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**Article I.—ANTS OF THE AMERICAN MUSEUM CONGO
EXPEDITION. A CONTRIBUTION TO THE
MYRMECOLOGY OF AFRICA¹**

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WITH THE COLLABORATION OF J. BEQUAERT, I. W. BAILEY, F. SANTSCHI, AND W. M.
MANN

PLATES I TO XLV, 47 MAPS, AND 103 TEXT FIGURES

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¹Scientific Results of the American Museum Congo Expedition. Entomology No. 7.

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INTRODUCTION

The present volume has grown out of a study of the ants collected by the American Museum Congo Expedition, under the direction of Messrs. Herbert Lang and James P. Chapin, and of a smaller collection made in the same region by Dr. J. Bequaert. The working up of this material has proved to be far from easy, owing to the state of the literature on the African Formicidæ. During the nineteenth century comparatively little work was done on the ants of the dark continent, but during the past two decades, as a result of numerous expeditions and the interest of resident entomologists, Emery, Forel, Santschi, and Arnold, but especially Forel and Santschi, have published a great number of papers dealing with fragments of the Ethiopian fauna. This literature proved to be quite unmanageable until I had carefully catalogued the numerous described species, subspecies, and varieties. After this had been accomplished it seemed best to publish the results as an aid to future students. Getting the catalogue ready for publication, however, was a very annoying task, which I could hardly have undertaken without the assistance of Dr. Bequaert, who patiently verified all the numerous references, added others, and helped in arranging the synonymy and lists of localities. He has also given me the benefit of his expert opinion in regard to many taxonomic details.

Both Mr. Lang and Dr. Bequaert have, in fact, showed such keen and enthusiastic interest in the progress of the work that it seemed advisable to expand it by the addition of other matter of interest not only to the zoologist but to the general public. This, however, required the services of several collaborators. At my request, Dr. F. Santschi kindly undertook to work up the species of *Crematogaster*, a genus to which he has given much attention. A glance at my catalogue of the Ethiopian species will show why I despaired of adequately handling the Congo material of the group. I might have attempted it, if the *Crematogaster* portion of Mr. George Arnold's monograph of the Rhodesian ants had appeared, but the World War had stopped the publication of this important work, so that even in making my catalogue I had nothing to rely on except the confused mess in the existing literature. Mr. Arnold nevertheless sent me some valuable comments on several of the species, together with the following remarks on the genus as a whole: "The genus *Crematogaster* is perhaps the most troublesome of all, and for this there are several reasons. First of all, it is a very large genus, so large that authors get lost in the vast number of described forms and of their collections. Secondly, the species of this genus in Africa are exception-

ally liable to minute variations in all directions even over a very small area (one might almost say 'on a very small number of adjacent trees,' since most of the species are arboricolous), and even within the limits of the same nest. This is a point which can only be properly appreciated by the man on the spot, and is persistently overlooked by the cabinet naturalist. Thirdly, in the separation of species and varieties, too much emphasis has been placed on unreliable characters, such as the length and degree of divergence of the epinotal spines, the strength of the median mesonotal tubercle, and the proportions of the petiole. Lastly, a good deal of confusion is due to sheer carelessness and contempt for exact methods." Other almost equally baffling and disconcerting complexes of forms are presented by *Camponotus* (*Myrmoturba*) *maculatus* (Fabricius) and *C.* (*Myrmotrema*) *foraminosus* Forel and their numerous subspecies and varieties. My catalogue of these probably has little value except as a record of present taxonomic confusion.

It seemed advisable to include in the work dichotomic tables for the identification of the known genera and subgenera of ants. In constructing these tables I have also been greatly aided by Dr. Bequaert. In drawing up those of the subfamilies Ponerinæ, Cerapachyinæ, Dorylinæ, and Dolichoderinæ, extensive use was made of Emery's fascicles in Wytsman's 'Genera Insectorum.' We have, of course, added brief diagnoses of all the genera and subgenera since published. As the publication of the fascicles on the Myrmiciniæ and Formiciniæ was rendered impossible by the German occupation of Belgium, we were compelled to create tables for these two subfamilies from such materials as we could find in the literature and from a study of representative species in my collection. This portion of the tables is, therefore, less satisfactory and may need modification when Emery's account of the Myrmiciniæ and Formiciniæ appears.

Among the collections made by Messrs. Lang, Chapin, and Bequaert, there was also considerable material representing portions of the singular plants (myrmecophytes) regularly inhabited by some of the Congolese ants. As Dr. Bequaert, during his sojourn in equatorial Africa, had made many detailed notes and drawings on the relations of ants to plants, he was requested to write an article on myrmecophytism. My colleague, Prof. I. W. Bailey, undertook to study the histology of the plants under discussion and reached such striking and important conclusions, both botanical and zoological, that there could be no doubt about the propriety of including his paper as a portion of the report.

After much of the taxonomic work had been completed, Dr. Bequaert discovered that additional ant material could be obtained from the stomachs of the numerous frogs and toads collected on the expedition, and Mr. G. K. Noble kindly went over all the Congo amphibians and cut out and labelled their stomachs. Among the ants, which were in a surprisingly good state of preservation, there were many interesting forms, notably representatives of the genera *Phrynoponera*, *Psalidomyrmex*, and *Leptogenys*, not taken by the collectors in the field. The results of this study suggested the writing of a special compilation by Dr. Bequaert on ants as the food of other animals. In future it will be advisable for collectors of ants in the tropics carefully to examine the stomach contents of all batrachians as well as those of ant-eaters.

The Lang-Chapin-Bequaert collection also contained a few striking myrmecophiles which I have described in a special chapter together with an account of an interesting collection of myrmecophilous beetles made for me by Mr. George Schwab in the Cameroon. In writing this part I have had the assistance of Dr. W. M. Mann, to whom the new species of Staphylinidæ are to be attributed.

I would express to the authorities of The American Museum of Natural History my deep appreciation of their kindness in enabling me to add to the interest of the volume by including in the text the many figures drawn by Mrs. Helen von Ziska, the maps of distribution, and especially the colored frontispiece by Mr. L. A. Fuertes and the reproductions of Mr. Lang's beautiful photographs of Congolese ant-nests. I trust that in its present form the work will not only prove to be valuable as an account of the Formicidæ collected by the first American expedition to the Congo, but will also serve as a book that can be profitably taken into the field by future collectors throughout the Ethiopian Region.

A list including the various localities in which Messrs. Lang, Chapin, and Bequaert collected the material treated in my taxonomic review precedes the Catalogue of Ethiopian ants.

WM. M. WHEELER

NEW SPECIES, SUBSPECIES, AND VARIETIES, WITH THEIR TYPE
LOCALITIES

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In addition, the following new names are proposed in this paper:

Phyracaces santschii Wm. M. Wheeler, p. 56; for *Phyracaces foreli* Santschi ♀, 1915; not *Phyracaces foreli* Santschi, ♂, 1914.

Platythyrea cribrinodis var. *brevidentata* Wm. M. Wheeler, Part VIII; for *Platythyrea cribrinodis* var. *punctata* Arnold, 1915; not *Platythyrea punctata* (F. Smith), 1858.

Monomorium modestum var. *smutsi* Wm. M. Wheeler, Part VIII; for *Monomorium modestum* var. *boerorum* Santschi, 1915; not *Monomorium minutum* subsp. *boerorum* Forel, 1910.

Monomorium salomonis subsp. *subopacum* var. *santschii* Wm. M. Wheeler, Part VIII; for *Monomorium salomonis* subsp. *subopacum* var. *senegalense* Santschi, 1913; not *Monomorium senegalense* Roger, 1862.

Ecophylla crassinoda Wm. M. Wheeler, p. 227; for *Ecophylla brevinodis* Wheeler, 1914; not *Ecophylla brevinodis* Ern. André.

