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Synaphridae Wunderlich, 1986 (Aranei: Araneoidea), a new family status, with a description of a new species from Turkmenistan

Synaphridae Wunderlich, 1986 (Aranei: Araneoidea), новый статус группы с описанием нового вида из Туркменистана

Yuri M. Marusik*, Pekka T. Lehtinen**
Ю.М. Марусик*, П.Т. Лехтинен**

* Institute for Biological Problems of the North, RAS, Portovaya 18, Magadan 685000, Russia.
** Zoological Museum, University of Turku, FIN-20014 Turku, Finland.
* Институт биологических проблем Севера, ДВО РАН, Портовая 18, Магадан 685000 Россия.

KEY WORDS: Aranei, spiders, Synaphridae, Anapidae, Symphytognathoidea, new status, new species
КЛЮЧЕВЫЕ СЛОВА: Aranei, пауки, Synaphridae, Anapidae, Symphytognathoidea, новый статус, новый вид.

ABSTRACT: The subfamily Synaphrinae Wunderlich, 1986 in Anapidae (*s.lat.*) is redefined and redelimited to include only the genera *Synaphris* Simon, 1894 and apparently *Cepheia* Simon, 1894. The genera *Crassignatha* Wunderlich, 1995 and *Iardinis* Simon, 1899 [*sensu* Brignoli, 1978] are removed from Synaphrinae. The characters of this group are carefully compared to those of the Symphytognathidae, Anapidae, Mysmenidae, and Theridiidae. On the basis of this comparison, the taxonomic status of the Synaphrinae is raised to family level but its correct phylogenetic placement within the higher Araneoidea remains unclear. Most of the Synaphridae *new status* characters are plesiomorphies of the symphytognathoid and theridioid spiders. The only reliable synapomorphy is the curious cenral notch of the tibial trichobothrial base. Male palpal structures may comprise additional synapomorphies, but as the sclerites of these organs have not been properly homologized in the symphytognathoid spiders, no detailed transformation series can be determined. Nothing is known about web building behaviour of the Synaphridae. A new species, *Synaphris orientalis* sp.n. (♂) is described from Turkmenistan, Central Asia.

РЕЗЮМЕ: Пересмотрен состав и статус подсемейства Synaphrinae Wunderlich, 1986 семейства Anapidae (*s.lat.*), включающего в себя род *Synaphris* Simon, 1894 и возможно *Cepheia* Simon, 1894. Роды *Crassignatha* Wunderlich, 1995 и *Iardinis* Simon, 1899 [*sensu* Brignoli, 1978] исключены из Synaphridae. Детальное сравнение признаков этого таксона с родственными группами: Symphytognathidae, Anapidae, Mysmenidae и Theridiidae позволило поднять статус таксона до уровня семейства, однако точное положение Synaphridae *new status* в пределах высших Araneoidea остаётся неясным. Большинство признаков синафрид являются плезиоморфными и встречаются у Symphytognathoidea и Theridioidea. Наиболее существенной аутапоморфией для таксона может служить уникальная форма основания трихоботрии на голени. Другие апоморфии очевидно имеются в структуре пальпы самца, однако детали строения пальпы не могут быть гомологизированы с таковыми у Symphytognathoidea. Тип ловчих сетей Synaphridae неизвестен. Описан новый вид *Synaphris orientalis* sp.n. (♂) из Туркменистана.

Introduction

The minute spiders of the Araneoidea (Symphytognathoidea Baert, 1982) have an eventful taxonomic history in modern arachnology. A very few diminutive araneoids were known to Simon [1884, 1894, 1899], who placed them mainly in the Theridiidae, as was done subsequently by Crosby & Bishop [1927] for their new genus *Micropholcomma* and by Levi [1956] for *Mysmena*. Suprageneric taxa were created e.g. Argiopidae: Anapeae [Simon, 1894], Theridiidae: Mysmeneae [Simon, 1922] and Micropholcommatidae [Hickman, 1944], while new species were assigned to new families like Symphytognathidae [Hickman, 1931] and Textricellidae [Hickman, 1945].

Fage [1937] created the concept of the Symphytognathidae (*sensu lato*) by transferring all minute araneoidean species, that lacked booklungs (Symphytognathidae; Argiopidae: Anapeae; and Theridiidae: Mysmeninae) to this group. Two years earlier, a parallel assemblage based on poorer reasoning had been named Anapidae by Kratochvil [1935]. Fage's grouping was adopted by Forster [1959: 271], followed "by all subsequent authors" (but actually only by himself and Gertsch!). Forster [1959] strongly emphasized the importance of the reduced respiratory system in these spiders, first studied by Petrunkevitch [1933], and united Anapidae, Mysmenidae, Symphytognathidae, Micropholcommatidae and Textricellidae to the Symphytognathidae, in spite of obvious fundamental differences in conformation of the copulatory organs, cheliceral armature, labral structure, *etc*. Soon after this extensive revision, the number of known, minute araneoid species has increased constantly over the years, through taxonomic studies of various authors, mainly due to a worldwide use of funnel techniques for sampling spiders. Most authors followed Forster's family concept, although the second author [Lehtinen, 1967] stated clearly that this concept "is surely a polyphyletic dump heap of minute Araneoidea".

Forster & Platnick [1977] analyzed carefully this concept of Symphytognathidae (*s.lat.*) and redelimited the family according to relatively convincing synapomorphies. They also confessed that generic concepts applied by them to many of genera included (*e.g. Symphytognatha, Patu, Anapistula*) were exceptionally broad, pending the discovery and description of new species. We agree that there are a number of undescribed species of "*Patu*" [cf. Saaristo, 1996] and "*Symphytognatha*" at least. Most probably, there are no globally distributed genera of soil spiders in natural habitats. The wide range of *Anapistula secreta* Gertsch, 1941 can probably be explained by its anthropochorous dispersal of a possibly parthenogenetic species of that group. In spite of Forster & Platnick's [1977] excellent redescription and redelimitation, the wide concept of Symphytognathidae has later been used repeatedly by leading specialists [*e.g.* Brignoli, 1978, 1980, 1981]. Wunderlich [1986, 1987, 1994a,b] used the same concept, but named the group as Anapidae (*s.lat.*), obviously due to priority reasons. The suprafamilial taxon Symphytognathoidea was first suggested by Baert [1982], to include Symphytognathidae, Anapidae and Mysmenidae. It was further redefined by including the Theridiosomatidae in addition to the three families listed above [Coddington, 1990a], and later used also by Dippenaar-Schoeman & Jocque [1997].

This study aims to discuss and clarify the characters and taxonomic position of one of the least known groups of minute Symphytognathoidea, first treated as a subfamily Synaphrinae by Wunderlich [1986]; a new species found in the course of this study is described.

