Proceedings of the American Academy of Arts and Sciences.

Vol. 62. No. 3.—April, 1927. p 92-120

THE ANTS OF THE CANARY ISLANDS.

By William Morton Wheeler.

THE ANTS OF THE CANARY ISLANDS.[1]

By William Morton Wheeler.

During July and August, 1925, as the guest of Mr. Allison V. Armour on his yacht, the "Utowana," I had an opportunity to visit the Canary Islands. The visit was the more interesting and enjoyable on account of the companionship of my old friend, Dr. David Fairchild, of the Bureau of Plant Industry, who was making a detailed study of the agricultural and horticultural plants of the Islands. We were able to spend about a week on each of four of the larger islands, Teneriffe, Palma, Gran Canaria and Lanzarote. Owing to the summer drought, the season was not the most favorable for entomological work, but I was able, nevertheless, to observe and collect a considerable portion of the species, subspecies and varieties of Formicidæ known to occur in the archipelago.

Our knowledge of the ants of the Canary Islands begins with Brullé, who in 1840 recorded five species which he called *Formica carinata*, *F. pubescens* var., *F. fusca*, *F. capitata* and *F. structor*. The three first are now known as *Camponotus fœ* Emery, *C. dubitatus* Emery and *Messor maurus* Santschi; the two remaining have not been taken since, unless as seems probable, Brullé's *F. fusca* is *Lasius niger* L. and his *F. structor* is *Messor sordidus* Forel. Since the publication of this early paper, Canary Island ants in small numbers have found their way from time to time into the hands of European myrmecologists, notably Forel, Emery, Santschi and Stitz, and have been described in several scattered publications during the past 35 years. As a result of this work the known fauna of the islands has been increased ten fold since Brullé's time, and a single indefatigable collector, Señor A. Cabrera y Diaz, deserves the credit of having brought most of the rarer forms to the attention of the systematists.

The accompanying table contains a list of the 56 forms (species, subspecies and varieties) now known, with indication of their occurrence in the various islands. It will be seen that 47 of them, have been taken in Teneriffe, 17 in Gran Canaria, 9 in Lanzarote, 8 in Palma, 7 in Fuerteventura, 2 in Gomera and only one in Alegranza. None has been recorded from Hierro or Graciosa. The small number cited from all the islands, except Teneriffe, is explicable in great part from the fact that they have been little explored by entomologists. It is highly improbable that so large an island as Hierro should

[1] Contribution from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 278.

List of Canary Island Ants Species (A) Subspecies (B) Variety (C)	Teneriffe	Gran Canaria	Palma	Gomera	Fuerteventura	Lanzarote	Alegranza
Ponera eduardi A	X	X					
Ponera punctatissima A	X						
*Ponera nivariana A	X						
Myrmica schencki B	X						
Aphænogaster testaceopilosa A					X		
*Aphænogaster hesperia A	X						
*Messor maurus C	X	X			X	X	
Messor sordidus B	X						
*Oxyopomyrmex insularis A	X						
*Oxyopomyrmex major C	X						
Pheidole megacephala A	X	X					
Pheidole teneriffana A	X	X				X	
*Crematogaster alluaudi A	X		X				
*Crematogaster noualhieri B	X						
*Crematogaster canariensis C						X	
*Monomorium hesperium A	X	X	X				
*Monomorium lanzarotense C						X	
*Monomorium medinæ A	X						
Monomorium salomonis A	X						
Monomorium subopacum B	X	X			X		
*Monomorium intermedium C			X			X	
Monomorium destructor A	X						
*Paraphacota cabreræ A	X						
*Paraphacota obscuripes B	X						

List of Canary Island Ants Species (A) Subspecies (B) Variety (C)	Tenerife	Gran Canaria	Palma	Gomera	Fuerteventura	Lanzarote	Alegranza
*Xenohyboma mystes A	X						
*Solenopsis canariensis A	X						
*Leptothorax cabreræ A	X						
*Leptothorax stitzi C	X						
*Leptothorax canescens A	X						
*Leptothorax elongatus A	X						
*Leptothorax gracilicornis A	X						
*Leptothorax hesperius A	X						
*Leptothorax nivarianus A	X						
*Leptothorax guancha C	X						
*Leptothorax risi A		X					
*Leptothorax globulinodis B		X					
*Leptothorax armouri B		X					
Tetramorium biskrense B	X						
*Tetramorium depressum C	X	X			X		
*Tetramorium fortunatarum C	X	X			X		
*Tetramorium guancha C	X						
*Tetramorium palmense C			X				
Iridomyrmex humilis A	X	X	X	X			
*Plagiolepis canariensis C	X	X				X	
Plagiolepis maura B	X		X				
*Camponotus carinatus C	X				X	X	
*Camponotus hesperius B	X		X		X		
*Camponotus feæ B		X					X

List of Canary Island Ants Species (A) Subspecies (B) Variety (C)	Teneriffe	Gran Canaria	Palma	Gomera	Fuerteventura	Lanzarote	Alegranza
*Camponotus dubitatus C	X	X					
*Camponotus excelsus C	X						
*Camponotus erythropus C	X			X		X	
*Camponotus guancha C	X						
Paratrechina longicornis A	X	X				X	
Lasius niger A	X	X	X				
Lasius emarginatus A	X						
Lasius nigro-emarginatus C	X						

be antless or that Gomera should have only two species, though such low, arid islands as Fuerteventura and Lanzarote certainly have a poorer fauna than Teneriffe.

The species, subspecies and varieties indigenous to the Canaries are indicated in the table by asterisks and are seen to number 39 (16 species, 6 subspecies, 17 varieties) i. e. nearly 70% of the total fauna. Twelve of the remaining 17 forms (6 species, 5 subspecies, 1 variety) are well-known South European and North African (i. e. Mediterranean) forms, while five (*Pheidole megacephala*, *Ph. teneriffana* *Monomorium destructor*, *Iridomyrmex humilis* and *Paratrechina longicornis*) are widely distributed tropicopolitan "tramp" species that have been introduced by commerce.

To the taxonomist the most interesting of the indigenous forms are the genera Paraphacota Santschi and Xenohyboma Santschi and the long series of Leptothorax (11 forms constituting nearly 20% of the entire fauna!). Of Paraphacota, which is, perhaps, parasitic on Monomorium, and is known only from male specimens, a species occurs in Tunis. Xenohyboma, also presumably parasitic, is the only genus peculiar to the Canaries, but since it is founded on a female specimen closely related to Monomorium, it may be the unknown sex of Paraphacota. If this should prove to be the case there would be no indigenous genus of Formicidæ in the islands. All the forms of Leptothorax seem to be rare or very local and are related to

North African or Mediterranean species. Two of them are actually represented by subspecies on the coast of Morocco (Mogador).

In general, the ant-fauna of the Canaries bears much the same relation to the south Palearctic fauna that the ants of the Galapagos bear to those of South and Central America. While collecting in the Canaries I was often vividly reminded of the similarity, notably in the prevailing small size of the insects, their timidity and the sporadic occurrence of their rather meager colonies in a volcanic environment very much like that of the Galapagos. The only ant conspicuous on account of its numbers and aggressive behavior is the Argentine ant, *Iridomyrmex humilis*, a recently introduced species which will be discussed in the sequel. If the Canary Islands are to be derived from a submerged portion of the Grand Atlas chain, as some have surmised, the origin of their ant-fauna may be accounted for in a manner analogous to that of the Galapagos, i. e. as a mixture, consisting partly of forms of recent and accidental introduction from the South Palearctic region and partly of forms originally indistinguishable from those of the neighboring African continent but having undergone appreciable specific, subspecific or varietal development since their isolation in the archipelago.[2]

Owing to their greater area, the Canary Islands have a much richer ant-fauna than Madeira and the Azores which lie at a greater distance from the African coast. The fauna of Madeira, including the uninhabited Selvagens, or Desiertas, comprises, so far as I am able to ascertain, only the following forms:

Ponera eduardi Forel
Ponera punctatissima Roger
Messor barbarus L. subsp. *structor* Latr.
Pheidole megacephala Fabr. subsp. *pusilla* Heer
Cardiocondyla emeryi Forel.
Monomorium carbonarium F. Smith
Monomorium (*Xeromyrmex*) *salomonis* L.
Monomorium (*Xeromyrmex*) *salomonis* subsp. *subopacum* Emery.

