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NEW DATA ON THE HABITS OF
CAMPONOTUS (MYRMAPHAENUS) ULCEROSUS
WHEELER

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In June 1951 the writer published, in this Journal, an account of the habits of *C. (M.) ulcerosus*. Since that time eight more colonies have been observed and additional data have been secured on the habits of this remarkable ant¹.

The truncated head of the major worker of *ulcerosus* has suggested to some myrmecologists a relationship with the subgenus *Colobopsis*. This view is unsatisfactory from a structural standpoint, for the two subgenera actually have little in common. Nor did it seem likely, since *ulcerosus* is a ground-dweller, that the head of the major could be used in phragmosis. It is now certain, however, that the major worker of *ulcerosus* does function as a door and does close the nest entrance with the front of the head in a fashion essentially similar to the phragmotic major of *Colobopsis*.

This is possible because *ulcerosus* constructs a carton shield at the nest entrance. In this shield is a single aperture which closely approximates, in size and shape, the truncated portion of the head of the major. The shield is made of a mixture of earth and bits of vegetable detritus. The shield is so fragile that it usually cannot be lifted away from the nest entrance intact and it is sometimes destroyed by a heavy rainstorm. The shield may be flat, dome-shaped or tubular. In the dome-shaped and tubular shields the length is from ten to fifteen millimeters and the diameter from seven to ten millimeters. Since the aperture is notably smaller, it forms a bottle-neck which the head of the major can close.

The major of *ulcerosus*, when acting as a door, lets the other members of the colony in and out by backing away

¹ This work was done on a Guggenheim Fellowship for 1951-52.

from the aperture. In this respect it behaves essentially as does the major of *Colobopsis*. There are, however, a number of interesting differences in the process. When the head of the major of *Colobopsis* is serving in its phragmotic capacity, the only portions of it presented to the exterior are the jaws and the truncated anterior face. The antennae are folded back against the sides of the head and they are well removed from the exterior: it is difficult to see how they could receive tactile stimuli. This may be why Wheeler (Bull. Amer. Mus. Nat. Hist., Vol. 20, No. 10, p. 154, 1904) was unable to elicit any response when he attempted to cause the withdrawal of the *Colobopsis* major by touching the exposed portion of the head with a pin or straw. The head of the major of *ulcerosus*, when in the phragmotic position, can readily receive tactile stimuli with the antennae. For these parts are not concealed, but held so that each funiculus lies at one side of the aperture. The returning workers touch the exposed antennae of the occluding major with their own antennae to secure entry for, when thus stimulated, the major withdraws its head from the aperture. This same response can be elicited by touching the antennae of the occluding major with a bit of grass. The major of *ulcerosus* is capable of a rather surprising range of behavior when acting as a guard. As a general rule a strange ant can walk across the face of the *ulcerosus* major, when the latter has assumed the phragmotic position, without producing any visible response. Occasionally, however, the major will seize the strange ant in its jaws and jerk it into the nest, where it is, presumably, killed. Furthermore, the major of *ulcerosus* does not always take a position where its head blocks the entrance. During periods when little traffic is passing the "door", the major on guard often remains well inside the carton, with only the tips of the antennae showing at the aperture. From this position it can pop into place instantaneously, which it does if a strange ant walks onto the shield. If foraging has ceased and there are no strange ants in the vicinity, the major may retreat so far from the aperture that it cannot be seen when a beam of light is thrown through that opening. It is of interest to note that the major of *ulcerosus* is not limited to serving

in a phragmotic capacity only. Some of the majors regularly leave the nest to forage with the medias and minors.

A few other observations may be added. Workers returning to the nest always go in through the aperture head-first. They will do so even when this involves considerable struggle with what they are carrying. In the event that some strange ant is on or near the shield, the returning *ulcerosus* workers make no effort to enter the nest. They will wander about nearby until the intruder leaves, at which time they will secure entry to the nest in the usual fashion. It is clear that *ulcerosus* is a very timid ant. It is much afraid of several smaller species, particularly *Xiphomyrmex spinosus insons*. If the two meet, the *Xiphomyrmex* will usually rob the *ulcerosus* worker of anything it is carrying. This may be the reason why the workers of *ulcerosus*, which are returning to the nest with food, will take a needlessly tortuous course over grass tufts. Such a course would minimize the chance for encounters with *Xiphomyrmex*, for the latter ant rarely leaves the surface of the soil when foraging.

Presented below are several records which add to the known range of *ulcerosus*:

ARIZONA: Huachuca Mountains, Carr Canyon, 5400'; Santa Rita Mountains, Sweetwater, 5800'; Chiricahua Mountains, Nat. Mon. Campground, 5400'.

CHIHUAHUA: Sierra de en Medio, Nogales Ranch, 5000'.

SONORA: Cerro San Jose (Naco) 5100'.