Material and methods

Only material of a new species from Turkmenistan was available for the genus *Synaphris*. Other species of *Synaphris* discussed below were carefully described in the original descriptions [*e.g.* Wunderlich, 1980, 1987] and comparisons can be made without re-examining actual specimens.

The comparison with other minute Araneoidea is based on material (listed below) kept in the MZTU.

THERIDIOSOMATIDAE: *Theridiosoma gemmosum* (L. Koch, 1877), *T. lopdelli* Marples, 1955, *Andasta semiargentea* Simon, 1895, *Wendilgarda* sp.

MYSMENIDAE: *Mysmena* spp., *Mysmenella illectrix* (Simon, 1895), *Trogloneta granulum* Simon, 1922, *Tamasesia rotunda* Marples, 1955, *T. acuminata* Marples, 1955, and six undescribed Polynesian species representing several new genera.

Undescribed suprageneric group (in Mysmenidae *sensu* Forster [1959]): «*Theridion*» *phyllicolum* Marples, 1955.

SYMPHYTOGNATHIDAE: *Patu samoensis* Marples, 1951, *Symphytognatha globosa* Hickman, 1934, *Anapistula secreta* Gertsch, 1941 and some undescribed species from the Oriental Region.

ANAPIDAE: *Comaroma simoni* Bertkau, 1889, *Conocolus lyugadinus* Komatsu, 1940, *Pseudanapis aloha* Forster, 1959, *Zangherella algerica* Simon, 1895 and other tropical species.

TEXTRICELLIDAE: *Textricella* spp. (New Guinea).

MICROPHOLCOMMATIDAE: *Micropholcomma* spp. (Australia).

HADROTARSIDAE: an undescribed genus and species from New Guinea, *Tekellina* sp.n. (in Theridiidae *sensu* Levi & Levi [1962]).

THERIDIIDAE: *Theonoe minutissima* (O. Pickard-Cambridge, 1879*), Coleosoma floridana* Banks, 1900, «*Theridion*» *soloa* Marples, 1955, *Pholcomma gibbum* (Westring, 1851), *Theridion*, spp., *Dipoena* spp., several Pacific new species and genera.

NESTICIDAE: *Nesticella* and *Howaia* spp.

Our analysis is based on traditional taxonomy, but cladograms for other araneoidean groups [Coddington, 1990a,b; Coddington & Levi, 1991; Griswold *et al*., 1998; Schütt, 2000] were available and are discussed. Several characters of the families discussed were studied with SEM.

Acronyms of museums: ZMMU — Zoological Museum, University of Moscow, Russia; ZMTU — Zoological Museum, University of Turku, Finland. Scale in all Figs. = 0.1 mm.

Taxonomy

Synaphridae Wunderlich, 1986, **new status**

Theridiidae, in part (*Theonoe*, in part): Simon, 1881: 132.

Linyphiidae, in part: Simon, 1884: 599.

Theridiidae Theonoeae, in part: Simon, 1894: 589.

Theridiidae Mysmeneae: Fage & Berland in Simon, 1926: 116.

Theridiidae Mysmeninae, in part: Petrunkevitch, 1928: 115; Roewer, 1942: 393–394.

Symphytognathidae *s.lat*., in part: Levi & Levi, 1962: 29; Brignoli, 1970: 1407; Wunderlich, 1980: 260.

Mysmenidae, in part (provisionally): Forster & Platnick, 1977: 2; Brignoli, 1983: 376 & 379.

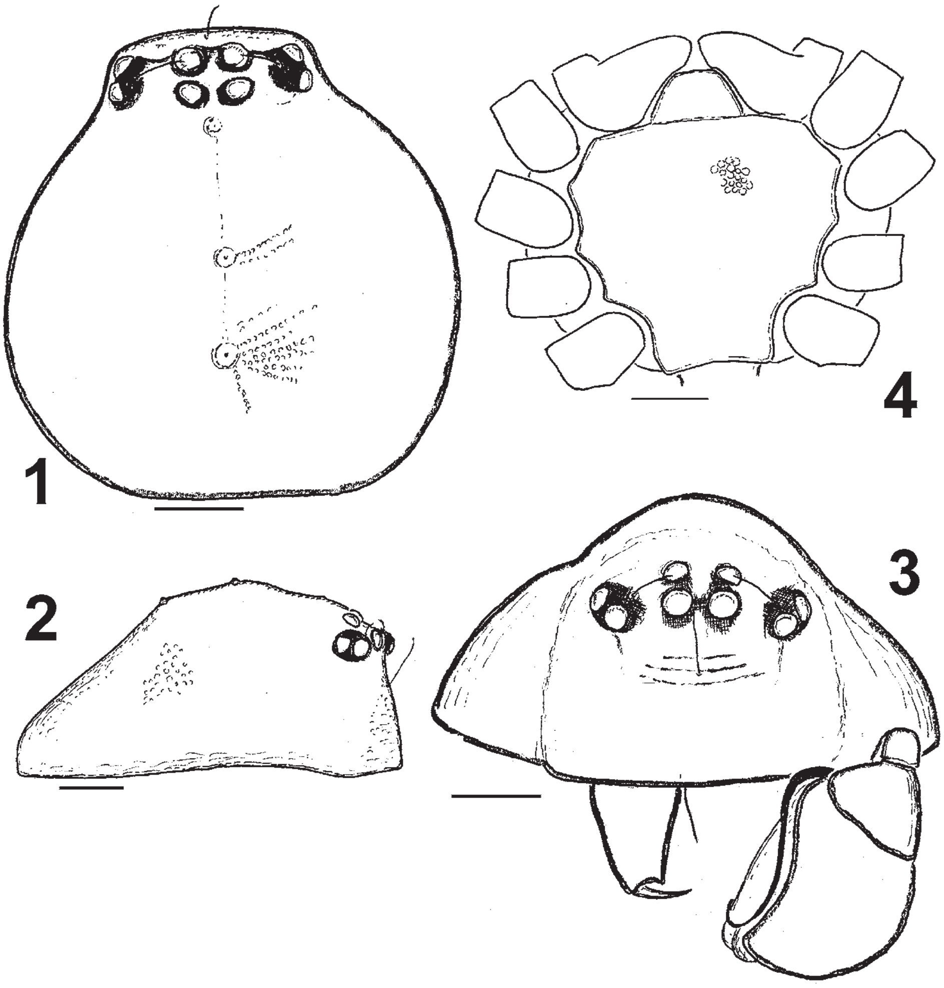
Mysmenidae, in part: Platnick, 1993: 235–236; Platnick, 1997: 309-310.

Anapidae Synaphrinae Wunderlich, 1986: 113; Wunderlich, 1987: 137; Wunderlich, 1995b: 776.

Synaphridae: Schütt, in press.

REVISED DIAGNOSIS. All species of Synaphridae possess a large tooth (or process with pointed tip) on the retromargin of the chelicerae. Other members of the Symphytognathidae *s.lat*. have a group of minute denticles or a smooth cheliceral margin. In addition, Synaphridae differ from Mysmenidae by lacking a femoral organ and having unmodified metatarsus I in males. The ultrastructure of the legs was studied for *Synaphris* (not for *Cepheia*, as no material was available), but the presence of the central notch in the base of the tibial trichobothria is a unique diagnostic character of Synaphridae. It is absent from the Symphytognathidae (*s.lat.*), nor has it been found in Araneoidea-Theridioidea-Linyphioidea, despite extensive studies of the bothrial base in practically all families and subfamilies of this complex.

DISCUSSION. Wunderlich [1986] originally listed *Synaphris*, Simon, 1894, *Cepheia* Simon, 1894 and *Iardinis* Simon, 1899 [*sensu* Brignoli, 1978] (Sumatra, Nepal & India) in Synaphrinae. Later, he [Wunderlich, 1995a] described a new genus *Crassignatha* (Anapidae: Synaphrinae) from Malaysia. Wunderlich [1986] originally noted that the Synaphri-



Figs 1–4. Cephalothorax of *Synaphris orientalis* sp.n.: 1 — carapace, dorsal view; 2 — carapace, lateral view; 3 — prosoma, frontal view showing ocular region, clypeus, palp and chelicera; 4 — sternum, coxae, labium, and gnathocoxae.

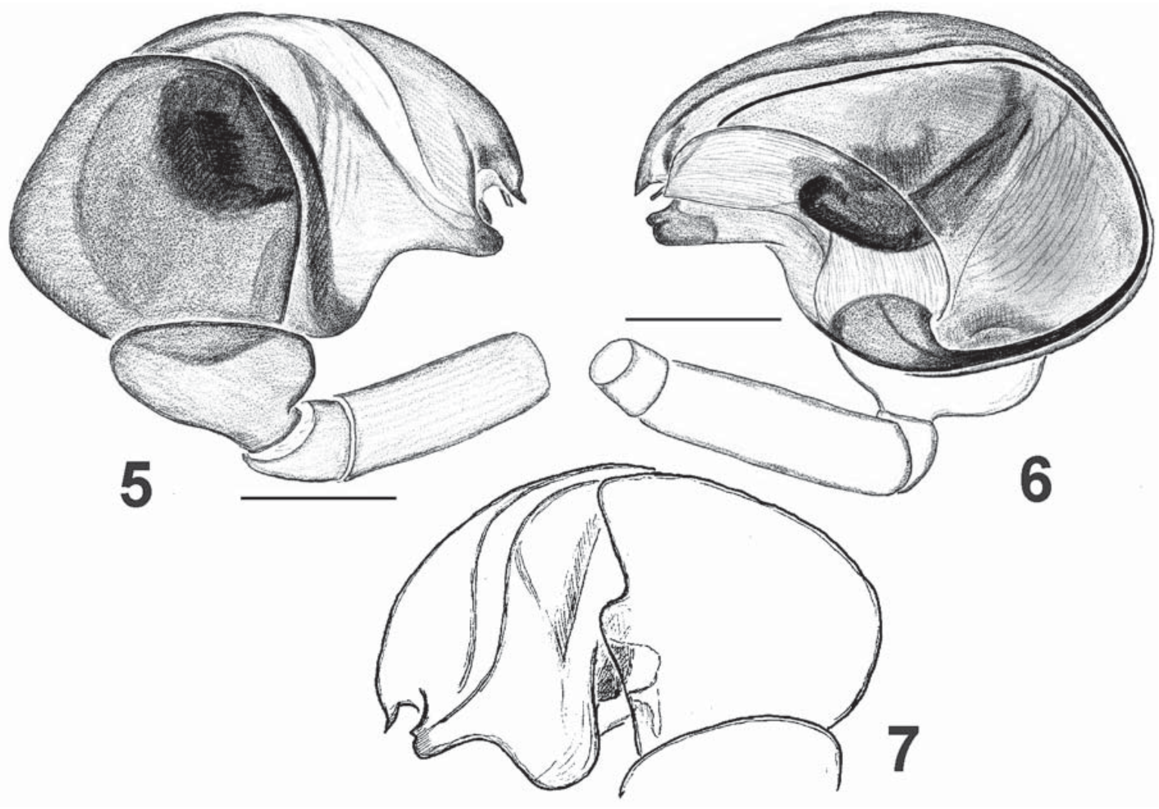
Рис. 1–4. Головогрудь *Synaphris orientalis* sp.n.: 1 — карапакс, вид сверху; 2 — карапакс, вид сбоку; 3 — головогрудь, вид спереди; 4 — стернум, тазики и нижняя губа.

nae had affinities to the Mysmeninae, but in his table he only listed the elongated palpal tibia (more pronounced in Theridiidae; not true for most Mysmenidae) and "normal" female palp — a typical plesiomorphy.

The limitation of Synaphrinae by Wunderlich [1986, 1995b] requires discussion. We agree that *Cepheia* is most probably related to *Synaphris*, however his placement of *Crassignatha* and *Iardinis* Simon, 1899 [*sensu* Brignoli, 1978] here is based solely on the presence of the strong cheliceral teeth (actually, a process with a pointed tip) and, when compared to the Mysmenidae, the lack of the femoral organ. The type material of the type species of *Iardinis* (*viz. I. weyersi* Simon, 1899) is considered lost and this species name was treated by Forster & Platnick [1977] and Platnick [1993] as a *nomen dubium*. The final judgment regarding the correct systematic placement of *Iardinis* must remain uncertain until topotypes become available.

The Synaphrinae Wunderlich, 1986 is here redefined and redelimited to include only *Synaphris* Simon, 1894 (with 6 known species from Macaronesia, the Mediterranean and Central Asia) and *Cepheia* Simon, 1894 (a single species known from southern Europe).

The familial assignment of Synaphrinae has been somewhat problematic. There are neither synapomorphies for the different groups of Anapidae [*sensu* Wunderlich, 1986], nor for the Symphytognathidae [*sensu* Fage, 1937] or Mysmenidae [*sensu* Platnick, 2001]. The presence of the labral spur is the convincing anapid synapomorphy. The abdominal scuta and tibial apophyses in male palps are present in all anapids, but lacking in the Synaphrinae, and their cheliceral armature, as stated by Wunderlich [1995b], is very different. The mysmenid synapomorphies include the raised cephalic region with a concave clypeus, the strongly modified cymbium and the presence of a femoral organ. The presence of numerous denticles as the cheliceral armature in Mysmenidae, differs from Synaphrinae which has a single strong tooth. The Synaphrinae and most of the Symphytognathidae share the pointed cheliceral process, but the structural details differ. *Synaphris* and *Cepheia* have an undivided process or a strong tooth, while the process is small and bipartite/tripartite in most symphytognathids (*Patu, Crassignatha, Anapistula, Iardinis* [*sensu* Brignoli, 1978]); it is reduced to a minute separate tooth in *Symphytognatha* and *Globignatha* and is more or less completely reduced in *Curimagua*. If the cheli-



Figs 5–7. Palp of *Synaphris orientalis* sp.n.: 5 — retrolateral view; 6 — prolateral view; 7 — dorso-retrolateral view.
Рис. 5–7. Пальпа *Synaphris orientalis* sp.n.: 5 — вид сзади; 6 — вид спереди; 7 — вид сверху-сзади.

