LETTERS TO THE EDITOR

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## On "The Evolution of Courtship Behaviour in Spiders"

Sir: Platnick's (1971) review of this subject is original and stimulating. It shows that students of behaviour have largely neglected a rich and exciting field. Leaving aside criticisms of the use of ethological terminology we would like to comment on some of Platnick's major generalisations.

The scheme is based on categorising three "levels" of spider courtship by the nature of "the prime releaser of male display" (1971, page 40). This approach contains at least two possible sources of error. Firstly the data allowing the assignment of families of spiders to the levels could be inadequate, and secondly the use of this type of criterion for building a phylogeny could be entirely artificial and irrelevant. The following notes expand these two points:

***Level I.*** Prime releaser "direct contact with the female". Contact is a description of a *situation* not a releaser. The releasers that the spider could respond to *during* contact, are, potentially, as diverse as the sensory modalities of the contact sense organs. The families grouped into this category need not share a qualitatively similar releaser. They may represent separate evolutionary trends and the Level I agglomeration would then be unnatural on the basis of this criterion. The data cited do not permit anything but the 'situation' classification, and even this is based mainly on inferential evidence.

***Level II.*** Prime releaser "chemotactic perception of silk and distance chemoperception of pheromones". These possible releasers may have nothing in common except the situation 'no contact with the female' (where contact = bodily contact) which they share with Level III. The evolution of some releaser associated with silk, if this indeed exists, is not a logically necessary step towards the evolution of an aerial pheromone, or vice versa. Evidence that these two kinds of releaser operate in the families of Level II is at the best circumstantial, and at the worst, lacking altogether.

***Level III.*** Prime releaser "sight of the female". Some of the spiders of families placed in this level have been the subject of exacting experimental studies (Crane 1949, in particular). Even at this level where visual displays are highly developed, the prime releasers are less easily determined.

The above comments suggest that the criteria for designating the categories of courtship have been confounded. Even if the prime releasers of male courtship were presently identifiable it would be necessary to justify the *use* of this criterion, out of the many aspects of courtship, to construct a phylogeny. This Platnick does not do. Further studies are needed to elucidate the types of signal systems involved in the courtship of most of the families of spiders. We think it highly probable that the evolution of predatory strategies has imposed restrictions on the types of signals that could be *used* in courtship. Visual hunters may have convergently evolved visual displays and trap builders could have evolved the use of silk as a signal transmitter. If this general point is true, evolutionary studies of spider courtship must go hand-in-hand with studies of predatory (and other) behaviour. There are enormous gaps in our knowledge over the whole field of spider behaviour and natural history. We can only hope that students of animal behaviour will come to realise that the spiders offer a rich and exciting study area, as Platnick has shown.

### References

CRANE, J. 1949: Comparative Biology of Salticid spiders at Rancho Grande, Venezuela, Part IV. An analysis of Display. *Zoologica, N.Y.* **34** : 159-214

PLATNICK, N. 1971: The Evolution of Courtship Behaviour in Spiders. *Bull. Brit. Arach. Soc.* **2** : 40-47