Polyrhachis militaris subsp. *cupreopubescens* var. *dido* Wm. M. Wheeler, p. 261; for *Polyrhachis militaris* subsp. *cupreopubescens* var. *argentatus* Stitz, 1910; not *Polyrhachis argentatus* (F. Smith), 1858.

Protholcomyrmex Wm. M. Wheeler, p. 162; subgenus of *Monomorium* with *Monomorium rothsteini* Forel as the type.

I.—ON THE DISTRIBUTION OF THE ANTS OF THE ETHIOPIAN AND MALAGASY REGIONS

By WM. M. WHEELER

THE PECULIARITIES OF THE ETHIOPIAN ANT-FAUNA

Owing to the great number of genera and species of ants occurring in Africa south of the Sahara and in Madagascar and the pronounced differences between the two faunas, it will be conducive to clearness if we regard the Ethiopian and Malagasy as representing distinct "Regions," with the limits usually assigned to them by zoögeographers and by the other contributors to the "Scientific Results of the Congo Expedition." For the same reasons, I have listed the Malagasy fauna separately (Part IX). Table I is introduced as a general background for the discussion of the two faunas. It shows the distribution as determined up to date for all the known genera of Formicidæ. A cross is used to indicate the presence; a dot, the absence of a genus; and an S, its occurrence only in the southern portion of a given region. The main data of this table are condensed in numerical form in Tables II and III, the former giving the total number of genera and the number of endemic genera in each region and the number common to the other regions, the latter the total number of genera and number of endemic genera in each of the subfamilies of Formicidæ. A comparison of the figures brings out the following facts.

1.—The total number of Ethiopian genera (90, or 33.5% of the 269 known genera), though but little in excess of the number of Papuan (81) and Australian genera (81), is greater than that of any other region, except the Indomalayan (101) and Neotropical (97).

2.—The number of indigenous, or precinctive, Ethiopian genera (34, or 38%) is decidedly greater than in any other region, except in the Neotropical (48, or 51%).

3.—The Ethiopian fauna has more genera (48) in common with the Indomalayan than with any other region, though it has 34 in common with the Malagasy, 39 with the Papuan, and 34 with the Australian.

4.—The Ethiopian fauna has fewer genera in common with the Neotropical (22) than with any other region, except the Nearctic (19). This is important in connection with the theories of a former land-connection between Africa and South America, and is still further emphasized by the fact that most of the 22 common genera are those of cosmopolitan, or "tramp," species.

From Table III the following conclusions may be drawn.

1.—The Ethiopian fauna possesses a larger number of ponerine and cerapachyine genera (33) than any other region, though few more than the Indomalayan (31), Papuan (27), Australian (26), and Neotropical (28). The number of endemic ponerine genera in the Ethiopian (15) is much higher than in any other region, except the Neotropical with 12. Since the Ponerinæ are the oldest and most primitive of existing ants we are justified in attributing a high degree of antiquity to the Ethiopian fauna.

2.—This fauna possesses a greater representation of doryline genera (3) than in any region, except the Indomalayan, which has the same number.

3.—In pseudomyrmine and myrmicine genera the Ethiopian Region, with 38 genera, is inferior only to the Neotropical with 51 genera.

4.—In having only 4 dolichoderine genera the Ethiopian Region is inferior to all the regions, except the Malagasy, which has only 2 genera.

5.—In formicine genera the Ethiopian (12), is superior to other regions, except the Indomalayan (18), Papuan (12), and Australian (17). It has, however, only three endemic genera as compared with 7 in the Indomalayan, 7 in the Australian, and 4 in the Neotropical.

The differences between the various regions in the number of endemic genera is still further emphasized by the fact that the Palearctic has only 13 endemic myrmicine genera. These are nearly all parasitic, and the only endemic genus of the Nearctic, apart from 4 parasitic myrmicine genera, is *Myrmecocystus*!

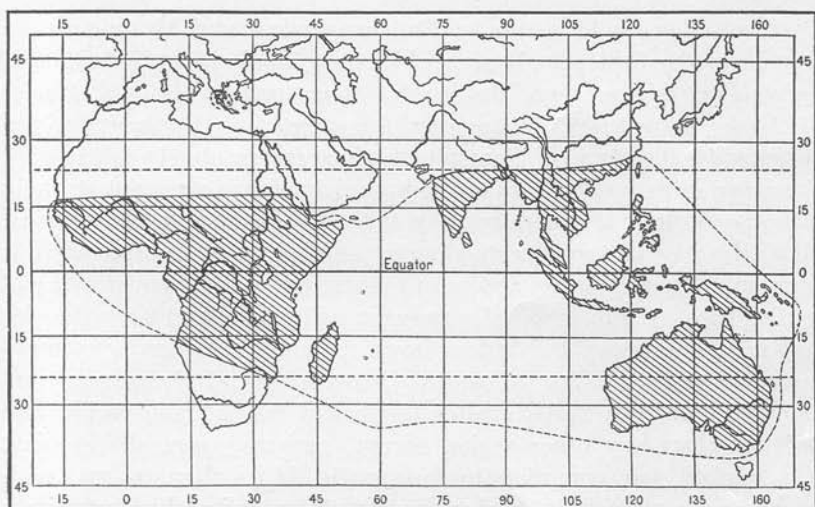
The Ethiopian fauna comprises 10 cosmopolitan genera (*Ponera*, *Pheidole*, *Crematogaster*, *Monomorium*, *Solenopsis*, *Leptothorax*, *Tetramorium*, *Tapinoma*, *Prenolepis*, and *Camponotus*), 7 tropicopolitan genera (*Cerapachys*, *Platythyrea*, *Euponera*, *Leptogenys*, *Anochetus*, *Odontomachus*, and *Cardiocondyla*), and 7 paleotropical genera (*Phyracaces*, *Bothroponera*, *Tetraponera*, *Oligomyrmex* (Map 1), *Technomyrmex*, *Plagiolepis*, and *Polyrhachis*).

The most striking features of the Ethiopian fauna, however, are revealed in a consideration of the number of species and of their peculiarities in the various genera. Owing to the abundant and rapid publication of myrmecological literature within recent years, I am not prepared to give an accurate up-to-date enumeration of the species described for the different zoögeographical regions. Table IV gives the number described down to 1911, as compiled by Prof. Forel.¹ Fully a thousand forms,

¹1911, 'Aperçu sur la distribution géographique et la phylogénie des fourmis.' 1^{er} Congr. Intern. Entom. Bruxelles, (1910), II, Mém., pp. 81-100.

mainly from the Ethiopian, Indomalayan, and Neotropical Regions, must have been described since this estimate was made, so that its value for the purposes under discussion is not very great. The Ethiopian species, subspecies, and varieties described down to 1920 are recorded in the list beginning on p. 31, and their number is given in the accompanying table (Table V).

The ponerine and cerapachyine genera confined to the Ethiopian Region are the following: *Xymmer*, *Probolomyrmex*, *Escherichia*, *Pseudosphincta*, *Streblognathus*, *Paltothyreus*, *Glyphopone*, *Leptopone*, *Megaponera*, *Ophthalmopone*, *Phrynoponera*, *Asphinctopone*, *Plectroctena*,



Map 1. Distribution of *Oligomyrmex*, a genus distributed over the tropics and subtropics of the Old World.

Psalidomyrmex, and *Cacopone*. The species of several of these and other genera (*Bothroponera*, *Phrynoponera*, *Streblognathus*, *Paltothyreus*, *Megaponera*, *Ophthalmopone*, *Plectroctena*, and *Psalidomyrmex*) are large, black or dark brown ants, highly predatory and termitophagous, which correspond ethologically with the species of *Myrmecia*, *Bothroponera*, and *Rhytidoponera* in Australia, of *Diacamma*, *Odontoponera*, and *Bothroponera* in the Indomalayan, and of *Dinoponera*, *Paraponera*, *Emeryella*, *Ectatomma*, *Pachycondyla*, and *Neoponera* in the Neotropical Region. An interesting negative peculiarity is the absence in Africa of the whole tribe Ectatommini, which is represented by numerous species of the genera *Rhytidoponera*, *Chalcoponera*, *Paranomopone*, and *Wheeleripone* in the

Australian and Papuan, and by species of *Stictoponera* in the Indomalayan, and of *Ectatomma* and *Emeryella* in the Neotropical Region.

