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THE AFFINITIES OF *WUBANA* AND *ALLOMENGEA* WITH SOME NOTES ON THE LATTER GENUS (ARANEAE, LINYPHIIDAE)

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With 25 text-figures

INTRODUCTION

Allomengea, formerly known as *Mengea*, is a well-known genus in north-western Europe. It is a small genus with only four species, which, though locally abundant, are not at all common. The males are easily recognized by the palp, which is adorned with a bunch of modified spines standing on the tip of a horn-like projection of the cymbium. Because of the long, thin embolus, which corresponds with coiled membraneous tubes in the female vulva, the genus is placed in the tribus Linyphiini¹).

The genus appeared to be Holarctic, since Holm (1960) transferred the North American *Microneta pinnata* Emerton to *Allomengea* and at the same time published the first records from the extreme northwestern part of the Nearctic Region (Alaska) of *Allomengea scopigera* (Grube), which until then had only been known from Eurasia. This paper contains additional North American records of *Allomengea scopigera*, the first North American record of *Allomengea vidua* (L. Koch) (*warburtonii* O.P.-Cambridge), as well as a summary of all records, old and new of *A. pinnata* (Emerton). Also included in this paper is a fourth species, *Allomengea dentisetis* (Grube), which occurs in Siberia. It was originally described in *Micryphantes*, and closely resembles *A. pinnata*. Regretfully the name *A. warburtonii* must fall into the synonymy of the older *Allomengea vidua* (L. Koch).

Emphasis is laid on the distributions of all four species under consideration,

1) The "Familien-Gruppen" of Wiehle (1956) are here considered tribus and the endings of the names have been changed accordingly.

but our knowledge on the subject is much hampered by the lack of data from Asia. *Micryphantès dentisetis* Grube, described from Irkutsk, Siberia, was found to belong to *Allomengea*, and despite the poor condition of the holotype (a male with both palps missing) it is considered a synonym of *Allomengea pigra* (L. Koch). A decision on the status of this species, whether the subspecific counterpart of *A. pinnata* or a distinct Asian species, must be postponed until undamaged material becomes available.

The present paper includes a concise monograph on the genus *Allomengea*. The reason that *Wubana* is also discussed here lies in the conspicuous resemblance of the types of genitalia that occur in these two genera. A detailed description with illustrations of the genitalia of *Wubana drassoides* (Emerton) is included in this paper in order to demonstrate the striking similarities with *Allomengea*; full descriptions of the *Allomengea* species are to be found in the monographic part on that genus.

Even though the oldest known species of *Wubana* was described in *Bolyphantes*, an undisputed linyphiid genus in the tribus Lephyphantini, it was transferred to *Nematogmus* and later to *Sphecozone* by subsequent authors. Both these genera were unanimously considered to belong to the Erigonidae, and several authors made comments to that effect. Chamberlin & Ivie (1936), in their monograph on the genus, found that: "The spiders of this genus, in the field, have the appearance of true Linyphiids more than of typical Micryphantids [= Erigonidae]. However, the structural characters correspond to those of the latter group", and "The genus *Wubana* represents a distinct group of spiders in the Micryphantidae". Kaston (1948) also placed the genus in the Erigonidae, and so did Bonnet (1959) in his *Bibliographia Araneorum*. Apart from the small size it must have been the cephalothoracal modifications in the male that are responsible for these opinions.

The species of *Wubana* and *Allomengea* do not resemble each other in habitus. Some *Wubana* species have distinct abdominal patterns, others are more uniformly coloured. Most species are very small (between 2 and 3 mm). The long and slender legs have a very simple spination, which may be correlated with the small size. Many differences are also found in other characters. The positions of the trichobothria on the metatarsi are lower (less than 0.5); the cephalothorax of the male is modified and bears a horn with bristles. Taking all together, this certainly does not immediately suggest a close relationship with *Allomengea*, a relationship of which I am nevertheless quite convinced. As indicated above, the affinity of the two genera in the first place is suggested by the similarity in structure of the genitalia. The structure of the male palp of *Wubana* clearly shows that it cannot be

maintained in the Erigonidae, since it has all the characteristics of the Linyphiidae. And within this family, or subfamily, it unmistakably fits in the tribus Linyphiini. The transfer to the Linyphiidae is also warranted by the presence of two d-spines on tibia IV.

The strongly modified paracymbium (fig. 4), apparently adapted to the shape of the epigyne and serving as a tool to fasten the palp to the epigyne during copulation, is a common feature in the Linyphiidae, but to my knowledge does not occur in the Erigonidae. The large and strongly developed lamella (fig. 7, *l*), the ventral margin of which is curled over to the mesal side and thus forms a long curved sheath in which the embolus rests in the unexpanded palp, would be a unique structure in the Erigonidae, but is not uncommon in the tribus Linyphiini of the Linyphiidae. These are exactly the two characters that suggest the affinity of *Allomengea* and *Wubana*: (i) the modified paracymbium, that has the main branches pointing backwards and only a very short branch directed forwards, and (ii) the long thin embolus, that arises from a rather small radix, which has a strongly built base but tapers to a hair-like tip, and which follows the gutter-shaped margin of the large lamella (figs. 4, 6, 20 and 22).