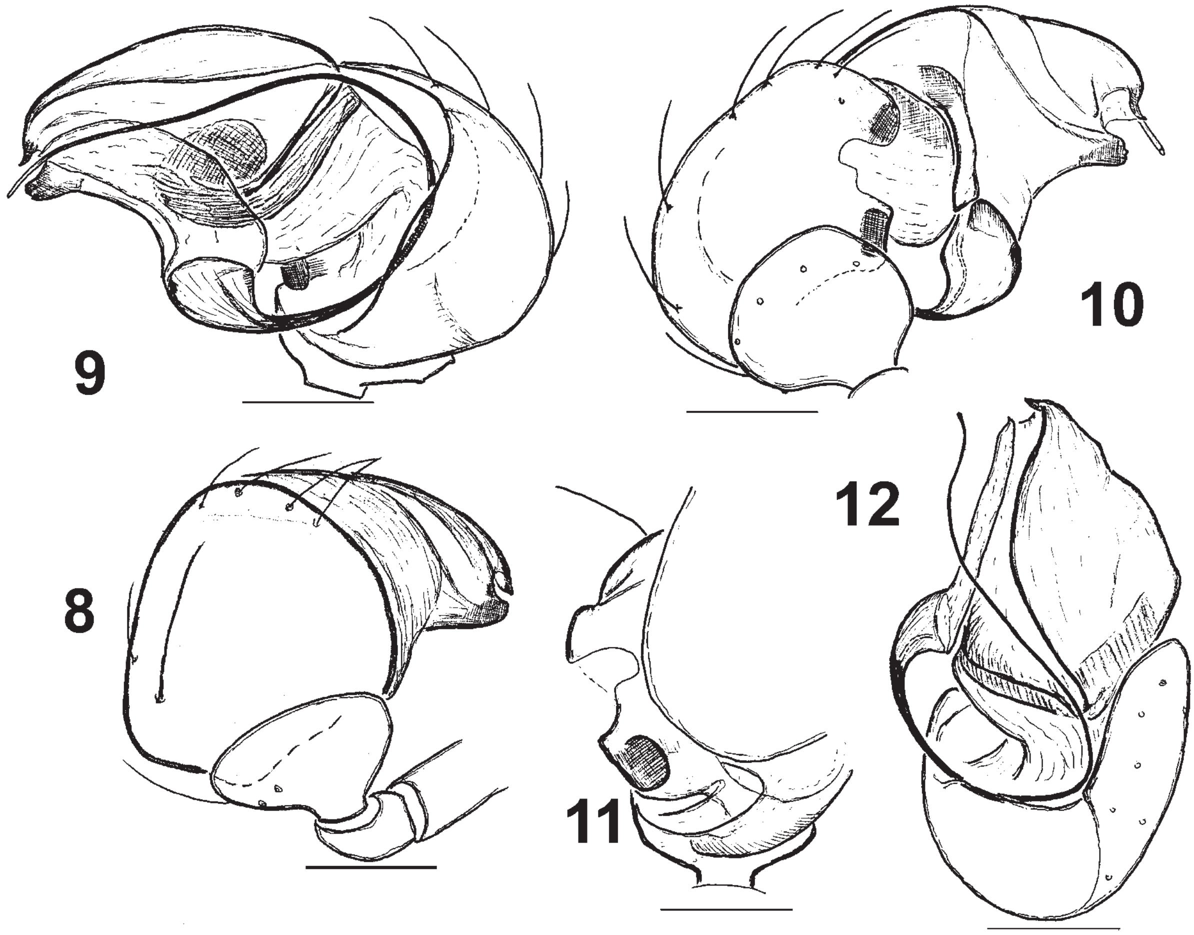
ceral process of the Synaphridae is homologous to that of the Symphytognathidae, it does not fit to a polarity for the evolution of this character in Symphytognathidae. A derivation of the Synaphrinae from the Symphytognathidae and *vice versa* seems to be impossible when other characters are considered. All the symphytognathids (*Crassignatha* Wunderlich, 1995 included) have lateral eyes situated on protruding eye tubercles, but the carapace of both *Synaphris* and *Cepheia* lacks these tubercles.

If the Symphytognathidae is defined according to the synapomorphies used by Forster & Platnick [1977], the Synaphrinae [*sensu* Wunderlich, 1995] cannot be included in this family. The genera *Iardinis* [*sensu* Brignoli, 1978] and *Crassignatha* Wunderlich, 1994 are known to us from published descriptions and drawings only. However, the former might be close to *Patu* [*sensu* Saaristo, 1996] from the Seychelles and the latter has no details in the description directly contesting its placement in the revised Symphytognathidae [*sensu* Forster & Platnick, 1977]. Wunderlich [1995a: 547] described the chelicerae of *Crassignatha* as not basally fused ("frei"), but obviously they were not detached and possibly not carefully analyzed for their basal part. On the other hand, the non-fused state seems to be plesiomorphic and is present in all possible candidates for sister groups of the Symphytognathidae. Therefore, the presence of the plesiomorphic state in some members of this obviously poorly known group is possible. The cheliceral extension is bipartite as in most "*Patu*" spp., thus differing from the cheliceral armature of *Synaphris* and *Cepheia.*

Textricellidae was synonymized with Micropholcommatidae by Platnick & Forster [1986] and this group was later transferred by Forster & Platnick [1984] from Symphytognathidae [*sensu* Forster, 1959] to Palpimanoidea. This transfer was based on the presence of the cheliceral peg teeth and cheliceral gland mounds. Although we do not agree with either of these taxonomic acts, the cheliceral structure of these groups is clearly different from that of Symphytognathidae and Synaphridae.

A comparison of other somatic characters of the Synaphridae to those of the Symphytognathidae simply reveals that the synaphrid structures are plesiomorphies for the whole complex (Symphytognathidae, Mysmenidae, and Anapidae), called "higher araneoids" by Coddington & Levi [1991] and Griswold *et al.* [1998]. This is true for the shape of carapace and abdomen, eye pattern, relative length of leg segments, structure of female palpi, *etc*.

