and 6 from Fraserpet during January, February, July, September, and December.

31. *Polyrhachis rupicapra* Roger.

1863. *P. rupicapra*, Roger, *Berl. ent. Zeit.*, VII, p. 154.

1903. *P. rupicapra*, Bingham, *Op. cit.*, p. 389.

The collection contained 5 specimens collected from Fraserpet in February, March and October; also 1 on *unspiked sandal* in April (N. C. C.); 1 specimen from Aiyur in March; and 15 specimens from Kottur in January, February, May, June, and December.

32. *Polyrhachis (Myrma) hemiopticoides* Mukerjee.

1930. *P. (Myrma) hemiopticoides*, Mukerjee, *Journ. Bomb. Nat. Hist. Soc.*, XXXIV, p. 161, fig. 5.

The collection contained 10 specimens from Fraserpet, collected in January, February, May-July, September and October; 9 specimens

from Aiyur in February, May, August to November ; 1 specimen from Jawalagiri in September, and 1 specimen from Kottur in December.

33. *Polyrhachis rastellata* Latr.

1802. *P. rastellata*, Latr., *Hist. Nat. Fourm.*, p. 130.

1903. *P. rastellata*, Bingham, *Op. cit.*, p. 414.

1925. *P. (Cyrtomyrma) rastellata*, Emery, *Op. cit.*, p. 258.

This species was represented in the collection by 41 specimens from Fraserpet collected throughout the year ; 185 specimens from Jawalagiri collected throughout the year ; 88 specimens from Aiyur collected throughout the year ; 1 specimen on *Zizyphus oenophia* in July (N. C. C.) ; 8 specimens from Kottur collected in January, February, May, July, and December ; 1 specimen from Denkanikota in June ; 2 specimens from Devarbetta in March ; 1 specimen from Noganur on *Dodonaea viscosa* in May (N. C. C.) ; and 1 specimen from Uduparani in May.

34. *Polyrhachis punctillata* Roger.

1863. *P. punctillata*, Roger, *Op. cit.*, VIII, p. 152.

1903. *P. punctillata*, Bingham, *Op. cit.*, p. 409.

1925. *P. punctillata*, Emery, *Op. cit.*, p. 204.

The examples of this species in the collection were 3 from Fraserpet collected in January, April and May ; 23 from Jawalagiri in March, May-July, October, and November ; and 1 from Kottur in February.

Analyses.

On analysis of the material, it is seen that the ant-population is rich at Aiyur which has thirty-one of the recorded species ; *Oecophylla*, *Camponotus*, and *Cremastogaster* species, however, predominate. Next follows Jawalagiri with twenty-nine of the recorded species, *Oecophylla* being poorly represented here. Fraserpet contains twenty-six and Kottur eighteen of the recorded species, the numerical strength of the ant-population being less at Kottur. At Fraserpet *Cataulacus*, *Camponotus*, *Polyrhachis* species are fairly represented. Next in order of richness of the ant-fauna comes Devarbetta, Noganur, Denkanikota, and Uduparani, the last having nine of the recorded species.

With regard to the numerical strength of the species in a locality, it is found that *Cremastogaster wroughtoni* tops the list in abundance, the *Camponotus* species, *Oecophylla*, *Myrmicaria*, *Cremastogaster*, and *Sima*, following the lead. *Triglyphothrix*, *Pheidole*, and *Monomorium* in comparison, are very poorly represented.

TABLE SHOWING THE DISTRIBUTION AND THE NUMBER OF THE VARIOUS SPECIES OF ANTS COLLECTED BY F. R. I. SANDAL INSECT SURVEY.

Prepared by Mr. N. C. Chatterjee.

Locality.	Drepanognathus saltator.	Lobopelta ocellifera.	Diacamma vagans.	Diacamma vagans var doverti.	Bothroponera sulcata.	Bothroponera rubiginosa.	Sima rufonigra.	Sima nigra.	Sima albobarans.	Myrmica brunnea.	Catantopus taprobanae.	Cremastogaster brunnea s. sp. tabula.	Cremastogaster wroughtonii.	Cremastogaster rogenhoferi.	Cremastogaster perelegans.	Cremastogaster contenta.	Cremastogaster rohneyi.
Alyur	13	6	7	..	1	1	165	262	38	420	52	397	1,368	1	3	274	115
Fraserpet	5	..	..	1	..	..	75	47	76	..	144	32	72	17	4	9	10
Jawalagiri	1	1	2	..	..	..	295	342	25	7	157	118	213	9	2	66	12
Kottur . . . . .	..	..	..	..	..	..	19	8	2	2	41	..	39	..	..	2	..
Denkanikota . . . . .	..	..	..	..	..	..	3	2	..	3	..	2	2	..	..	..	..
Devarbetta . . . . .	..	..	..	..	..	..	..	7	..	1	2	3	13	..	..	10	1
Kogannur	1	..	..	..	..	..	3	..	..	..	1	1	1	..	..	1	..
Udappanai . . . . .	..	..	..	..	..	..	1	..	2	1	1	1	5	..	..	1	..
TOTAL	20	7	9	1	1	1	591	963	143	484	398	554	1,708	27	9	369	188

TABLE SHOWING THE DISTRIBUTION AND THE NUMBER OF THE VARIOUS SPECIES OF ANTS COLLECTED BY F. R. I. SANDAL INSECT SURVEY—*contd.*

Locality.	Triglyphothrix walshii.	Triglyphothrix obesa.	Triglyphothrix decamera.	Monomorium destructor.	Rheidole rhomboida.	Myrmica beesoni.	Geophylla smaragdina.	Camponotus compressus.	Camponotus mirts.	Camponotus variegatus var. mirts.	Camponotus nuchitatus s. sp. mirts var bacchus.	Camponotus sericeus.	Polyrhachis clypeata.	Polyrhachis simplex.	Polyrhachis ruficeps.	Polyrhachis hemiopti-coides.	Polyrhachis rasteilata.	Polyrhachis punctillata.
Aiyur	5	..	4	1	5	1	562	745	244	57	28	570	7	..	1	9	88	1
Fraserpet . . . . .	..	2	3	..	..	4	11	215	12	1	..	81	276	6	5	10	41	3
Jawalangiri . . . . .	..	1	2	..	2	2	37	511	27	21	2	193	21	2	..	1	185	23
Kottur . . . . .	..	..	3	..	..	..	14	26	11	1	..	8	4	..	15	1	8	1
Denkankota . . . . .	..	..	..	..	..	..	..	3	63	1	..	55	..	..	..	..	1	..
Devarbetta . . . . .	..	..	..	..	..	..	4	3	..	..	..	3	1	..	..	..	2	..
Noganur . . . . .	..	..	..	..	1	..	..	6	4	..	..	2	2	..	..	..	1	..
Udupacani . . . . .	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..
TOTAL	5	3	12	1	8	7	629	1,509	361	81	30	912	311	8	21	21	327	27

It is interesting to note that *Camponotus compressus*, *C. sericeus*, *Cataulacus taprobanæ*, *Cremastogaster wrightoni* *C. brunnea* var *rabula*, *Polyrhachis rasilata* and *Sina rufonigra* are species that are constantly found on sandal trees, being represented in all or in seven out of the eight localities surveyed; and these occur in a fair number. The remaining species are found either in one or the other of the localities. The Ponerinae are not represented in Kottur, Vellore forest division.

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