

"3. We must consider also the peculiar structure of the ant-epiphytes, which are unable to grow except on an artificial accumulation of humus.

"4. Finally, experiments were performed, which show that the ants actually transport the seeds of the ant-epiphytes to the proper situations."

In his paper of 1906, written presumably some time after his return to Germany, we have this less inferential and more positive statement:

"I have established the fact that ants carry the seeds of certain plants into the crevices and crotches of trees and bushes or into earthen nests built in such places and then by bringing up more and more earth encourage the growth of the plantlets and thus secure greater volume and firmness for their construction." He also offers the following remarks on the phylogenetic development of the structures under discussion:

"Presumably the flower-garden arose from the ants occasionally establishing their nests among epiphytes, thus acquiring a more secure foundation for them. The ants then fed on the juicy berries of these epiphytes and occasionally carried their seeds into the crevices of the bark, where some of them germinated and in turn gave protection to ant-nests. But as soon as these clever little insects perceived the usefulness of the growing epiphytes, they took greater care to encourage their growth, and their cultivation became an inherited habit. The plants cultivated by the ants now adapted themselves to the conditions or became modified and in part survived only in the flower-gardens. *Unquestionably, the ants, when founding new nests, carry seeds into them from the old nests, a fact that would be most easily explained in the case of *Camponotus femoratus*, which often occurs in great numbers in the same locality. At times of flood the flower-gardens would be distributed now and then by fallen and floating trees. In the single gardens which occur more sporadically, as is more frequently the case with those of *Azteca*, the plants could reach their destination only if their seeds were carried long distances by the ants. It is a striking fact that certain species of ant epiphytes occur again and again as single specimens in such widely separated localities. Since the ants have selected and cultivated for their nests plants which then became dependent on their activities, it is demonstrated, that these animals are able to adapt themselves to the plants, to modify their structure and to take advantage of their peculiarities."*

I have cited these passages because they may be regarded as a classical example of the uncritical mixtures of observation, inference, assertion and speculation, which abound in the work of observers in the tropics and constitute the only foundation on which some of the closet naturalists of Europe and the United States have been building their specious hypotheses. Although, as above stated, I was unable to repeat Ule's experiments with the epiphyte seeds, owing to the unfavorable season, the British Guiana ant-gardens are so similar to those observed by Ule in Brazil, that I feel justified in offering the following comments: