

## THE ANT MIMIC *MYRMARACHNE PLATALEOIDES*.

By J. E. Marson, F.R.E.S.

The ant, *Æcophylla smaragdina*, is common in most tropical countries. I have found it in East Africa, Burma, and Ceylon. Its nest of woven leaves is very conspicuous at the ends of the boughs of such trees as the Mango. The method used by these ants in making their nests is very interesting to watch. A group of ants hold the edges of two adjacent leaves, and slowly draw them together. In order to do this the ants form parallel rows at right angles to the leaf edge. When the edges of the leaves are in contact, other ants, holding ant larvae in their jaws, "sew" the leaves together with the silk spun by the larvæ.

This ant has many spider mimics. Hingston comments upon the mimics *Amycioea forticeps* and *Myrmarachne platalaeoides* in India, and gives a full ecological description of the former. In East Africa this ant has *Myrmarachne fœnissex* as its mimic. The following description applies to both species of *Myrmarachne*, but not to *Amycioea*.

The mimicry of these spiders is remarkable, not so much because of the ant-like form but because of the ant-like movements and posture. The spider's abdomen is elevated and is held at an angle similar to that of the ant's abdomen, and the first pair of legs, held forward, are waved about very much like the antennæ of the ant. Only three pairs of legs are used for walking. This waving of the first pair of legs is not peculiar to this genus of the *Salticidæ*, as it is only a more highly developed form of the slight waving of the forelegs which I have observed in other *Salticidæ*. In such cases it appears that the forelegs have a sensory function. If one of the ant mimics is held on your hand and the tip of your finger placed in front of it, it will stand still putting its forelegs on your finger and moving them over it. The ant-like walking of these spiders is however quite remarkable, as the jumping and rapidly moving habit, so characteristic of the *Salticidæ*, is fully suppressed when the spider is moving normally. When the spider is disturbed however, it moves rapidly to the lower surface of the leaf in a most un-ant-like manner. This is the movement which normally distinguishes the spider from its model in the field.

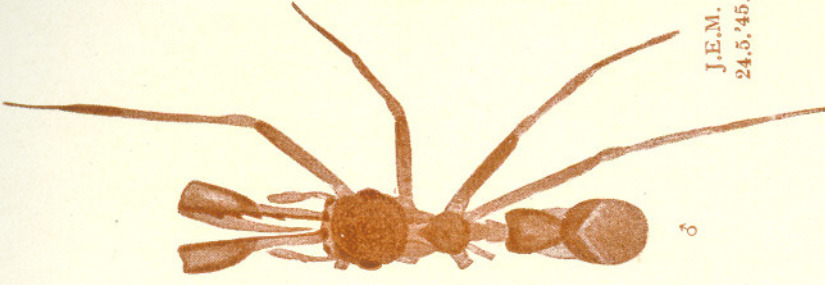
After the fifth moult, the spider is almost a perfect mimic of the red ant, the male resembling the female in form, no sexual dimorphism being apparent at this stage. They both run amongst the ant columns, showing no antagonism for the ants. Hingston states that the mimic *A. forticeps* attacks its model and use them as food. Bhattacharya states that the small jumping spider *Marpissa melanognathus* rests at the side of the ant columns and periodically falls upon the ants robbing them of the food or eggs which they are carrying. From my observations of *M. platalaeoides*, this species does not interfere with the red ant in any way. The fact that this species does not use the ants as food is illustrated by the following experiment, carried out by Lieut. Barnley and myself at Toungup, Burma.

Two cellophane bags were made and a mango leaf with a pair of *M. platalaeoides* were placed in each. Into one, two red ants were introduced and into the other, two small frog-hoppers. After a few hours both frog hoppers were killed and eaten but after two days the red ants were still alive, the male spider having eaten the female.

Small insects, Diptera, Hemiptera, etc., seem to form the main food of these spiders at all stages of development.

Before the sixth moult the female spins a fine cover web on the upper surface of a leaf. She retreats beneath it and moults for the last time. This last moult is not accompanied by any external change in form in the female.