The real synapomorphies of most Araneoidea are found in the fundamental structure of the copulatory organs. A critical comparison of most characters of the male palpal organs of symphytognathoidean groups has never been undertaken; Forster & Platnick [1977] commented on "terminal elements" of the palp, "elongate and hooklike processes", *etc.* but did not use exact terms. In this situation, a reliable matrix for a phylogenetic analysis is difficult to create. The cymbium of *Synaphris* is modified (see below), the tegulum is flattened, oval and the long, thin embolus and a transparent lamella are the only clearly separable details. There are some insignificant terminal modifications of the tegulum, but until now no specialist has tried to homologize them to the described «terminal elements» of various symphytognathid and mysmenid genera. The central epigynal depression, characteristic



Figs 8–12. Partly expanded palp of *Synaphris orientalis* sp.n.: 8 — dorsal view; 9 — dorso-prolateral view; 10 — ventro-retrolateral view; 11 — palpal tibia and cymbium showing paracymbium; 12 — view from above.

Рис. 8–12. Частично вздутая пальпа *Synaphris orientalis* sp.n.: 8 — вид сверху; 9 — вид сверху-спереди; 10 — вид снизу-сзади; 11 — голень и цимбиум вместе парацимбиумом; 12 — вид сверху.

of all Macaronesian species of *Synaphris*, is unique among the Symphytognathoidea, while the vulval structure with strongly coiled ducts seems to have evolved in parallel, at least in Theridiidae and Symphytognathidae.

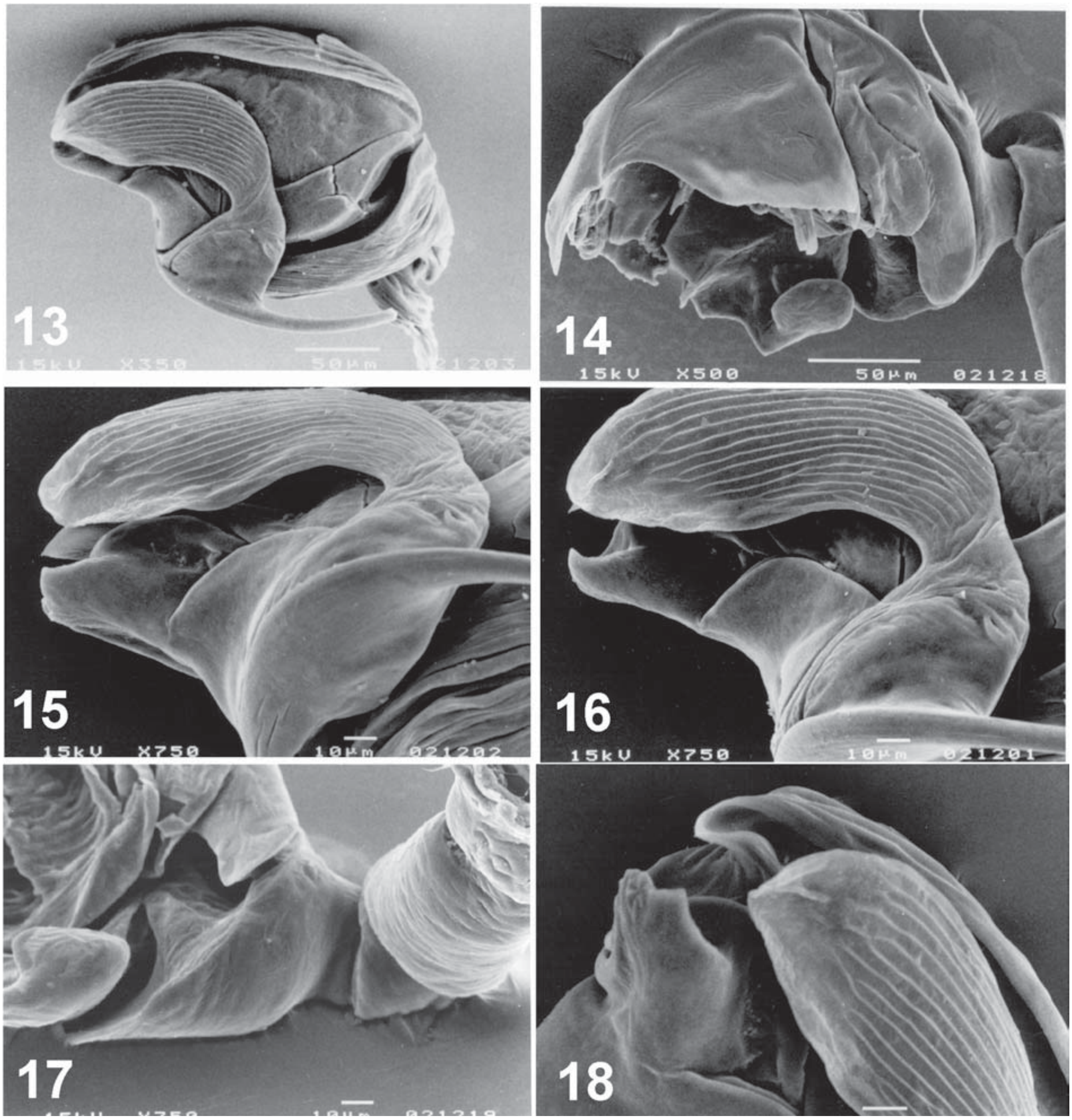
There is no tibial apophysis in the male palp of Synaphridae, but the lateral surface of the palpal tibia has been developed into a rounded lobe as in all Theridiidae and most Hadrotarsidae. However, unlike Theridiidae and Hadrotarsidae, the palpal tibia is tightly pressed against the cymbial base and has at least two pits (Fig. 17).

The tarsi of all Synaphridae are longer than the metatarsi, a character that has sometimes been used as a key-character for various spider groups, including practically all minute Theridiidae. They all share a minute body size and the length of tarsi is probably strongly and negatively correlated to size, as well as to a reduction in the respiratory organs.

The ultrastructural characters of the legs have only been studied in *Synaphris orientalis* sp.n. The tibial bothrial hood with a deep central notch (Fig. 23) is unique among all spiders studied to date and it also serves as a synapomorphy for the Synaphridae. The hood of the single metatarsal trichobothrium is notched too, but the notch is low and rounded. The tarsal organ (Fig. 20) is very low, not domed in lateral view, and has a large oval pit. The position of the tarsal organ is ca. 0.36, roughly corresponding to that of the Cyatholipidae, at least. The scaly leg surface is of general araneoidean type. The ventral hairs at the tip of the tarsus are unmodified (Fig. 19), not serrate as in Theridiidae and some Nesticidae. There are no real leg spines, only bristles of varying strength. This is a character with numerous parallels in Araneoidea and as such not a reliable character. The sockets of the tarsal and metatarsal hairs are conical with a long distal extension (Fig. 24). The subdistal lyriform organs of the metatarsus consist of a wide band of anastomosing ridges, a pattern that is not known in other higher Araneoidea.

