

ON YET ANOTHER ARTIFICIAL SPIDER CLASSIFICATION: A REVIEW

Levi, Herbert W. 1982. Araneae. In Parker, Sybil B. (ed.), *Synopsis and Classification of Living Organisms*. McGraw-Hill Book Company, New York, vol. 2, pp. 77-95.

Levi's 1982 classification of spiders is presented as part of a two-volume survey of the families of living organisms that includes coverage of scorpions (by O. F. Francke), pseudoscorpions (by W. B. Muchmore), solpugids (by M. H. Muma), opilionids (by W. A. Shear), and acari (by D. E. Johnston and others); the smaller orders are covered in short accounts by Levi. The spider section is worthy of note primarily because it contains a new classification and descriptions of families that are offered to the general public as a summary of our knowledge of the order. Unfortunately, it is so riddled with errors of fact and analysis that one can only hope the general public is never misled by it. Since the volumes carry a hefty price tag (\$150), their distribution will probably be limited to libraries.

Levi acknowledges at the beginning that "family classifications are controversial"; although one might expect, therefore, to find many families placed only *incertae sedis*, such is not the case—all the families of araneomorphs discussed are assigned to one of 16 equally ranked superfamilies. Levi indicates that "a conservative view is used here," by which he evidently means that classical groups which are known to be artificial are retained at the expense of more recently proposed groups that might possibly be natural.

The most obvious instance of this is Levi's superfamilial classification of araneomorphs. Evidence available in the literature since at least 1968 indicates that the fundamental division within the Araneomorphae is between a group (Palaeocribellatae) containing only the two genera *Hypochilus* and *Ectatosticta* and a group (Neocribellatae) containing all other araneomorphs. But Levi retains the archaic lumping of *Hypochilus* and *Ectatosticta* with *Hickmania*, *Gradungula*, and *Thaida* in the single superfamily Hypochiloidea, a clearly artificial group defined only by the absence of the derived characters that unite all other araneomorphs. One could understand the deceptive allure of "A/not-A" grouping, but in this case Levi does not even recognize the corresponding "A" group, the Araneoclada!

Even those systematists who can tolerate groups that are probably paraphyletic are likely to balk at groups that are probably polyphyletic, such as Levi's superfamilies Eresoidea (containing the Uloboridae, Dinopidae, and Eresidae) and Palpimanoidea (containing the Zodariidae, Mecysmaucheniidae, Palpimanidae, and Stenochilidae). The Eresoidea is *presented* as a wastebasket group: "The three families . . . are not closely related but do not fit into other groups." The Palpimanoidea are united because "the posterior spinnerets are reduced or lost." The homology of the condition of the spinnerets in the Zodariidae to that in the other families is doubtful; even Levi says that "The loss of the posterior spinnerets, although unique, is a poor characteristic upon which to base common origin." The cause of his reservations about the group seems to be the fact that some of the families are haplogyne whereas others are entelegyne (i.e., have an epigynum, in Levi's terminology). Levi claims twice that the zodariids and mecysmaucheniids have an epigynum, but in fact the mecysmaucheniids do not. In this case again, Levi has retained an archaic association (between zodariids and true palpimanoids), which even he suspects is artificial, in preference to an alternative one (between zodariids and corinnids) already presented in the literature (by Lehtinen, 15 years ago) that is probably correct.

Those systematists who do search for natural groups will be dismayed to find that Levi's desire to have a neat series of pigeonholes (suborders and superfamilies) in which to stick families has led him to ignore all evidence that some of those suborders and superfamilies may even (horrors!) have interrelationships. For example, Levi recognizes three suborders (Mesothelae, "Orthognatha," and Labidognatha) but does not specify which of the other two suborders his orthognaths are most closely related to. Similarly, Levi distributes the classical Haplogynae among four superfamilies (Dysderoidea, Caponoidea, Scytodoidea, and Pholcoidea) but never informs the reader that the latter three superfamilies are united by having lamellate chelicerae. And for the mygalomorphs, Levi abandons all pretense of classification and merely lists the 11 families that have classically been recognized.

The discussions of the families are frequently out of date (evidently the work was in press for an unusually long time) but contain numerous errors that cannot be attributed merely to age. For example, consider just the first half dozen families Levi discusses. (1) Liphistiids are characterized as having five pairs of heart ostia, but it was the discovery that *Heptathela sinensis* has only four pairs that led Petrunkevitch to establish the family Heptathelidae; the fact that at least one other species of *Heptathela* has retained all five pairs is insufficient reason to dismiss Petrunkevitch's observation. (2) *Liphistius* is said to occur "from Burma to the Moluccas" but in the entire Malay archipelago the genus is known from only one island, Sumatra. (3) There are said to be a dozen species of mecicobothriids in three genera (*Hexura*, *Microhexura*, and *Mecicobothrium*); at a time before *Microhexura* was shown to be a diplurid rather than a mecicobothriid, there would only

have been five described species in those three genera (even today, there are only eight known species in four genera). (4) Similarly, *Microhexura* has only four spinnerets, making Levi's characterization of the Mecicobothriidae as having six spinnerets false both at the time it was written and today (*Hexura rothi* also has only four spinnerets). (5) The atypids are said to have the sternum and labium fused, but that is true only for *Atypus* and *Sphodros*, not *Calommata*. (6) A lowly planarian (*Dugesia*) is promoted to the Theraphosidae. (7) The pycnothelids are said to be placed in two genera; even Schiapelli and de Pikelin's outdated 1965 revision of the family included four genera. (8) The pycnothelids are also said to have two pairs of spinnerets, even though *Diplotheopsis* has only a single pair.

Such errors are by no means restricted to these families. Particularly strange is the claim that there are only three genera of palpimanids (there are four genera in America alone, and the bulk of the group is African), and similarly incomplete lists of genera are given for the Tetrablemmidae and Ochyroceratidae. Since the Scytodidae, Loxoscelidae, and Sicariidae are each said to be monogeneric, one must conclude that *Drymusa* belongs to no family. We are told, incredibly, that pholcids are absent from Australia, and that leptonetids have two pairs of book lungs! In some cases, of course, it is possible that Levi's original text has been edited into nonsense (the Pholcoidea, for example, are said to have "one pair of spiracles, one which is posterior," whatever that means), and certainly the proofreading was inadequate (a list of spider sensory structures omits tarsal organs but includes "split sense organs," catering, one imagines, to the schizophrenic). But whatever the reasons for the mistakes, anyone using this compilation should obviously double-check both the classification and the character information against more reliable sources.

It may be that the most beneficial effect Levi's contribution will have is to convince arachnologists that no single worker can present a classification of all spiders, at this level of detail, without making major blunders. Perhaps the next general classification to be offered can be a collaborative effort, on the part of several systematists, that will not show the lack of first-hand knowledge of so many taxa that this work evidences.

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