Similar structures are found in several genera of the Linyphiini. In *Stemonyphantes* the long ribbon-shaped embolus follows a narrow groove that runs along the curved lateral margin of the lamella. In *Frontinellina* there is a roughly S-shaped lamella, the long antero-lateral arm of which is shaped as a sheath and holds the long ribbon-like embolus. In *Microlinyphia* the lamella has an upturned mesal brim that again, at least in the unexpanded palp, holds the long thread-like embolus. Apparently the development of a long embolus, that is paramount in this tribus, poses a mechanical problem. During copulation the long embolus has to be brought into the vulva of the female, where the long and usually coiled tubes must have evolved parallel with the embolus. It must be extremely difficult to find the entrance of the tube of the vulva with the fine tip of such a long embolus. It looks as if in all genera mentioned above — *Allomengea* and *Wubana* included — the problem has been solved in a similar way, by developing a specialized lamella with a sheath-like construction along one of its margins. The anterior tip of the lamella often has the form of a sclerotized tooth, suggesting that it functions as a path-finder for the embolus, with the sheath or groove ending at the base of this groove. The embolus now can be properly guided into the entrance of the vulva and is firmly supported while it is pushed in.

Of course it is possible that the Linyphiini constitute an unnatural assemblage of genera, that are characterized by a long embolus, and that all have developed the same type of lamella to meet the mechanical problems that

arise from the development of this type of embolus. In the Lepthyphantini — to select an example for comparison — we find the broad and flat type of embolus and a differently shaped lamella, that has quite a different function during copulation. The problem goes back then to the question whether there is a basic difference between the two types of embolus found in this family, or that the transition from the one to the other has occurred on several occasions during evolution. With other words, that genera with the same type of embolus not necessarily have a common ancestry. However, in the Linyphiidae the present grouping of genera into tribus is largely based on this character, in combination with other characters, and this seems to be satisfactory. It also agrees with the general view that genitalia should provide the more conservative characters.

SYSTEMATIC PART

With a view to facilitating comparison between *Wubana* and *Allomengea*, this section starts with *Wubana*. An enumeration of the most important characters is given for the type-species *Wubana drassoides* (Emerton). The genitalia are described in more detail since so much emphasis has been given to these organs in the introductory section. For an overall picture of *Wubana* the reader is referred to the monograph by Chamberlin & Ivie (1936).

Allomengea is treated in full at the end.

Wubana Chamberlin, 1919

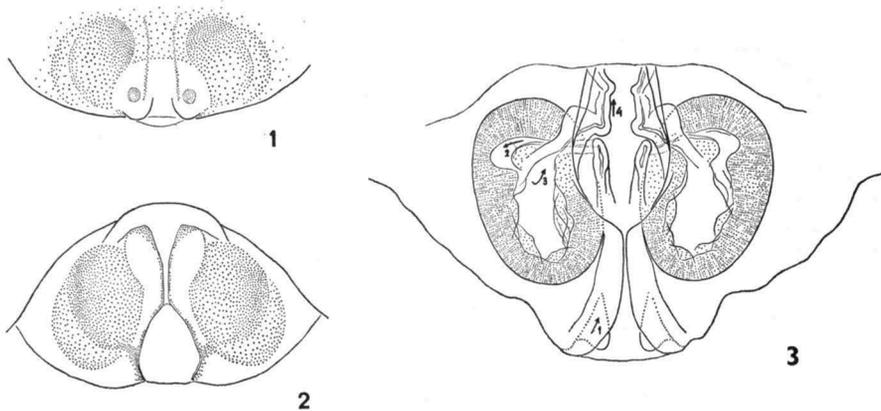
Wubana Chamberlin, 1919, Ann. Ent. Soc. Amer., 12: 252. Chamberlin & Ivie, 1936, Ann. Ent. Soc. Amer., 29: 85 (monograph).

Type-species: *Bolyphantes drassoides* Emerton, 1882 [= *Wubana drassoides* (Emerton)], by original designation.

Distribution. — *Wubana* comprises seven species in the Nearctic Region. One more species was described in the genus, viz., *Wubana hamulifer* Denis from Algeria (1936), while another, *Wubana waggae* (O.P.-Cambridge, 1873), from Siberia (Baikal Lake region), was transferred from *Erigone* to *Wubana* by Denis (1936). I have not seen specimens of these two species, but from the description of *Wubana hamulifer*, and notably from the illustrations that were added, it is clear that it cannot be a *Wubana*. "*Wubana waggae*", was listed by Bonnet (1958) under *Oedothorax* on the authority of Charitonow. The description and figures show the presence of a conical eminence on the cephalothorax with a long spine at the apex. The description of the palp is very short ("the palpal organs are well developed and complex, consisting of several corneous spines and processes, but none of a very

remarkable character"), the figure is not very helpful either. Without having examined the type-material I can only observe that *Oedothorax* is as likely a genus as *Wubana*.

As to the species of the Nearctic Region the reader is referred to the monograph of Chamberlin & Ivie (1936), which deals with six of the seven species included. Only *Wubana reminiscens* Chamberlin, 1948, has been added since.



