Redelimitation of the Subfamily Micronetinae HULL, 1920 and the Genus Lepthyphantes Menge, 1866 with Descriptions of Some New Genera
(Aranei, Linyphiidae)

by

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Synopsis: The subfamily Micronetinae HULL, 1920 and the genus Lepthyphantes MENGE, 1866 are redelimited with special reference to the secondary genital organs. The genus Lepthyphantes has been limited to five species only. The following eight new genera have been created for 89 of the remaining species of the former Lepthyphantes: Improphantes n.gen. (type-species Lepthyphantes improbulus SIMON, 1929), Mansuphantes n.gen. (type-species Linyphia mansueta THORELL, 1875), Piniphantes n.gen. (type-species Lepthyphantes pinicola SIMON, 1884), Teniphantes n.gen. (type-species Linyphia tenuis BLACKWALL, 1852), Anguliphantes n.gen. (type-species Linyphia angulipalpis WESTRING, 1851), Flagelliphan- nes n.gen. (type-species Lepthyphantes flagellifer TANASEVITCH, 1987), Decipiphantes n.gen. (type-species Linyphia decipiens L. KOCH, 1879), Formiphantes n.gen. (type-species Taranucnus lephythyphantiformis STRAND, 1907). Three genera, i.e. Oryphantes HULL, 1932 gen.rev. (type-species Linyphia angulata O. PICKARD-CAMBRIDGE, 1881), Bolephthyphantes STRAND, 1901 gen.rev. (type-species Linyphia index THORELL, 1856), and Agnyphantes HULL, 1932 gen.rev. (type-species Linyphia expuncta O. PICKARD-CAMBRIDGE, 1875), are revalidated. The following generic and species-level synonyms as well as new status are established: Centromerita DAHL, 1912 = Centromerus DAHL, 1886 n.syn., Tapinasta SIMON, 1895 = Syedra SIMON, 1884 n.syn., Lepthyphantes beticus DENIS, 1957 = Lepthyphantes improbulus SIMON, 1929 n.syn., Lepthyphantes leruthi DENIS, 1952 = Lepthyphantes alacris (BLACKWALL, 1853) n.syn., Acantho- neta ESKOV et MARUSIK, 1992 (= subgen. of Poeciloneta KULCZYNSKI, 1894) n.stat., Stygohyphantes KRATOCHVIL, 1948 (= subgen. of Troglohyphantes JOSEPH, 1882) n.stat., Troglyditya DEELEMAN-REINHOLD, 1978 (= subgen. of Troglohyphantes) n.stat. The basic pattern of the secondary genital organs of both sexes has been revised and figured. The nomenclature of the elements of the male palp and epigyne is discussed and augmented.

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1. Introduction:

In our earlier paper (SAARISTO & TANASEVITCH 1993) devoted to a reclassification of the genus *Lepthyphantes*, we presented a survey of its history, nomenclature, and current systematics. We also stated that *Lepthyphantes* is an extremely heterogeneous and polyphyletic genus. Using a typological approach based on the structure of the secondary genital organs (in general, the conformation of the embolus as the most stable part of the copulatory organs), we then split the genus into 31 monophyletic or monotypic species complexes mainly concerning the Palaeartic fauna only. Almost all of these complexes are separate genera, and some of them even belong to another subfamily.

This paper is devoted to a taxonomic redelimitation of the subfamily Micronetinae HULL, of the genus *Lepthyphantes* in particular, as well as to a review of the structure and nomenclature of the micronetid genitalia of both sexes.

Regrettably, as will be shown below, only a minor fraction (five) out of the almost 450 formal *Lepthyphantes* known to date appear to be actually congeneric with the type-species *L. minutus* (BLACKWALL, 1833), thus representing *Lepthyphantes* s.str. The remaining 99% must be transferred elsewhere, often requiring new genera for their incorporation. Over 440 new combinations is a serious problem in itself, let alone about two hundred of these concerning widely used names.

