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*Ants and Myrmecophiles at Bordighera.**Myrmecophilous Notes for 1925.*

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Ants and Myrmecophiles at Bordighera.

By HORACE DONISTHORPE, F.Z.S., F.E.S., etc.

Having spent part of last winter at Bordighera, in Italy, I took the opportunity to study the ants of the neighbourhood and investigate their habits. Very few species were found at large, it being too early in the year (January-March), and most of the species mentioned in this

paper were found either under stones, or by digging in the earth. Very few of these ants occur in Britain; and it was a great pleasure to me to study species in life which I had only previously seen in collections, or read about.

The most prolific collecting grounds at Bordighera were the high ground just above the sea, covered with sand, rocks and aloes, etc., the olive woods above the town, and the undercliff on the lower road by the sea to Ospedaletti and near the Osteria, made famous in Ruffini's novel "Dr. Antonio."

PONERINAE.—1. *Ponera eduardi*, Forel.—Several small colonies of this non-British *Ponera*, were found under stones at Ospedaletti in February, and isolated ♂ & ♀ at Bordighera in March.

MYRMICINAE.—2. *Myrmica sulcinodis*, Nyl., var. *sulcinodo-scabrinodis*, Forel.—This var. was the only *Myrmica* I found. Small colonies occurred under stones on February 8th and March 7th, in the Olive Woods above the town. The following myrmecophiles were taken with this ant—a small beetle *Bathysiola aubei*, Kiew., *Platyarthrus hoffmanseggii*, Brdt., *Cyphodeirus albinos*, Nic.; the aphid *Forida formicaria*, C. Heyd., and a small spider, also found with other ants.

3. *Aphaenogaster* (*Attomyrma*) *subterranea*, Latr.—In January and February, many small colonies were found under stones, and by digging in the earth. Often a few ♂ & ♀ only were seen, and these quickly disappeared into the ground; much digging failing to locate their proper nest. A larger colony was found under a stone in the olive woods on March 7th. At Ospedaletti and Dolceacqua larger colonies occurred under stones. In the former locality a white smooth *Clythra* case was secured in a nest of this ant on February 6th. The mouth of the case was closed up, but when I had come back to England and had placed the case in my observation nest of *Stenamma westwoodi*, the larva protruded and crawled about in the nest for some days. Finally it closed the case again, but could not find enough material to make it secure; as when it had probably turned round to pupate, the wretched *Stenamma* ♂ & ♀ forced an entrance and devoured it. *Cyphodeirus albinos*, Nic., was the only other myrmecophile seen with this ant.

4. *Aphaenogaster* (*Attomyrma*) *subterranea*, Latr., var. *clara*, Sants.—A number of specimens of this new variety was dug up under a small stone on February 3rd.

5. *Aphaenogaster* (*Attomyrma*) *subterranea-dulcinea*, Sants.—Several colonies of this new subspecies were found under stones, at the sides of rocks, and in the ground with small grains of earth raised over them.

6. *Aphaenogaster* (*Attomyrma*) *gibbosa*, Latr.—A few ♂ & ♀ were found under a stone at Ospedaletti on February 6th. This, the typical form, is new to Italy, as my respected colleague, the late Professor Emery, puts it in square brackets in his excellent work on the *Formicidae* of Italy [*Bull. Soc. Ent. Italiana*, 47 56 (1915)], and says it occurs in France.

7. *Messor barbarus*, L.—This was the first species of ant I saw in Italy; small black ♂ & ♀ were walking in files on paths and over rocks, carrying small seeds. Their large red-headed 24 24 were only seen when a nest was dug up, deep down in large galleries, sometimes over

a foot in depth. The species was nesting under stones, in banks, and mounds, by the sides of rocks, etc. The ♂ ♂ were found later walking about everywhere, often among crowds of *Lapinoma nigerinum*; the latter not attempting to attack them, but getting out of their way. I once found two *M. barbarus* ♂ ♂ fighting, so locked together that they died in the spirit tube, still holding on to each other. I collected a large quantity of over a dozen different species of seeds taken from the granaries of these ants, which were situated in pockets just below the surface of the ground. A number of *Lepismas* (some very small among the seeds) were found with this ant; as also *Cyphodeirus albinos*.

8. *Messor structor*, Latr.—A very large colony of this species was found on February 1st, the nest being situated under a heavy stone close to a rock. This I dug up entirely, but no queen could be found, and no granary. Many 24, large and small ♂ ♂, ♂ ♂, and larvae were present. The Myrmecophiles taken were—*Platyarthrus hoffmanseggii* and *Cyphodeirus albinos* in numbers; a small fly *Drapetis nervosa*, Lw. (this species I have taken with *Formica fusca* in England); various *Lepismas*; and a number of two species of *Anthicus* (*A. 4-guttatus*, Rossi, and *A. (Leptaleus) rodriguesi*, Latr.), these were right in the nest, and kept crawling out of it and up the rock, as I dug it up. The only other occasion on which I found this ant, was on February 20th, when I took a single ♂ entangled in a spider's web, but still alive.