[2] In connection with the hypothesis maintained by Scharff and others that there was formerly a land-connection between Western Europe and the West Indies and the speculations of those who like Lewis Spence see in the Canaries the last remnants of the lost "Atlantis," it is interesting to note the number of species of Leptothorax in these islands and the fact that the most characteristic West Indian ants belong to the closely allied genus Macromischa. This beautiful genus, moreover, which has its center of distribution in Cuba and Haiti, happens to be most closely related in shape of thorax and structure of petiole to the very section of the genus Leptothorax (th *rottenbergi* group), which has its center of distribution in the Canaries a Morocco.

Tetramorium simillimum Roger
Iridomyrmex humilis Mayr
Tapinoma erraticum Latr.
**Tapinoma erraticum* var. *madeirense* Forel.
**Plagiolepis barbara* Santschi var. *madeirensis* Emery
**Plagiolepis schmitzi* Forel.
Lasius niger L.

Of these 15 forms only three are endemic (one species and two varieties), 7 are well-known members of the Mediterranean fauna and 5 are vagrants (*Pheidole megacephala, Cardiocondyla emeryi, Monomorium carbonarium, Tetramorium simillimum* and *Iridomyrmex humilis*).

The fauna of the Azores is even more depauperate, comprising only the following five species:

Ponera eduardi Forel
Aphænogaster testaceopilosa Lucas
Monomorium carbonarium F. Smith.
Tetramorium cæspitum L.
Lasius niger L.

Four of these are common Palearctic species and one (*M. carbonarium*) is a tropicopolitan tramp; three are common to the Canary Islands and three to Madeira. A similarly meager and adventitious ant-fauna characterizes many of the small Pacific islands. I have noticed it in Tahiti and Rarotonga, and it is shown in Timberlake's recent list (1926) of the Hymenoptera of Johnston and other diminutive islands west of Hawaii.

The only ant of any economic importance in the Canary Islands, is *Iridomyrmex humilis*, which has now become a serious menace to the leading industry of Teneriffe, Gran Canaria, Palma and Gomera. For more than a century the hardy islanders have suffered a series of reverses in their agricultural undertakings. Their cultivation of the grape was long ago carried to a high state of development only to be destroyed by the introduction of the Phylloxera, and after the cultivation of cochineal had made great progress the discovery of the aniline dyes robbed this industry in turn of its importance. Now the islanders, having established flourishing banana plantations and having become prosperous through supplying the European markets with their fruit, are finding that the Argentine ant may compel them to abandon this and resort to some other crop. A fear of closing the European markets to their produce has prevented the officials from announcing the presence of the pest, and I was there-

fore astonished to encounter it in enormous numbers in three of the islands which we visited.

The Argentine ant is obviously of South American origin, though it may not have started on its peregrinations from the Argentine, since it occurs also in Brazil. Its behavior and its invasion of the Southern States and California have been closely studied by our economic entomologists, and it is known to have crossed the Atlantic at least once during the past forty years and to have established itself in Madeira, South Africa, Portugal and Southern France. In 1893 when Father Ernest Schmitz first sent specimens to Professor Forel from Madeira, the latter expressed himself as surprised to receive the insect from such a locality. During the same year Father Schmitz published a Portuguese article in which he stated that the insect had just become a "veritable plague and public calamity" in Funchal. "Thousands of them invade everything, fields, gardens, plantations and especially the houses and their pantries, cupboards, wardrobes, tables and even the beds of the invalids. No places in which there is anything that may tempt their appetite are secure from their incursions. Although thousands of them may be killed with hot water, fire or poisons, their numbers show no diminution. Powdered or dissolved insecticides, solutions of corrosive sublimate, quick lime, etc. arrest their progress for a time, but after a few days fresh legions find their way over the mountains of their companions' corpses to anything that excites their appetite." The invasion of dwellings, however, is only one of the nefarious activities of *I. humilis*. It is a far greater pest in connection with growing plants. It does not, of course, attack the vegetation directly, but owing to its fondness for honey-dew, or the sweet excrement of Coccids, it not only cultivates these sap-sucking insects on the branches and foliage of a great variety of trees and shrubs but actually transports their young from plant to plant. And since this pasturing of scale-insects and mealy-bugs yields an abundant and constant supply of food and drink, it can remain active and multiply inordinately in subtropical countries during the long summer droughts while other ants and most other insects are inactive or æstivating.

The Argentine ant is, moreover, an inveterate destroyer of other ants, so that few of the native or even of the previously introduced species are able to survive in infested areas. The supplanting of one species by Iridomyrmex was shown in an interesting manner in Madeira. In 1852 Heer found the island overrun by *Pheidole megacephala* subsp. *pusilla*, which seems to have been accidentally in-

troduced from Africa or Madagascar. I quote a paragraph from his vivid description of the abundance of this ant during the middle of the last century. "It is found over the whole southern portion of the island of Madeira up to an altitude of about 1000 ft. in untold numbers especially in hot, sunny localities. In such places nests of these ants may be found under eight out of every ten overturned stones. In the town of Funchal there is probably not a single house that does not harbor millions of the tiny creatures, which ascend to the topmost stories, emerge in great cohorts from the crevices of the walls and floors and in regular columns traverse the rooms in all directions. They climb the legs of the tables, creep along their edges onto their surfaces, and also invade the cupboards, chests, etc. They are so minute that they can pass through the smallest holes and cracks. One may kill them by thousands without noticing any decrease in their numbers, for these are continually restored by the arrival of fresh multitudes," etc. Now it is an interesting fact that the Argentine ant, soon after its arrival in Madeira, completely replaced the Pheidole as a house ant. According to Father Schmitz, the latter after the introduction of the South American species, could still be found in a sandy and stony locality a league from Funchal, but from the town itself it had completely disappeared. A similar observation is also cited by Stoll (1898). This is the more remarkable because the Pheidole is a pugnacious, hard-bodied ant and not only possesses a sting but also a huge-headed, huge-jawed soldier caste, whereas the Iridomyrmex is soft-bodied and stingless, though it probably possesses disagreeable secretions. Owing, however, to its having a very much greater fecundity than the Pheidole and to the absence of any hostility between its various colonies, it is able to overpower and replace other ants by the mere weight of its numbers.

The Argentine ant has evidently been in the Canary Islands for some time. Don Juan Bolinaga, director of the Royal Botanical Garden at Orotava, Don Antonio Gonzalez Cabrera, agronomic engineer, and Mr. Blandy, who has long resided in Madeira and Las Palmas, when consulted in regard to the insect, agreed that it first made its appearance in the islands seventeen or eighteen years ago (about 1910), but they differed in regard to its provenience. Don Antonio assured me that it was introduced directly from the Argentine in cargoes of grain, whereas Mr. Blandy was equally certain that it had come from Madeira in sugar-cane, of which large quantities were formerly brought to Gran Canaria. I was unable to ascertain which island was the first to become infested, but it was, in all probability,

either Gran Canaria or Teneriffe. At the present time all the regions devoted to banana culture in Gran Canaria, Teneriffe, Palma and Gomera are heavily infested and the plants are being greatly injured by the protégés of the ants, a mealy bug, *Pseudococcus comstocki*, and a scale insect, *Ceroplastes* sp., the former being the more prolific and more serious pest. I found the ant very numerous over a considerable region about the Villa and Puerto de Orotava, on Teneriffe, but it seemed to be even more abundant in the banana plantations of Gran Canaria. According to an unpublished report by the agronomic engineer, received from the American vice-consul Mr. Greenup, the areas most heavily infested with the mealy bugs and ants in Gran Canaria cover the towns of Las Palmas, Telde, San Lorenzo, Arucas and Galdar. The accompanying photograph (Pl. XXVI) shows the appearance of hundreds of banana plants which we examined in the plantations at Telde and Las Palmas.[3]

I was informed that the activities of the Iridomyrmex are most conspicuous during the dry season when it nests in the earth of the plantations, but that during the wet season, when the soil is drenched with the rains or by irrigation, it moves its brood up under the leaf-bases of the banana plants and lives in close contact with its coccids. It shows no inclination to ascend to a greater elevation than about 1000 ft. Only in one place, near Teror, Gran Canaria, did I find it at 2000 ft., nesting under stones in a piece of open woods. Within the zone which it now occupies native ants are already absent or survive only in the barrancos and fields remote from plantations and dwellings. Even in the outskirts of Santa Cruz where Iridomyrmex was everywhere in evidence, on all kinds of trees in the gardens and on the dry mountain slopes behind the town, I sought in vain for any of the native ants. While stopping at the Hotel Martianez, in the Puerto de Orotava I had occasion to observe the Iridomyrmex at my leisure. They frequently invaded the apartments though not in annoying numbers, but in the garden the trees and shrubs, especially the great exotic fig trees, were alive with their dense ascending and descending files. The most careful search failed to reveal the presence of any other ant. It is probable therefore that in a few years only the native ants that can live above an altitude of 1000 ft. or on the low and very arid islands of Fuerteventura and Lanzarote, will survive.

[3] Dr. David Fairchild, who has revisited the Canary Islands during the past winter, writes me that the Argentine ant is still increasing in numbers and has become an even greater menace to the banana industry. This is confirmed by an article which he sends me by Don Antonio Gonzalez Cabrera ("La Plaga de Hormigas," Hojas Divulgadoras, Sección Agronóm. de las Palmas, no. 1, 1927).

On Lanzarote no bananas are grown and a very peculiar form of agriculture is practised, which seems to have been invented by the ancient inhabitants, the Guanches. Where the land is not too much exposed to the wind, tomatoes, vines, fig-trees, etc. are planted in a layer of lapilli dug from the low extinct volcanic cones and uniformly spread over the surface. The lapilli absorb enough dew to nourish the plants and produce plentiful crops. Where the country is wind-swept, as in the neighborhood of Uga (Pls. XXVII and XXVIII), the grape vines and fig-trees are planted in large pits dug in the lapilli and protected by semicircular walls of volcanic rock on the windward side. Here, too, the dew is an adequate substitute for the very infrequent rains. Obviously this is not a country that would appeal to the Argentine ant.

In the following pages I give a complete list of the known Canary Islands ants, with the localities in which they have been taken and their more important synonymy, as an aid to future collectors and students of geographical distribution. It will also serve the useful purpose of bringing the hitherto unsettled nomenclature up to date and of revealing the very considerable gaps in our knowledge of the precise range of the various forms within the archipelago.

Family Formicidæ

Subfamily Ponerinæ

1. **Ponera eduardi** Forel

Ponera confinis Roger subsp. *eduardi* Emery, Mem. R. Accad. Sc. Inst. Bologna, 1895, p. 8, figs. 14–16, ☿ ♀ ♂.

Ponera eduardi Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿; Emery, Deutsch. Ent. Zeitschr. 1909, p. 372, fig. 10, ☿ ♀ ♂; Emery, Gen. Insect. Ponerinæ, 1911, p. 90, fig. 4, pl. 3, ☿ ♀ ♂; Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 335, ☿.

Teneriffe (A. Cabrera y Diaz); Fuente di Pedro (Heymons).

I found several small colonies of this ant in the Barranco Ruiz, near San Juan de la Rambla, Teneriffe and at Azuaje, in the Barranco de la Virgen, Gran Canaria. In both localities the nests were under stones on the banks of streams.

2. **Ponera punctatissima** Roger.

Ponera punctatissima Emery, Ann. Mus. Civ. Genova 18, 1882, p. 450, ☿; Emery, Ann. Soc. Ent. France, 1893, p. 82; Emery, Mem. R. Accad. Sc. Ist. Bologna, 1895, p. 6, figs. 8, 10, ☿ ♀ ♂;

Emery, Deutsch. Ent. Zeitschr., 1909, p. 373, fig. 11, ☿ ♀ ♂; Emery, Gen. Insect. Ponerinæ, 1911, p. 91, fig. 5, pl. 3, ☿ ♀ ♂.
Teneriffe (Noualhier).

3. **Ponera nivariana** Santschi.

Ponera nivariana Santschi, Ann. Soc. Ent. France, 1908, p. 518, ☿; Emery, Gen. Insect. Ponerinæ, 1911, p. 91, ☿.
Teneriffe: Bajamon (Cabrera y Diaz), type locality.

SUBFAMILY MYRMICINÆ

4. **Myrmica scabrinodis** Nyl. subsp. **schencki** Emery.

Myrmica scabrinodis r. *schencki* Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 347, ☿.
Teneriffe: Santa Cruz (Heymons).

5. **Aphænogaster testaceopilosa** Lucas.

Aphænogaster testaceopilosa Emery, Ann. Soc. Ent. France, 1893, p. 84, ☿; Emery, Deutsch. Ent. Zeitschr., 1908, p. 316, ☿; Emery, Gen. Insect. Myrmicinæ, 1921, p. 62, ☿ ♀ ♂.
Fuerteventura (Alluaud).

6. **Aphænogaster (Attomyrma) hesperia** Santschi

Stenamma (*Aphænogaster*) *crocea* var. *croceoides*. Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿.
Aphænogaster hesperia Santschi, Ann. Soc. Ent. Belg. 55, 1911, p. 284, ☿; Santschi, Bol. R. Soc. Hespañ. Hist. Nat. 19, 1919, p. 247 ☿; Emery Gen. Insect. Myrmicinæ 1921, p. 58 ☿.
Teneriffe: Bajamar (Cabrera y Diaz), type locality.

7. **Messor instabilis** F. Smith subsp. **minor** Er. André var. **maurus** Santschi.

Atta capitata Brullé, in Webb and Berthelot Hist. Nat. Isles Canar. 2, 1840, p. 84, ☿.
Aphænogaster barbara var. VII, Emery, Ann. Mus. Civ. Genova 12 1878, p. 57, fig. ☿ ♀ ♂.
Aphænogaster barbara Emery, Ann. Mus. Civ. Genova 18, 1882, p. 451, ☿.
Aphænogaster barbara var. *minor* Ern. André, Spéc. Hymén. Europ, 2, 1882, p. 355, 368, ☿ ♀.

Aphænogaster capitatus var. *minor* Emery, Explor. Sc. Tunisie, Fourmis, 1891, p. 12.

Aphænogaster (*Messor*) *barbarus* race *capitatus* var. *minor* Emery, Ann. Soc. Ent. France, 1893, p. 84.

Stenamma (*Messor*) *barbarum* race *capitatum* var. *minor* Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿ ♀.

Messor barbarus subsp. *minor* Emery, Gen. Insect. Myrmicinæ, 1921, p. 71, ☿ ♀ ♂.

Messor instabilis st. *minor* var. *maura* Santschi, Rev. Suisse Zool. 30, 1923, p. 325, ☿ ♀.

Teneriffe: (Noualhier); Orotava (L. Fea); Bejano (Cabrera y Diaz), type locality.

Gran Canaria (Alluaud).

Fuerteventura (Alluaud).

I have taken this species in the following localities:

Gran Canaria: Arucas, 800–1000 ft.; Azuaje, Barranco de la Virgen; Santa Brigida; Los Tilos, 1500 ft.; Goberas, 1000 ft.

Teneriffe: Barranco Ruiz, near San Juan de la Rambla.

Lanzarote: near Haria, 1000 ft.

The specimens from all these localities are very constant in coloration, except those from Teneriffe, which have the head and thorax of a paler and more vivid red. The nests resemble those of *Messor barbarus* L., being large craters often surrounded by considerable masses of chaff. At Goberas this chaff was found to be inhabited by numerous, small, active, broadly elliptical Tenebrionid beetles very similar to a species which I had previously seen in the chaff of *M. barbarus* nests near Meknes, Morocco.

