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### Buchbesprechung/Book review

#### **John A Murphy & Michael J Roberts 2015 Spider families of the world and their spinnerets. British arachnological Society, York. 553 pp. ISBN 978 0 950093 7 7**

John Murphy and Michael Roberts have both made very significant contributions to arachnology. Michael Roberts is widely known for his excellent illustrations and much appreciated for his impressive trilogy “The spiders of Great Britain and Ireland” (Roberts 1985a, 1985b, 1987, 1993), later followed by the equally useful “Spiders of Britain and Northern Europe” (Roberts 1995). Both works laid the foundation for a lifelong interest in the faunistics of Northern European spiders for many of us and the books turned out to be, in fact, indispensable. On top of that, Roberts published several papers on, among others, Theridiidae, Tetragnathidae, Araneidae, Gnaphosidae and Linyphiidae. John Murphy, arguably the Nestor of arachnology at present, is best known for his many key papers on Gnaphosidae, many of them executed in collaboration with Norman Platnick or Anthony Russell-Smith. Both authors also undertook some excellent collaborations in the past: the wonderful “An introduction to the spiders of South East Asia” (Murphy & Murphy 2000) gained much from the illustrations of Michael Roberts and his magnum opus “Gnaphosid genera of the world” (Murphy 2007) derives much of its splendour from the amazing artwork of the same Roberts.

When it was announced that both authors were about to publish “Spider families of the world and their spinnerets” (Murphy & Roberts 2015), expectations were high.

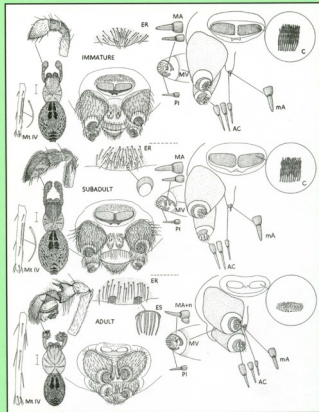
As it turns out, this bulky, two-volume work is again excellently illustrated by Roberts, although most figures focus on details of spinnerets, tarsal claws and setae. Genitalic structures are generally ignored, except for the 25 page appendix, where the palps, epigynes and vulvae of a number of puzzling specimens are illustrated in full splendour reminiscent of Roberts’s best work. There is good reason to suppose that the text was also mainly under the responsibility of Michael Roberts, reflecting his views on high level spider taxonomy.

For the first time, we have a book that gives a comprehensive overview of spinneret characters for all spider families. Moreover, a few new and taxonomically interesting spinneret characters are described and illustrated. The book is also well edited, the only flaw being that illustrations 31 and 44 occur twice and 32 and 45 are missing. These two plates were later sent to all owners in digital format. The authors modestly describe their book, which took them ten years to complete,

# SPIDER FAMILIES OF THE WORLD

## AND THEIR SPINNERETS

John A. Murphy  
and  
Michael J. Roberts



### PART I: Text

BRITISH ARACHNOLOGICAL SOCIETY

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### PART II: Plates

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as a “preliminary work” and rightly hope that it will be an incentive for many to devote renewed attention to high level spider taxonomy.

In spite of these undeniable positive elements, “Spider families of the world” disappoints in several respects.

The work not only duly presents an overview of all the spider families of the world, but also sets out to propose a new taxonomic framework for the entire order. For such a large, megadiverse group, this seems a task that simply cannot be brought to a good end by two authors in a single book.

Writing a family overview of a megadiverse taxonomic group like spiders is indeed a daunting task, one of us can vouch for that. Not only is the amount of information to be gathered enormous, the task is also frustrating as it is never finished. Although some scholars complain about a dip in taxonomic research, there have never been as many taxonomists active at the same time as nowadays. This fact is reflected in the enormous stream of data at all levels of spider taxonomy, including at the family level. There is no ideal time to write a book on spider families: the subject is constantly changing.

Murphy & Roberts were admittedly not very lucky in this respect, as during the period in which they prepared their book, dramatic changes at family level have taken place. Since the previous overview by Jocqué & Dippenaar-Schoeman (2006), six families were added before their book was published. Of these, only Eutecnizidae and Trogloraptoridae are discussed. Eutichuridae, Phrurolithidae, Sinopimoidae and Trachelidae are not mentioned.