Abbreviations:
The following abbreviations have been used in the text and figures:

- **ap** apical part of paracymbium
- **apo** anterior pocket of paracymbium
- **appo** apical pocket of paracymbium
- **aw** anterior wall of epigyne
- **ax** apex of embolus
- **bc** bursa copulatrix
- **bf** basal fould of embolus
- **c** column
- **ca** carina
- **cl** cleft
- **cw** cavity wall
- **dps** distal part of scape
- **e** embolus
- **eg** entrance groove
- **ep** embolus proper
- **es** embolic sulcus
- **et** embolic tooth
- **fg** fertilization groove
- **fgl** Fickert's gland
- **lc** lamella characteristica
- **ll** lateral lobe of epigyne
- **lw** lateral wall of epigyne
- **ma** membranous area of radix
- **ml** median lobe of epigyne
- **mm** median membrane
- **mp** middle part of paracymbium
- **mps** median part of scape
- **ph** pit hook
- **pi** pit
- **pmp** posterior median plate
- **po** pocket of lateral lobe
- **pp** proximal part of paracymbium
- **ppo** posterior pocket of paracymbium
- **pps** proximal part of scape
- **ps** prosccapus
- **psp** serrated area of embolus
- **phs** pseudoscape
- **pw** posterior wall of epigyne
- **r** radix
- **re** receptacula
- **sa** suprategular apophysis
- **sb** scapoid base
- **se** serrate area of embolus
- **sh** special hair (on patella or tibia)
- **sp** secondary prosccapus
In the text the chaetotaxy is given in the following formula: Ti I: 2-1-1-0 which means that the first tibia has two dorsal, one prolateral and one retrolateral spine, ventral spines absent (the apical spines have been disregarded). All measurements cited below are in millimetres.

2. Structure of the secondary genital organs in Micronetinae:

It has been stated on several occasions (e.g. SAARISTO 1973, WANLESS 1971) that the studies of VAN HELSDINGEN (1965) on Lepthyphantes lepwsus (OHLERT) have fundamentally contributed in our understanding of the complicated functional relationship of the male palp and female epigyne in Micronetinae, at least. Also it now seems to be a general attitude of the majority of the authors that these organs are of fundamental importance also when delimiting the taxa above the species level. However, time after time the quite simple, meristic characters such as chaetotaxy in practice seem to have surpassed the importance of the secondary genital organs. This is still more astonishing when one considers the structural complexity of these organs which evidently must also mean a much more complicated genetic background compared with such a simple character state as the existence or nonexistence of a certain spine.

After the paper of VAN HELSDINGEN (1965) it has been quite safe to state that the male palp and female epigyne of Lepthyphantes as well as its relatives function as a lock-and-key system. Accordingly it may be inferred that, in a broad sense, these organs are structurally like mirror images of each other or like a mold and a cast. Theoretically this means that if we knew all the smallest details of the correlations between the structures and functions of the secondary genital organs we would be able to predict the structure of the palp of an unknown male merely by studying the epigyne of the female or vice versa. In fact, within certain limits this is already possible. Thus for example the shape of the embolus reflects the shape of the apical part of the scape as well as the positions of the openings of the entrance ducts in relation to the lateral pockets. Likewise the absence of a pit is correlated with the loss of a pit hook and so on. On the other hand very careful analyses of the secondary genital organs are needed to avoid the misleading effect of parallelism. In many cases species which are fairly remote relatives may possess superficially quite similar secondary genital organs, especially in females. Thus the so-called heart-shaped epigyne is commonly found in many Lepthyphantes species, e.g. L. flavipes, L. decolor, and L. holmi and also in species which are more closely related to Bolyphantes C.L. KOCH, 1833 than Lepthyphantes, e.g. L. mughi and its relatives. There are numerous other examples of this kind of parallelism. Furthermore, especially reduction of various parts of the secondary genital organs creates another kind of difficulties. The above stated "mirror-image" of the palp and epigyne is also important in that it gives a theoretic basis for studying the relationships of different species using only one of the two sexes and even only some parts of the secondary genital organs. Thus WANLESS' (1971) grouping of the species solely on the basis of the female secondary genital organs has its justification. Although there are several papers dealing with the structure of secondary genital organs of the Micronetinae (MERRETT 1963, VAN HELSDINGEN 1965, SAARISTO 1971, 1973, MILLIDGE 1977) several new terms (bold in text) are needed to describe all the small details.

