Some Ants (Hym. Formicidae) from North-East Asia

By

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I am indebted to Dr. E. Kjellander of the Naturhistoriska Riksmuseum, Stockholm for the opportunity of examining a rather miscellaneous but interesting collection of ants mainly collected by Drs. R. Malaise, S. Bergman and F. Trybom from North Asia and Burma during the years 1927—1935. There are also a few specimens taken by Dr. D. Hummel during one of Sven Hedin’s expeditions to North-West China. A fair number of species are present and their records presented here provide new information of some interest on their ranges in North-East Asia. I have been guided by the list of Asian Formicidae prepared by Chapman and Capco (1951) for data on distribution. Most of the taxonomic literature for this area is scattered in short papers but I have used Bingham (1903) where applicable for detailed information on some of the species since this is still the only available comprehensive work on ants for India and adjacent countries. The species are discussed individually in the main body of the paper but a list is given for convenience, showing their country of capture and previously recorded ranges.

List of Species

Dorylus (Alaepone) orientalis Westwood
Aenictus wroughtoni Forel
Aenictus grandis Bingham
Bothroponera rufipes Jerdon
Diacamma scalpratum Fr. Smith
Ectomyrmex astutus Fr. Smith
Odontoponera transversa Fr. Smith
Euponera (Trachymesopus) darwini Emery

Burma
India
Burma
Burma
Sikkim
Sikkim
Burma
Burma
Burma
Burma
Thailand
Burma
Burma
Thailand

Indo-Malaya
India
Burma
India
Burma
Indo-Malaya
Burma
Indo-Malaya
Indo-Malaya
Indo-Malaya &
Burma
Indo-Malaya
India
India

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Leptothenax acervorum Fab.
Leptothenax tuberum Fab.
Paratopula ceylonicus Emery
Myrmica rubra L.

Myrmica ruginodis Nyl.
Myrmica stulcinodis Nyl.
Myrmica berti Emery

Myrmica rugulosa Nyl.
Myrmica angulinitis Ruzsky
Aphaenogaster subterranea Latr.
Aphaenogaster (Nystalomyrma) gigantea Sp. N.
Carebara lignata Westwood
Pheidologeton diversus Jerdon
Monomorium (Parholcomyrmex) gracillimum Smith
Dolichoderus (Hypoclinea) fuscus Emery
Lioetopum sinensis Wheeler
Technomyrmex brunneus Forel
Bothriomyrmex myops Forel
Cataglyphis birmana Sp. N.
Proformica deserta Kuznetzov
Formica lugubris Zetterstedt
Formica fusca japonica Motschulsky

Formica lemani Bondroit
Formica (Neoformica) rufolucida Sp. N.
Lasius niger L.
Lasius sitkaensis Pergande
Lasius (Chthonolasius) mixtus Nyl.
Pseudolasius hummeli Stitz
Pseudolasius minutus Emery
Pseudolasius sp.
Camponotus herculeanus L.
Camponotus japonicus Mayr.

Camponotus obscuripes Mayr.
Camponotus (Myrmotarsus) mistura Fr. Smith
Camponotus (Orthonotomyrmex) sericeus Fab.
Camponotus (Orthonotomyrmex) mutillaria Em.
Camponotus (Tanaemyrmex) taylori Forel
Camponotus (Tanaemyrmex) variegatus Fr. Smith
Camponotus (Tanaemyrmex) mitis Fr. Smith

Camponotus (Tanaemyrmex) irritans Fr. Smith

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Siberia
Burma
China
Siberia
China
Siberia
Siberia
Siberia
Siberia
Siberia
Kamchatka
China
Burma
Thailand
Burma
Burma
Burma
China
Kamchatka
Siberia
Kuril Is.
Burma
Siberia
Burma
Siberia
China
Burma
Burma
Siberia
China
Japan
Burma
Kuril Is.
Burma
India
Burma
Burma
Siberia
China
Burma
Siberia
China
Burma
Burma
Burma
Kuril, Nth Japan
Indo-Malaya
India, Ceylon & Africa
Burma
China
India, China
Indo-Malaya
Indo-Malaya, Papua
India
Indo-Malaya

Euro-Siberia
Europe
Indo-Malaya
Europe &
North Asia
Europe &
North Asia
Euro-Siberia
East Europe &
Middle East
Europe
Siberia
Siberia
Europe
Indo-Malaya
Indo-Malaya
Indo-Malaya and
Middle East
Burma
China
India, Sikkim
India, Sikkim
Local
Turkestan
Europe
North-east Asia
Europe
Local
Holarctic
North America
North Europe
China
Indonesia
Holarctic
North Asia
Kuril, Nth Japan
Indo-Malaya
India, Ceylon & Africa
Burma
Burma
India, China
Indo-Malaya
Indo-Malaya, Papua
India
Indo-Malaya
SOME ANTS (HYM. FORMICIDAE) FROM NORTH-EAST ASIA

Colobopsis saundersi Emery
Colobopsis strictus Jerdon
Colobopsis pubescens Mayr.
Polyrachis (Myrmhopla) dives Fr. Smith
Oecophylla smaragdina Fab.