8. **Messor barbarus** L. subsp. **sordidus** Forel.

? *Atta structor* Brullé, in Webb and Bethelot, Hist. Nat. Isles Canaries 2, 1840, p. 84, ☿.

Aphænogaster (*Messor*) *barbara* race *sordida* Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿.

Messor barbarus sordidus Emery, Deutsch. Ent. Zeitschr, 1908, p. 445, 447, ☿.

Messor barbarus subsp. *sordida* Emery, Gen. Insect. Myrmicinæ, 1921, p. 72, ☿.

Teneriffe (Cabrera y Diaz).

The occurrence of this form in the Canaries is doubtful. Forel's specimens may have belonged to the preceding variety of *instabilis*.

9. **Oxyopomyrmex insularis** Santschi.

Oxyopomyrmex insularis Santschi, Ann. Soc. Ent. France, 1908, p. 523, fig. 7, ☿ ; Emery, Gen. Insect Myrmicinæ, 1921, p. 76, ☿ .
Teneriffe: Medano (Cabrera y Diaz), type locality.

10. **Oxyopomyrmex insularis** var. **major** Santschi.

Oxyopomyrmex insularis var. *major* Santschi, Rev. Suisse Zool. 30, 1923, p. 326, ☿ .
Teneriffe: Medano (A. Cabrera y Diaz), type locality.

11. **Pheidole megacephala** Fabr.

Pheidole megacephala Emery, Ann. Soc. Ent. France, 1893, p. 84; Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿ ; Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 340, ♃ ☿ .
Teneriffe (Noualhier, Cabrera y Diaz); Tegina (Lehmann); Orotava, 250 m. (Tessmann).
Gran Canaria (Alluaud)

I found a few small colonies of this tropicopolitan ant under stones in a very dry locality near Arucas, Gran Canaria.

12. **Pheidole teneriffana** Forel.

Pheidole teneriffana Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 465, ♃ ☿ ; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 90, 160, ♃ ♀ ; Santschi, Ann. Soc. Ent. France 77, 1908, p. 520, ☿ ; Emery, Gen. Insect. Myrmicinæ, 1921, p. 89, ♃ ☿ ; Santschi, Bull. Soc. Vaud. Sc. Nat. 56, 1925, p. 83.
Teneriffe: Laguna (Medina), type locality.
Gran Canaria: Las Palmas (Cabrera y Diaz).

A few colonies of this ant were found nesting in the plaza of Haria, Lanzarote and among volcanic lapilli at Uga on the same island. Like the allied *Ph. megacephala,* it is evidently extending its range to many tropical and subtropical countries. Santschi calls attention to its present occurrence in Tunis, Smyrna, Kartum, Mombassa, Durban, Samoa and China.

13. **Crematogaster (Acrocœlia) alluaudi** Emery.

Crematogaster alluaudi Emery, Ann. Soc. Ent. France, 1893, p. 83, ☿ ; Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿ ; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿ ; Emery, Deutsch. Ent. Zeitschr, 1912, p. 663, ☿ .

Crematogaster (*Acrocœlia*) *alluaudi* Emery, Gen. Insect. Myrmicinæ, 1921, p. 142, ☿.
Palma (Alluaud), type locality.
Teneriffe (Cabrera y. Diaz).

14. **Crematogaster (Acrocœlia) alluaudi** subsp. **noualhieri** Emery.

Crematogaster alluaudi race *noualhieri* Emery, Ann. Soc. Ent. France, 1893, p. 83, ☿; Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿; Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 341, ☿ ♀.
Crematogaster alluaudi noualhieri Emery, Deutsch. Ent. Zeitschr., 1912, p. 664, ☿.
Crematogaster (*Acrocœlia*) *alluaudi* subsp. *noualhieri* Emery, Gen. Insect. Myrmicinæ, 1921, p. 142, ☿.
Teneriffe (Noualhier, Cabrera y Diaz), type locality; Agua Mansa, 600 m. (Tessmann).

15. **Crematogaster (Acrocœlia) læstrygon** Emery, subsp. **maura** var. **canariensis** Emery.

Crematogaster schmidti race *læstrygon* Emery, Ann. Soc. Ent. France, 1893, p. 82, ☿.
Crematogaster auberti læstrygon var., Emery, Deutsch. Ent. Zeitschr., 1912, p. 658, ☿.
Crematogaster læstrygon maura var. *canariensis* Emery, Boll. Soc. Ent. Ital. 58, 1926, p. 3, ☿.
Lanzarote (Alluaud), type locality.

16. **Monomorium (Xeromyrmex) hesperium** Emery.

Monomorium minutum race *carbonarium* Emery, Ann. Soc. Ent. France, 1893, p. 83, ☿.
Monomorium hesperium Emery, Mem. Accad. Sc. Ist. Bologna (5) 5, 1895, p. 298, fig. 3, ☿; Emery, Deutsch. Ent. Zeitschr., 1908, p. 680, fig. 10, ☿; Santschi, Bol. R. Soc. Españ, Hist. Nat. 19, 1919, p. 247, ☿.
Monomorium (*Xeromyrmex*) *hesperium* Emery, Gen. Insect. Myrmicinæ, 1921, p. 177, ☿.
Gran Canaria (Alluaud), type locality.
Teneriffe (Cabrera y Diaz).

A few workers of this species were found running over rocks in *Pinus canariensis* woods at Pinar del Chalco on the island of Palma, and over the pavement of the patio in a farm-house near Goberas, Gran Canaria.

17. **Monomorium (Xeromyrmex) hesperium** var. **lanzarotense** var. nov.

Worker. Length 1.8–2.4 mm.

Averaging smaller than the typical *hesperium* and with the antennal scapes extending somewhat beyond the posterior border of the head. The color is darker, being black, with the mandibles, funiculi and ventral surface of pedicel deep reddish, the median portions of the tibiæ and femora darker.

Described from numerous specimens taken from a populous colony nesting among volcanic lapilli under a stone on the Cuesta de Malpaso at about 1000 ft. altitude, above Haria, Lanzarote. Owing to its darker color, this variety is even more deceptively like *M. carbonarium* than is the typical *hesperium*.

18. **Monomorium (Xeromyrmex) medinæ** Forel.

Monomorium medinæ Forel, Ann. Soc. Ent. Belg. 36, 1892, p. 454, ☿ ; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿ ; Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿ ; Emery, Deutsch. Ent. Zeitschr., 1908, p. 679, fig. 9, ☿ ; Santschi, Bol. R. Soc. Españ. Hist. Nat. 19, 1919, p. 247, ☿ .

Monomorium (Xeromyrmex) medinæ Emery, Gen. Insect. Myrmicinæ, 1921, p. 177, ☿ .

Teneriffe: Laguna (Cabrera y Diaz), type locality.

19. **Monomorium (Xeromyrmex) salomonis** L.

Monomorium salomonis Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿ ; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿ ; Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 346, ☿ .

Monomorium (Xeromyrmex) salomonis Emery, Gen. Insect. Myrmicinæ, 1921, p. 177, ☿ ♀ ♂.

Teneriffe (Cabrera y Diaz); Orotava (Heymons).

20. **Monomorium (Xeromyrmex) salomonis** subsp. **subopacum** Emery.

Monomorium subopacum Emery, Ann. Mus. Civ. Genova 18, 1882, p. 450, ☿ ; Emery, Ann. Soc. Ent. France, 1893, p. 82, ☿ .

Monomorium salomonis var. *subopacum* Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿ ♂.

Monomorium salomonis subopacum Emery, Deutsch. Ent. Zeitschr. 1908, p. 676, fig. 4, ☿ ♀ .

Monomorium (*Xeromyrmex*) *salomonis* subsp. *subopacum* Emery, Gen. Insect. Myrmicinæ, 1921, p. 178, ☿.
Teneriffe (L. Fea, Noualhier, Cabrera y Diaz); Santa Cruz (L. Fea).
Gran Canaria (Alluaud).
Fuerteventura (Noualhier).