2.1. Male palp Figs 1 - 5):

Femur usually unmodified and only in a few cases there may be special structures on it like in the genus Tennesseellum PETRUNKEVITCH, 1925. Patella and tibia both with one special dorsal hair (sh 1 and sh 2 in Fig. 1). In the patella it is situated apicodorsally and in the tibia me-
Fig. 1: Right male palp.
Fig. 2: A: Embolus of *Leptyphantes minutus* (BLACKWALL). – B: Generalized paracymbium of Micronetinae.

Fig. 3: Generalized palp of Micronetinae.
Fig. 4: Embolus of *Leptphyantes minutus* (BLACKWALL) dorsally.

A: Total view. — B: Embolic sulcus.
Fig. 5: Embolus dorsally.

diodorsally. In the former case it is frequently prominently modified and quite often with swollen base. In the later case it is usually long and thin and often bent more or less abruptly in one or two places. In some cases there is an extra special hair on the patella close to the previously mentioned one. Originally there are three trichobothria on the tibia (Fig. 1); two retrolateral (tr 1 and tr 2) and one mediiodorsal (tr 3). In a few cases the apical one (tr 1) of the two retrolateral trichobothria may be lost. Not so seldom certain areas of the tibia may be modified to form apophysis-like structures.

Cymbium, which is a transformed tarsus, has several special structures in different genera. At the present they will not be discussed here. Like in all spiders the cymbium bears on its ventral side the bulbus which includes the reservoir and sperm duct as well as certain accessory elements to fasten the bulbus on the epigyne.

In the family Linyphiidae also another important structure called paracymbium (pc) is associated with the cymbium. Its shape and complexity vary within the family but basically it is a separate, well-sclerotized structure articulating via a membranous area with the cymbium on its retro-lateral side near the base. The paracymbium (Fig. 2: B) is U-shaped in lateral view. It may be divided into tree regions: (1) a proximal part (pp) with some hairs on its external surface while on its internal surface there is a membranous area by which the paracymbium articulates with the cymbium, (2) a middle part (mp) with two depressions, the posterior pocket (ppo) and anterior pocket (apo), and (3) an apical part (ap) with an apical pocket (appo).

The bulbus may be divided in the following four regions: (1) subtegulum, (2) tegulum, (3) suprategulum, and (4) embolie division. In locating the palpal structures in the expanded palp we have used the terms employed by MERRETT (1963).

Suprategulum (su) (Fig. 3) is well-developed and its anterior surface is drawn into a wedge-like projection, the suprategular apophysis (sa). The tip of the suprategular apophysis is pushed into the stretcher pit of the epigyne during copulation. It is our opinion that this is the original state of this structure. Later it has been further modified and out of its dorsal surface a special pit hook (ph) has been formed to take over the function of the tip of the suprategular apophysis.

The embolie division is connected to the suprategulum with a short, membranous column. A prominent median membrane (mm) arises from the column. Its apical part is in a close association with the apical part of the embolus. In several cases the anteroproximal part of the median membrane is strongly chitinized. Quite often this sclerotized area is armed with tooth-like projections like in the genus Centromerus DAHL, 1886.

The embolie division is of the complex type (MERRETT 1963), consisting of the radix (r), which bears on its mesal side embolus (e), terminal apophysis (ta) and lamella characteristica (lc). The part of the radix to which the three last mentioned sclerites are attached is less sclerotized than the rest of the radix and is here called membranous area (ma). Inside the radix, at the site of the embolic base the sperm duct is dilated forming the so called FICKERT's gland (fgl) which is thought to be an ancestral feature, present already in the members of the evolutionary lineage leading to the subfamily Micronetinae. In certain cases this gland has been lost which sometimes is compensated by a secondary dilation inside the embolus like for example in some Agyneta HULL, 1911 species.

It may be supposed that the ancestral micronetid embolus was a fairly complicated, more or less sickle-shaped structure comparable to those now found e.g. in the genus Agyneta or Lephyphantes minutus and its close relatives. Thus, using the embolus of L. minutus as an example the following structures may be named in it (Figs 2: A; 4: A, B)): basal fold (bf), embolic sulcus (es), carina (ca), embolus proper (ep), apex (ax), and thumb (th) (see also Fig. 5: A, B). Functionally it corresponds to WIEHLE's (1956) "Anschluss-Embolus" or joint-type embolus. In practice this means that the main body of the embolus follows the contours of the median and apical parts.