Burma
Burma
Burma
China
India
Indo-Malaya
Indo-Malaya
Malaysia
Melanesia, China, Japan
Tropical Asia

Siberia

Collecting areas:
Central Siberia — Krasnoyarsk, lat. 56°; Timsk, lat. 59°40'; Nesimovo, lat. 59°35'; Nikilina, lat. 60°25'; Obensis; Novosaljevsk, lat. 65°10'; Tungusk, lat. 65°50'; Fatjanovsk, lat. 64°5'; Antsiverovo; Jeneseisk, lat. 58°20'; Leg. F. Trybom.
Kuril Islands — Kunashiri: Furukamappu, Tomari, Yeterofu, Chiripoi, Leg. S. Bergman.

The species:

*Myrmica rubra* L. 1 ♀ Jeneseisk.
*Myrmica ruginodis* Nyl. 1 ♀ Tungusk.
*Myrmica sulcinodis* Nyl. 5 ♂♂ Obensis.
*Myrmica bergi* Emery. I ♀, 5 ♂♂ Timsk, Antsiferovo.
*Myrmica rugulosa* Nyl. subsp.? 3 ♂♂ Krasnoyarsk. Fig. 1, 2.
*Myrmica angulinodis* Ruzsky. 1905 1 ♀ Kamchatka — Machura. Fig. 3, 4, 5.

The examples of *M. rubra*, *M. ruginodis* and *M. sulcinodis* all appear fairly typical and have been previously recorded from Siberia. The records for *M. bergi* extend the known range of this south-east European marshland species considerably to the north. Existing records include several localities in Transcaucasia and just north of the Aral sea (Ruzsky, 1905). Sadil (1951) records it from south Czechoslovakia. Recently, Dr. H. Kutter has informed me that he received this species through Dr. A. Jacobson from near Riga in Latvia. Southward it has been recorded as 'var. fortior' Crawley from Mesopotamia. Thus, its range from south to north is from about latitude 33° to latitude 60°. The Siberian examples are rather small but typical in other respects.

The Siberian specimens of *M. rugulosa* differ from the typical European species in having much shorter epinotal spines which are broadly based and splayed outwards. The petiole node also is larger and more rounded so that from above it appears rather oval in outline instead of rectangular. The head and scape characters, general appearance and size are much as in typical European *M. rugulosa* but the spine and petiole characters may well justify a species or subspecies difference should further material confirm their constancy in the Siberian population.

The single alate ♀ *M. angulinodis* taken appears to conform to Ruzsky's description although it is far to the east of Irkutsk, the only previously recorded locality. It is characterised by the high angled petiole node, short broad epinotal spines and the slender but distinctly angled scape which has

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a scarcely discernible transverse ridge at the bend. The length is about 4.8 mm. and the head-width/frons width ratio is as 49 : 19. In general appearance, including sculpture and colour, this specimen resembles a small *M. scabrinodis* Nyl. rather than *M. lobicornis* Nyl.

*Leptothorax acervorum* Fab. 2 ♀♀, Krasnoyarsk, Fatyanovsk.
*Leptothorax tuberum* Fab. 1 ♂ Krasnoyarsk.

The abundant Eurasian *L. acervorum* is recorded by Ruzsky (1905) throughout north Russia and Siberia. Emery (1921) includes Central Asia in its range and Kuznetsov (1929) recorded it as far east as Vladivostok. *L. tuberum* is common from the Pyrenees in the west and the Alps and Caucasus to about latitude 62° in Sweden and Finland. Ruzsky (1905) only recorded it from south-west Russia but it seems probable that its range would extend continuously throughout the centre of Russia and Siberia.

*Liometopum sinensis* Wheeler, 1921. subsp.? 1 ♂ Vladivostok.

This specimen differs from Wheeler’s species by the uniform pale rose colour of head, alitrunk and appendages. Wheeler (1921) describes *L. sinensis* as red brown with the femora darker and mandibular border black. In all other respects the specimen corresponds with Wheeler’s description. The head is more widely emarginate with the occipital angles more flattened than in the European *L. microcephalum* Panz. and it entirely lacks the characteristic colour pattern of the latter. Kuznetsov (1929) lists *L. microcephalum* from Vladivostok but previously this species had not been recorded further east than the Caucasus (Emery, 1912). It seems more probable, therefore, that Kuznetsov’s record should refer to *L. sinensis* rather than to the European species.

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Formica fusca japonica Motsch. 1 ♂ 2 ♀ Vladivostok; Yeterofu; Petropil.
Formica lemani Bondroit. 5 ♂♀ Kuril — Kunashiri, Chiripoi.