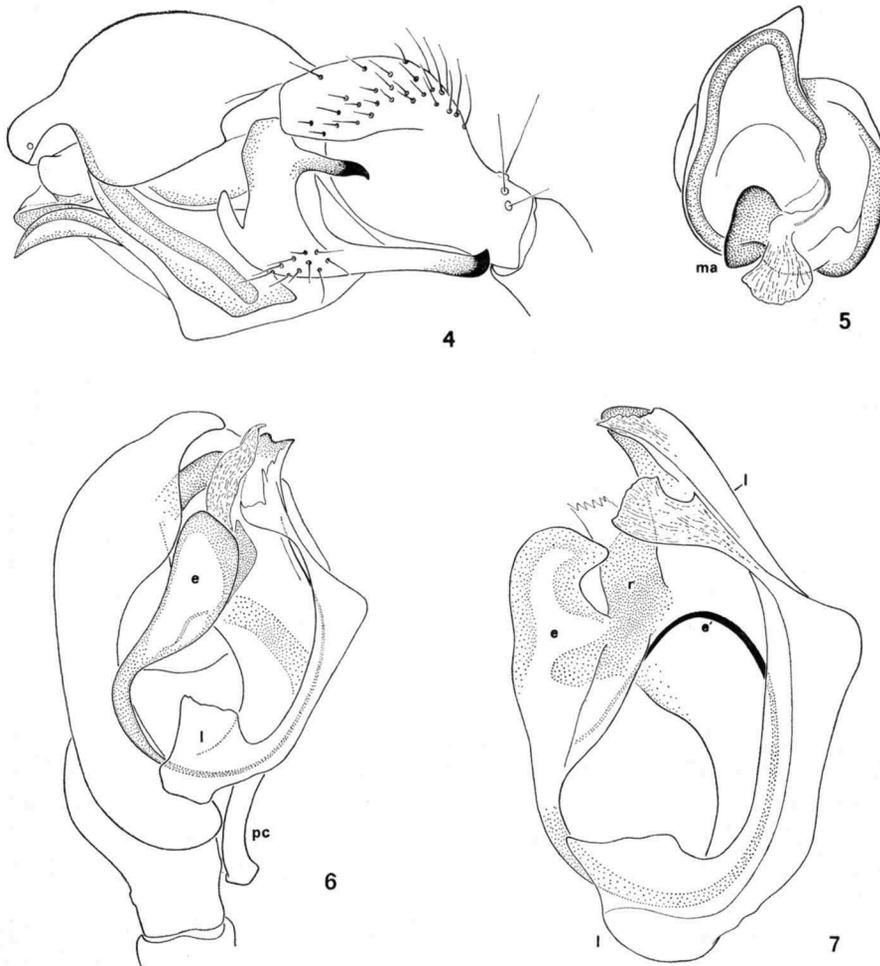
Figs. 1-3. *Wubana drassoides* (Emerton). 1, epigyne; 2, epigyne, posterior view; 3, vulva, dorsal view. 1, 2, $\times 150$; 3, $\times 225$.

Generic characters (based on *Wubana drassoides*, figs. 1-7). — Small spiders (1.9-2.8 mm). Cephalothorax of male with a conical horn behind the PME, bearing strong spines, which curve forwards; the anteriormost spine slightly flattened dorso-ventrally; cephalothorax of female without any trace of a horn. PME slightly less than one diameter apart and about half a diameter from PLE, AME smaller than other eyes and close to each other and to ALE. Chelicerae with 3 or 4 dorsal and 3 or 4 ventral teeth, the latter small and close together. Stridulating files well-developed, the ridges well-spaced.

Femora spineless. Patellae with 2 d-spines, the basal one very small and weak. All tibiae with 2 d-spines, but without any other spines. Metatarsi spineless. Position of d''-spine on tibia I 0.20-0.24, diameter of tibia I 0.11-0.12 mm. Ratio length to width of tibia I 8-9. Tm I 0.46-0.51, trichobothrium present on metatarsus IV. Femur I and tibia I of about equal length, and 1.0-1.05 (♀) to 1.1-1.15 (♂) times as long as cephalothorax.

Male palp (figs. 4-7). Tibia presenting a dorso-lateral lobe, which curves in antero-lateral direction, thus giving the segment a concave outer surface;

lobe beset with short spines on its outer surface; antero-mesal surface of lobe fitting against straight latero-proximal margin of cymbium. Cymbium prolonged meso-proximally, tip truncate. Paracymbium attached to cymbium close to the tip of the tibial lobe; element with a short anterior hook and two branches, which point backwards; the ventralmost of these long and slender, reaching backwards to the base of the tibia, its tip curved outwards; the dorsal branch equally slender, but half as long as the ventral one and directed more outwards; main body of element hairy on latero-ventral side.



Figs. 4-7. *Wubana drassoides* (Emerton). 4, male palp, lateral view; 5, tegular section with median apophysis (*ma*); 6, male palp, mesal view; 7, embolic section, with radix (*r*), embolus (*e*), and lamella (*l*). 4-6, $\times 150$; 7, $\times 232$.

Median apophysis (*ma*) a short, rounded lobe, at the base of which the spermduct leaves for the embolic section. Radix (*r*) small and inconspicuous, situated close to the base of the embolus. Embolus (*e*) of the long and thread-like type, lying in a loop at the mesal side of the palp, partly disappearing into a fold of the lamella. Lamella (*l*) large, only slightly shorter than the cymbium; ventral margin projecting angularly in the middle; ventral margin from base to tip curled over to the mesal side, forming a groove or sheath, through which the embolus completes its loop; curled-over part widened at the proximal end of the lamella, and with a small, subapical lobe near the distal tip.

Epigyne (figs. 1, 2) and vulva (fig. 3). Epigyne projecting, in side view of truncate, conical shape, posterior surface flat; entrances to the vulva situated on the truncated top surface. Tubes in vulva barely coiled, running backwards near mesal plane close to the ventral surface, then curving in dorsal direction and outwards, entering the receptacula at their antero-dorsal sides. Free tips of receptacula pointing to the tip of the epigyne. Fertilization-ducts leaving receptacula at their dorsal sides and reaching dorsal surface of epigyne at either side of the triangular mesal portion, which catches the eye in the posterior view (fig. 2).

The data presented here are based on the following material of *W. drasoides*.

Massachusetts. — 2 ♀, Middlesex Co., Concord, Walden Pond, sifted from leaf-litter, 24.iii.1970, W. A. Shear (ML). 2 ♂, Middlesex Co., Hammond Pond SW of Brookline, sifted from leaf-litter, 3.xii.1970, P. J. van Helsdingen (ML). 1 ♀, Barnstable Co., Cape Cod National Seashore, Province Lands area, 17.iv.1970, W. A. Shear (MCZ).