9. *Messor instabilis*, Sm., var. *bouvieri*, Bond.—A ♂ of this form was dug up near the "Osteria" on February 17th. This is its first record for Italy.

10. *Pheidole pallidula*, Nyl.—Many colonies were found under stones of all sizes at Bordighera, Ospedaletti, Sasso, and on Monte Nero, etc. In several nests I found two species of seeds. The 24 in two nests, on Monte Nero on February 24th, all possessed black heads. It is very entertaining to watch the big headed soldiers, when a nest is disturbed, marching forward with open jaws ready to attack anything. Their real function is however to crush the seeds—those which I found were very hard. The myrmecophiles of this ant were—*Lepismas* frequent: *Platyarthrus hoffmanseggii*; *Cyphodeirus albinos*; and some small Acari. A large *Cetonia* larva was found in a colony on February 24th, an *Anthicus* larva on February 20th; the beetle **Thorictus grandicollis*, Germ., February 20th, and a delightful little beetle *Dachillus minutus*, Sol., on March 7th. It feigned death when touched; with the legs closely packed against the body, and the antennae close together, rigidly extended in front of the head, when it looked like a small seed. Wasmann records another species *Dachillus algiricus*, Luc., as only being found with ants.

11. *Cremastogaster scutellaris*, Ol.—The first specimen I took of this ant was on February 1st, when a single ♂ was found sunning itself on a stone at the foot of a wall by the side of the ancient aqueduct. Later very many ♂ ♂ were observed walking along a wall at Ospedaletti. A large colony was found in an Olive tree at Sasso on February 10th, in burrows in the hard wood; another colony occurred in a large rolled up mullein leaf, February 22nd, and one was also

*This species is recorded by Wasmann with *Tetramorium caespitum* and *Aphaenogaster testaceopilosa* at Biskra (Bonnaire) and Tangiers and Gibraltar (J. J. Walker).

found on February 27th nesting under a stone resting on an olive stump, the interstices being filled up with a black carton. I collected samples of this carton, but to my regret, it got left behind when I came home.

12. *Cremastogaster sordidula*, Nyl.—Colonies of this small species were found under stones at Bordighera, Sasso, Ospedaletti, and Monte Nero. In one colony nearly all the ♂♂ were callows and 6 deâlated ♀♀ occurred in this nest. On one occasion, on March 7th, a colony was nesting under the same stone as a colony of *Pheidole pallidula*. When the stone was raised, the two species, which occupied different halves of the area, became mixed, and their behaviour was very interesting to watch. When a *Cremastogaster* found itself among a number of the *Pheidole* it remained quite quiet with the gaster raised in the typical *Cremastogaster* manner, and the *Pheidoles* quickly moved away. A *Pheidole* ♀ with open jaws would advance, but on meeting a *Cremastogaster* ♂, the former would quickly retire. When however a *Pheidole*, ♀ or ♂, found itself among the *Cremastogaster* ♂♂, it made all speed to extract itself. Their (the *Pheidoles*) behaviour was very different when under the same stone as a colony of *Camponotus*, as will be seen later. *Cyphodairus albinus*, the small spider (before mentioned) on various occasions, and a few of a pink Aphid (*Tetraneura* sp.) were the only myrmecophiles found with this ant.

13. *Solenopsis fugax*, Latr.—This little robber-ant was found with various species of other ants, as well as on a few occasions apparently alone, but probably with connecting galleries with some other ant's nest. February 3rd it was observed in great abundance in the earth of a nest of *Camponotus aesthiops*; all the ♂♂ were small and of equal size. A few ♂♂ were seen under a stone, apparently by themselves, on February 8th; a ♂ was taken in a nest of *Aphaenogaster subterranea* on February 11th; 1 ♂ on the same day in a nest of *Pheidole pallidula*; a number under the same stone as *Plagiolepis pygmaea* on February 22nd; and on March 7th very many, all small ♂♂, under a stone by themselves.

14. *Leptothorax niger*, Forel.—One ♂ of this rare species was dug up from under a stone on February 17th, near the "Osteria."

15. *Leptothorax nylanderi*, Först., var. *lichtensteini*, Bond.—A large colony of this variety was found under a stone on February 23rd.

16. *Tetramorium caespitum*, L., a var. near to *impura*, Först.—A large colony was found under a stone in the Olive woods on February 17th. The last two mentioned vars. are new records for Italy.

(To be concluded.)