Taken repeatedly in rather populous colonies under stones in open fields near Goberas, 1000 ft., Gran Canaria.

21. **Monomorium (Xeromyrmex) salomonis** subsp. **subopacum** var. **intermedium** var. nov.

Worker. Intermediate between the typical *salomonis* and its subsp. *subopacum* in the opacity of the body, the punctuation being finer than in the latter and the surface distinctly lustrous but not so smooth or subshining as in the former.

Palma: Barranco de las Angustias, about 1000 ft. (type locality); *Lanzarote:* Haria and Uga, nesting in volcanic lapilli.

22. **Monomorium (Parholcomyrmex) destructor** Jerdon.

Monomorium destructor Emery, Ann. Soc. Ent. France, 1893, p. 82, ☿; Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿.
Monomorium (*Parholcomyrmex*) *destructor* Santschi, Bol. R. Soc. Españ. Hist. Nat. 50, 1921, p. 424, ☿; Emery, Gen. Insect. Myrmicinæ, 1921, p. 180, ☿ ♀ ♂.
Teneriffe (Noualhier); Santa Cruz (Cabrera y Diaz). Introduced from the Orient.

23. **Paraphacota cabreræ** Santschi.

Paraphacota cabreræ Santschi, Bol. R. Soc. Españ. Hist. Nat. 19, 1919, p. 405, fig. 1, ♂.
Teneriffe: Laguna (Cabrera y Diaz), type locality.

According to Santschi, the genus Paraphacota, which he based on a male specimen of *P. surcoufi* (Bull. Soc. Ent. France, 1919, p. 91, fig.) from Tunis, is probably parasitic and owing to its very close relationship to the subgenus Xeromyrmex may have been derived from Monomorium, like the parasitic genera Epixenus and Wheeleriella.

24. **Paraphacota cabreræ** subsp. **obscuripes** Santschi.

Paraphacota cabreræ st. *obscuripes* Santschi, Bol. R. Soc. Españ. Hist. Nat. 50, 1921, p. 424, ♂.
Teneriffe: Bejairo (type locality) and Bajamar (Cabrera y Diaz).

25. **Xenohyboma mystes** Santschi.

Xenohyboma mystes Santschi, Bol. R. Soc. Españ. Hist. Nat. 19, 1919, p. 405, fig. 2, ♀.

Teneriffe: Laguna (Cabrera y Diaz), type locality.

This genus, based on a single female specimen, is also closely related to Monomorium and Epixenus, especially to the former. Santschi believes *X. mystes* to be parasitic, but the question arises as to whether it may not be the female of *Paraphacota cabreræ*.

26. **Solenopsis canariensis** Forel.

Solenopsis orbuloides r. *canariensis* Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿ ♂ (?); Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 161, ☿ ♂ (?).

Solenopsis canariensis Emery, Deutsch. Ent. Zeitschr. 1909, p. 35, fig. 12, ☿; Emery, Gen. Insect. Myrmicinæ, 1921, p. 201, ☿.

Teneriffe: La Punta (type locality) and Laguna (Cabrera y Diaz).

27. **Leptothorax cabreræ** Forel.

Leptothorax cabreræ Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 464, ☿; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 160, ☿; Santschi, Ann. Soc. Ent. France, 1908, p. 517, ♀; Santschi, Rev. Suisse Zool. 17, 1909, p. 465, ☿ ♀.

Teneriffe: La Punta (type locality) and Bajanos (Cabrera y Diaz).

Although the typical form of this species is from Teneriffe, it possesses a var. *mauritanicus* Santschi, in Morocco (Mogador).

28. **Leptothorax cabreræ** var. **stitzi** Santschi.

Leptothorax denticulatus Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 336, fig. 4, ☿. (*nom. præocc.*)

Leptothorax cabreræ var. *stitzi* Santschi, Bull. Soc. Hist. Nat. Afr. 9, 1918, p. 465, ☿; Emery, Gen. Insect. Myrmicinæ, 1921, p. 252, ☿.

Teneriffe: Road to Agua Mansa, 600 m. (type locality), "under stones in wall."

29. **Leptothorax canescens** Santschi.

Leptothorax canescens Santschi, Ann. Soc. Ent. France, 1908, p. 526, ♀; Santschi, Bol. R. Soc. Españ. Hist. Nat. 19, 1919, p. 407, ☿ ♀; Emery, Gen. Insect. Myrmicinæ, 1921, p. 253, ☿.

Teneriff: Medano (Cabrera y Diaz), type locality.

30. **Leptothorax elongatus** Santschi.

Leptothorax elongatus Santschi, Bol. R. Soc. Españ. Hist. Nat. 19, 1919, p. 247, ☿.

Teneriffe: Laguna (Cabrera y Diaz), type locality, "nesting in *Clema nerifolia.*"

31. **Leptothorax gracilicornis** Emery.

Leptothorax gracilicornis Emery, Ann. Mus. Civ. Genova 18, 1882, p. 450, fig. ☿ ♀; Emery, Ann. Soc. Ent. France, 1893, p. 85; Santschi, Ann. Soc. Ent. France, 1908, p. 517; Emery, Gen. Insect. Myrmicinæ, 1921, p. 254, ☿ ♀.

Teneriffe: Vicinity of the Pico de Teyde (L. Fea), type locality; (Cabrera y Diaz).

32. **Leptothorax hesperius** Santschi.

Leptothorax hesperius Santschi, Rev. Suisse Zool. 17, 1909, p. 467, fig. 1, ☿; Santschi, Bol. R. Soc. Españ. Hist. Nat. 19, 1919, p. 247, ☿; Emery, Gen. Insect. Myrmicinæ, 1921, p. 252, ☿.

Teneriffe (Cabrera y Diaz), type locality.

This species is represented by a subspecies, *inermis* Santschi, in Morocco (Mogador).

33. **Leptothorax nivarianus** Santschi.

Leptothorax nivarianus Santschi, Eos 1, 1925, p. 343, ☿.

Teneriffe: Monte Aguirre (Mas de Xaxas), type locality.

34. **Leptothorax nivarianus** var. **guancha** Santschi.

Leptothorax nivarianus var. *guancha* Santschi, Eos, 1, 1925, p. 344, ☿ ♀.

Teneriffe (Cabrera y Diaz), type locality.

35. **Leptothorax risi** Forel.

Leptothorax risii Forel, Ann. Soc. Ent. Belg. 36, 1892, p. 456, ☿, Santschi, Rev. Suisse Zool. 17, 1909, p. 470, fig. 3, ☿; Emery, Gen. Insect. Myrmicinæ, 1921, p. 252, ☿.

Gran Canaria: Las Palmas (type locality).

36. **Leptothorax risi** subsp. **globulinodis** Santschi.

Leptothorax risii Emery, Ann. Soc. Ent. France, 1893, p. 84, ☿.

Leptothorax risii subsp. *globulinodis* Santschi, Rev. Suisses Zool. 17,

1909, p. 471, fig. 4, ☿ ; Emery, Gen. Insect. Myrimicinæ, 1921, p. 252, ☿.

Gran Canaria (Alluaud), type locality.

37. **Leptothorax risi** subsp. **armouri** subsp. nov.

Worker. Length nearly 3 mm.

Smaller than the typical *risi* (3–3.7 mm.) and considerably smaller than the subspecies *globulinodis* (4–4.2 mm.), with the head and gaster deep black throughout, the petiole and postpetiole above, the antennal clubs and middle portions of femora brown-black, the petiolar peduncle brownish yellow and the remainder of the body deep red. The hairs are glistening white, the whole body shining, with the sculpture of *glubulinodis*. Shape of petiolar and postpetiolar nodes as in that species, but the infrapetiolar spine longer and directed more forward. Teeth on the epinotum stouter and less acute than in the typical *risi* and *globulinodis*, as broad as long and nearly as long as their distance apart at the base. Mesoëpinotal impression, feeble, but distinct in profile. Clypeus flat, longitudinally rugulose, with a pronounced ruga in the middle.

A single specimen found running on the ground at Azuaje, in the Barranco de la Virgen, Gran Canaria.

38. **Tetramorium cæspitum** L. subsp. **biskrense** Forel.

Tetramorium cæspitum r. *sublæve* var. *biskrensis* Stitz, Ameisen aus d. westl. Mittelmeergeb. etc. 1916, p. 339 ☿.

Tetramorium cæspitum subsp. *biskrensis* Emery, Gen. Insect. Myrmicinæ, 1921, p. 277, ☿.

Teneriffe: Orotava, Barranco de la Reina (Tessmann).

I suspect that Stitz's specimens did not belong to this North African subspecies but to one of the following varieties of *semiblæve*.

39. **Tetramorium cæspitum** subsp. **semilæve** Ern. André var. **depressum** Forel.

Tetramorium cæspitum st. *depressum* Forel, Ann. Soc. Ent. Belg. 36, 1892, p. 455, ☿ ; Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿ ♀ ♂; Medina, Act, Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿ ♀ ♂.

Tetramorium cæspitum race *semilæve* Emery, Ann. Soc. Ent. France, 1893, p. 84; Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 339, ☿.

Tetramorium cæspitum var. *punicum* Santschi, Ann. Soc. Ent. France, 1908, p. 517, ♀.

Tetramorium cæspitum punicum var. *depressa* Emery, Deutsch. Ent. Zeitschr., 1909, p. 704, ☿ ♀ ♂.

Tetramorium cæspitum subsp. *punica* var. *depressa* Emery, Gen. Insect. Myrmicinæ, 1921, p. 277, ☿ ♀ ♂.

Tetramorium cæspitum subsp. *semilæve* var. *depressa* Santschi, Bol. R. Soc. Españ. Hist. Nat. 50, 1921, p. 429, ☿ ♀ ♂; Emery, Ann. Soc. Ent. Belg. 64, 1924 (1925), p. 182, fig. D, 19.

Teneriffe (Noualhier); Laguna, Monte Agua Garcia, Los Rodeos (Cabrera y Diaz); Orotava, El Guerra (Heymons); Agua Garcia (Lehmann).

Gran Canaria (Alluaud); Las Palmas (Ris), type locality.

Fuerteventura (Alluaud).

I took this variety frequently under stones in the *Oreodaphne fœtida* woods at Los Tilos (1500 ft.) on Gran Canaria and at Azuaje, in the Barranco de la Virgen (1200 ft.) on the same island. The workers agree perfectly with two cotypes from Las Palmas, received many years ago from Professor Forel.

40. **Tetramorium cæspitum** subsp. **semilæve** var. **fortunatarum** Emery.

? *Tetramorium cæspitum*, var. Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162.

Tetramorium cæspitum subsp. *semilæve* var. *fortunatarum* Emery, Ann. Soc. Ent. Belg. 64, 1924 (1925), p. 190, fig. D, 13, 18, ☿ ♀ ♂.

Fuerteventura (C. Alluaud), type locality.

Teneriffe (Noualhier, Cabrera y Diaz).

Gran Canaria (Alluaud).

Numerous workers and a few females were taken at Azuaje (1200 ft.) in the Barranco de la Virgen, Gran Canaria. These agree perfectly with Emery's description and figures, except that the epinotal teeth of the workers are somewhat stouter.

41. **Tetramorium cæspitum** subsp. **semilæve** var. **guancha** Santschi.

Tetramorium cæspitum r. *semilæve* var. *guancha* Santschi, Bol. R. Soc. Españ. Hist. Nat. 50, 1921, p. 431, ☿; Santschi, Eos 1, 1925, p. 347, ☿.

Teneriffe: Medano (Cabrera y Diaz), type locality; Monte Aguirre (Mas de Xaxas.)

42. **Tetramorium cæspitum** subsp. **semilæve** var. **palmense** var. nov.

Worker. Closely related to the preceding varieties but having the head less smooth and shining, distinctly though finely and very superficially rugulose as far back as the occiput. Head not distinctly longer than broad, nearly square. Clypeal carina absent or feebly developed. Scapes not reaching the occipital border by fully twice their greatest diameter. Shape and sculpture of thorax and pedicel much as in *depressum* and *fortunatarum*, the epinotal teeth stout, triangular, blunt, as long as broad at their bases, the postpetiole transversely elliptical, twice as broad as long.

Brownish yellow, head often slightly darker; gaster usually as pale as the thorax but occasionally with the first segment somewhat infuscated posteriorly.

Female. Much like the female of the var. *depressum* but somewhat smaller and the thoracic dorsum even more flattened, especially in the scutellar region, than in that variety and *fortunatarum*.

The border of the petiolar node is scarcely thinner than in *depressum* and decidedly thicker and less arcuate than in *fortunatarum*. In one specimen this border is deeply emarginate, in the other nearly entire.

Color nearly as pale as that of the worker, the gastric segments somewhat infuscated in the middle above.

Described from numerous workers and two females taken from a single large colony in the Barranco de las Angustias (about 1000 ft.) near the Caldera, Palma. To the same variety belong a few workers taken at Bella Vista (2000 ft.) on the same island.

Subfamily Dolichoderinæ

43. **Iridomyrmex humilis** Mayr.

Iridomyrmex humilis Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 347, ♀.

Teneriffe: Orotava (Heymons, Michaelis, Lehmann).

I find no mention of this pest in lists of Canary Island ants antedating Stitz's paper. The following is a list of localities in which I either saw the insect in 1925 or learned of its occurrence from reliable observers:

Teneriffe: Santa Cruz, Laguna, Villa and Puerta de Orotava, Santa Ursula, San Juan de la Rambla, Icod.

Palma: Los Llaños and San Andres. Said to occur also in other parts of the island where bananas are grown.

Gomera, according to Don Antonio Gonzalez Cabrera, agronomic engineer at Las Palmas.

Gran Canaria: Puerto de la Luz, Las Palmas, Telde and Teror, San Lorenzo, Arucas and Galdar.

SUBFAMILY FORMICINÆ

44. **Plagiolepis barbara** Santschi var. **canariensis** Santschi.

Plagiolepis pygmæa Emery, Ann. Soc. Ent. France, 1893, p. 85, Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿ ♀; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿ ♀; Santschi, Ann. Soc. Ent. France, 1908, p. 517; Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 347, ☿.

Plagiolepis pygmæa var. *schmitzi* Santschi, Ann. Soc. Ent. Belg., 1911, p. 286, ☿ ♂.

Plagiolepis barbara Santschi var. *canariensis* Santschi. Bull. Soc. Vaud Sc. Nat. 53, 1920, p. 173, ☿ ♀ ♂; Emery, Gen. Insect. Formicinæ, 1925, p. 20, ☿ ♀ ♂.

Teneriffe (Noualhier); Tegina (Lehmann); Agua Mansa (Tessmann); Ratamas (Heymons); La Laguna (type locality), Bejano and Esperanza (Cabrera y Diaz).

Several colonies were found under stones on open hillsides near Arucas, Gran Canaria and nesting among volcanic lapilli at Uga, Lanzarote. This variety seems to be very close to Emery's var. *madeirensis* from Madeira.

45. **Plagiolepis pallescens** Forel subsp. **maura** Santschi.

Plagiolepis maura Santschi, Bull. Soc. Vaud Sc. Nat. 53, 1920, p. 169, fig. 1 M N, ☿ ♀ ♂.

Plagiolepis pallescens Emery, Ann. Soc. Ent. Belg. 61, 1921, p. 314, ☿.

Plagiolepis pallescens subsp. *maura* Emery, Gen. Insect. Formicinæ, 1925, p. 21, ☿ ♀ ♂.

Teneriffe: Laguna (A. Cabrera y Diaz).

One colony containing a deälated mother queen taken under a stone in the Barranco de las Angustias (1000 ft.), Palma.

46. **Camponotus (Tanæmyrmex) compressus** Fabr. subsp. **thoracicus** Fabr. var. **carinatus** Brullé.

Formica carinata Brullé, in Webb and Berthelot, Hist. Nat. Isles Canar. 2, 1840, p. 84, ☿ ♂.