Michigan. — 2 ♂, Calhoun Co., Ott Biological Preserve, 18.x.1947, A. M. Chickering (MCZ).

Allomengea Strand, 1912

Pedina Menge, 1866, Preuss. Spinnen, 1: 125 (gen. nov.) (preoc.).

Mengea F.O.P.-Cambridge, 1903, Ann. Mag. Nat. Hist., (7) 11: 35 (new name for *Pedina* Menge; name already used in 1901) (preoc.).

Pedinella Dahl, 1909, Süswasserfauna Deutschlands, 12: 6 (new name for *Mengea* F.O.P.-Cambridge) (preoc.).

Allomengea Strand, 1912, Intern. ent. Zeitschr., 5: 346 (new name for *Mengea* F.O.P.-Cambridge).

The senior homonyms of the preoccupied names can be found in Bonnet (1955: 228).

Type-species: *Pedina cristata* Menge [= *Allomengea scopigera* (Grube)], by monotypy.

Distribution. — *Allomengea* is a Holarctic genus, with two species that appear to occur — with interruptions — throughout the northern parts of

both New and Old World, with one species in Siberia, and with one that seems restricted to North America. All species seem to prefer the same type of habitat, viz., swampy areas with a well-developed herbaceous stratum but only sparse covering by trees. And all have a late summer to early fall mating-period.

Diagnosis. — Small to medium-sized spiders (2.9-5.6 mm). Cephalothorax without modifications (cf. *Wubana*). Eyes of about equal size, the AME hardly smaller than the others. Chelicerae with 4 or 5 teeth in both rows. Stridulating files well-developed. Legs long and slender. Femora spineless, patellae with 2 d-spines. At least anterior tibiae with 1-spines and one or more v-spines, apical spines only on tibiae III and IV. Metatarsi usually bearing spines, occasionally anterior tibiae spineless. Position of d''-spine on tibia I between 0.20 and 0.35. Tm I 0.65-0.80, Tm IV present.

Male palps characterized by the proximo-dorsal protrusion, which bears modified setae at its tip and on the lateral surface. Paracymbium with main branches curved backwards, the interior one touching the ventral surface of the palpal tibia; anterior branch of paracymbium small and comparatively simple. Median apophysis not much developed. Lamella large, its proximal ventral border curled over, forming a sheath; distal part grooved and tapering to a narrow, usually slightly twisted point. Embolus long and thin, tapering to a hair-like tip; proximal end knob-shaped, attached to a very small and hardly developed radix; in the unexpanded palp embolus lying in the sheath and groove of the lamella.

Epigyne lightly sclerotized with few external characteristics. Vulva with coiled and twisted membraneous tubes leading from entrances, which lie close to or at the tip of the epigyne, towards the large receptacula seminis, which point backwards. Fertilization-ducts short, leading from receptacula to sides of mesal dorsal plate.

Allomengea scopigera (Grube)

(figs. 8-11)

Linyphia scopigera Grube, 1859, Arch. Naturk. Livl. Ehstl. Kurlands, (2) 1: 440, 470 (descr. ♂; Latvia (Latviya) near the town of Wenden [now Tsisis]).

Pedinella scopigera; Johansson, 1943, Ent. Tidskr., 64: 119 (Sweden).

Mengea scopigera; Simon, 1929, Arachn. France, 6 (3): 627, 742, figs. 948-950 (France). Forman, 1951, Scott. Nat., 63: 155 (Scotland; cit.). Hackman, 1951, Mem. Soc. Fauna Flora Fenn., 27: 78 (Finland, Sweden). Locket & Millidge, 1953, Brit. Spiders, 2: 403, figs. 242B, C, E (England, Scotland). Richter, 1953, Scott. Nat., 65: 100 (Scotland; cit.). Millidge & Locket, 1955, Ann. Mag. Nat. Hist., (12) 8: 172 (England). Wiehle, 1956, Tierw. Deutschl., 44: 283, figs. 468-471 (Germany). Eggeling, 1957, Scott. Nat., 69: 52 (Scotland). Braendegard, 1958, Zool. Iceland, 3(54): 2, 89, 95, 105, 109, figs. 87, 88 (Iceland). Locket, Millidge & La Touche,