A fact not brought out in the foregoing tables is the great development of the doryline genera in the Ethiopian Region. All the subgenera of *Dorylus* but one (*Dichthadia*) are represented, some of them by numerous species (*Dorylus*, *sens. str.*; *Anomma*). The genus *Ænictogiton*, known only from male specimens, is peculiar to Africa. The genus *Ænictus*, however, though well represented in Africa, has more numerous species in the Indomalayan Region and extends to China, Philippines, and northern Queensland. The genus *Dorylus* is represented by very few species in India and Indonesia.

The following 14 genera of Pseudomyrmicinae and Myrmicinae are peculiar to the Ethiopian Region: *Viticicola*, *Pachysima*, *Cratomyrmex*, *Anergatides*, *Diplomorium*, *Bondroitia*, *Atopomyrmex*, *Atopula*, *Macromischoides*, *Ocymyrmex*, *Tetramyrma*, *Rhoptromyrmex*, *Decamorium*, and *Microdaceton*, nearly all of them monotypic or represented by few species. The remarkable peculiarities of the myrmicine fauna come out strongly in the composition of genera common to the Ethiopian and other regions. Thus, *Myrmecaria*, though extending to the Philippines and Indonesia, is represented by the largest and most numerous species in equatorial and South Africa. *Cataulacus* is also represented by more and larger species than in the Malagasy and Indomalayan Region, *Crematogaster* by numerous subgenera, a few of which (*Nematocrema*, *Sphærocrema*) are endemic, and by a much greater number of species, subspecies, and varieties than any other region except, perhaps, tropical America. *Monomorium*, too, comprises more forms in Africa than are met with anywhere else, with the possible exception of Australia, which contains a considerable number of undescribed species. *Pheidole* is represented by many species with a peculiar African habitus and especially by the great development of the *megacephala* group. The hypogæic and termitophilous ants are represented by species of *Diplomorium*, *Bondroitia*, *Solenopsis*, *Æromyrma*, *Oligomyrmex*, *Carebara*, and *Pædalagus*. Africa is, however, very poor in species of *Solenopsis*, compared with South America, and *Meranoplus* has very few African species compared with the number found in Australia. The complex of closely allied genera comprising *Tetramorium*, *Rhoptromyrmex*, *Xiphomyrmex*, *Decamorium*, *Triglyphothrix*, and *Macromischoides* has many African species. This is particularly true of *Tetramorium*, which closely rivals *Crematogaster* and *Monomorium* in the number and variety of forms. In other portions of the globe, notably the Nearctic and Neotropical Regions, there are very few species of *Tetramorium* and *Xiphomyrmex*.

A negative peculiarity of considerable interest in connection with the subfamily Dolichoderinae is the complete absence in Africa south of the Sahara of *Dolichoderus*, which is so well represented in the Indomalayan, Australian, and Neotropical, and even by a few species in the Palearctic and Nearctic Regions. On the other hand, Africa possesses one endemic genus, *Engramma*. A species of the genus *Semonius* (Map 2) which was supposed to be peculiar to Africa, has recently been



Map 2. Distribution of *Semonius* in Africa. This genus has recently been recorded from the Indomalayan Region (Singapore).

described from the Indomalayan Region, and further research may show that this region also contains species of *Engramma*.

Three genera of Formicinae, *Phasmomyrmex*, the very peculiar, large-eyed *Santschiella*, and *Aphomomyrmex*, which is very closely allied to *Myrmelachista* of the New World, are confined to the Ethiopian Region. Each, however, is represented by a single species. The characteristic complexion of the Ethiopian formicine fauna is due to the great develop-

mend of the genera *Acantholepis* and *Plagiolepis*, with the subgenera *Anacantholepis* and *Anoplolepis*, the latter with several large and conspicuous species, and of the genera *Camponotus* and *Polyrhachis*. *Camponotus* is characterized by a few endemic subgenera (*Myrmopsamma*); some striking species of *Myrmopiromis*, *Myrmosericus*, and *Orthonotomyrmex*; an extraordinary development of the species, subspecies, and varieties of the subgenera *Myrmoturba* and *Myrmotrema*, especially of the *maculatus* and *foraminosus* complexes; and a surprisingly feeble development of other subgenera, such as *Colobopsis*, which has so many species in the Indomalayan and Papuan Regions. One species of *Orthonotomyrmex* (*sericeus*) and one of *Myrmosericus* (*rufoglaucus*) have a very wide distribution, ranging not only over the whole Ethiopian but occurring also in the Indomalayan Region. *Polyrhachis*, which is represented by numerous subgenera in the Indomalayan, Papuan, and Australian Regions, has species of only two subgenera, *Myrma* and *Cyrtomyrma*, in Africa. The genus is absent from Madagascar, but a species of the subgenus *Myrmhopla* (*simplex*) occurs as far north as Palestine, so that it would seem that the ancestors of the present Ethiopian species entered the continent by way of the Nile Valley and the Sudan. *Prenolepis* is poorly represented in Africa. The deserticolous genus *Cataglyphis* belongs properly to the Palearctic fauna and such species as are found in the Ethiopian Region must have come from the Sahara or Arabia. *Ecophylla* has a peculiar distribution, ranging clear across tropical Africa and through the Indomalayan and Papuan Regions into northern Queensland but not occurring in Madagascar.

Within the Ethiopian Region the distribution of species evidently depends on the distribution of temperature, moisture, and vegetation. It might be interesting to discuss this matter in detail but the data at present available are hardly sufficient. From the synonymic list, in which all the recorded localities for the various forms are cited, it will be seen that many species, subspecies, and varieties are known only from single stations. Some of the large, common, and conspicuous forms, however, such as *Megaponera fœtens*, *Paltothyreus tarsatus*, *Myrmecaria eumenoides*, etc., are known to occur throughout the Ethiopian Region. Others, e. g. *Pachysima æthiops*, *Viticolola tessmanni*, and several *Crematogasters*, are so intimately associated with certain host-plants as to be restricted to the range of the latter. Still others, such as the species of *Phrynoponera*, *Psalidomyrmex*, *Macromischoides*, and some species of *Polyrhachis* and *Camponotus*, are evidently confined to the rain forests of western equatorial Africa, while a considerable number of species of

Pheidole, *Crematogaster*, *Tetramorium*, *Monomorium*, etc., and the genera *Messor* and *Ocymyrmex* (Map 3) are peculiar to the dry savannahs.

The problem of the altitudinal distribution of the Formicidæ in the Ethiopian Region is peculiarly interesting in connection with the circumpolar fauna and the montane faunas in other parts of the World. As there is no general account of the subject, Dr. Bequaert, who collected on Mt. Ruwenzori, has written out for me the following sketch of what is known of the ant-faunas of this and the other high mountains of tropical Africa.



Map 3. Distribution of *Ocymyrmex*, a genus peculiar to the dry savannahs of East and South Africa.