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of the scape and only the tooth-like embolus proper which bears the opening of the sperm duct is thrust inside the bursa copulatrix.

The integument of the basal fold is very thin and unsclerotized while the rest of the embolus is more or less strongly sclerotized. The main body of the embolus can be removed fairly easily from the embolic division at the border of the unsclerotized and sclerotized part of the embolus which is here called cut area. The basal fold then remains with the embolic division. Originally the embolic sulcus starts at the cut area running along the posterodorsal side of the embolus up to the base of the embolus proper. The carina is a thin, ridge-like structure starting from the proximal part of the embolus running up to the embolus proper. The thumb is the part of the apical part of the embolus separated from the apex by a curved incision.

2.2. Epigyne (Figs 6 - 9):

There has been some confusion as to the terms epigyne and vulva. Thus, e.g. WANLESS (1973) called vulva all the female secondary genitals collectively. In the Linyphiids this issue is, admittedly, somewhat confusing because the structures via which the sperm passes to the vagina or perhaps more precisely near the opening of it, are U-shaped invaginations of the epigynal integument (SAARISTO 1972 & 1975) and thus integral parts of the epigyne.

There are no well bordered sclerites or plates in the epigyne, except the posterior median plate (SAARISTO 1971: 465). Therefore there are certain difficulties in describing the epigyne. In the following a generalized picture is given of the micronetid epigyne with some remarks on certain special derivatives.

The middle part of the epigyne is depressed so that a fairly deep epigyneal cavity with a roundish aperture is formed (Fig. 6: A, B). The integument lining the epigynal cavity is here called cavity wall (cw). The integument surrounding the cavity is divided into anterior (aw), lateral (lw) and posterior walls (pw). From the border of anterior and cavity walls arises a posteriorly projecting scape or scapus. In the posterior part of the epigyne there are two deep clefts (cl) that make the lateral borders of the posterior median plate (pmp). Starting from the apex of the scape (Fig. 7: B) the entrance grooves (eg) run along the both sides of cavity wall to the clefts. At this point each entrance groove joins a darkly pigmented body, the receptaculum (re). From both receptacula starts a short fertilization groove (fg) running along the posterior wall to the vicinity of the vaginal opening.

It is assumed that the scape is an extension of the cavity wall rather than of the anterior wall and hence hairless. Originally its starting point, scapoid base (sb), was somewhat inside the cavity, the anterior wall extending as an arch over the scapoid base. The ancestral scape was presumably S-shaped and can be divided into three parts: proximal part (pps) or proscapus (= proscape) (ps) [= scapus auct.], median (mps) and distal part (dps). Quite often it is just the shape of the proscapus that gives the epigyne its characteristic outlook when studied in ventral view.

The border of the proscapus and the median part of the scape is marked by a change in the path of the entrance grooves. In the distal and median parts of the scape they run along the outer surface of the scape but when reaching the proscapus they pass over on its inner surface. The border of median and distal parts is more indefinite. However, it may be said that the apical part is composed of the stretcher (st) (Fig. 7: B), the lateral lobes (ll) and the median lobe (ml). The apical part of the scape also bears the starting points of the entrance ducts, viz. the bursa copulatrix (bc). On the outer surface of the stretcher there is a small hollow, the pit (pi). Margins of the lateral lobes are so built that they form pocket-like structures. The median lobe is an unpaired ridge-like structure between the lateral lobes. It is well possible that the bursae were originally situated on each side of the median lobe. — Note: WANLESS (1971) used the term median lobe for a flap-like structure covering the bursa copulatrix.
The above presented description is thought to be the ancestral state of the micronetid epigyne. This basic pattern of the epigyne has changed in numerous ways within the Micronetinae. However, in this only a couple of special secondary structures of the epigyne, viz. pseudoscapus (pss) (= pseudoscape — Fig. 7: A) and secondary proscape (sp) (Figs 8: B; 9: A) will be mentioned. The former is a more or less pronounced posteriorly pointing projection at the base of proscape on its external surface. The pseudoscape is always devoid of entrance grooves and also of hairs. The secondary proscape is formed from the area in front of the scapoid base and thus bears hairs on its external surface and entrance grooves on its internal surface.
Fig. 8: A: Epigyne of *Tenuiphantes alacris* (BLACKWALL). — B: Scapus of *Formiphantes lepthyphantiformis* (STRAND).
Fig. 9: Scapus. — (A): *Formiphantes lephthyphantiformis* (STRAND) (lateral view). — B: *Tenuiphantes alacris* (BLACKWALL) (distal part of scapus).
3. Redelimitation of the subfamily Micronetinae HULL, 1920:


Tennesseellinae PETRUNKEVITCH, 1928 n. syn.

Lepthyphanteae SIMON, 1929. Les Arachnides de France 6 (3): 534.


1) Other species included: A. arboreus (EMERTON, 1915) n. comb. ex Lepthyphantes MENGE, 1886.
2) Other species included: B. indexoides (TANASEVITCH, 1989) and B. caucasicus (TANASEVITCH, 1990), both n. comb. ex Bolyphantes C.L. KOCH, 1833.
Note: Inclusion of a particular genus in the Micronetinae is based on the characters of its type-species. Therefore, as most of the included genera are still unrevised it is not necessary that all members of certain genera are representatives of Micronetinae, e.g. only the type-species of the genus *Saaristoa* is a micronetid and the other species included in this genus, viz. *S. firma* represents another subfamily.

Diagnosis: Micronetids may be recognized by the complex type of the embolic division as described above. Also the presence of the outward pointing suprategular apophysis just below the tip of the cymbium in the unexpanded palp is often diagnostic (for more detail see SAARISTO 1973 & 1977).

4. Revised and new genera:

4.1. Genus *Lepthyphantes* Menge, 1866 (Fig. 10: A-D):

![Image of Lepthyphantes spp.](image)

Fig. 10: Embolus of *Lepthyphantes* spp.
- A: *L. minutus* (BLACKWALL).
- B: *L. leprous* (OHLERT).
- C: *L. cruentatus* (TANASEVITCH).
- D: *L. iranicus* (SAARISTO & TANASEVITCH).

**Type species:** By subsequent designation (Simon 1884: 265) *Lepthyphantes muscicolus* Menge, 1866 = *Linyphia minuta* Blackwall, 1833.


**Diagnosis:** Species belonging to *Lepthyphantes* may be easily recognized in the male sex by the massive, sickle-shaped embolus with tight sulcus and large carina (Fig. 10: A-D) and in female sex by the well developed scape arising far from the inside of the epigynal cavity.

**Description:** Large to medium-sized linyphiids; total length 2.50-4.50. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, Fe II-IV: 0-0-0-0; Ti I: 2-1-1-2(3), II: 2-0-1-2, III: 2-0-0-1, IV: 2-0-0-1(2); Mt I: 1-1-1-1(0), II: 1-1-1-0, III-IV: 1-1-0-0. The above is the chaetotaxy of *L. minutus*. In other species the number of ventral spines is variably reduced and the smaller species, *L. cruentatus* and *L. iranicus* have in all metatarsi only one dorsal spine while *L. simiensis* has lost it even from the metatarsi IV. Tm I 0.18-0.23; no trichobothria on metatarsus IV. Palp: Patella with a special spine (*L. minutus*) or none. Cymbium with proximal outgrowth(s). Paracymbium relatively large. Embolus (Fig. 10: A-D) massive, sickle-shaped in lateral view. Embolic sulcus and carina well developed. Epigyne: The scapus is sigmoid, posterior median plate not hypertrophied. Abdomen with a distinct pattern.

**Remarks:** The 5 known species of *Lepthyphantes* are here placed in three species groups. The *minutus-gcoxip* is characterized by the bowl-shaped proscapus with a pair of elongated depressions and includes *cruentatus*, *iranicus*, and *minutus*. In the *leprosus*-group, which includes only one species, the proscapus is quite narrow with parallel sides and dilated apical part. Finally in the *simiensis*-group, which also includes only one species, the proscapus is almost as wide as long.