- 1958, Ann. Mag. Nat. Hist., (13) 1: 146 (England, Wales). Parker, 1958, Ent. Month. Mag., 94: 282 (Scotland); 1961, Bull. Flatford Mill Spid. Gr., 11: 5 (England). Heydemann, 1960, Verh. Deutsch. Zool. Ges., 1960: 437 (Germany); 1960, Abh. math. naturwiss. Kl. Akad. Wiss. Liter. Mainz, 1960 (11) (not seen); 1964, Faun. Mitt. Norddeutschl., 2: 138 (Germany). Cooke, 1961, Ent. Month. Mag., 97: 252 (England); 1962, Ent. Month. Mag., 98: 22 (England); 1963, Suffolk Nat. Trans., 12 (3): 171 (England). Von Broen, 1962, Zool. Anz., 169: 403 (Germany). Duffey, 1963, Field Studies, 1: 4, 23 (England). Merrett, 1965, Bull. Brit. Spid. Study Gr., 26: 6 (England); 1967, Bull. Brit. Spid. Study Gr., 34: 6 (England); 1969, Bull. Brit. Arachn. Soc., 1: 21 (England). Beer, 1964, Zool. Zhurn., 43: 527, fig. 4 (Russia). Palmgren, 1964, Comment. Biol., 27 (1): 10 (Finland); 1965, Comment. Biol., 27 (7): 5 (Finland). Duffey & Locket, 1961, Bull. Flatf. Mill Spid. Gr., 9: 2, 3 (England). Hiebsch, 1965, Archiv Natursch. Landforsch., 5: 228 (Germany). Buchar, 1967, Opera Corcontica, 4: 83 (Czechoslovakia). Van Heerdt & Bongers, 1967, Tijdschr. Ent., 110: 111, 123 (Netherlands). Ribolla, 1968, Bull. Brit. Spid. Study Gr., 38: 12 (England). Mackie, 1968, Bull. Brit. Spid. Study Gr., 40: 4 (Scotland). Huhta, 1971, Ann. Zool. Fennici, 8: 537 (Finland). Hauge, 1971, Norsk Ent. Tidsskr., 18: 27 (Norway).
- Allomengea scopigera*; Holm, 1960, Zool. Bidr. Uppsala, 33: 110, 125 (Alaska); 1973, Zool. Scripta, 2: 90 (Siberia). Cooke, 1967, Journ. Nat. Hist., 1: 147 (Scotland). Larsen & Bøggild, 1970, Ent. Meddel., 38: 344 (Denmark). Proszynski & Starega, 1971, Katal. Fauny Polski, 33: 101 (catal., Poland). Koponen, 1971, Lounais-Hämeen Luonto, 43: 43 (Finland). Tyshchenko, 1971, Opredel. Pauk. Europ. Chasti SSSR: 214 (USSR).
- Pedina cristata* Menge, 1866, Preuss. Spin.: 125, pl. 23 figs 49A-O (Germany).
- Linyphia sitkaensis* Keyserling, 1886, Spinnen Amerikas, 2 (2): 86, pl. 14 fig. 180 (Alaska).
- Helophora sitkaensis*; Chamberlin & Ivie, 1947, Bull. Univ. Utah, 37 (10): 56 (comb. nov.; Alaska). Ivie, 1967, Journ. New York Ent. Soc., 75: 130 (= *Allomengea scopigera*).
- For a complete list of references up to 1939, see Bonnet, 1955, under *Allomengea scopigera* (Grube) (p. 229), and 1957, under *Linyphia sikkensis* [!] Keyserling (p. 2529).

Types. — Of the synonyms listed above I have seen the type of one only: ♀ holotype of *Linyphia sitkaensis* Keyserling, from Sitka, Alaska (property of U.S. National Museum, Washington, at present in the American Museum of Natural History, New York).

Description. — Measurements in mm. Male, total length 3.35-4.5; cephalothorax, length 1.65-2.0, width 1.35-1.5; chelicerae, length 0.70-0.87, width 0.31-0.40. Female, total length 3.2-5.6; cephalothorax, length 1.4-2.25, width 1.10-1.65; chelicerae, length 0.62-1.02, width 0.32-0.47.

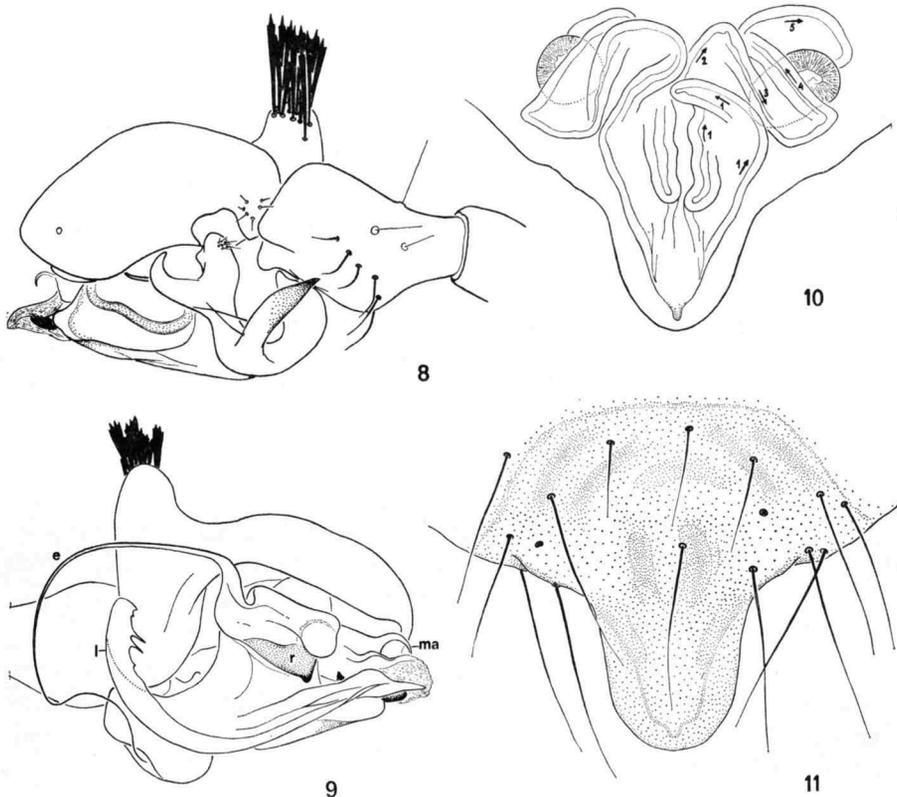
Cephalothorax light brown with darker striae, mouthparts brown. Legs light brown with even, light grey suffusion. Abdomen greyish, posterodorsally with greyish bars separated by lighter interstices; ventrally with lighter area in the middle.