Dr. Malaise collected a good series of all castes of *F. lugubris* and as already mentioned (Collingwood, 1961) the specimens had been placed in the Stockholm Museum variously as *F. rufa* and *F. pratensis* more or less according to the colour markings of the ♂ thorax. All, however, are typical *F. lugubris*. Nothing is yet known about this species in Russia or Siberia. There are, however, certain records for eastern Europe and Karelia (Holl-döbler, 1961) and there is little doubt that it will be found to occur more or less continuously throughout the northern coniferous forest zone of north Russia and Siberia as well.

The general appearance of the *F. fusca japonica* specimens is more matt and opaque than in true *F. fusca*. The male is otherwise indistinguishable and has the petiole scale simple as in *F. fusca* and not fringed with long hairs as in most other species in this group. Kuznetzov (1929) only recorded *F. japonica* from Vladivostok but Eidmann (1941) lists both *F. fusca* and *F. japonica* from West China. It is probable that the two should be regarded as independent species rather than as subspecies but further study of this group in Asia is required.

The *F. lemani* examples have the sculpture, more or less shining integument and coarse thoracic bristles as in European specimens. The body colour is unevenly reddish brown instead of evenly dark, and there are patches of sparse pubescence. This variation together with the immense area from the Kuril Islands to Europe from which *F. lemani* has not yet been recorded makes the identification of this form uncertain. However, by analogy with *F. lugubris* which shares very much the same distribution as *F. lemani* in Europe, the eastward extension of the latter through north Russia and Siberia would by no means be unlikely.

Lasius niger L. 3 ♀ Vladivostok — Suchan, Sedanka.
Lasius sitkaensis Pergandei. 1 ♂ Kuril — Kunashiri.
Lasius (Chthonolasius) mixtus Nyl. 1 ♀ Vladivostok — Suchan.

The *L. niger* ♀♀ are unusually pubescent compared with European examples and one of them has rather reduced appendage pilosity. The single example of *L. sitkaensis* has the mandibles rather worn but the reduced offset basal tooth, rather flattened clypeal outlined, pale reddish brown colour and scattered appendage pilosity all conform to the North American *L. sitkaensis* and not to *L. niger*. *L. sitkaensis* has the most northwesterly range of the American *Lasius* and occurs in western Alaska to latitude 58°. It is considered by Wilson (1955) to be the most primitive of the *L. niger* species group, nesting mainly in rotting logs or under stones in shaded forest. This is a new record for the palaearctic fauna but it would be desirable to examine much more material from this area of north-east Asia. Confirmed records of *L. niger* exist for Japan, China, Formosa and Kamchatka and it seems probable that *L. sitkaensis* has a quite restricted distribution, perhaps confined to the Kuril Islands.

The *L. mixtus* ♀ almost entirely lacks standing hairs on the body, those on the gaster are extremely short and confined to the anterior face of the

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first segment. The whole body is thickly pubescent and the colour is dark brown. The specimen, therefore, represents an extreme variation from *L. umbratus* Nyl. as generally accepted before Wilson (1955), with its copious body and appendage hairs. *L. mixtus* has been recorded throughout northern Eurasia. The Vladivostok example is darker and more pubescent than *L. umbratus* sensu Wilson (1955) in north America and there is no suggestion, therefore, that the European *L. mixtus* varies towards its American counterpart as it extends eastwards. Wilson's synonymy of *L. mixtus* as a form of *L. umbratus* has been challenged by some European authors, E. G. Forslund (1957), and Wilson (pers. commun.) has agreed that there is an element of doubt as to whether these forms are really one and the same species. It seems best, therefore, to continue to record them separately until fresh evidence can be reassembled.

*Camponotus herculeanus* L. 1 ♂, 3 ♀♀, 1 ♀, Tungusk, Novosaljevsk, Timsk, Krasnoyarsk.

*Camponotus japonicus* Mayr. 8 ♀♀, Nikilina, Nesimovo, Krasnoyarsk.

*Camponotus obscuripes* Mayr. 4 ♀♀, Kuril — Kunashiri, Tomasi; Yeteropu, Shana.