The sister group to Synaphridae cannot be defined according to the information available now for the structure of the copulatory organs of various araneoidean groups composed only of minute spiders. A placement to poorly defined Theridioidea auct. is as possible as to Symphytognathoidea auct. Coddington [1990b]. Forster *et al*. [1990] discussed the rare theridid relatives and stated that the exact placement of many groups (Pahorinae, Physogleninae) is still unresolved.

This careful comparison of the newly delimited Synaphridae with other araneoidean groups shows that this group cannot be placed in any family to which it has been assigned during its history (Theridiidae, Mysmenidae, Symphytognathidae, and Anapidae), because it lacks the generally accepted synapomorphies of all these groups. Therefore, we raise the Synaphrinae to family level and place it in the "higher



Figs 13–18. Palp of *Synaphris orientalis* sp.n.: 13, 15–16 — prolateral to ventral view, variable angles showing lamella and base of embolus; 14 — cymbium, mesal view showing hairless part of cymbium, cymbial furrow and paracymbium; 17 — mesal view of palpal tibia showing paracymbium and pits of tibia; 18 — tip of bulbus, showing a terminal sclerite, lamella, and tip of the tegular furrow functioning as a conductor.

Рис. 13–18. Пальпа *Synaphris orientalis* sp.n.: 13, 15–16 — вид спереди-сверху и спереди-снизу, разные углы, показывающие ламеллу и основание эмболюса; 14 — цимбиум и голень, показаны часть цимбиума лишенная волосков и щель, и парацимбиум; 17 — основание цимбиума и голень, показаны углубления голени и парацимбиум; 18 — вершина бульбуса, показаны вершина ламеллы, терминальный отросток и щелевидное углубление тегулюма служащее как кондуктор.

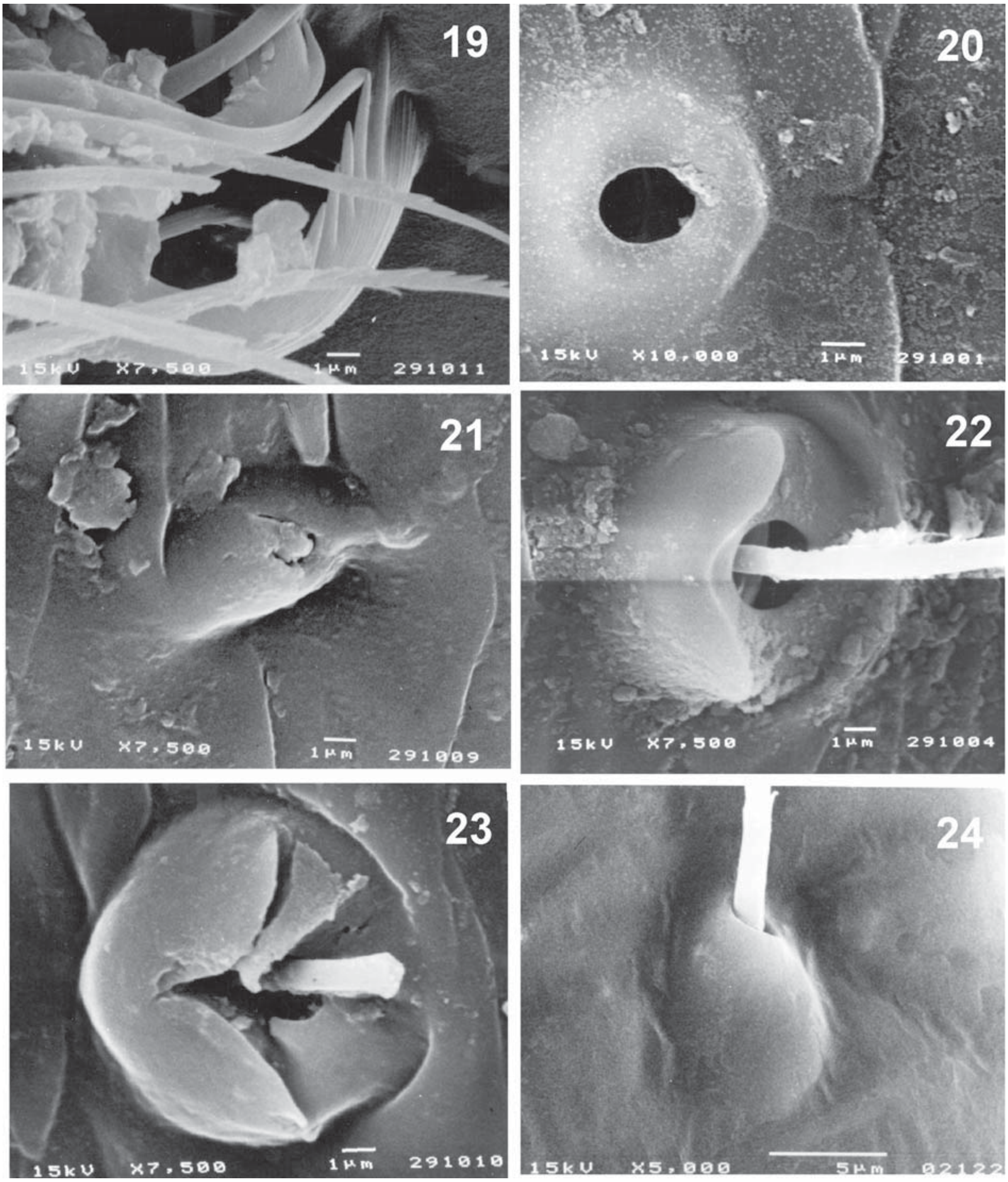
araneoids” of Coddington & Levi [1991]. The concepts of Theridioidea and Symphytognathoidea are regarded here as only preliminary working terms for the two last branches in the cladogram of the Araneomorphae by Coddington & Levi [1991: fig. 2 on p. 577].

When the manuscript of this paper was almost ready, we had the chance to read a manuscript on a similar topic by Schütt [in press]. She came to the same conclusion concerning the specifity of Synaphrinae and treated this taxon as a separate family.

Synaphris Simon, 1894

Grammonota, Simon, 1884: 599, in part

Synaphris Simon, 1894: 589; Roewer, 1942: 394; Bonnet, 1956: 4222; Levi & Levi, 1962: 29; Brignoli, 1970: 1407; Brignoli, 1983:



Figs 19–24. Ultrastructures of leg I of *Synaphris orientalis* sp.n.: 19 — tarsal claws; 20 — tarsal surface with tarsal organ; 21 — unknown pattern of pores in tibial surface; 22 — metatarsal trichobothrial base; 23 — tibial trichobothrium; 24 — socket of unmodified tarsal hair.