Formica brullei F. Smith, Cat. Hymen, Brit. Mus. 6, 1858, p. 35.
Camponotus carinatus Roger, Verzeich. d. Formicid., 1863, p. 2.
Camponotus sylvaticus razza *cognatus* Emery, Ann. Mus. Civ. Genova 18, 1882, p. 448, ☿ ♀ ♂.
Camponotus maculatus race *carinatus* Emery, Ann. Soc. Ent. France 1893, p. 85.
Camponotus maculatus thoracicus var. *carinata* Emery, Deutsch, Ent. Zeitschr. 1908, p. 195, ☿ ♀ ♂.
Camponotus (*Tanæmyrmex*) *compressus* subsp. *thoracica* var. *carinata* Emery, Gen. Insect. Formicinæ, 1925, p. 99, ☿ ♂.
"*Canaries*" (type locality).
Lanzarote (L. Fea).
Teneriffe: Vicinity of the Pico de Teyde (L. Fea).
Fuerteventura (Alluaud).

I took numerous workers from a fine colony nesting under a stone near Haria, Lanzarote.

47. **Camponotus (Tanæmyrmex) atlantis** Forel subsp. **hesperius** Emery.

Camponotus maculatus race *hesperius* Emery, Ann. Soc. Ent. France 1893, p. 85, ☿ ♀; Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 464; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 160; Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿ ♀ ♂.
Camponotus maculatus hesperius Emery, Deutsch. Ent. Zeitschr., 1908, p. 204, ♃ ☿ ♀.
Camponotus (*Myrmoturba*) *maculatus* race *hesperius* Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 353, ☿.
Camponotus pallens hesperius Emery, Bull. Soc. Ent. Ital. 52, 1920, p. 7.
Camponotus (*Tanæmyrmex*) *atlantis* subsp. *hesperia* Emery, Gen. Insect. Formicinæ, 1925, p. 91, ☿ ♀.
Teneriffe (Alluaud, Heer, Hintz); La Punta (Cabrera y Diaz); Orotava (Heymons); La Paz (Tessmann); Pinar (Lehmann).
Fuerteventura (Alluaud).

Major and minor workers were taken in two localities on the island of Palma; Monte de las Lomitas (4200 ft.), near San Andres, and Barranco de las Angustias, near the Caldera.

48. **Camponotus (Myrmosericus) rufoglaucus** Jerdon subsp. **feæ** Emery.

Camponotus feæ Emery, Ann. Mus. Civ. Genova 18, 1882, p. 449, fig. 1, ☿.

Camponotus rufoglaucus race *feai* Emery, Ann. Soc. Ent. France, 1893, p. 87, ☿ ♀.

Camponotus (*Myrmosericus*) *rufoglaucus* race *micans* Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 350, ☿.

Camponotus (*Myrmosericus*) *rufoglaucus* subsp. *feæ* Emery, Gen. Insect. Formicinæ, 1925, p. 106, ☿.

Alegranza (L. Fea) type locality.

Gran Canaria (Hintz); 300–1500 m. (Alluaud); Isleta (Lehmann).

Numerous workers from several fine colonies nesting under stones near Teror, Gran Canaria (1500–2000 ft.), and a few workers found running on the ground at Los Tilos on the same island. The large workers in the nests often have the gaster considerably enlarged, owing to overdevelopment of the fat-body ("Fettleibigkeit"), a condition not infrequent in some other species of Camponotus, as Emery has shown.

49. **Camponotus (Myrmosericus) rufoglaucus** subsp. **feæ** var. **dubitatus** Emery.

Formica pubescens var. Brullé, in Webb and Berthelot, Hist. Nat. Isles Canar. 2, 1840, p. 84, ☿.

Camponotus rufoglaucus race *micans* var. *dubitatus* Emery, Ann. Soc. Ent. France, 1893, p. 87, ☿ ♀.

Camponotus (*Myrmosericus*) *rufoglaucus* subsp. *feæ* var. *dubitata* Emery, Gen. Insect. Formicinæ, 1925, p. 106, ☿ ♀.

Teneriffe (Noualhier), type locality.

Gran Canaria (Alluaud).

Workers were taken from several nests under stones in open country about Goberas and Arucas and at Azuaje, in the Barranco de la Virgen, Gran Canaria. Isolated workers were also found running on the trunks of trees (*Eucalyptus cornuta*) near Santa Brigida on the same island.

50. **Camponotus (Myrmosericus) rufoglaucus** subsp. **feæ** var. **excelsus** Emery.

Camponotus rufoglaucus race *micans* var. *excelsus* Emery, Ann. Soc. Ent. France, 1893, p. 88, ☿.

Camponotus rufoglaucus race *feæ* var. *excelsior* Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿ ♀.

Camponotus (*Myrmosericus*) *feæ* var. *excelsus* Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 350, ☿.

Camponotus (*Myrmosericus*) *rufoglaucus* subsp. *feæ* Emery var. *excelsa* Emery, Gen. Insect. Formicinæ, 1925, p. 106, ☿.

Teneriffe: 2000 m. (Alluaud), type-locality; Orotava, Fuente di Pedro and Monteverde (Heymons); Medano (Cabrera y Diaz).

51. **Camponotus (Myrmosericus) rufoglaucus** subsp. **feæ** var. **erythropus** Emery.

Camponotus rufoglaucus race *micans* var. *erythropus* Emery, Ann. Soc. Ent. France, 1893, p. 87, ☿.

Camponotus feæ var. *erythropes* Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿.

Camponotus (Myrmosericus) feæ var. *erythropus* Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 350, ☿ ♀.

Camponotus (Myrmosericus) rufoglaucus subsp. *feæ* var. *erythropus* Emery, Gen. Insect. Formicinæ, 1925, p. 106, ☿ ♀.

Gomera (Alluaud), type-locality.

Teneriffe (Noualhier, Cabrera y Diaz); Orotava (Heymons); Orotava, road to Cumbre in the Erica zone between 1300 and 1600 m. (Tessmann).

Fine colonies of this variety were found nesting under stones near Icod, Teneriffe and near Haria, Lanzarote; isolated workers running on the ground near Santa Cruz and San Juan de la Rambla, Teneriffe. In the Icod and Haria colonies the major workers varied greatly in color in the same nests, some of them having the head and thorax bright red, with red or yellowish legs, while others had the head and thorax black or dark brown with the femora more or less infuscated at the base. The small workers, however, were always black, with the mandibles, cheeks, antennæ, tibiæ, tarsi and tips of femora red. The females (length 9–10 mm.) are of the same color, with the articulations of the wings and the posterior border of the pronotum red. The wings are yellowish hyaline, with resin-yellow veins and stigma and brownish costa. The male (length 5 mm.) is deep black, with darker legs and more shining body than in the female and the wings of the same color.

52. **Camponotus (Myrmentoma) lateralis** Olivier var. **guancha** Santschi.

Camponotus sicheli Emery, Ann. Soc. Ent. France, 1893, p. 88, ☿.

Camponotus sicheli var. *guancha* Santschi, Ann. Soc. Ent. France, 1908, p. 534, ☿ ♀.

Camponotus (Orthonotomyrmex) sicheli Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 351, ☿.

Camponotus (*Myrmentoma*) *sicheli* var. *guancha* Emery, Gen. Insect. Formicinæ, 1925, p. 121, ☿.

Camponotus (*Myrmentoma*) *lateralis* var. *guancha* Emery, Rend. R. Accad. Sc. Ist. Bologna, 1925, p. 10, fig. 15, ☿.

Teneriffe (Noualhier); El Val de Gimenez, Garachico (type locality) and Laguna (Cabrera y Diaz); Agua Mansa (Tessmann).

53. **Paratrechina longicornis** Latreille.

Prenolepis longicornis Emery, Ann. Soc. Ent. France, 1893, p. 85; Forel, Ann. Soc. Ent. Belg. 37, 1893, p. 466, ☿; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿.

Prenolepis (*Nylanderia*) *longicornis* Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 349, ☿.

