

axis), mutual grooming and glossation of the body surfaces, etc., that spread colony-specific combinations of molecules around among inmates of one nest, as in the honeybees. According to the hypothesis, an individual either with the same odor-or-taste, or with none at all, would be treated by its host colony as a neutral.

Many known and suspected parasite species, both with and without external signs of a metapleural gland, have other features, such as glandular hairs and trichomes, and large smooth, polished areas of the body, that appear to attract and pacify host workers, perhaps usually through the medium of secreted liquids (*allomones*, see Postscript) smelled or tasted by the hosts. It is conceivable that such apparatus, if producing potent allomones in quantities large enough, could overcome the effects of an "enemy pheromone" produced by the same individual. In fact, the frequently ambiguous response of host workers to certain parasite queens, a response alternately hostile and amicable, could be due to the conflicting influences of attractant allomones and enemy pheromones. It is interesting to note in this connection that the parasitic female of *Acanthomyops murphyi* has a heavy mat of long, appressed golden hairs, apparently glandular, over the distorted and reduced metapleural gland area. This suggests that, even if the metapleural gland does release a product, it is fairly smothered by the thick vestiture and any secretions from the latter.

If the metapleural gland does produce a pheromone that says to other colonies of the same species, "I am an enemy," there remains the important question of how such identification can be adaptive. At the moment, we can answer this question only by pointing to the indubitable fact that individuals of most ant species normally tend to treat members of different conspecific colonies with hostility, or at least to avoid them. Also, although relatively few ants have been studied from this point of view, a number of species are known to guard and fight for territories around their nests. It therefore seems that the metapleural glands and their product(s) may serve, at least in part, as an epideictic device, or mechanism by means of which the colony as a whole senses and reacts adaptively to changes in important population parameters.

Thanks are due to E. O. Wilson for showing me the suggestive grooming behavior of *Pogonomyrmex badius*, for ideas gained during long discussions of the glands and of ant behavior, and for his critical reading of the manuscript. The first draft was also read and criticized by R. H. Crozier and M. W. Wing. My acknowledgment does not, of course, necessarily imply that these colleagues support all my conclusions.

POSTSCRIPT

Allomone: a chemical substance produced or acquired by an organism which, when it contacts an individual of *another species* in the natural context, evokes in the receiver a behavioral or developmental reaction adaptively favorable to the transmitter. The term means essentially the same as *alloiohormone* (Bethe, 1932), but is shorter and is deliberately