Yasumatsu and Brown (1951, 1957) discuss the synonymy and variation of the *C. herculeanus* group of species in Asia in some detail. Their chief concern was to disentangle the two species *C. herculeanus* and *C. japonicus* which have not always been satisfactorily distinguished either from each other or from other similar species in the past owing to colour and to some extent pubescence variations. In the present collection, the *C. herculeanus* examples are all from central Siberia ranging from latitude $50^\circ$ to $65^\circ$ 50'. The *C. japonicus* examples from Siberia range to $60^\circ$ 25' and there is in this region a considerable overlap between the two species. The chief confusion between them has arisen from black forms of *C. herculeanus* which occur here and there sporadically over its whole range, being insufficiently distinguished from *C. japonicus*, a predominantly black species, but also sometimes developing a reddish colour in the ♀ head and thorax. This is well exemplified by three ♀♀ from Krasnoyarsk. The most reliable distinctions include the greater extent of gastric pubescence in *C. japonicus* coupled with the clypeus which projects slightly forward beyond the lateral lobes in this species but not in the others of this group in Asia. Santschi (1914) also refers to the more rounded epinotum in *C. japonicus* when seen in profile. These differences are slight but taken together seem to be quite reliable as far as the present collection goes which includes numerous examples of *C. japonicus* from China, Japan and Burma listed elsewhere in this paper. It is interesting that the Burmese examples show considerably less pubescence than those from further north although they are completely and characteristically black. The single ♂ *C. japonicus* in the collection has the petiole distinctly less emarginate than in species of this group from Europe.

*C. japonicus* has been recorded as far west as Nanga Parbat in the West Himalayas (Eidman, 1942) and the South Urals in Russia (Ružsky, 1905). It appears to have much the same relationship to *C. herculeanus* in north Asia as does *C. ligniperdus* Latr. to that ant in Europe. According to Yasumatsu and Brown (1951), *C. japonicus* characteristically nests in the ground, just as *C. ligniperdus* in my experience generally nests in stony banks and
Fig. 6. Map of Asia showing

- - - - East. Range of C. obscuripes Mayr
- - - - West. Range of C. ligniperdus Latr.

is only found in tree stumps in the more southern part of its range. *C. herculeanus*, on the other hand, typically nests in fir stumps and probably tolerates damper and more shaded conditions than the other two species. Holgersen (1942) records *C. herculeanus* as far north as latitude 70° in Norway whereas *C. ligniperdus* ranges no further than about latitude 62° in Sweden and Finland although Holgersen (op. cit.) has one isolated record from west Norway at latitude 66° 20’. *C. ligniperdus* ranges from the Pyrenees to the Caucasus but not apparently further into Russia (Ruzsky, 1905). See Map (Fig. 6).

This European species is very similar to *C. obscuripes* which according to the records summarised by Yasumatsu and Brown (1951) is restricted to north Japan, the Kuril Islands and Sakhhalin. The ♀♂ in the present collection differ from European *C. ligniperdus* only in the slightly coarser microsculpture when seen under high magnification and in the greater extent of yellowish red on the first gaster segment. The leg colour from which the specific name is derived is no darker than that of several *C. ligniperdus* examples I have from the Alps and only the vast area between eastern Europe and north-east Asia enforces the assumption that they are separate.
species as far as present knowledge goes. It is perhaps curious that the common European C. ligniperdus is seemingly replaced by C. japonicus in Asia whereas the latter, C. obscuripes and yet a third species C. hemichlaena Yasumatsu and Brown are all sympatric in the north Japanese islands. The remaining European species, C. vagus Schr. is quite distinct from any of the above and occupies warmer, drier habitats than C. ligniperdus in south Europe. It ranges from Spain in the west to the Middle East and the Caucasus in the east and northwards to about latitude 51° in Poland.

**China and Japan**

Collecting areas:

Japan — Kobe, leg. I. Trotzig.
North-west China — South Kansu, North-east Szechuan, leg. D. Hummel.
West China — Yarkand, leg. Raquette.
East China — Kiangsu, leg. Kolthoff.

The species:

*Myrmica rubra* L. ♀ ♂ South Kansu.
*Myrmica ruginodis* Nyl. 1 ♂ South Kansu.
*Aphaenogaster (Atomyrma) subterranea* Latr. 1 ♂ South Kansu.

These ♂ ♀, all from the same locality, were presumably taken by Dr. Hummel during a mating flight. The *M. ruginodis* and *A. subterranea* are in fact mounted on the same pin. Both the *Myrmica* species have been recorded for China but *A. subterranea* is an interesting new record. Ruzsky (1905) did not record this species further east than the Caucasus and the present record, therefore, extends the known species range considerably eastward. The single ♂ of *A. subterranea* collected is quite typical and resembles those I have from Switzerland.

*Proformica deserta* Kuznetzov. ♀ South Kansu.

This ♀ has the *Cataglyphis* like maxillary palps and elongate posterior spiracle characteristic of the species. There are also some ♀♂ in the Naturhistoriska Riksmuseum under the label 'Formica picea' from south Kansu and south Mongolia taken by Dr. Hummel which probably belong as well to *P. deserta*. In general appearance and size the ♀ is much like *P. nasuta* Nyl. of Europe but like the ♂ and ♀, immediately distinguished by the long posterior spiracle which has the approximate proportions of length to breadth of 7 : 2. This species evidently extends at least from the Amu Darya region of Russian Turkestan and north Afghanistan (Collingwood, 1960) well into north China and may well have been referred to under some other name in the literature on Central Asian ants.