Paratrechina longicornis Emery, Gen. Insect. Formicinæ, 1925, p. 217, ☿ ♀ ♂.

Teneriffe (Cabrera y Diaz); Orotava (Heymons).

Gran Canaria.

I found this introduced tropicopolitan ant only at Yaiza, Lanzarote, where it was running over the flowers of a wax plant (*Hoya carnosa*) in the patio of the residence of Don Rafaele Herrera.

54. **Lasius niger** L.

Lasius niger Emery, Ann. Soc. Ant. France, 1893, p. 85; Forel, Ann. Soc. Ent. Belg., 1893, p. 466, ☿ ♂; Medina, Act. Españ. Hist. Nat. (2) 2 (22), 1893, p. 162, ☿ ♂; Santschi, Ann. Soc. Ent. France, 1908, p. 517, ☿ ♀ ♂; Stitz, Ameisen aus d. westl. Mittelmeergeb., etc., 1916, p. 349, ☿; Emery, Gen. Insect. Formicinæ, 1925, p. 229, ☿ ♀ ♂.

Teneriffe (Noualhier, Cabrera y Diaz); Orotava (Heymons, Tessmann)

Gran Canaria (Noualhier).

All the phases of what I take to be the typical form of this circumpolar ant were common during late July and early August in the following localities:

Teneriffe: Las Mercedes (2500 ft.), near Laguna; Barranco Ruiz, near San Juan de la Rambla; Icod.

Gran Canaria: Teror (2000 ft.), Aguaje, in the Baranco de la Virgen (1200 ft.); Los Tilos (1500 ft.).

Palma: Barranco de las Angustias; Las Lomitas, (4500–5000 ft.) near San Andres.

As a rule, *L. niger* seems to prefer the higher altitudes or rather moist shady places. At Las Mercedes, in the forest of tree-heath

(*Erica arborea*) and laurel (*Cerasus lusitanicus*) it was very common and the only ant I succeeded in finding.

55. **Lasius emarginatus** Latreille.

Lasius emarginatus Emery, Ann. Mus. Civ. Genova 18, 1882, p. 450, ☿ ♀; Emery, Ann. Soc. Ent. France, 1893, p. 85; Emery, Gen. Insect. Formicinæ, 1925, p. 229, ☿ ♀ ♂.
Tenerife (Alluaud); Vicinity of the Pico de Teyde (L. Fea).

56. **Lasius emarginatus** var. **nigro-emarginatus** Forel.

Lasius emarginatus var. *nigro-emarginatus* Stitz, Ameisen aus d. westl. Mittelmeergeb. et., 1916, p. 349, ☿.
Teneriffe: Ratamas, 2500 m. (Heymons); Orotava, Barranco de la Reina 450 m.; Agua Mansa, La Paz (Tessmann).

LITERATURE

BRULLÉ, A. Hyménoptères, in Webb and Berthelot's "Histoire Nat. des Isles Canaries 2, 1840, p. 84.

EMERY, C. Le Crociere dell' Yacht "Corsaro" del Capitano Armatore Enrico d'Albertis, II Formiche. Ann. Mus. Civ. Stor. Nat. Genova 18, 1882, p. 448–452, 2 figs.

EMERY, C. Voyage de M. Ch. Alluaud aux Isles Canaries. Formicides. Ann. Soc. Ent. France, 1893, p. 81–88.

EMERY, C. Sopra alcune Formiche della Fauna Mediterranea. Mem. R. Accad. Sc. Ist. Bologna, 1895, p. 291–307, 1 pl.

EMERY, C. Beiträge zur Monographie der Formiciden des palaärktischen Faunengebietes. 11 parts. Deutsch. Ent. Zeitschr., 1908–1912.

EMERY, C. Notes Critiques de Myrmécologie. Ann. Soc. Ent. Belg. 64, 1924 (1925), p. 177–191, 4 figs.

EMERY, C. Family Formicidæ in Wytsman's "Genera Insectorum," 1911–1925.

EMERY, C. I Camponoti (Myrmentoma) paleartici del gruppo lateralis. Rend. R. Accad. Sc. Ist. Bologna, 1925, p. 62–72, 17 figs.

EMERY, C. Ultime Note Mirmecologiche, Boll. Soc. Ent. Ital. 58, 1926, p. 1–9, 1 fig.

FOREL, A. Quelques Fourmis de la Faune Méditerranienne. Ann. Soc. Ent. Belg. 36, 1892, p. 452–457.

FOREL, A. Quelques Fourmis des Canaries récoltées par M. Cabrera y Diaz, Ann. Soc. Ent. Belg. 37, 1893, p. 464–466.

FOREL, A. Dimorphisme du Mâle chez les Fourmis et quelques autres Notices Myrmécologiques (I Fourmis de Madère). Ann. Soc. Ent. Belg. 48, 1904, p. 421–425.

HEER, O. Ueber die Haus-Ameise Madeiras. 54. Stück. An die Züricher Jugend auf das Jahr 1852 von der naturforschenden Gesellschaft, 1852, 24 pp., 1 pl.

MEDINA, M. Algunas Hormigas de Canarias recogidas por el Sr. Cabrera y Diaz, por M. Auguste Forel. Actas Soc. Españ. Hist. Nat. (2) 2 (22), 1893, 159–162.

MEDINA, M. Quelques Fourmis de la Faune Méditerranienne par M. Auguste Forel, Professeur a Zurich. Actas Soc. Españ. Hist. Nat. (2) 2 (22), 1893, 90–94.

SANTSCHI, F. Nouvelles Fourmis de l'Afrique du Nord (Égypte, Canaries, Tunisie). Ann. Soc. Ent. France, 1908, p. 517–534, 12 figs.

SANTSCHI, F. Leptothorax rottenbergi et espèces voisines. Rev. Suisse Zool. 17, 1909, p. 459–482, 10 figs.

SANTSCHI, F. Formicides de diverses provenances. Ann. Soc. Ent. Belg. 55, 1911, p. 278–287.

SANTSCHI, F. Fourmis d'Espagne et des Canaries. Bol. Real. Soc. Españ. Hist. Nat. 19, 1919, p. 241–248, 2 figs.

SANTSCHI, F. Trois Nouvelles Fourmis des Canaries. Bol. Real. Soc. Españ. Hist. Nat. 19, 1919, p. 405–507, 2 figs.

SANTSCHI, F. Cinq Nouvelles notes sur les Fourmis. Bull. Soc. Vaud Sc. Nat. 53, 1920, p. 163–186, 1 fig.

SANTSCHI, F. Notes sur les Fourmis Paléarctiques. I Quelques Fourmis du Nord de l'Afrique et des Canaries. Bol. Real. Soc. Españ. Hist. Nat. 50, 1921, p. 424–436, 3 figs.

SANTSCHI, F. Messor et autres Fourmis Paléarctiques. Rev. Suisse Zool. 30, 1923, p. 317–336, 4 figs.

SANTSCHI, F. Fourmis d'Espagne et autres Espèces Paléarctiques. Eos 1, 1925, p. 339–360, 3 figs.

SCHMITZ, E. As Formigas da Madera. Am. Sc. Nat. 1896 p. 55–58.

STITZ, H. Ameisen aus dem westlichen Mittelmeergebiet und von den Kanarischen Inseln. 1916, 14 figs.

STOLL, O. Zur Kenntnis der geographischen Verbreitung der Ameisen. Mitth. Schweiz. Ent. Ges. 10, 1898, p. 120–126.

TIMBERLAKE, P. H. Hymenoptera, in E. H. Bryan's "Insects of Hawaii, Johnston Island and Wake Island." Bull. 31, Bernice P. Bishop Mus., 1926, p. 17–43, 6 figs.

WHEELER, W. M. The Ants of the Galapagos Islands. Proc. Cal. Acad. Sci. 2, 1919, p. 259–310.

WHEELER, W. M. The Formicidæ of the Harrison Williams Expedition to the Galapagos Islands. Zoologica 5, 1924, p. 101–122, 8 figs.