changing from white to yellow or vice versa. Gertsch (1939, Bull. Amer. Mus. Nat. Hist. 76: 277–442) reports that the misumenids have a powerful venom and are capable of quickly subduing insects, including bumblebees, moths, and butterflies, that are much larger than the spiders.

An interesting spider-plant-butterfly relationship is indicated by this collection. Gertsch (1939, Bull. Amer. Mus. Nat. Hist. 76: 277–442) maintains that the habitat of a spider determines the kind of prey that becomes available to it. Flower-inhabiting spiders feed on insects attracted to flowers for nectar, pollen, or other food sources. Although larvae of *N. menapia* are destructive defoliators of pine, Orr (1954, USDA, For. Serv., Intermountain For. and Range Exp. Stn., Misc. Publ. No. 1, 12 p.) reports that the adults feed only on flowers. This habit renders them vulnerable to predation by flower-inhabiting predators, such as crab spiders.

Spider and butterfly are deposited in the collection of the American Museum of Natural History, New York.

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BUTTERFLIES ASSOCIATED WITH AN ARMY ANT SWARM RAID IN HONDURAS

The swarm raids of the army ant *Eciton burchelli* (Westwood) (Formicidae: Dorylinae) are a striking feature of tropical forests throughout Central and South America. Associated with these raiding swarms of *Eciton* are various animals that exploit the swarm raid for the purposes of feeding or reproduction. For example, ant birds (Formicariidae) forage at the leading edge of such swarms and feed on insects flushed from the vegetation by the army ant juggernaut. Flying above the swarm raid are various species of tachinid flies (Diptera: Tachinidae) and other insects, e.g., staphylinid beetles (Coleoptera: Staphylinidae), the life cycles of which may be regularly intermeshed with those of the ants (Akre & Rettenmeyer 1966, J. Kansas Entomol. Soc. 39: 745–782). Some of these flies, for instance, are known to hover above the swarm, then dart down and quickly lay an egg on a prey item being carried back to the army ant bivouac. The egg then develops among the doryline brood (Schneirla 1971, Army Ants, Freeman & Co., San Francisco).

During the early afternoon of 24 May 1972, I observed a large swarm raid of *E. burchelli* in tropical broadleaf forest located on the west shore of Lago Yojoa, Santa Barbara Province, Honduras. Flying low over the leading edge of the swarm were six butterflies: two male *Graphium philolaus* (Boisduval) (Papilionidae: Papilioninae), two female *Mechanitis isthmia isthmia* Bates, and two female *Mechanitis polymnia doryssus* Bates (Nymphalidae: Ithomiinae). These three species were the most common of the several butterfly species in the area, but only the six individuals listed above were flying in the vicinity of the swarm during the observation period. Flying in general ca. 2 ft. above the ground and occasionally dipping down to ground level (but without alighting), the butterflies stayed above the leading edge of the swarm as it moved steadily southward some 20 ft. during the 2 hr that I was able to watch it. The behavior of all three species during this time was similar, although *G. philolaus* had a more soaring and wide-ranging flight than the two ithomiines and, as a result, seemed to be tracking the movements of the ant swarm less closely. Ant birds foraged at the

head of the swarm, but none of the three or four birds present were ever seen to take or attempt to take any of the six butterflies.

Eciton burchelli has a distinctive odor that can be recognized by a sensitive human nose as an army ant odor (Carl W. Rettenmeyer, pers. comm.) and has been described in the old literature (Rettenmeyer, *op. cit.*) as similar to the odor of human feces. Although Dr. Rettenmeyer thinks this description incorrect, the odor is at least unpleasant. This distinctive odor is probably enhanced by the large swarm size and may thereby attract certain animals (Rettenmeyer 1961, Univ. Kansas Sci. Bull. 42: 993–1066). Indeed, the tachinid flies and other insects mentioned above may even respond to the odor as an olfactory signal that initiates oviposition behavior. Perhaps the odor contains elements similar to those of the androconial tufts of *Mechanitis* males, which might explain why only female *Mechanitis* were following the swarm. Longstaff (1912, Butterfly-hunting in Many Lands, Longmans & Co., London) recorded that some clearwing ithomiines in Venezuela had scents of a "disagreeable character, recalling stables or pig-sties," that he believed to be associated with the hindwing androconial brushes (found only in males). However, this does not explain why the male *Graphium* followed the swarm, since in *Graphium*, like the ithomiines, it is the males that have the scent scales. Possibly the *Graphium* males were attracted by a component of the ant odor that elicited food searching behavior.

During 14 months of field research in the tropical rain forests of Eastern Ecuador in 1973–1974, I observed dozens of swarm raids by several colonies of *E. burchelli* in areas rich in ithomiines (but not in *Graphium*) yet never saw any butterflies that seemed in any way attracted to or associated with the army ant swarms. Dr. Rettenmeyer informs me that in his many years of field work on army ants he has never observed any butterflies which appeared to be associated with swarm raids. Thus, it appears that my observation may be unique and, therefore, interesting only as a curiosity, at least until such time as the chemical components of the pheromones of *E. burchelli* are better known.

Specimens of the Honduran army ant population are in the collection of C. W. Rettenmeyer. All six of the observed butterflies are in the personal collection of the author.

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