*Pseudolasius hummeli* Stitz (1936). 1 ♀ North-east Szechuan.

The general description of this species and that of the widely distributed Indonesian *P. familiaris* Fr. Smith are very similar. Both are of similar size and appearance — pale reddish yellow with thick, silky pubescence. Stitz (1936) does not indicate what the main differences are. However, Emery (1911) keys *P. familiaris* as having the third mandibular tooth clearly smaller than the second which is the reverse in the present species.

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Camponotus japonicus Mayr. 1 ♂ Japan — Kobe; 1 ♂, 1 ♀, 6 ♀♀ Kiangsu. Camponotus (Tenuemymrinx) taylori Forel. 1 ♀ Yarkand.

This has the cylindrical scapes and tibiae without spines or outstanding hairs and rather upright thin scale characteristic of the species which ranges widely through India and China.

Polyrhachis (Myrmhopia) dives Fr. Smith. 6 ♀♀ China no locality.

Other specimens from these Chinese collections have already been dealt with by Stitz (1936). It seems worthwhile, therefore, listing here the additional species that were included in his paper. These are:

Myrmica schencki Em. North-east Szechuan.
Pristomyrmex pungens Mayr. Kiangsu.
Pheidole rhambinodis Mayr. North-east Szechuan.
Tetramorium caespitum pallida Stitz. Kiangsu.
Tetramorium caespitum jacoti Wheeler. South Kansu.
Stenamma owstoni Wheeler. S. Kansu.
Tapinoma geei Wheeler. South Mongolia.
Tapinoma orthocephalum Stitz. South Mongolia.
Camponotus herculaneus Fu Shu Shi, 2100 m.
Camponotus japonicus North-east Szechuan; South Kansu.
Camponotus (Tenuemymrinx) irritans hongkongensis Forel. Kiangsu.
Camponotus (Myrmontoma) kolthoffi Stitz. Kiangsu.
Camponotus (Myrmontoma) reticulatus Roger V. bedoti Emery. Kiangsu.
Polyrhachis lamellidens Fr. Smith Kiangsu.
Lasius fuliginosus Latr. South Kansu.
Lasius niger L. North-east Szechuan.
Lasius alienus Forst. South Mongolia.
Formica exsecta v. fusculi Stitz (not listed Chapman & Capco (1915)?).
Formica yessensis Forel.
Formica clara Forel. South Mongolia.
Formica japonica Motsch. North-east Szechuan; South Kansu.
‘Formica picea’ (=Proformica desertae Kuznetsov). South Mongolia: South Kansu.

The total list of species here shows an interesting mixture of European, Oriental and local forms. Eidmann (1941) also lists a number of species from the same general area. This author also gives Formica picea with the comment that it inhabits stony, grassy steppes and mountain sides to the snowline and I suspect that here, too, there has been a confusion between the boreo-alpine bog inhabiting ‘F. picea’ 1. E. F. transkaucasic Nas. (Yarrow, 1954) and one or other superficially similar Proformica species which is more likely to be found in such areas. Eidmann (1941) further lists another shining black species, Formica geygates Latr. with the comment that it avoids woodland whereas in south Europe this ant is exclusively attached to oak woods. Here, however, it frequently nests in open situations but always in close proximity to trees. Ten of Eidmann’s species are included in those already listed by Stitz above and these two collections together, mainly from west China, total some 61 species — a considerable total but probably a small fraction of those already known to exist in China as a whole.
Burma, India, Sikkim, Thailand

Collecting areas:

Burma: Kambaiti Mountains — altitude about 2,000 m. Tenasserim — Malvedaung; Mekane; Waschaung. South Shan — Taungyi; Sadon; Myitkina; Taungdo; Pekkong; leg. R. Malaise.
Sikkim: Tista Bridge — 200 m. Leg. R. Malaise.
Thailand: Pak Kok; Koon Tan. Leg. Gyldenstolpe.

The species:

_Dorylus (Alaeopone) orientalis_ Westwood. 15 ♂♂ Kambaiti; Myitkina.
This is common throughout Indo-Malaya.
_Aenictus grandis_ Bingham. 1 ♂, Sikkim.
_Aenictus wroughtonii_ Forel. 1 ♂, Taungyi.
These two species appear to be new records for Sikkim and Burma respectively.

_Bothroponera rufipes_ Jerdon. 1 ♀, Sikkim.
This is widely distributed through south Asia but is apparently a new record for Sikkim.
_Diacamma scalpratum_ Fr. Smith. 1 ♂, Pekkong.
_Ectomyrmex astatus_ Fr. Smith. 1 ♀, Taungyi.
_Odontoponera transversa_ Fr. Smith. 1 ♂, 2 ♀♀ Malvedaung; Taungyi.
_Euponera (Trachymesopus) darwini_ Emery. 4 ♀♀, Thailand; Waschaung; Mekane; Taungyi.