**4.2. Genus Improphantes** n. gen. (Fig. 11: A-G):

**Type species:** *Lepthyphantes improbulus* Simon, 1929.


**Diagnosis:** Species belonging to *Improphantes* may be easily recognized in the male sex by the sickle-shaped embolus with open sulcus and slightly reduced carina (Fig. 11: A-G). At present, no unambiguous character state common for the females of the included species could be found.

**Description:** Small linyphiids: 1.45-1.90; females occasionally longer than 2 mm. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, Fe II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; Mt I-IV: 1-0-0-0. Tm I - 0.17-0.23; no trichobothria on metatarsus IV. Male palp: Patella and tibia unmodified. Cymbium without basal process. Paracymbium with 1-2 teeth or without any. Lamella characteristica a long stripe. Embolus (Fig. 11: A-G) sickle-shaped with open sulcus and slightly reduced carina. Epigyne with a strongly protruding epigynal area and markedly hypertrophied posterior median plate, lining the epigynal cavity like a second floor. Abdomen grey to black, abdominal pattern absent.

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4.3. Genus *Mansuphantes* n. gen. (Fig. 12: A–D):

**Type-species:** *Linyphia mansueta* THORELL, 1875.

Fig. 12: Embolus of *Mansuphantes* spp.

**Diagnosis:** Species belonging to *Mansuphantes* may be easily recognized in the male sex by the sickle-shaped embolus with a strong tooth close to the embolus proper (Fig. 12: A-D) and in the female sex by a more or less oval proscape with narrow proximal part which covers entirely all other parts of the scape. Posterior median plate at least moderately hypertrophied.

**Description:** Small to medium-sized linyphiids: total length 1.70-2.20. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0 (in *L. auruncus*: Ti II-III: 2-0-1-0); Mt I-III: 1-0-0-0 (in *L. ovalis, L. pseudoarciger, L. mansuetus, L. auruncus, L. parmatus* and *L. arciger*), the other species have: Mt I-IV: 1-0-0-0. Tm I - 0.16-0.23; no trichobothria on metatarsus IV. Male palp: Tibia usually with a knob-like outgrowth distally. Paracymbium large, with a marginal tooth (except *L. parmatus*), and one or two teeth in the middle part. Embolus (Fig. 12: A-D) sickle-shaped with a strong tooth close to the embolus proper. Embolus proper terminally bifid. Epigyne: Proscape well sclerotized, wide, rounded or slightly elongated. Abdomen grey to black, abdominal pattern absent.
Remarks: This is a very homogenous genus and it has not been found necessary to divide it into species-groups.

4.4. Genus *Piniphantes* n. gen. (Fig. 13: A-C):

**Type species:** *Leptophyantes pinicola* SIMON, 1884.


**Diagnosis:** Males of this genus are recognized by having a more or less elongated projection with numerous finger-like protrusions at the proximal part of the embolus (Fig. 13: A-C). Females have a strongly protruding epigynal area and markedly hypertrophied posterior median plate.

**Description:** Small linyphiids: total length 1,45-1,90, females occasionally longer than 2 mm. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, Fe II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; Mt I-III: 1-0-0-0. TmI – 0,19-0,25; no trichobothria on metatarsus IV. Male palp: Patella and tibia unmodified. Cymbium without basal process. Paracymbium relatively large, with 1-2 teeth or toothless. Proximal part of embolus with elongated projection bearing numerous finger-like protrusions (Fig. 13: A-C). Epigyne with a strongly protruding epigynal area, and the hypertrophied posterior median plate lines the epigynal cavity like a second floor. Abdomen grey to black, abdominal pattern absent.

**Remarks:** This genus is closely related to *Improphantes* n. gen., see above.

![](image)

**Fig. 13:** Embolus of *Piniphantes* spp.  

4.5. Genus *Tenuiphantes* n. gen. (Fig. 14: A-I):

**Type species:** *Linyphia tenuis* BLACKWALL, 1852.

Diagnosis: Species belonging to Tenuiphantes may be easily recognized in the male sex by the sinuous embolus with an often dentigerous protrusion at about halfway (Fig. 14: A-I); after a narrow middle section the embolus widens into a more voluminous apical part. The females are characterized by having the prosopagus bordered at either side by the lateral wing-like extensions of the median part of the scapus.