"The ant-fauna becomes exceedingly poor in the higher alpine and subalpine regions of Central Africa and shows no peculiar forms nor any of the boreal, palearctic, or holarectic elements which are so conspicuous a feature of the flora.¹ Tropical plant and animal life stops at

¹The fauna of these alpine and subalpine regions of tropical Africa possesses also a few boreal elements, e.g. among the Molluscs (*Helicidæ*, *Vitrinidæ*) and bees (*Andrena*, *Osmia*).

about the 1500 m. level-line; between 1500 and 2500 to 3000 m. extends a warm temperate belt, which may conveniently be called the lower mountain region. Its ant-fauna is scanty in species and individuals and includes only a few representatives of the more generally distributed Ethiopian genera. This is shown by the following list of genera of which workers were found by Alluaud and Jeannel on Mt. Kenia, the Aberdare Range, Mt. Kilimanjaro, and Mt. Ruwenzori, between 1500 and 2850 m.¹: *Bothroponera* (1 sp.); *Dorylus*, *sens. str.* (2 sp.) and subgen. *Anomma* (1 sp.); *Monomorium* (3 sp.); *Messor* (2 sp.); *Pheidole* (5 sp.); *Oligomyrmex* (1 sp.); *Crematogaster* (3 sp.); *Xiphomyrmex* (1 sp.); *Engramma* (1 sp.); *Tapinoma* (1 sp.); *Technomyrmex* (1 sp.); *Plagiolepis* (1 sp.); *Acantholepis* (1 sp.); and *Camponotus* (6 sp.). The number of species represented is very small and most of them also occur at lower altitudes. The absence of certain common Ethiopian genera, such as *Paltothyreus*, *Megaponera*, *Euponera*, *Odontomachus*, *Ænictus*, *Tetraponera*, *Myrmecaria*, *Solenopsis*, *Cataulacus*, *Æcophylla*, and *Polyrhachis*, is very striking; furthermore, it must be noted that most of the montane ants mentioned above have been found below 2000 m. Indeed, on all Central African mountains reaching above 4000 m. there is between 2000 and 3000 m. a belt of very moist and cool forest, which for many hours of the day is often enveloped in clouds; it is well known that such an environment is very unfavorable to ants and accordingly a few species of *Crematogaster* and certain driver ants alone enter these cloud forests. On Mt. Kenia and Mt. Ruwenzori, the alpine region above the cloud forest up to the snowline (about 4500 m. in tropical Africa) is mainly covered with a peculiar swampy heath- and bog-formation, which practically excludes ant-life. Mt. Kilimanjaro, Mt. Meru, and the Aberdare Range, owing to their more eastern location, present, however, very different conditions: the usual cloud forest extends from 1800 to 2600 m. on the eastern and to 3000 m. on the western slopes; then begins a rather dry, alpine, steppe formation, with short grass growing in tussocks, where a few species of ants are found, nesting in the soil [*Melissotarsus emeryi* var. *pilipes* Santschi (Mt. Kilimanjaro, 2740 m.); *Tetramorium squaminode* Santschi (Mt. Kilimanjaro, 2600 to 3800 m.); *T. cæspitum* subsp. *altivagans* Santschi (Mt. Kinangop, 3100 m.); *Engramma ilgi* var. *stygium* Santschi (Mt. Kilimanjaro, 2740 m.); *Camponotus maculatus* subsp. *kersteni* (Gerstæcker), a strictly montane ant, known only from Mt. Kilimanjaro, where it is common between 2500 and 3000 m.]. Most of these ants, with the possible exception of the subspecies of *T.*

¹Genera which were collected in the winged sexual phases only are not included in this and similar lists because such individuals are apt to be carried to higher altitudes than their nesting sites.

cæspitum, are identical with or closely allied to Ethiopian forms of lower altitudes and evidently derived from them.

"Very few ants are known from Mt. Ruwenzori above 1500 m. and they were all collected on the eastern slopes (Uganda). Only the two following species have been recorded thus far: *Dorylus brevipennis* Emery, at Bujongolo (♀; Alluaud and Jeannel), and *D. nigricans* subsp. *burmeisteri* var. *molesta* (Gerstæcker), on the eastern slopes, 1600 m. (♀; Alluaud and Jeannel).¹ In April and May 1914 I collected altogether five species of ants in the cloud forest region of the western slopes of Mt. Ruwenzori, between 2000 and 2500 m.; unfortunately these specimens are not available for study. None was seen above 3000 m. The scarcity of ants in the Ruwenzori Range was very surprising; most striking among them were the columns of driver ants (*Dorylus nigricans*), often met with in the bamboo forests at about 2200 to 2500 m. Alluaud and Jeannel comment as follows upon the driver ants of the lower mountain region: 'In the forest of Kenia the *Anommas* are very abundant and we were even subjected to an invasion of our camp I, at 2400 m., in the lower forests; only fire and barriers of hot ashes succeeded in averting from the tents the columns of thousands of assailants. We have also frequently observed migrations of *Anomma* in the bamboo forest up to about 3000 m.' Sjöstedt observed driver ants on Mt. Meru, where they also reach 3000 m.

"It is rather unfortunate that no information is forthcoming regarding the ant-fauna of the alpine and subalpine regions of Mt. Cameroon, where ecological conditions are somewhat similar to those of Mt. Ruwenzori and Mt. Kilimanjaro."

¹*Dorylus nigricans* was also taken by the British Museum Ruwenzori Expedition on the eastern slopes, in the Mobuku Valley, between 5000 and 7000 feet.

Table I
General Distribution of the Genera of Ants¹

	Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Nearctic	Neotropical
<i>Dorylus</i>	+	.	+	+	.	S	.	.
<i>Ænictogiton</i>	+
<i>Ænictus</i>	+	.	+	+	+	S	.	.
<i>Cheliomyrmex</i>	+
<i>Eciton</i>	S	+
<i>Leptanilla</i>	.	.	+	.	.	S	.	.
<i>Eusphinctus</i>	.	.	+	+	+	.	.	.
<i>Sphinctomyrmex</i>	?	+
<i>Cerapachys</i>	+	+	+	+	+	S	S	+
<i>Phyracaces</i>	+	+	+	+	+	.	.	.
<i>Lioponera</i>	?	.	+	.	+	?S	.	.
<i>Acanthostichus</i>	S	+
<i>Cylindromyrmex</i>	+
<i>Simopone</i>	+	+
<i>Myrmecia</i>	+	.	.	.
<i>Mystrum</i>	+	+	+
<i>Stigmatomma</i>	.	.	+	+	+	S	+	+
<i>Xymmer</i>	+
<i>Amblyopone</i>	.	.	.	+	+	.	.	.
<i>Myopopone</i>	.	.	+	+	+	.	.	.
<i>Paraponera</i>	+
<i>Platythyrea</i>	+	+	+	+	+	.	S	+
<i>Paranomopone</i>	+	.	.	.
<i>Prionopelta</i>	.	.	+	+	.	.	.	+
<i>Typhlomyrmex</i>	+
<i>Rhopalopone</i>	.	.	+	+	.	.	.	+
<i>Wheeleripone</i>	.	.	.	+
<i>Atjaria</i>	+
<i>Stictoponera</i>	.	.	+	+
<i>Acanthoponera</i>	+	.	.	+
<i>Holcoponera</i>	+
<i>Chalcopyonera</i>	.	.	+	+	+	.	.	.
<i>Rhytidoponera</i>	.	.	.	+	+	.	.	.
<i>Emeryella</i>	+
<i>Ectatomma</i>	S	+
<i>Thaumatomyrmex</i>	+

¹ + = present; ? = generic reference doubtful; * = introduced genera; S = only in the southern part of the region.