Figs 19–24. Ультраструктура ноги I *Synaphris orientalis* sp.n.: 19 — коготки; 20 — тарзальный орган; 21 — неизвестный секреторный орган на голени; 22 — основание трихоботрии на предлапке; 23 — трихоботрия на голени; 24 — основание волоска на лапке.

379; Wunderlich, 1986: 113; Wunderlich, 1987: 137; Platnick, 1993: 236; Wunderlich, 1994 b: 776; Platnick, 1997: 310

The type species, *Grammonota letourneuxi* Simon, 1884 (male from Egypt), by original designation and monotypy. Simon [1926] listed a record of the type species also from Kairouan (Tunis), but the material cannot be located and its conspecifity remains doubtful. One species from Dalmatia was described by Wunderlich [1980] on the basis of both sexes and three further species were described by Wunderlich [1987] from the Canary Islands. The sixth species from Turkmenistan (a first record from Asia) is described below.

The placement of spiders in *Synaphris* Simon, 1894 has undergone several changes. First, the type species of the genus, *letourneuxi* Simon, 1884, was originally placed in *Grammonota* in the Linyphiidae. Later, Simon [1894] erected the new genus *Synaphris* for this species and placed it in Theridiidae: Theonoeae. Petrunkevitch [1928] placed *Synaphris* in the subfamily Mysmeninae. Archer [1950] and Levi & Levi [1962] excluded this genus from Theridiidae and assigned it to the Symphytognathidae (*s.lat.*), where it was also listed by Brignoli [1970] and Wunderlich [1980]. Finally, Wunderlich [1986] transferred *Synaphris* into a new subfamily of its own, Synaphrinae, which he placed in the Anapidae (*s.lat.*).

The six species of *Synaphris* described to date can be treated as two relatively distinct species groups:

1: The *letourneuxi*-group (*S. letourneuxi*, *S. dalmatensis* Wunderlich, 1980, and *S. orientalis* sp.n.) is known from the eastern Mediterranean to Central Asia and is characterized as follows:

— the absence of a distinct depression in the epigynal area;
— the vulval ducts spirally coiled in their lateral parts;
— the distal part of the embolus in a furrow on the tegular surface;
— the tegulum with two distal processes, the lower one bipartite;
?— the bulbus ventrally with a transparent lamella [this character remains to be checked in *S. letorneuxi* and *S. dalmatensis*]

2: The *calerensis*-group (*S. calerensis* Wunderlich, 1987, *S. agaetensis* Wunderlich, 1987 and *S. franzi* Wunderlich, 1987) is known only from the Canary Islands and may be endemic to that archipelago. It is characterized as follows:

— the presence of an oval depression in the epigynal area;
— the gradually tapering basal part of embolus;
— the tegular surface without a furrow;
— the tegulum with two entire distal processes;
?— the transparent lamella of the bulbus is absent [this character may have been overlooked by Wunderlich [1987], as no SEM was used in the study of the species from the Canary Islands].

COMMENTS. The palpal details of *Crassignatha* and *Iardinis* [*sensu* Brignoli, 1978] are much more complex and their detailed comparison is unnecessary, because these two genera are removed from the Synaphrinae in this paper.

Synaphris orientalis Marusik & Lehtinen, **sp.n.**

Figs 1–24.

MATERIAL. Holotype♂ from Turkmenistan, Central Kopetdagh Mts, Dushak Mt., 1988, G.T. Kuznetsov, in the ZMMU, leg I and male palp as a SEM-mount in the ZMTU.

DIAGNOSIS. *S. orientalis* sp.n. can be separated from *S. letourneuxi* by having a relatively shorter carapace and relatively larger AME. The male palp was illustrated very schematically (i.e. without showing fine details) by Brignoli [1970: figs 7–10] and Wunderlich [1980: figs 15–16] and thus the exact shape of some parts remains unclear. The presence of a lamina covering an essential part of the tegulum in *S. letourneuxi* can be detected in Brignoli's figure, while other important characters, for instance, the shape or even the presence of the small paracymbium cannot be observed. This species is further separated from *S. dalmatensis* by the presence of numerous teeth in the paired tarsal claws of leg I, compared with thesingle, small tooth in *S. dalmatensis*. The details of the male palp cannot be compared using the original drawings of *S. dalmatensis*.

DESCRIPTION. Total length 1.06 mm. Carapace: 0.54 mm long, 0.49 mm wide, brown with blackish margins, whole surface punctuated with numerous small pits (Figs. 1–2); medially with two distinct spiny tubercles and one poorly developed tubercle (Figs. 1–2), clypeus high (Fig. 3). Sternum brown, densely punctuated, posterior margin wide, separating coxae IV by more than two diameters (Fig. 4). Abdomen greyish brown, wrinkled because of slight desiccation. Legs yellow, I leg: femur 0.43 mm, patella+tibia 0.44 mm, metatarsus 0.24 mm, tarsus 0.29 mm (t/mt = 1.2). Labium wider than long, gnathocoxae strongly converging (Fig. 4). Male palpal tibia without apophyses, but with two pits (Fig. 17). Retrolateral margin of palpal tibia is rounded and lies close to the cymbium as in most Theridiidae and Hadrotarsidae. Palp (Figs. 5–18) with complicated, deeply invaginated cymbium forming a kind of capsule. Bulbus elongate, embolus long and thin originating from the circular base in the base of tegulum, long ridged lamella (Figs. 6, 13, 16, 18, poorly visible in light microscope) starting from under the embolic base. Tegulum with only one separate sclerite in the terminal region, long furrow along tegulum serves as a conductor. Cymbium complicated, consisting of two parts (Fig. 12): one rounded and covered with hairs (Figs. 8–10, 12), the other part, prolateral, transparent, semicircular, hairless, and divided in two unequal parts by a deep furrow (Figs. 12, 14). The latter is poorly visible under the light microscope. Distal margin of the hairy part perpendicular to that of the transparent part. A retrolateral paracymbium close to the base of cymbium is directed inwards (Fig. 14). Median part of cymbium with transparent cuticle along the retrolateral margin terminating in a small notch. Light microscopy did not permit the observation of some details of the cymbium and it was partly broken during dissection. The exact course of the retrolateral margin of the cymbium remains unstudied, as well as the exact structure of the transparent, thin cuticle. Possibly there is a second internal "paracymbium" starting from the angled part of cymbium. Origin of the transparent part of cymbium is unclear, because it is hidden by the embolus, which overlies it. Its distal part may even represent a haematodocha and the basal region of the subtegulum.

Position of trMt1 = 0.51, position of tarsal organ 0.36. The metatarsal tip is gently curved and the subdistal pattern of transverse lyriform organs is wide and its ridges are irregular and partly anastomosing.

The paired tarsal claws have ca. five long teeth and the unpaired claw 2–3 teeth (Fig 19).