Eyes of subequal size, the AME close together, the lateral eyes touching. PME one diameter apart or more and separated by the same distance or slightly more from the PLE, distance to AME distinctly larger. Chelicerae

with four strong dorsal teeth and four smaller ventrals. Height of clypeus 0.18-0.21 of length cephalothorax in males, 0.15-0.18 in females.

Legs slender, length femur I 1.05-1.2 times as long as cephalothorax in males, 1.0-1.1 times in females; 1/d tibia I 10-12 in males, 8-9 in females. Leg IV longer than leg I in both sexes. Measurements in mm (specimens from Kotzebue, Alaska):

	♂					♀			
	I	II	III	IV	palp	I	II	III	IV
Fe	2.12	2.05	1.75	2.20	1.00	1.65	1.65	1.40	1.80
Pa	0.52	0.50	0.47	0.47	0.35	0.50	0.50	0.50	0.45
Ti	2.05	2.00	1.52	2.12	0.45	1.65	1.55	1.25	1.75
Mt	1.97	1.92	1.57	2.15	—	1.45	1.45	1.20	1.65
Ta	1.17	1.12	0.87	1.12	0.65	0.90	0.90	0.70	0.90



Figs. 8-11. *Allomengea scopigera* (Grube). 8, male palp, lateral view; 9, do., mesal view; 10, vulva; 11, epigyne; (*l*, lamella; *e*, embolus; *r*, radix; *ma*, median apophysis). 8, 9, $\times 70$; 10, $\times 140$; 11, $\times 150$.

Chaetotaxy. Femora and patella as in the other two known species of the genus. Spination of tibiae distinctly different from the other species in having — besides two dorsal, one I' and one I''-spine — two pairs of ventral spines; on tibiae III and IV apical pair of v-spines sometimes reduced to a single v'-spine (on tibia IV) or lacking (tibia III); a whorl of apical spines present on tibiae III and IV. Metatarsi with one v' and one v''-spine, posterior metatarsi with additional d and l-spines.

Length of d''-spine on tibia I 0.26-0.34 mm in males, 0.31-0.37 mm in females; diameter of tibia I 0.17-0.20 mm in males, 0.16-0.24 mm in females. Position of d''-spine on tibia I 0.22-0.26 (♂) and 0.24-0.29 (♀). Tm I 0.74-0.80; all metatarsi with one (on III) or two smaller and less conspicuous trichobothria proximally of main trichobothrium (not present in other species).

Male palp (figs. 8, 9). Tibia without the ventral extension of *A. pinnata*. Cymbium (length 0.57-0.62 mm) characterized by the shape of the proximo-dorsal horn, which is broader, shorter and more roundish than in the other species, and which stands perpendicular to the cymbium proper; 9-12 modified spines at apex. Paracymbium large, the outer branch blade-like and curved in postero-dorsal direction, the inner branch lying close against the ventral surface of the tibia with its broad tip that curves forwards (cf. *pinnata*). General shape of other elements as in *pinnata* and *vidua* the main differences being found in the size of the elements (in *scopigera* smaller than the others) and shape.

Epigyne (fig. 11) and vulva (fig. 10). General shape intermediate between the short epigyne of *vidua* and the long, protruding one of *pinnata*. Slit-like entrances of spirally coiled tube on dorsal side, tubes leading to receptacula seminis that are surrounded by the coils of the tube, tips of receptacula pointing backwards and inwards. Fertilization-ducts leading directly from receptacula to dorsal surface.

Distribution. — In Europe, *A. scopigera* has been recorded from the following countries; Eire, Scotland, Wales, England, France (north-east only), Netherlands, Germany, Czechoslovakia, Poland, Denmark, Norway, Sweden, Finland, and the U.S.S.R. There also is a record from Iceland. Bonnet (1955: 230) listed Switzerland, referring to a paper by Schenkel (1930), that in reality deals with spiders from Kamtchatka. I do not know of any recent record from Switzerland. I cannot suppress an, in my opinion possibly incorrect, record from Italy by Di Caporiacco. In his paper of 1927 (Mem. Soc. Ent. Ital., 5) he recorded 1♀ from Pesariis in the Karnische Alpen, a village at about 750 m above sea-level (p. 93, as *Centromerus scopiger*

(Grube)). This record lies so far outside the known range, that I would like to see it confirmed before accepting it.

There are several records from Central Siberia, and the species also has been found in Kamtchatka (a.o. Schenkel, 1930), Alaska and Canada (Manitoba, this paper).

The distribution in Europe is hardly different from that of *A. vidua*. The two species in fact repeatedly were reported to have been collected together in the same habitat (cf. F.O.P.-Cambridge, 1892; Von Broen, 1962; Cooke, 1967), which again can be characterized as wet and marshy. Both species were often found on plants near the water, apparently without webs. Only Roewer (1928) indicated a different habitat: "... in Detritus, unter Steinen".

Material examined.

Alaska. — 2 ♀ 6 ♂, Kotzebue, 13-14.viii.1958, C. Lindroth (MCZ; Holm, 1960). 1 ♀, Nome, 11-12.viii.1958, C. Lindroth (MCZ; Holm, 1960). 1 ♀ 1 ♂, Circle, 24.viii.1936, S. Williams (MCZ). 2 ♀, Tanana, 21.viii.1936, S. Williams (MCZ). 2 ♂, between Fairbanks and Circle (Steese Highway, Mile 68), 13.viii.1968, W. Ivie (AMNH). 4 ♀, 18 mi. NE of Fairbanks, Steese Highway, 11.viii.1968, W. Ivie (AMNH). 1 ♀, Katmai National Monument, Brooke Lake, viii-ix.1962, K. R. Troutman (AMNH). 1 ♀, Sitka (holotype (?)) of *Linyphia sitkaensis* Keyserling; AMNH).