Table I (continued)
General Distribution of the Genera of Ants

	Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Neartic	Neotropical
<i>Proceratium</i>	.	.	+	+	.	.	+	.
<i>Sysphincta</i>	+	+	+	+
<i>Discothyrea</i>	+	.	+	+	+	.	+	.
<i>Prodiscothyrea</i>	.	.	+	.	+	.	.	.
<i>Probolomyrmex</i>	+
<i>Escherichia</i>	+
<i>Spaniopone</i>	+
<i>Pseudosphincta</i>	+
<i>Dorylozelus</i>	+	.	.	.
<i>Centromyrmex</i>	+	.	+	+
<i>Harpegnathos</i>	.	.	+
<i>Odontoponera</i>	.	.	+	+
<i>Streblognathus</i>	+
<i>Paltothyreus</i>	+
<i>Glyphopone</i>	+
<i>Leptopone</i>	+
<i>Dinoponera</i>	+
<i>Diacamma</i>	.	.	+	+	+	.	.	.
<i>Megaponera</i>	+
<i>Ophthalmopone</i>	+
<i>Neoponera</i>	+
<i>Pachycondyla</i>	S	+
<i>Bothropone</i>	+	+	+	+	+	.	.	.
<i>Phrynoponera</i>	+
<i>Ectomomyrmex</i>	+	.	+	+	+	+	.	.
<i>Euponera</i>	+	+	+	+	+	+	.	+
<i>Pseudoponera</i>	+	.	+
<i>Emeryopone</i>	.	.	+
<i>Belonopelta</i>	+
<i>Cryptopone</i>	+	.	+	+
<i>Ponera</i>	+	+	+	+	+	+	+	+
<i>Asphinctopone</i>	+
<i>Trapeziopelta</i>	.	.	+	+
<i>Plectroctena</i>	+
<i>Myopias</i>	+	.	+	+
<i>Psalidomyrmex</i>	+
<i>Cacopone</i>	+
<i>Onychomyrmex</i>	+	.	S	.
<i>Leptogenys</i>	+	+	+	+	+	.	S	+

Table I (continued)
General Distribution of the Genera of Ants

	Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Nearctic	Neotropical
<i>Prionogenys</i>	+	.	.	.
<i>Anochetus</i>	+	+	+	+	+	S	.	+
<i>Champsomyrmex</i>	.	+
<i>Odontomachus</i>	+	+	+	+	+	.	S	+
<i>Pseudomyrma</i>	S	+
<i>Tetraponera</i>	+	+	+	+	+	S	.	.
<i>Vitivicola</i>	+
<i>Pachysima</i>	+
<i>Hylomyrma</i>	+
<i>Pogonomyrmex</i>	+	+
<i>Cratomyrmex</i>	+
<i>Myrmica</i>	.	.	+	.	.	+	+	.
<i>Stenamma</i>	+	+	.
<i>Sifolinia</i>	+	.	.
<i>Aphaenogaster</i>	.	+	+	+	+	+	+	+
<i>Messor</i>	+	+	.	.
<i>Novomessor</i>	S	+
<i>Veromessor</i>	S	+
<i>Goniomma</i>	S	.	.
<i>Oxyopomyrmex</i>	S	.	.
<i>Machomyrma</i>	+	.	.	.
<i>Ischnomyrmex</i>	.	.	+
<i>Ceratopheidole</i>	.	.	+	+
<i>Parapheidole</i>	.	+
<i>Decapheidole</i>	+
<i>Pheidole</i>	+	+	+	+	+	S	+	+
<i>Epipheidole</i>	+	.
<i>Sympheidole</i>	+	.
<i>Melissotarsus</i>	+	+
<i>Rhopalomastix</i>	.	.	+
<i>Metapone</i>	.	.	+	.	+	.	.	.
<i>Stereomyrmex</i>	.	.	+
<i>Myrmicaria</i>	+	.	+	+
<i>Cardiocondyla</i>	+	+	+	+	+	S	S	+
<i>Crematogaster</i>	+	+	+	+	+	S	+	+
<i>Vollenhovia</i>	.	+	+	+
<i>Heteromyrmex</i>	.	.	+
<i>Huberia</i>	+	.	.	.
<i>Monomorium</i>	+	+	+	+	+	S	S	+

Table I (continued)
General Distribution of the Genera of Ants

	Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Neartic	Neotropical
<i>Epixenus</i>	S	.	.
<i>Trichomyrmex</i>	.	.	+
<i>Hagioxenus</i>	S	.	.
<i>Wheeleriella</i>	S	.	.
<i>Phacota</i>	S	.	.
<i>Paraphacota</i>	S	.	.
<i>Xenomyrmex</i>	+
<i>Allomerus</i>	+
<i>Megalomyrmex</i>	+
<i>Liomyrmex</i>	.	.	+	+
<i>Epæcus</i>	+	.
<i>Anergates</i>	+	.	.
<i>Anergatides</i>	+
<i>Tranopelta</i>	+
<i>Carebarella</i>	+
<i>Diplomorium</i>	+
<i>Bondroitia</i>	+
<i>Solenopsis</i>	+	+	+	+	+	+	+	+
<i>Lophomyrmex</i>	.	.	+
<i>Trigonogaster</i>	.	.	+
<i>Pheidologeton</i>	?	.	+	+	+	.	.	.
<i>Aneleus</i>	+	.	+
<i>Aëromyrma</i>	+	+	?
<i>Oligomyrmex</i>	+	+	+	+	+	S	.	.
<i>Erebomyrma</i>	S	+
<i>Carebara</i>	+	.	+	+
<i>Pædalagus</i>	+	.	+
<i>Podomyrma</i>	.	.	.	+	+	.	.	.
<i>Lordomyrma</i>	.	.	.	+	+	.	.	.
<i>Atopomyrmex</i>	+
<i>Dilobocondyla</i>	.	.	+	+
<i>Terataner</i>	+	+
<i>Atopula</i>	+
<i>Paratopula</i>	.	.	+
<i>Brunella</i>	.	+
<i>Myrmecina</i>	.	.	+	+	+	+	+	.
<i>Pristomyrmex</i>	.	.	+	+	+	S	.	.
<i>Acanthomyrmex</i>	.	.	+	+
<i>Dacryon</i>	.	.	.	+	+	.	.	.

Table I (continued)
General Distribution of the Genera of Ants

	Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Neartic	Neotropical
<i>Archæomyrmex</i>	.	.	.	+
<i>Mayriella</i>	+	.	.	.
<i>Promeranoplus</i>	+	.	.	.
<i>Meranoplus</i>	+	+	+	+	+	.	.	.
<i>Prodicroaspis</i>	+	.	.	.
<i>Calyptomyrmex</i>	+	.	+	+	+	.	.	.
<i>Macromischa</i>	+
<i>Macromischoides</i>	+
<i>Leptothorax</i>	+	+	+	.	.	+	+	+
<i>Harpagoxenus</i>	+	+	.
<i>Myrmoxenus</i>	+	.	.
<i>Formicoxenus</i>	+	.	.
<i>Epimyrma</i>	S	.	.
<i>Symmyrmica</i>	+	.
<i>Rogeria</i>	.	.	.	+	.	.	.	+
<i>Lachnomyrmex</i>	+
<i>Apsychomyrmex</i>	+
<i>Adelomyrmex</i>	.	.	.	+
<i>Ocymyrma</i>	+
<i>Tetramyrma</i>	+
<i>Lundella</i>	+
<i>Tetramorium</i>	+	+	+	+	+	+	S	+
<i>Rhoptromyrma</i>	+
<i>Acidomyrmex</i>	.	.	+
<i>Strongylognathus</i>	+	.	.
<i>Xiphomyrmex</i>	+	+	+	+	+	.	+	.
<i>Decamorium</i>	+
<i>Triglyphothrix</i>	+	+	+	+
<i>Eutetramorium</i>	.	+
<i>Ochetomyrmex</i>	+
<i>Wasmannia</i>	*	+
<i>Cataulacus</i>	+	+	+	+
<i>Procryptocerus</i>	+
<i>Zacryptocerus</i>	+
<i>Cephalotes</i>	+
<i>Cryptocerus</i>	S	+
<i>Basiceros</i>	+
<i>Daceton</i>	+
<i>Acanthognathus</i>	+