These are all widely distributed through Indo-Malaya. _E. darwini_ is a new record for Burma.

There are also five Ponerine ♂♂ belonging to four species which I have no means of identifying. Existing keys to Ponerine ♂♂ are unfortunately very incomplete and ♂♂ of several genera have never been described. Three of the species are slender and testaceous with long filiform antennae. The median and hind tibiae have two spurs; the median spur of the hind tibia is pectinate, the others simple. The claws are each bidentate. The pygidium is spined. The mandibles are very short without teeth. The scape is short and thick, about ×3 the first funiculus segment, but the two together are much shorter than any of the very long succeeding antennal segments. The mesonotum has widely spaced non converging furrows. This combination does not fit any of the genera keyed by Wheeler (1922 a). All have the body testaceous and shining. The antennae, petiole, epitum and part of the first gaster segment are pubescent and in the two larger species 14 and 10 mm. long respectively, long subdecumbent hairs clothe the posterior gaster segments. The largest species has the petiole longer than wide, triangular in profile with two median forward projecting teeth ventrally and one on each side. The second species is similar but has the petiole shorter and sloping much more steeply to its dorsal crest. The small species, about 4 mm. long, has the gaster missing but the petiole is low, cubical without ventral teeth and evidently belongs to a different genus. These specimens are all from Taungyi.

The remaining ♂ has a general resemblance to a _Tetraponera_ but has the

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antennal scape very short, shorter than the quadrangular swollen first funicleus segment. The remaining eleven segments are elongate. The petiole nodes are broad and flat with coarse, shallow punctures on the dorsal surface. The post-petiole is strongly constricted behind as in Tetraponera. The tibiae each have two long finely pectinated spurs. The whole body is clothed in fine long white hairs. The head and thorax are dark brown the rest pale to reddish brown. This specimen, 1 mm long, is from Suratgar.

*Tetraponera allaborans* Walker 1 ♀ Tenasserim.
*Tetraponera fergusoni* Forel 1 ♂ South Shan.

These are widely distributed in south Asia. *T. fergusoni* was described as a subspecies of *T. nigra* Jerdon and is so listed by Chapman and Capco (1951). It is probably a new record for Burma.

*Crematogaster (Oxygyne) aberrans* Forel. 1 ♂, Pak Kok.
*Paratopula ceylonica* Emery. 1 ♀, Taungyi; 1 ♂, Mekane.

*P. ceylonica* is a new record for Burma. Previous records are from India, Ceylon and Formosa with varieties in Sumatra and Bengal. The Taungyi specimen corresponds well enough with Bingham’s description but that from Mekane is distinctly narrower and the epinotum is more distinctly carinate above with the keep running forward on each side from the epinotal spines which are also sharper. This may well be a different species but only examination of a large series could decide this.

*Pheidologeton diversus* Jerdon. 1 ♀ Malvedaung.

This is widely distributed throughout Indo-Malaya but has not hitherto been recorded from Burma.

*Carebara lignata* Westwood, 1 ♂, Koon Tan.
*Monomorium (Parholcomyrmex) gracillimum* Fr. Smith 12 ♂♂, Kambaiti.

This ant is very widely distributed through Indo-Malaya and north Africa. It is one of several *Monomorium* species that tend to be spread by commerce and Bernard (1960) regards it in Africa as an essentially oriental species that is spreading westward. The Burmese examples are light in colour instead of the more usual brownish black. The species would seem to be truly indigenous in Burma since the specimens were collected in a mountain area.

*Aphaenogaster (Nystalomyrma) gigantea* Sp. Nov. 1 ♀, 1 ♂ Kambaiji Mts. Fig. 7. 2,000 m. 24/6 /34, leg. R. Malaise.

*Nystalomyrma* Wheeler (1916) as known up to the present includes only a few species restricted to Australia and New Guinea. This record of another species well northward almost into the palaeartctic zone is of great interest. *Aphaenogaster* ssp. from New Guinea have recently been reviewed by Marion Smith (1961) and his careful re-description of *Nystalomyrma pythia* Forel shows many structural resemblances to the present species. This, however, is of larger size and coarser sculpture; it has a more flattened petiole node and longer epinotal spines, Type ♂ — Length 7 mm. Head subrectangular, longer than broad. Antennae 12 segmented; scape evenly curved near base, thickening distally, exceeding the occipital border by about 1/4 its length. Funiculus segments slightly longer than broad, thickening distally to form an indistinct four segmented club. Prothorax and mesothorax forming

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Fig. 7. Aphaenogaster (Nystalomyrma) gigantea Sp. Nov. Side view.
Fig. 8. Cataglyphis birmana Sp. Nov. Maxillary palps 1—5.
Fig. 9. Cataglyphis birmana Sp. Nov. Epinotum and petiole in side view.
Fig. 10. Formica rufolucida Sp. Nov. Side view.
Fig. 11. Formica rufolucida Sp. Nov. Upper edge of petiole scale, front view.