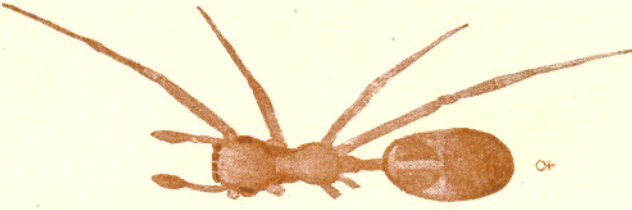
PLATE VI.



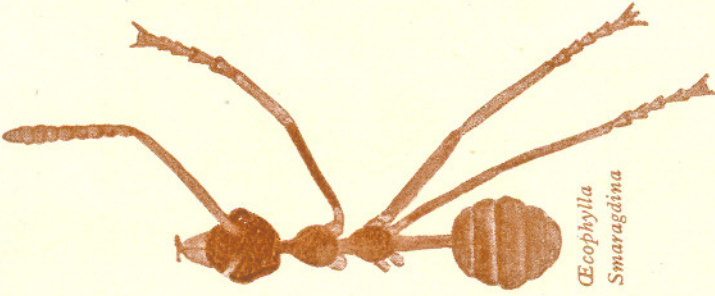
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♂

*Myrmarachne  
flataleois.*



♀



*Ecophylla  
smaragdina*

In the last moult of the male however, a very definite change occurs. Instead of the chelicerae being small as in the mature female, they are very much developed being as long as the cephalothorax. The moulting of the male is very fully described by Bhattacharya. I have noticed a similar change in the size of the chelicerae in certain species of the Genus *Tetragnatha* but in this case the change in size occurs in both male and female.

Mating occurs after this sixth moult and after mating the female re-enforces the cover web with patches of closely woven white webbing. She then lays eight to twelve eggs, white or yellow in colour, which are covered with two other layers of protective webbing. She remains under the cover web until she dies a few days later. The male stands on guard at the side of the web. The young hatch after five or six days and emerge after a similar period.

The young spiders change considerably in colour during the first four moults, being similar to different ants at different stages. Bhattacharya gives the following information on this species in India. "I have noticed *M. plataleoides* at their first, second and third stages to mimic *Selenopsis geminata* and after the fourth moult the ant *Plagiolepis longipes*. After the fifth moult both male and female mimic *Ecophylla smaragdina*." My observations are that at these stages the immature spiders are like the ants named in form and colour but I do not consider that they can be considered as true "ecological" mimics as they do not live in the same habitat as these ants. I will refer to this point later in the article.

The sixth moult is accompanied by a change in attitude to the ant model. The female remains hidden under the cover web and when she does come out to catch food she immediately runs back to the cover web, when an ant approaches. This is the opposite of the male's reaction because he now stands on guard and chases any ants which may approach the web. The ants usually flee rapidly from the male and I have not yet seen a male do any other but chase the ant intruder.

I think that the ant mimic genus *Myrmarachne* should be divided into two groups which I prefer to call "ecological" and "physical" mimics. My reasons for this are as follows.

*M. plataleoides* is an "ecological" mimic as I have never found this spider on trees where ant colonies were not present. This "ecological" mimic therefore obtains a double protection from its mimicry. Firstly the physical difference from spiders protects it from the normal spider enemies which do not attack ants. Secondly the fact that the spider runs with the red ants protects it from the enemies of the ants, as the law of chance comes into action; the possibility of the spider being picked out from the large number of ants is slight.

At higher altitudes in Burma black shiny species of *Myrmarachne* are fairly common. These mimics are not however found running with any ant colonies. An ant which is similar to these spiders may be found but these cannot be "paired" ecologically. These species of *Myrmarachne* are "physical" mimics as they only obtain the first part of the protection which the "ecological" mimic does. I do not think that this aspect of mimicry can be neglected in any discussion of mimetic forms.

#### LITERATURE.

- Hingston, 1927. Field observations of Spider Mimics. *Proc. Zool. Soc.*, 55.  
 Bhattacharya, 1936-37. On the moulting and metamorphosis of *Myrmarachne plataleoides*.  
*Trans. Bose Research Instit., Calcutta*, 12.  
*Idem*, 1936. Observations of some peculiar habits of the spider *Marpissa melanognathus*. *J. Bombay N. H. Soc.*, 39.

The first of these articles by Bhattacharya contains a very complete literature reference on this spider.

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