Table I (continued)
General Distribution of the Genera of Ants

	Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Neartic	Neotropical
<i>Epitritus</i>	+	.	.	+	+	S	.	+
<i>Orectognathus</i>	.	.	.	+	+	.	.	.
<i>Pentastroma</i>	.	.	+
<i>Rhopalothrix</i>	.	.	+	+	+	.	.	+
<i>Microdactylon</i>	+
<i>Epopsotoma</i>	.	.	.	+	+	.	.	.
<i>Glomyrmex</i>	+
<i>Codiomyrmex</i>	+
<i>Strumigenys</i>	+	+	+	+	+	+	+	+
<i>Stegomyrmex</i>	+
<i>Proatta</i>	.	.	+
<i>Pseudatta</i>	+
<i>Blepharidatta</i>	+
<i>Myrmecocrypta</i>	+
<i>Apterostigma</i>	+
<i>Mycocepurus</i>	+
<i>Cyphomyrmex</i>	S	+
<i>Sericomyrmex</i>	+
<i>Trachymyrmex</i>	+	+
<i>Atta</i>	S	+
<i>Aneuretus</i>	.	.	+
<i>Dolichoderus</i>	.	.	+	+	+	+	+	+
<i>Linepithema</i>	+
<i>Leptomyrmex</i>	.	.	.	+	+	.	.	.
<i>Semonius</i>	+	.	+
<i>Liometopum</i>	S	+	.
<i>Turneria</i>	.	.	.	+	+	.	.	.
<i>Froggattella</i>	+	.	.	.
<i>Dorymyrmex</i>	+	+
<i>Araucomyrmex</i>	+
<i>Iridomyrmex</i>	*	.	+	+	+	.	.	+
<i>Bothriomyrmex</i>	.	.	+	+	+	S	+	.
<i>Forelius</i>	S	+
<i>Azteca</i>	+
<i>Engramma</i>	+
<i>Tapinoma</i>	+	+	+	+	+	+	+	+
<i>Technomyrmex</i>	+	+	+	+	+	.	.	.
<i>Myrmoteras</i>	.	.	+
<i>Dimorphomyrmex</i>	.	.	+

Table I (continued)
General Distribution of the Genera of Ants

	Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Nearctic	Neotropical
<i>Santschiella</i>	+
<i>Notoncus</i>	+	.	.	.
<i>Myrmecorhynchus</i>	+	.	.	.
<i>Diodontolepis</i>	+	.	.	.
<i>Melophorus</i>	+	.	.	.
<i>Prolasius</i>	+	.	.	.
<i>Lasiophanes</i>	+
<i>Atopodon</i>	.	.	+
<i>Acropyga</i>	+	.	+	+	+	.	.	.
<i>Rhizomyrma</i>	.	.	+	+	.	.	.	+
<i>Pseudaphomomyrmex</i>	.	.	+
<i>Acantholepis</i>	+	+	+	.	.	s	.	.
<i>Stigmatoceros</i>	+	.	.	.
<i>Plagiolepis</i>	+	+	+	+	+	s	.	.
<i>Myrmelachista</i>	+
<i>Cladomyrma</i>	.	.	+
<i>Aphomomyrmex</i>	+
<i>Brachymyrmex</i>	.	*	+	+
<i>Gesomyrmex</i>	.	.	+
<i>Prenolepis</i>	+	+	+	+	+	+	+	+
<i>Pseudolasius</i>	+	.	+	+	+	.	.	.
<i>Lasius</i>	+	+	.
<i>Myrmecocystus</i>	+	.
<i>Cataglyphis</i>	+	s	.	.
<i>Polyergus</i>	+	+	.
<i>Formica</i>	+	+	.
<i>Gigantiops</i>	+
<i>Oecophylla</i>	+	.	+	+	+	.	.	.
<i>Opisthopsis</i>	.	.	.	+	+	.	.	.
<i>Notostigma</i>	+	.	.	.
<i>Camponotus</i>	+	+	+	+	+	+	+	+
<i>Phasmomyrmex</i>	+
<i>Overbeckia</i>	.	.	+
<i>Calomyrmex</i>	.	.	+	+	+	.	.	.
<i>Dendromyrmex</i>	+
<i>Echinopla</i>	.	.	+	+	+	.	.	.
<i>Mesoxena</i>	.	.	.	+
<i>Polyrhachis</i>	+	.	+	+	+	s	.	.

Table II

Total Number of Genera and Number of Endemic Genera in each Region, also Number of Genera Common to other Regions¹

Zoögeographical Regions	Total Number of Genera	Number of Endemic Genera	Genera Common to							
			Ethiopian	Malagasy	Indomalayan	Papuan	Australian	Palaearctic	Neartic	Neotropical
Ethiopian	90	34	..	34	48	39	34	28	19	22
Malagasy	40	4	34	..	32	29	26	20	18	19
Indomalayan	101	21	48	32	..	65	51	31	25	29
Papuan	81	4	39	29	65	..	59	28	23	27
Australian	81	18	34	26	51	59	..	27	22	24
Palaearctic	54	13	28	20	31	28	27	..	26	20
Neartic	53	5	19	18	25	23	22	26	..	36
Neotropical	97	48	22	19	29	27	24	20	36	..

Table III

Total Number of Genera and Number of Endemic Genera in Each of the Subfamilies

Zoögeographical Regions	Cerapachyinae and Ponerae	Dorylinae	Pseudomyrmecinae and Myrmecinae	Dolichoderinae	Formicinae	Totals
Ethiopian	33—15	3—1	38—14	4—1	12—3	90—34
Malagasy	12—1	0—0	22—3	2—0	4—0	40—4
Indomalayan	31—2	3—0	42—11	7—1	18—7	101—21
Papuan	27—1	2—0	33—2	7—0	12—1	81—4
Australian	26—5	1—0	29—5	8—1	17—7	81—18
Palaearctic	7—0	3—0	31—13	4—0	9—0	54—13
Neartic	12—0	1—0	27—4	6—0	7—1	53—5
Neotropical	28—12	2—1	51—28	8—3	8—4	97—48

¹Excluding introduced genera and the cases where the generic reference is doubtful.

Table IV
Number of Species, Subspecies, and Varieties Known from Each Region
in 1911 (Forel)

GEOGRAPHICAL FAUNAS		SPECIES AND RACES OR SUBSPECIES	VARIETIES
I. NEOTROPICAL FAUNA	a. South America, except Patagonia	961	208
	b. Central America	506	121
II. ETHIOPIAN FAUNA	(Africa south of the Sahara)	629	125
III. MALAGASY FAUNA	(Madagascar, Comoros, Chagos, Seychelles, etc.)	230	63
IV. INDOMALAYAN FAUNA	(India, Indo-China, Anda- mans, Ceylon, In- donesia, Philip- pines, part of China and Japan)	1165	210
V. PAPUAN AND OCE- ANEAN FAUNA	(Moluccas, New Guinea, Oceania)	335	42
VI. AUSTRALIAN FAUNA	(Australia, New Caledonia, Tasmania)	380	105
VII. PALEARCTIC FAUNA	a. Palearctic proper	152	116
	b. Mediterranean (in- cluding North Africa, Sahara, Asia Minor, etc.)	294	158
VIII. NEARCTIC FAUNA	(North America)	352	105
IX. ANTARCTIC FAUNA	(New Zealand, Patagonia)	27	3
TOTAL		5031	1256

Table V

Number of Species, Subspecies, and Varieties of Each Genus Hitherto
Recorded from the Ethiopian Region and the Belgian Congo

	ETHIOPIAN REGION			BELGIAN CONGO		
	Species	Subspecies	Varieties	Species	Subspecies	Varieties
<i>Dorylus</i>	41	20	42	26	8	10
<i>Enicogiton</i>	5	..	1	5	..	1
<i>Enictus</i>	25	6	7	5	1	1
? <i>Sphinctomyrmex</i>	1	1	..	..	..	..
<i>Cerapachys</i>	7	..	3	1	..	..
<i>Phyracaces</i>	6	1	..	3	1	..
? <i>Lioponera</i>	2	..	..	..	..	..
<i>Simopone</i>	2	..	..	..	..	..
<i>Mystrium</i>	1	..	..	..	..	..
<i>Xymmer</i>	1	..	..	..	..	..
<i>Platythyrea</i>	14	2	5	4	..	2
<i>Sysphincta</i>	1	..	..	..	..	..
<i>Discothyrea</i>	3	..	1	..	..	..
<i>Probolomyrmex</i>	1	..	..	..	..	..
<i>Escherichia</i>	1	..	..	..	..	..
<i>Pseudosphincta</i>	1	..	..	..	..	..
<i>Centromyrmex</i>	2	..	2	..	..	..
<i>Streblognathus</i>	1	..	..	..	..	..
<i>Pallothyreus</i>	1	1	4	1	..	..
<i>Glyphopone</i>	1	..	..	1	..	..
<i>Leptopone</i>	1	..	..	..	..	..
<i>Megaponera</i>	1	..	1	1	..	..
<i>Ophthalmopone</i>	5	..	..	..	..	..
<i>Bothroponera</i>	18	3	8	5	..	3
<i>Phrynoponera</i>	5	..	5	5	..	5
<i>Ectomomyrmex</i>	1	..	..	..	..	..
<i>Euponera</i>	17	2	5	4	..	1
<i>Pseudoponera</i>	2	..	..	..	..	..
<i>Cryptopone</i>	1	..	..	..	..	..
<i>Ponera</i>	17	8	5	3	1	..
<i>Asphinctopone</i>	1	..	..	..	..	..
<i>Plectroctena</i>	4	1	2	3	..	..
<i>Myopias</i>	1	1	..	..	..	..
<i>Psolidomyrmex</i>	5	..	..	3	..	..
<i>Cacopone</i>	1	..	..	..	..	..
<i>Leptogenys</i>	23	6	9	4	1	3
<i>Anochetus</i>	14	1	6	8	..	1
<i>Odontomachus</i>	2	2	5	2	1	3
<i>Tetraponera</i>	21	9	9	5	1	3

Table V (continued)

Number of Species, Subspecies, and Varieties of Each Genus Hitherto
Recorded from the Ethiopian Region and the Belgian Congo

	ETHIOPIAN REGION			BELGIAN CONGO		
	Species	Subspecies	Varieties	Species	Subspecies	Varieties
<i>Vititicola</i>	1	..	1	1	..	1
<i>Pachysima</i>	2	..	..	2	..	..
<i>Cratomyrmex</i>	1	..	2	..	..	..
<i>Messor</i>	5	7	10	..	..	..
<i>Pheidole</i>	57	32	31	17	12	7
<i>Melissotarsus</i>	4	..	1	1	..	..
<i>Myrmicaria</i>	10	5	10	4	3	6
<i>Cardiocondyla</i>	1	1	..	1	..	..
<i>Crematogaster</i>	88	56	102	39	25	39
<i>Monomorium</i>	50	25	28	15	4	6
<i>Diplomorium</i>	1	..	..	..	..	..
<i>Bondroitia</i>	1	..	..	1	..	..
<i>Solenopsis</i>	8	4	4	2	2	..
<i>Anergatides</i>	1	..	..	1	..	..
? <i>Pheidologeton</i>	2	1	..	..	..	..
<i>Aneleus</i>	4	3	..	..	..	..
<i>Oligomyrmex</i>	6	1	1	1	1	..
<i>Aëromyrma</i>	9	..	1	1	..	..
<i>Carebara</i>	8	..	..	5	..	..
<i>Pædalgus</i>	2	..	..	1	..	..
<i>Terataner</i>	2	..	..	..	..	..
<i>Atopomyrmex</i>	1	1	2	1	1	2
<i>Atopula</i>	1	..	..	..	..	..
<i>Calyptomyrmex</i>	7	..	1	1	..	1
<i>Meranoplus</i>	7	5	2	2	1	..
<i>Macromischoides</i>	2	1	4	2	1	4
<i>Leptothorax</i>	6	2	..	3	..	..
<i>Ocymyrmex</i>	5	5	4	..	..	..
<i>Tetramorium</i>	50	29	43	10	6	7
<i>Decamorium</i>	1	..	1	..	..	..
<i>Xiphomyrmex</i>	11	2	5	5	1	..
<i>Tetramyrma</i>	1	..	..	..	..	..
<i>Rhoptomyrmex</i>	7	1	2	2	1	2
<i>Triglyphothrix</i>	18	1	6	2	..	1
* <i>Wasmannia</i>	1	..	..	..	..	..
<i>Cataulacus</i>	25	15	16	10	2	5
<i>Microdaceton</i>	1	..	..	..	..	..
<i>Strumigenys</i>	20	5	3	3	1	2
<i>Epitritus</i>	2	..	..	..	..	..

Table V (continued)

Number of Species, Subspecies, and Varieties of Each Genus Hitherto
Recorded from the Ethiopian Region and the Belgian Congo

	ETHIOPIAN REGION			BELGIAN CONGO		
	Species	Subspecies	Varieties	Species	Subspecies	Varieties
<i>*Iridomyrmex</i>	1	..	..	..	..	..
<i>Engramma</i>	10	2	2	8	1	2
<i>Tapinoma</i>	10	3	4	1	1	..
<i>Technomyrmex</i>	9	2	4	6	..	1
<i>Semonius</i>	1	..	..	..	..	..
<i>Santschiella</i>	1	..	..	1	..	..
<i>Acropyga</i>	1	..	..	..	..	..
<i>Plagiolepis</i>	26	3	8	6	1	1
<i>Acantholepis</i>	20	11	16	5	2	4
<i>Aphomyrmex</i>	2	..	..	..	..	..
<i>Prenolepis</i>	13	..	1	5	..	..
<i>Pseudolasius</i>	4	..	1	3	..	1
<i>Cataglyphis</i>	2	4	2	..	..	..
<i>Ecophylla</i>	2	..	4	1	..	3
<i>Camponotus</i>	94	81	76	37	33	19
<i>Phasmomyrmex</i>	1	..	..	1	..	..
<i>Polyrhachis</i>	37	17	22	23	9	11
TOTAL	920	389	540	318	122	158

THE PECULIARITIES OF THE MALAGASY ANT-FAUNA

The Malagasy Region includes Madagascar and a number of small neighboring islands known as the Comoros, Seychelles, and Chagos. The ant-fauna of Madagascar was first studied by Forel in a splendid volume in Grandidier's large work on the physical and political history of the island. More recently, the Swiss myrmecologist has contributed data on the ants of the smaller islands. Turning again to Tables I, II, and III, we note the following facts.

1.—The Malagasy ant-fauna comprises 40 genera, somewhat less than half the number known from the Ethiopian Region, but only four of these (*Champsomyrmex*, *Parapheidole*, *Brunella*, and *Eutetramorium*) are endemic, or precinctive.

2.—Of the 40 genera, 34 are common to the Ethiopian and 32 to the Indomalayan, so that the affinities appear to be about equally divided between these two regions.

3.—The generic affinities with the Papuan and Australian Regions are somewhat less pronounced (29 and 26 respectively), but considerably more than with the Palearctic, Nearctic, and Neotropical (20, 18, and 19 respectively).

4.—The subfamily Dorylinæ is completely absent from the Malagasy Region.

5.—The Dolichoderinæ are poorly represented by two genera.

6.—The Formicinæ are represented by only four genera (*Acanthoiepis*, *Plagiolepis*, *Prenolepis*, and *Camponotus*).

7.—The Malagasy possesses only two genera (*Aphænogaster* and *Vollenhovia*) which are not known to occur in the Ethiopian Region.

8.—On the other hand, there are 13 genera (*Discothyrea*, *Centromyrmex*, *Ectomyrmex*, *Dorylus*, *Ænictus*, *Myrmecaria*, *Carebara*, *Pædalagus*, *Calptomyrmex*, *Semonius*, *Pseudolasius*, *Æcophylla*, and *Polyrhachis*) which occur in the Indomalayan and Ethiopian Regions but are not known to occur in the Malagasy.

9.—Three peculiar genera (*Simopone*, *Melissotarsus*, and *Terataner*) are known to occur only in the Ethiopian and Malagasy Regions.