Manitoba. — 1 ♀ 2 ♂, Churchill, 3.viii.1937, D. G. Denning (AMNH).

Without locality. — 1 ♀, labelled *Linyphia sitkaensis*, Nathan Banks Coll. (MCZ).

Europe. — For comparison the following specimens were used: 2 ♀ 2 ♂, England, Yorkshire, Malham, ix.1961, P. Merrett (his private collection). 1 ♀ 1 ♂, Sweden, Boh. Skafto, Grundsunda, 18.viii.1942, A. Holm (MCZ).

Siberia, Kamtchatka. — 2 ♀ 8 ♂, Achomtenbay, 10.ix.1920, Swedish Kamtchatka Expedition 1920-1922 (Schenkel, 1930; 1 ♀ 7 ♂ in MS, 1 ♀ 1 ♂ in NMB).

Allomengea vidua (L. Koch) (= *Allomengea warburtonii* (O.P.-Cambridge)) (figs. 12-16)

Linyphia vidua L. Koch, 1879, Kongl. Svenska Vet.-Akad. Handl., 16 (5): 24, fig. 11 (descr. ♀, Siberia). Holm, 1973, Zool. Scripta, 2: 90 (= *Allomengea warburtonii*).

Tmeticus warburtonii O.P.-Cambridge, 1889, Proc. Dorset Nat. Hist. Antiquar. Fld. Club, 10: 115 (descr. ♀ ♂, England).

Mengea warburtoni; Simon, 1920, Arachn. France, 6(3): 627, 742, figs. 951-952 (France). Bristowe, 1939, Comity Spid., 1: 99 (distribution Great Britain). Denis, 1934, Bull. Soc. Ent. France, 39: 144 (France); 1947, Entomologiste, 3: 234 (France). Locket & Millidge, 1953, Brit. Spiders, 2: 404, figs. 242A, D (England); Locket, 1964, Ann. Mag. Nat. Hist., (13) 7: 276 (neotype selection). Millidge & Locket, 1955, Ann. Mag. Nat. Hist., (12) 8: 170 (England). Wiehle, 1956, Tierw. Deutschl., 44: 286, figs. 472-475 (Germany). Chrysanthus et al., 1959, Ent. Ber., 19: 184 (Netherlands). Hulsebos, 1961, Ent. Ber., 21: 4 (Netherlands). Parker, 1961, Bull. Flatford Mill Spid. Study Gr., 11: 6 (England); 1962, Ann. Mag. Nat. Hist., (13) 5: 222 (England). Casemir, 1962, Gewässer und Abwässer, 30/31: 20, fig. 6 (Germany). Von Broen, 1962, Zool. Anz., 169: 403 (Germany). Pilawski, 1963, Przegląd Zool., 7:

- 46 (Poland). Mackie, 1963, Rep. Lancashire & Cheshire Fauna Comm., 33: 56 (England); 1965, Rep. Lancashire & Cheshire Fauna Comm., 35: 3 (England); 1966, Bull. Brit. Spid. Study Gr., 29: 6 (England). Van Helsdingen, 1963, Zool. Verh., 62: 32 (Netherlands). Jerrard, 1964, Ent. Month. Mag., 99: 184 (England). Merrett, 1965, Bull. Brit. Spid. Study Gr., 26: 6 (England); 1967, Bull. Brit. Spid. Study Gr., 34: 6 (England); 1969, Bull. Brit. Arachn. Soc., 1: 21 (England). Nellist, 1965, Bull. Brit. Spid. Study Gr., 26: 2 (England). McHugh, 1966, Bull. Brit. Spid. Study Gr., 29: 8 (England). Crocker, 1967, Bull. Brit. Spid. Study Gr., 34: 11 (England). Herzog, 1968, Veröff. Bez.-heimatmus. Potsdam, 16 (= Beitr. Tierw. Mark, 5): 8 (Germany). Buchar, 1968, Acta Univ. Carol., Biol., 1967: 294 (Czechoslovakia). Duffey, 1970, Guides Wicken Fen, 7: 6 (England).
- Allomengea warburtoni*; Miller, 1951, Prirod. Sborn. Ostravsk. Kraje, 12: 224, figs. 22-27 (Czechoslovakia). Merrett, 1963, Proc. Zool. Soc. London, 140: 383, fig. 40 (structure of ♂ palp). Lehtinen, 1964, Ann. Zool. Fennici, 1: 305 (Finland). Cooke, 1967, Journ. Nat. Hist., 1: 147-148 (Scotland). Larsen & Bøggild, 1970, Ent. Meddel., 38: 344 (Denmark). Proszynski & Starega, 1971, Katal. Fauny Polski, 33: 101 (catal., Poland). Holm, 1973, Zool. Scripta, 2: 90 (synonym of *Linyphia vidua*).
- Centromerus probabilis* O.P.-Cambridge, 1908, Proc. Dorset Nat. Hist. Antiquar. Fld. Club, 29: 174, 190, pl. A figs. 20-23. Bristowe, 1939, Comity Spid., 1: 99 (= *Mengea warburtoni*).
- Pedinella marchica* Dahl, 1909, Süßwasserfauna Deutschl., 12: 8 (diagn., Germany). Wiehle, 1956, Tierw. Deutschl., 44: 286 (= *Mengea warburtoni*).
- For a complete list of references up to 1939, see Bonnet, 1955, under *Allomengea marchica* (Dahl) (p. 228) and *Allomengea warburtoni* (O.P.-Cambridge) (p. 230), and Bonnet, 1957, under *Linyphia vidua* L. Koch (p. 2538).