an uninterrupted convexity above; meso-epinotal furrow shallow; epinotal spines longer than the distance between their tips, lightly curved downwards and inwards such that they appear subparallel from above and continue the general line of the epinotum in profile. Petiole about twice as long as wide and rectangular in outline from above; rather flattened in profile with the anterior face of the node mildly concave. Postpetiole swelling posteriorly so as to appear almost pyriform both from above and in side view. Head and pronotum very coarsely longitudinally rugulose above; rest of thorax and petiole nodes coarsely transversely rugulose above with coarse longitudinal striae at sides. Long, outstanding hairs are scattered on dorsum of gaster, thorax and head, also below head. Appendages with short adherent pilosity and long subdecumbent hairs. Tibial spurs short and reduced on mid and hind legs. Colour dark yellowish brown to dark brown. Gaster shining.

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Cotype ♀ length 11 mm. As above but epinotal spines relatively shorter. Thorax massive with slight mesonotal prominence.

*Dolichoderus* (*Hypoclinea*) *fuscus* Emery. 1 ♀ Pak Kok.
*Technomyrmex brunneus* Forel. 1 ♀ Pak Kok.
*Bothriomyrmex myops* Forel. 1 ♀ Mekane.

*D. fuscus* and *T. brunneus* are both apparently new records for Thailand. Both were treated as separate species by Bingham (1903) not as subspecies as originally described, of *H. feae* Emery and *T. albipes* Fr, Smith respectively. *B. myops* is apparently a new record for Burma.

*Cataglyphis birmana* Sp. Nov. 1 ♀ Tenasserim — Malvedaung 300 m. 25/11/34 Fig. 8, 9. leg. R. Malaise.

No species of *Cataglyphis* appears to have been recorded from Burma. The present specimen is like a typical large *Cataglyphis* in shape but may be immediately distinguished by the abundant long hairs over the body and all appendage surfaces and the thick short pale grey pubescence. The sixth maxillary palps are wanting — presumably broken off, but the proportions of the remaining palp segments are more in conformity with the subgenus *Cataglyphis* than to *Machaeromyrma* to which the extreme hairiness and pubescence would be more appropriate, Type ♀ — Length 11.5 mm. Head of usual *Cataglyphis* shape, antennae very long with the first three segments of the funiculus long and sub-equal and the rest elongate but perceptibly shortening towards the tip. Thorax slender; petiolar longer than wide from above with large rounded node, the anterior face almost vertical and the posterior face curving more gradually towards the gaster. Head and irregular areas of the pronotum and mesonotum above red, the rest including mandibles, scape most of thorax, femora and gaster dark with the funiculus, tibiae and tarsi somewhat paler. Abundant long pale hairs over whole body and appendages; head thinly pubescent, the rest of body, especially the gaster, with thick pale pubescence obscuring the sculpture. General appearance, apart from the head, greyish and furry.

This is a handsome looking insect. The only other species of this subgenus so far recorded in the Indo-Malayan region is *C. setipes* Forel which ranges from Central India through south Afghanistan to South-east Persia (Collingwood. 1960).

*Formica* (*Neoformica*) *tufolucida* Sp. Nov. 25 ♀♀ Kambaiti Mts. 1700—
2000 m. Malvedaung 300 m. Inle Lake, Taungdo. Fig. 10, 11. 27/3 34—
10/10/34. leg. R. Malaise.

No *Formica* species has hitherto been recorded from Burma. The present series of specimens are of exceptional interest in that they are more akin to the American subgenus *Neoformica* than to *Formica* itself. The anten nal scapes are long and exceed the distance between occiput and front clypeal border by about a third of their length. The alitrunk is nearly twice as long as the head length as measured above; the epinotum is rounded, rather than angled, seen in side view. The petiolar is cordate in front view with the posterior border incised to divide the upper portion into two rounded lobes. Wheeler (1922) refers to a form of the American *F. neogages* in the Phillipines but this is a *Proformica* species with different structural
characteristics. The present species has a superficial resemblance to *Neofor-mica pallide-fulva* but is immediately distinguished by the wide incised scale. It is more sharply differentiated from members of the *Formica fusca* group by the relatively longer antennae and alitrunk. Comparative ratios with similar sized specimens of *F. cunicularia* Latr. are: *F. cunicularia* head length: scape length — 97 : 100; head length: alitrunk length 100 : 175. *F. rufolucida* head length: scape length — 74 : 100; head length: alitrunk length — 100 : 190.