The ultrastructure of the leg is typical for Araneoidea. Leg surface is composed of wide scales (Fig. 21), close to the metatarsal tip and tarsal base the scales are fused in transverse zones. The tarsal organ is a low dome with an ovoid orifice. The tibial surface has a pitted surface "organ" of unknown function (Fig. 21). The single metatarsal trichobothrium has a crescent-shaped hood not reaching the posterior margin of the circular pit. The tibial trichobothria (Fig. 23) are exceptionally long and with the detailed structure of the base entirely different from that of metatarsal bothrium (Fig. 22). There are deep lateral and posterior furrows around the base, the pit is much smaller and the hood has a deep central incision. This type of trichobothrial base is not known from any other group of spiders and seems to represent an excellent synapomorphy for the genus, at least. No other genera are definitively included here in Synaphridae, and no material of other possible members of this group was available for studies of the ultrastructure. It is possible that such a unique structure is most probably a synapomorphy of the whole family. Each tarsal setal socket (Fig. 24) has a drop-shaped pit and a rounded distal tip.

Cepheia Simon, 1894

Cepheia Simon, 1894: 589, fig. 592 ♂ Southern France; Brignoli, 1970: 1410 figs. 11–14 ♂♀; Brignoli, 1980: 730; Thaler & Noflatscher, 1989: 173, figs. 25–29 ♂♀ from Austria, Südtirol; Thaler, 1993: 99.

The type species, *Theonoe longiseta* Simon, 1881, by original designation. No other species have been described. *Melos bicolor* O. Pickard-Cambridge, 1899 from southern England has been sometimes [Bristowe, 1923; Berland & Fage in Simon, 1926; Roewer, 1942; Bonnet 1956] regarded as a synonym of *Cepheia longiseta* (Simon, 1881), but when Brignoli [1970] checked the type material he found it to be a juvenile *Theridion* (*s.lat.*), twice as large as an adult *Cepheia*. Therefore, Brignoli [1983] and Platnick [1993, 1997] listed *Melos* as a *nomen dubium* in Theridiidae.

No material has been examined by the authors.

Cepheia longiseta (Simon, 1881)

Theonoe longiseta Simon, 1881: 132 pl. 26 fig 1, ♂ (♀ not described) from southern France; Bertkau, 1890: 10 Italy, San Remo

Cepheia longiseta Simon, 1894: 589, fig. 592 ♂ S. France; Fage & Berland in Simon, 1926: 313; Denis, 1933a: 564; Denis, 1933b: 93; Levi & Levi, 1962: 18, figs 309–310; Brignoli, 1970: 1410; Brignoli, 1980: 730; Thaler & Noflatscher, 1989: 173, figs. 25–29 ♂♀ from Austria, Südtirol, ♂ Spain; Thaler, 1993: 99.

The syntypes (♂♀♀, ♂ not originally depicted) from southern France (MNHN), ♂ designated as lectotype by Brignoli [1970]. There are several records along the Mediterranean coast of France, Italy, and Spain [s. Denis, 1933a-b; Brignoli, 1970, 1980; Thaler & Noflatscher, 1989]; and also a record from the lowland at the base of southern slopes of the Alps in Austria [Thaler & Noflatscher, 1989; Thaler, 1993].

DIAGNOSIS**.** According to the descriptions by Brignoli [1970] and Thaler & Noflatscher [1989], the most striking character is the narrow cymbium. Except for the thin embolus, the other palpal details could not be homologized to those of *Synaphris* and therefore the assignment of *Cepheia* to the Synaphridae is provisional, especially because no ultrastructural characters of *Cepheia* have been studied. The female vulva has two subglobular receptaculae and the strongly coiled ducts as in *Synaphris* (but also in many other Araneoidea). The most convincing similarities between *Synaphris* and *Cepheia* are the strong, single tooth of the chelicera, the sloping clypeus and the absence of lateral projections in the eye region.

DISCUSSION. Representatives of *Synaphris* are in several respects similar to *Cepheia longiseta* in having the large elongate bulbous palp, with the long embolus originating from the basal part of the bulb. Also, in lacking distinct sclerites other than the embolus and the lamella, and in the eye placement and round shape of the prosoma. Nevertheless, the two genera are quite different in the shape of the cymbium: long and thin in *Cepheia* and rounded and deep in *Synaphris*. In addition, *Synaphris* has the embolus placed on one side of the tegulum and terminating in the apical part of the modified tegulum, while in *Cepheia* the embolus terminates on the other side of the tegulum just opposite the embolic base. The starting point and course of the lamella in *Cepheia* is unclear from the figures provided by Brignoli [1970] and Wunderlich [1980].

It seems that *Synaphris* is related to or at least most similar to Theridiidae (Theridiinae, *Theridion*). Common (similar) characters are as follows: 1) a circular base of the embolus, 2) tip of the embolus terminal in relation to the tegulum, 3) internal "paracymbium", 4) circular margin of the palpal tibia covering basal part of the cymbium and the bulb, 5) the conductor (=lamella in *Synaphris*) originating from under the embolus base.

A transfer of *Crassignatha* Wunderlich, 1995 and *Iardinis sensu* Brignoli [1978]

These genera/groupings were included in the Synaphrinae by Wunderlich [1995a,b], mainly because of the suggested similarity of the cheliceral armature.

Crassignatha haeneli Wunderlich, 1995 from Bukit Fraser, Malaysia, shares its eye pattern, globose abdomen and complexity of the male palp with the Old World genera *Symphytognatha* and *Patu* (and possibly also with other genera of Symphytognathidae not carefully studied to date), by their original definitions and also in the sense of Forster and Platnick [1977]. The modification of the cheliceral armature seems to be a further parallel apomorphic state of the symphytognathid pattern (one large tooth instead of 2–3 small teeth).

The genus *Iardinis* Simon, 1899 with the type species *I. weyersi* from Sumatra has confused the discussion of the phylogenetic relations of the higher araneoids, because there is no identified material in any museum. A discussion by recent authors has concentrated on the new concepts of *Iardinis* (*I. martensi* Brignoli, 1978 from Nepal; *I. mussardi* Brignoli, 1980 from South India; and *Iardinus* (!) *albulus* Gertsch, 1960 from British Guiana and the transfer of *Anapistula boneti* Forster, 1958 from Mexico). It is highly likely that all these species belong to different genera, and we feel that all of them should be removed from the Synaphridae: *I. albulus* was assigned by Forster & Platnick [1977] to the theridiid genus *Styposis*; *I. boneti* was returned by Forster & Platnick [1977] to *Anapistula*; *I. mussardi* has most of the generally accepted synapomorphies/diagnostic characters of the Mysmenidae: the basally modified embolus, annulated legs and the concave clypeus. Previously, Brignoli [1980] stated that *Iardinis* fitted well in the Mysmenidae, according to its general appearance and copulatory organs, but “their chelicerae are simple”.

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