

is available. This seems to be the case in *P. dives* SMITH, 1857, which normally nests freely in large globular nests (YAMAUCHI *et al.*, 1987).

An advantage of the leaf-roll type of pavilion in *P. hodgsoni* might be that this pavilion is difficult to detect for predators and more stable and less material-consuming than the below-leaf type of *P. arachne*. On the other hand, *P. hodgsoni* depends on prerolled leaves for nest and pavilion construction. Our finding that the released *P. hodgsoni* colony built 11 new pavilions within 2 1/2 days suggests, however, that this limiting factor is of low significance for the ants. At present we are unable to assess the value of the leaf-roll-pavilion as a protection against predators: birds quickly learn to specialize on a certain type of prey, and leaf rolls nearly always contain some food for birds (spiders, orthopterans, caterpillars, ants, etc.).

Homoptera cultivation

A remarkable characteristic of *P. arachne* and *P. hodgsoni* is the highly evolved mode of Homoptera cultivation. The ants collect homopterans of different species from all over the bamboo plant and transport them into their silk pavilions. Here they are well protected against weather influences, competing ants, parasites, and predators, a marked advantage for both the homopterans and the ants. The facts that no free-living homopterans were found on the bamboos inhabited by the ants and that some homopterans were thrown down from the leaves suggest that the Homoptera population is regulated by *Polyrhachis* workers according to the ant colony's demands. Such behaviour, which destroys food sources for other ant species, has been reported from *Oecophylla longinoda* (Latreille, 1802) (WAY, 1954), *Camponotus texens* Dumpert 1985 (MASCHWITZ *et al.*, 1985), and occurs also in a pavilion-building *Dolichoderus* species (MASCHWITZ *et al.*, 1989).

Tending of Homoptera in *Polyrhachis* is only known from 3 other species of the subgenera *Cyrtomyrma* and *Myrmhopla*, which are the most evolved subgenera within *Polyrhachis* (HUNG, 1967): *P. (Cyrtomyrma) laevisissima* Smith 1858 (DATTA *et al.*, 1983), *P. (Myrmhopla) dives* Smith 1857 (WASMANN, 1905), and *P. (Myrmhopla) lacteipennis* Smith 1858 (*P. simplex* auct.) (OFER, 1970). According to our extended observations in *Polyrhachis* even the visit of trophobionts is a rare phenomenon. *P. lacteipennis* is able to live in the same habitat as *P. arachne* and *P. hodgsoni*: It has been reported nesting under bamboo sheaths (LEFROY and HOWLETT, 1909), but is not specialized on these plants (HINGSTON, 1929; KARAVAIEV, 1928; LEFROY and HOWLETT, 1909; OFER, 1970).

Similar cases of cultivation of Homoptera in other pavilion building tree ants have been reported from *Oecophylla longinoda* (WAY, 1954), some silk weaving *Camponotus* (Karavaievia) species (MASCHWITZ *et al.*, 1985; DUMPERT *et al.*, 1989), and a silk weaving species of *Dolichoderus* (MASCHWITZ *et al.*, 1989). But all these species show no plant specialization.