Type and cotype **♀** Length 5.5—8 mm. Head length from occiput to front clypeal border not longer than maximum head width. Head with occipital angles smoothly rounded, narrowing anteriorly; frontal triangle twice as wide as high. Clypeus keeled with the front border slightly raised. Antennae long with the scape surpassing the occipital border by nearly half its length. Second, third and fourth funiculus segments subequal, together slightly longer than twice as long as the first segment. Prothorax rather domed above and smoothly rounded; epinotum with dorsal and posterior faces subequal, smoothly rounded in profile. Scale wide, incised in the middle so as to form two broadly rounded lobes. Gaster large, smooth and shining. Thorax finely sculptured and shining; head slightly more coarsely sculptured, especially clypeus. Faint pubescence on front of head and on gaster but not obscuring sculpture. Long outstanding hairs on head and gaster, gula and alitrunk bare. Tibiae with a row of suberect bristles on inner face, spurs long and slender. Most of head, tips of antennae, variable patch on pronotum and whole gaster dark brown, the rest including clypeus, cheeks, most of antennae, legs and mandibles yellowish red.

*Pseudolasius minutus* Emery. 1 ♀, Waschaung.

*Pseudolasius* sp. 1 ♀, Taungyi.

The specimen ascribed to *P. minutus* corresponds rather approximately with the description given by Emery (1911). It is 6 mm long, very pubescent, pale yellowish red in colour with the appendages slightly paler. The head is short, wider than long and the maximum widths of head, thorax and gaster are about equal. The thorax is flattened above and the whole body is less massive than in moth other species of the genus. *P. minutus* is recorded from Java and Sumatra and if correctly named, is a new record for Burma.

The second specimen is much larger — 9 mm long; the thorax is massive relative to the head. The head and appendages are pale reddish brown; the thorax is unevenly reddish brown; the tip of the funiculus is dusky. The gaster is predominantly brown with a reddish patch to each side on the first segment. All body surfaces including the appendages are clothed in long thick pubescence and yellowish outstanding hairs. The wings are very dark. The only *Pseudolasius* so far recorded from Burma is *P. emeryi* Forel which has different characters.

*Acantholepis* sp. 1 ♂, Kambaiti.

I have no means of identifying this ♂ at present. The length is 3.2 mm. It has pale wings and a narrowed gaster. The body is shining black with all surfaces including the appendages, clothed in long pale hairs. This genus has not been recorded from Burma.

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Prenolepis sp. 4 ♂ ♂, Madura.
These are 5.5—6 mm long. The colour is uniformly dark brown with the wings slightly infuscate. The legs have short scattered adherent pubescence. The scale is thick, low and emarginate with long pale dorsal hairs. The rest of the body has scattered long hairs which are more numerous on the gaster.

Camponotus (Tanaemyrmex) variegatus Fr. Smith. 1 ♀, 4 ♂ ♂, Taungyi; 1 ♀, Mekane.
Camponotus (Tanaemyrmex) mitis Fr. Smith. 1 ♀, 1 ♂, Taungyi.

These are common species throughout Indo-Malaya. C. mitis is apparently recorded for Burma for the first time. The ♂ is 9.5 mm long. The colour is evenly dark brown. The petiole scale is low and thick. The femora are distinctly channelled. The tibiae are long slender and flattened but have no bristles. The extensor surfaces of the femora have scattered long hairs and the scapes and tibiae sparse short hairs. The clypeusis rounded anteriorly.

Camponotus (Tanaemyrmex) sp. 1 ♂, Calcutta.
This is 10 mm long, uniformly dark. The tibial bristles are well-developed and the tibiae somewhat flattened. This could be C. irritans but as with so many of the forms of this difficult subgenus, the male of this species has not been described.

Camponotus (Myrmotarsus) mistura Fr. Smith. 1 ♀, Tenasserim.
Camponotus (Orthonomomyrmex) sericeus Fab. 1 ♀, Madura.
Camponotus (Orthonotomomyrmex) mutillaria Emery. 2 ♀ ♀, Taungyi.

C. mutillaria was described as a variety of C. wasmanni Emery and is so listed by Chapman and Capco (1951). However, it is well distinguished by the red thorax and distinctive red blotch on either side of the first gaster segment. This colour is quite constant in the Burmese population (Bingham, 1903) and there is no good reason why C. mutillaria should not be regarded as an independent species.

Colobopsis saundersi Emery, 2 ♀ ♀, Mekane, Pekkong.
Colobopsis strictus Jerdon. 2 ♀ ♀, Mekane.
Colobopsis pubescens Mayr. 2 ♀ ♀, Mekane.
Colobopsis sp. 1 ♀, Mekane.

C. strictus and C. pubescens are recorded for Burma for the first time. These and C. saundersi are all widely distributed through Indo-Malaya. The remaining species is comparatively small, length 5 mm. and resembles the European C. truncatus but is considerably darker.

Oecophylla smaragdina Fab. 1 ♂, Calcutta.
This is a very pale specimen of the abundant weaver ant of India.

References


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