The authors state that “...the form of the spinnerets and their spigots within any given family remain remarkably constant, even though somatic and genitalic structures may vary considerably...”. This may sound plausible, but by the same token, an important and remarkably constant character such as spore bearing gills, for example, has evolved independently eight times in eight major orders of fungi (Wright 2014)! Based on their firm belief in, and their very personal interpretation of, the importance of spinneret characters for high level spider taxonomy, Murphy & Roberts, contra Lehtinen (1967), reinstall Cribellatae and divide the Araneomorphae into cribellates and colulates. Cribellates are considered those that have a cribellum (lost in some instances) instead of the ancestral anterior median spinnerets, colulates have a non-functional bump called a colulus instead, a structure which may be reduced to a few setae or be entirely lost. This rejection of the repeatedly corroborated hypothesis that the cribellum is the plesiomorphic state within Araneomorphae leads to a plethora of proposed nomenclatural changes and transfers. These are listed on pages viii and ix, arguably the most objectionable pages of the book. First of all, no arguments are given for the many changes, apart from the fact, in some instances, that species with a cribellum and species with a colulus are not allowed to be placed in the same family. On top of that, these two pages reveal an incomplete survey and a selective interpretation of the arachnological literature. Three transfers to Agelenidae had already been published by Miller et al.

(2010). The transfer of *Poaka* to Amaurobiidae was already made by Raven & Stumkat (2003). The transfers of *Perilla* and *Phonognatha* to Araneidae date back to Kuntner (2002) and Kuntner et al. (2008). The influential work of Ramirez (2014) is completely ignored.

Another disappointing, if not irritating, aspect of the text are the negative comments on valuable and established techniques in spider taxonomy. Cladistics is called “a kind of lie” and “not science”. Millidge (1995) is quoted in this respect, and it has to be admitted that twenty years ago spider cladistics still had a long way to go. Nevertheless, quite a few relationships established in that period still stand. Nowadays, cladistics has become an accurate, carefully executed discipline and not just “crunch the numbers”. Cladistics takes into account all important characters without engaging in preconceived ideas, while “Spider families of the world and their spinnerets” virtually ignores valuable characters such as tenent hairs, the retrolateral tibial apophysis, tapetum, chilum, mouthparts, legs and more. Scanning electron microscopy is called a “quick fix” and “woefully inadequate”. It is true that a good light microscopist can study matters in surprising detail and that SEM is maybe used too often, but anybody who has tried to obtain good, clean SEM images of a tiny part of a rare spider can confirm that the technique is far from a quick fix.

Unfortunately, the book also contains a number of errors which have led to false conclusions. *Eutichurus* females, for example, do have cylindrical gland spigots and as such would not belong in Clubionidae. However, only careful comparison between males and females can make this clear, and the book only illustrates a female. Invisible under the light microscope, the nubbins on the anterior lateral spinnerets of *Penestomus* and *Cryptothele*, an important character, are not shown or mentioned. The major ampullate spigots of *Selamia* are not recognised as such. *Tamgrinia* has a cribellum (Miller et al. 2010) and also the fact that *Archoleptoneta* has a cribellum (Ledford & Griswold 2010) has escaped the authors' attention – it is happily left in Leptonetidae, where it belongs. Somewhat embarrassing is the fact that *Drassodes hypocrita* (fig. 3, p. 5) should be *Drassodex hypocrita*, the type species of the genus (Murphy 2007).

On page 6, the authors state: “We feel certain that studies in molecular biology will eventually confirm most of our work in progress...”. The course of events has decided otherwise. Garrison et al. (2016), in the largest assessment of spider phylogeny to date using genomic data only, recovered many of the well-supported monophyletic groups that Murphy & Roberts reject: Entelegynae, Dionycha, and the RTA clade. Dimitrov et al. (in press), in a molecular analysis based on six genes, find further evidence for a single origin and multiple independent losses of the cribellum within Araneomorphae, not the existence of two independent lineages, as Murphy & Roberts propose.

Notwithstanding the serious drawbacks outlined above, the two-volume book is worth having. When critically studied and compared with the literature, the contents encourage us to question the prevailing views on high level spider taxonomy, stimulating a renewed interest in this fascinating subject. After all, John Murphy and Michael Roberts have contributed widely to arachnology in the past and their legacy has been of great use to all of us.

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