Description: Small to large linyphiids: total length 1.7-4.1. Chaetotaxy: Fe I: 0-1-0-0; II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; Mt I-IV: 1-0-0-0. There are the following exceptions: cristatus: Ti III-IV: 2-0-1-0, fogarasensis: Ti I-IV: 2-1-1-0, retezaticus: Ti: 2-1-1-1, Ti II: 2-0-1-1, and spiniger: Mt I-IV: 1-1-1-0. Tm I 0.20-0.30; no trichobothria on metatarsus IV (except retezaticus!). Male palp: Cymbium more or less unmodified. Paracymbium relatively large with 1 - 3 teeth or unarmed. Lamella characteristica usually S-shaped. Embolus (Fig. 14: A-I) large, with an often dentigerous protrusion at about halfway. Epigyne: Prosopagus bordered at either side by the lateral wing-like extensions of the median part of the scapus. Abdomen of female with dark dorsal pattern, which is obscure in the male sex. Abdomen of retezaticus totally grey without any pattern.

Remarks: In spite of its large size the genus is very homogenous especially as to the structure of the secondary genital organs. Thus the main bulk of it is here placed in the tenuis-group. The other group is the alacris-group which differs from the former by having the epigyne with strongly developed lateral teeth (VAN HELSDINGEN 1965: 30). So far, this group includes only alacris.

4.6. Genus Oryphantes HULL, 1932 gen. rev. (Fig. 15: A-B):


Type-species: Linyphia angulata. O. PICKARD-CAMBRIDGE, 1881.

Species included: O. angulatus (O. PICKARD-CAMBRIDGE, 1881), O. bipilis (KULCZYNSKI, 1885), O. cognatus (TANASEVITCH, 1992), O. geminus (TANASEVITCH, 1982). All n. comb. ex Lepthyphantes.

Diagnosis: Males of this genus are recognized by having a large, outwards projecting embolic thumb, bifid embolus proper, and totally reduced carina (Fig. 15: A-B). Females distinguishable by the presence of the elongated outgrowths of the lateral walls of the epigyne, directed under the prosopagus.

Description: Small to medium-sized linyphiids: total length 2.00-2.70. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, Fe II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; Mt I-IV: 1-0-0-0. Tm I-IV: 0.20-0.27; no trichobothria on metatarsus IV. Male palp: Patella with a conical or cylindrical outgrowth bearing a special spine. Paracymbium with a tooth
Fig. 15: Embolus of *Oryphantes* spp.


on its apical part. Embolus (Fig. 15: A-B) large, with outwards projecting embolic thumb. Embolus proper bifid. Carina totally reduced. Epigyne with a slightly protruding epigyneal area. Lateral walls of the epigyneal cavity with elongated outgrowths, directed under the proscapus. Abdomen grey to black, abdominal pattern absent.
Remarks: This genus is closely related to Anguliphantes n. gen., differing from it in the male sex by the well-defined outgrowth of the patella of the male palp, bifid embolus proper, and totally reduced carina. In the female sex it differs by the presence of the elongated outgrowths of the lateral walls of the epigynal cavity, directed under the prosccapus.

4.7. Genus Anguliphantes n. gen. (Fig. 15: C-I):

Type-species: Linyphia angulipalpis WESTRING, 1851.

Diagnosis: Males of this genus are recognized by having a relatively large thumb, sharp-pointed embolus proper, and small carina (Fig. 15: C-I); females by having a narrow and long proscape, distally not expanded.

Description: Small to medium-sized linyphiids: total length 1.17-2.50. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, II-IV: 0-1-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; Mt I-III: 1-0-0-0 (except L. maritimus: Mt I-IV: 1-0-0-0). Tml - 0,14-0,22; no trichobothria on metatarsus IV. Male palp: Patella without well-defined outgrowth, ending with a special spine. Paracymbium usually with a ridge in middle part and / or one or two small teeth. Lamella characteristica curved medially at an angle of ca. 90°. Embolus (Fig. 15: C-I) with a relatively large thumb, sharp-pointed embolus proper, and a small carina. Epigyne with a strongly protruding epigynal area. Proscape long and narrow, distally not expanded. Abdomen grey to black, abdominal pattern absent.