The following remarks on particular genera are of general interest. Of the four endemic, or precinctive, genera, *Champsomyrmex*, *Parapheidole*, and *Brunella* are monotypic and *Eutetramorium* contains only two species. *Champsomyrmex* is very close to *Odontomachus*; *Parapheidole* seems to be very close to and parasitic on *Pheidole*; the species of *Brunella* was originally described as an *Aphænogaster*, and *Eutetramorium*, as the name indicates, is allied to *Tetramorium*. These four genera, therefore, lend nothing very striking to the complexion of the Malagasy ant-fauna. Its distinctive features are due to the peculiar development of species within certain genera which it shares with the faunas of other regions.

Among the Ponerinæ, the very ancient and primitive genera *Simopone* with 3 and *Mystrium* with 5 species show a greater development than elsewhere, though the former occurs also in Africa and the latter both in Africa and the Indomalayan Region. The only known species of *Euponera*, *sensu stricto*, (*E. sikoræ* Forel) is found in Madagascar. *Leptogenys* is beautifully represented by no less than 16 species, including three species of an endemic subgenus, *Machærogenys*. The remaining genera of the subfamily show nothing unusual.

Among the Myrmicinæ, we find *Tetraponera* represented by 12 species and *Aphænogaster*, which does not occur in the Ethiopian Region, by 2. one of *Aphænogaster*, *sensu stricto*, and one of the subgenus

Deromyrma. *Crematogaster* has 21 species, distributed among the following subgenera: *Crematogaster*, *sensu stricto*, 11; *Orthocrema*, 1; *Oxygyne*, 5; *Decacrema*, 4. One of the species of *Vollenhovia* (*lævithorax* Emery) and the single species of *Triglyphothrix*, *T. striatidens* (Emery), are really tropical "tramps" from the Indomalayan Region. *Pheidole* is well represented by 17 species, some of which have a peculiar habitus. The *megacephala* group comprises a number of forms as in the Ethiopian Region. *Terataner* with 5, *Xiphomyrmex* with 13, and *Cataulacus* with 8 species are unusually well represented, considering the small size of the territory.

The Dolichoderinæ, as previously stated, have a very poor representation, *Tapinoma* by only one species, *melanocephalum* (Fabricius), a common tropicopolitan tramp, and *Technomyrmex* by 4 species, 3 of which are confined to Madagascar, while one, *albipes* (Smith), is widely distributed over the Indomalayan and Papuan Regions.

The greatest representation of Formicinæ is furnished by the genera *Prenolepis* with 11 and *Camponotus* with 47 species. The latter genus is remarkable on account of the great number of subgenera represented (*Camponotus*, *sensu stricto*, with 1; *Myrmoturba* with 4; *Dinomyrmex* with 5; *Myrmosaga* with 7; *Myrmosericus* with 1; *Mayria* with *Myrmotrema* with 2; *Colobopsis* with 1; *Myrmonesites* with 6; *Momyptia* with 1; *Myrmorhachis* with 1; *Orthonotomyrmex* with *Myrmosaulus* with 1; and *Myrmopiromis* with 7 species). The subgen *Mayria*, *Myrmosaga*, *Myrmonesites*, and *Myrmomyptia* are confined Madagascar. The single species of *Brachymyrmex*, *B. cordemoyi* (Forel, known to occur in the island of Réunion, has been introduced by commerce from South America. In Table VI the Malagasy genera of ants are listed, with the number of known species, subspecies, and varieties. According to Forel,¹ the fauna is made up of groups of species having the following provenience and affinities.

A.—Imported Forms

1. Tropicopolitan forms, imported on various occasions by ships	8
2. American forms, evidently of recent importation: <i>Brachymyrmex cordemoyi</i> (Forel), <i>Pheidole flavens</i> Roger	2
3. Of recent importation from Indomalaya: <i>Plagiolepis longipes</i> (Jerdon)	1
4. Derived from Oceania: <i>Strumigenys godeffroyi</i> Mayr	1
5. More or less ancient Indomalayan importations	6
6. More or less ancient African importations	9
Total	27

¹1907, 'La faune malgache des fourmis et ses rapports avec les faunes de l'Afrique, de l'Inde, de l'Australie, etc.' Rev. Suisse Zool., XV, pp. 1-6.

B.—Malagasy Forms

7. With cosmopolitan affinities (varieties of intercontinental species).....	9
8. With Indomalayan affinities.....	10
9. With Ethiopian affinities.....	9
10. With very distinct Australasiatic (Moluccan and Australian) affinities. To these many might be added from the following group which, on the whole, have Moluccan and Australian affinities.....	9
11. Malagasy forms proper.....	201
Total.....	238

Forel summarizes his views on the Malagasy ant-fauna as follows:

To sum up, the local Malagasy fauna is a fauna of extremely ancient relicts, which have been evolved in certain intercontinental groups (*Camponotus*, *Pheidole*, *Crematogaster*, etc.) to form a very peculiar fauna, the most ancient and primordial affinities of which connect it with the ancient fauna of the Moluccas and Northern Australia. But whereas the Indomalayan genus *Polyrhachis* has invaded Australasia and Australia, it no more exists in Madagascar than does the subfamily Dorylinæ. Subsequently, invasions from East Africa and India confused the situation; still analysis is possible, although it is sometimes difficult to distinguish the direction of the invasions, especially that of the Malagasy fauna into Africa and India.

Finally, very recent invasions of cosmopolitan and even of American species, introduced, without doubt, by shipping, have still further complicated the situation, especially in the small Malagasy archipelagos and along the coast. Nevertheless, it is on the whole easy in these cases to detect the invasions and to avoid erroneous interpretations. The genus *Brachymyrmex* admits of no doubt, and an eye-witness, Vinson, of St. Denys, was able to give me exact information, through M. de Lamoignon, on the invasion of *Plagiolepis longipes* into Réunion some twenty-five years ago.

Table VI

Number of Species, Subspecies, and Varieties of Each Genus Hitherto
Recorded from the Malagasy Region

	Number of Species	Number of Subspecies	Number of Varieties
<i>Cerapachys</i>	1	..	..
<i>Phyracaces</i>	2	..	1
<i>Simopone</i>	3	..	..
<i>Mystrum</i>	5	..	1
<i>Platythyrea</i>	4	1	1
<i>Bothroponera</i>	4	1	..
<i>Euponera</i>	4	..	2
<i>Ponera</i>	6	3	2
<i>Leptogenys</i>	16	2	2
<i>Anochetus</i>	2	..	2
<i>Champsomyrmex</i>	1	1	..
<i>Odontomachus</i>	1	..	..
<i>Tetraponera</i>	12	4	4
<i>Aphaenogaster</i>	3	..	3
<i>Parapheidole</i>	1	..	..
<i>Pheidole</i>	17	3	8
<i>Melissotarsus</i>	1	..	..
<i>Cardiocondyla</i>	4	1	2
<i>Crematogaster</i>	21	7	6
<i>Vollenhovia</i>	2	1	..
<i>Monomorium</i>	8	5	..
<i>Solenopsis</i>	1	..	..
<i>Aëromyrma</i>	1	..	..
<i>Oligomyrmex</i>	2	..	..
<i>Terataner</i>	5	..	..
<i>Brunella</i>	1	..	..
<i>Meranoplus</i>	2	..	..
<i>Leptothorax</i>	3	..	..
<i>Tetramorium</i>	5	2	1
<i>Xiphomyrmex</i>	13	2	1
<i>Triglyphothrix</i>	1	..	1
<i>Eutetramorium</i>	2	..	..
<i>Cataulacus</i>	8	..	..
<i>Strumigenys</i>	4	..	..
<i>Tapinoma</i>	2	..	..
<i>Technomyrmex</i>	4	2	1
<i>Acantholepis</i>	1	..	..
<i>Plagiolepis</i>	5	1	..
* <i>Brachymyrmex</i>	1	..	..
<i>Prenolepis</i>	11	4	3
<i>Camponotus</i>	47	16	29
Total	237	56	70