

environment: substances which commonly evoke specific behavioral responses in higher ants? And if so are the responses elicited in *Myrmecia* essentially like those of higher ants?

We have recently described one such set of reactions: the stimulus to attack behavior in *Myrmecia gulosa* elicited by formic acid, a normal exocrine defense product of its common prey-genus *Campoponotus*, but not, so far as can be determined, of *M. gulosa* itself (Haskins, Hewitt, and Haskins, 1973). The present investigation is concerned with the reactions of workers of a species of *Myrmecia* to substances which commonly stimulate necrophoric behavior in higher ants, such as oleic and related fatty acids.

Wilson (1958) and Wilson, Durlach, and Roth (1958) demonstrated that when groups of workers of the Myrmicine ant *Pogonomyrmex badius* come into contact with formic acid, ethylamine, triethanolamine, phenol, n-butyric acid, n-valeric acid, n-caproic acid, or n-caprylic acid, absorbed on centimeter-square patches of filter paper, they exhibit weak to moderate alarm behavior, sometimes passing into digging behavior, concentrated about the squares. In the case of oleic acid—and of that substance alone—the ants transported the paper squares away from the nest to the kitchen middens. A fatty acid component—quite probably oleic acid—obtained from the decaying bodies of *P. badius* workers also elicited necrophoric behavior in *Solenopsis saevissima*.

Blum, Doolittle, and Beroza (cf. Blum, 1970) fractionated dead workers of *Solenopsis saevissima* and determined that the releasers of necrophoric behavior were restricted to the rich free fatty acid fractions. Myristoleic, palmitoleic, oleic, and linoleic acids were present in these fractions, and all these acids possessed necrophoric activity in this species.

Such a reaction to chemicals like oleic acid has obvious adaptive advantage for any ant, or indeed for any social insect inhabiting a closed nesting situation. Such chemicals can serve as sensitive "indicators" of objects in the nest—whether prey or remains of adult or immature members of the community—which are dangerously decomposed and should be removed. It seems plausible, therefore, that this behavior pattern may have been established very early in the social evolution of the Formicidae. Hence it seemed of particular interest to investigate it within the Myrmeciinae.

Necrophoric Behavior in *Myrmecia vindex*

The species *Myrmecia vindex* was chosen for several reasons. It is a common and wide-ranging form in western Australia, where