Remarks: The genus is very closely related to Oryphantes HULL, 1932 gen. rev., see above.

4.8. Genus Flagelliphantes n. gen. (Fig. 16: A):

Species included: F. bergstroemi (SCHENKEL, 1931), and F. flagellifer (TANASEVITCH, 1987), F. sterneri (ESKOV et MARUSIK, 1993). All n. comb, ex Lepthyphantes.

Diagnosis: Species belonging to Flagelliphantes may be easily recognized in the male sex by the flagelliform patellar spine, and the large hood-like embolus thumb, and in the female sex by the strongly protruding epigyne with long and narrow posterior median plate.

Description: Small linyphiids: total length 1.65-2.10. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; Mt I-III: 1-0-0-0. Tml - 0,15-0,21; no trichobothria on metatarsus IV. Male palp: Patella with a flagelliform spine. Cymbium without basal outgrowths. Embolus (Fig. 16: A, B) rather small with large hood-like thumb. Epigyne relatively narrow, strongly protruding. Proscape long, S-shaped, more or less rigid. Posterior median plate hypertrophied, long and narrow with parallel sides. Abdomen grey to black, abdominal pattern absent.

Remarks: Judging from the shape of embolus this genus seems to be related to Anguliphantes n. gen. and Oryphantes HULL, 1932 gen. rev.

4.9. Genus Decipiphantes n. gen. (Fig. 16: D):

Type-species: Linyphia decipiens L. KOCH, 1879.

Species included: D. decipiens (L. KOCH, 1879) n. comb. ex Lepthyphantes.

Diagnosis: Species belonging Decipiphantes may be easily recognized in the male sex by rectangular thumb and the long and narrow proximal part of the embolus (Fig. 16: D) and in the female sex by the presence of a lateral outgrowth of the proscapus, and long posteriorly protruding lateral walls of the epigynal cavity, covering the distal part of the proscape.

Description: Small linyphiids: total length 1.70-2.10. Legs without dark bands. Chaetotaxy: Fe I: 0-1-0-0, II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; MT I-III: 1-0-0-0. Tm I: 0.21-0.25; no trichobothria on metatarsus IV. Male palp: Patella anteriodorsally with a cylindrical or conical outgrowth, bearing a special spine. Cymbium with basal outgrowth. Paracymbium simple. Embolus (Fig. 16: D) with a long and narrow proximal part. Lamella characteristica long and complex. Epigyne: Lateral walls long, posteriorly protruding, covering the distal part of the proscape. Proscape with lateral outgrowths. Abdomen grey to black, abdominal pattern absent.
4.10. **Genus Formiphantes** n. gen. (Fig. 16: C):

**Type-species:** *Taranucnus lephthyphantiformis* STRAND, 1907.

**Species included:** Only the type species *F. lephthyphantiformis* n. comb. ex Lepthyphantes.

**Diagnosis:** The only member of this genus is easily recognized according to the secondary proscape in the female epigyne. Males have the embolus in principle of the sickle-shaped type bearing small denticles at its proximal part (Fig. 16: C).

**Description:** Medium-sized linyphiids: total length 2.0 - 2.4. Chaetotaxy: Fe I: 0-1-0-0, II-IV: 0-0-0-0; Ti I: 2-1-1-0, II: 2-0-1-0, III-IV: 2-0-0-0; Mt I-III: 1-0-0-0. Tm I: 0.17 - 0.19, no trichobothria on metatarsus IV. Male palp: Patella with a special spine. Tibia with a mediadorsal bulge. Cymbium without basal outgrowths. Paracymbium relatively large, toothless. Embolic division with a short radix. Lamella characteristica relatively small, strongly sclerotized. Embolus (Fig. 16: C) sickle-like, basally dented. Epigyne (Figs 8: B; 9: A): with a secondary proscape bearing hairs on its external surface. Abdomen pale, without dorsal pattern.

**Remarks:** This genus deviates from all the other genera dealt with in this paper by having a curious extra structure in the epigyne, here called the secondary proscape. Although the sickle-shaped embolus of the male palp points in the direction of the genus *Lepthyphantes* it is too early to say anything about the relationship of this genus within the subfamily Micronetinae.

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5. **Literature:**