Types. — A neotype (♂) of *Tmeticus warburtonii* was selected by Locket (1964: 276) from the O.P.-Cambridge collection at Oxford, England. Type-locality: Southport (Lancashire) in England. Holotype (♀) of *Linyphia vidua* from Krasnoyarsk, Siberia, present in the Naturhistoriska Riksmuseet, Stockholm (examined). The original material of the other synonyms could not be located.

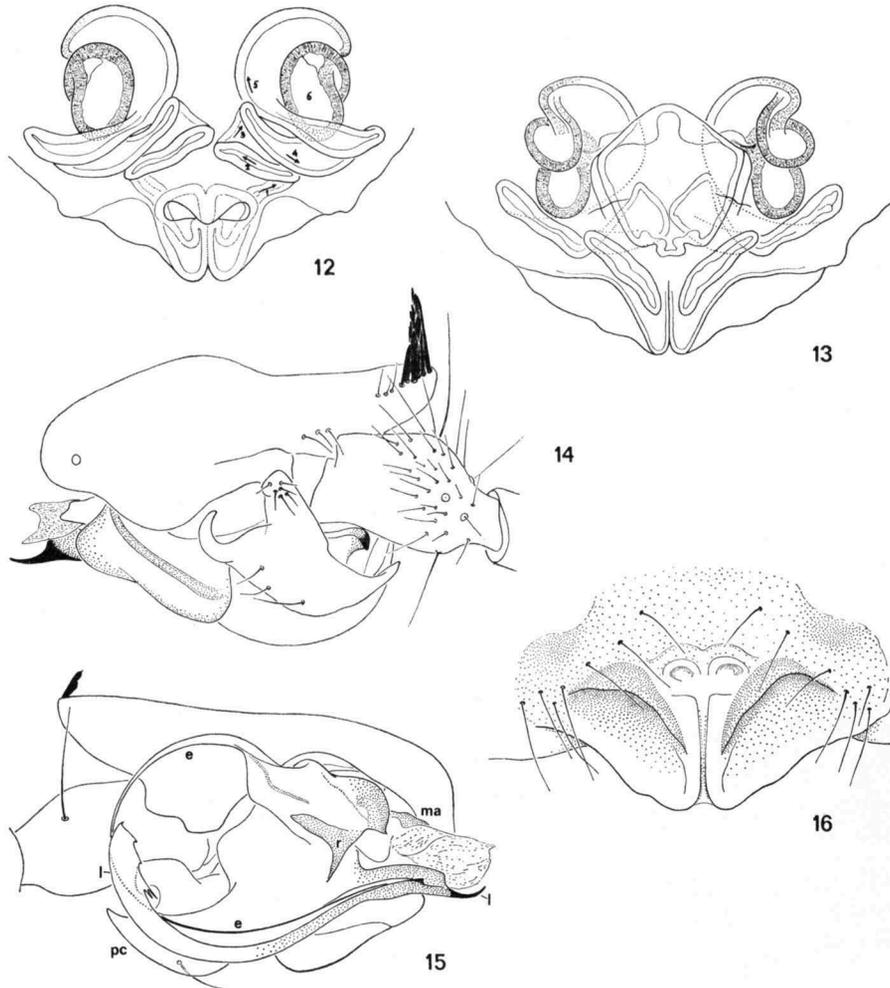
Remarks. — Until very recently this species was known (as *A. warburtonii*) from Europe only. The consequence of Holm's (1973: 90) discovery that *Linyphia vidua* L. Koch relates to the same species is twofold. In the first place *warburtonii*, regrettably, has to be replaced by *vidua*, the latter being the oldest name. And in the second place, more important and less annoying, it means that this species, too, occurs in Siberia. An adult ♂ specimen from Ontario, Canada, proves its range to extend to the Nearctic Region. The only available specimen from Siberia, the ♀ holotype of *Linyphia vidua*, is relatively small with a cephalothorax length of 1.45 mm, as opposed to 1.60-1.75 mm in European specimens.

Description. — Measurements in mm. Male, total length 2.9-3.4; cephalothorax, length 1.45-1.50, width 1.15-1.22; chelicerae, length 0.62-0.67, width

0.29-0.30. Female, total length 3.8-4.3; cephalothorax, length 1.45-1.75, width 1.12-1.35; chelicerae, length 0.65-0.77, width 0.31-0.36.

Whole animal dull brown, abdomen with faintly visible pattern of greyish cross-bars, legs evenly coloured, sternum and mouth-parts suffused with grey.

Eyes of subequal size, the AME close together, the lateral eyes touching, the PME less than one diameter apart and less than one diameter from PLE,



Figs. 12-16. *Allomengea vidua* (L. Koch). 12, vulva, ventral view; 13, vulva, dorsal view; 14, male palp, lateral view; 15, do, mesal view; 16, epigyne; (*pc*, paracymbium; *l*, lamella; *e*, embolus; *r*, radix; *ma*, median apophysis). 12, 13, $\times 140$; 14, 15, $\times 84$; 16, $\times 150$.

but removed from AME by slightly more than their diameter. Chelicerae with four large dorsal teeth and four small ventrals, as in *pinnata*. Stridulating files well-developed. Height of clypeus 0.15-0.17 of length of cephalothorax in females, 0.19 in males.

Legs fairly slender, especially in the male. Femur I 1.2 times as long as cephalothorax in males, slightly shorter to slightly longer than cephalothorax (0.9-1.1) in females; 1/d tibia I 11-12 in males, 8-9 in females. Legs IV barely longer than legs I in either sex. Measurements of segments in mm (♂ from Ontario, Canada, ♀ from Netherlands):

	♂					♀				
	I	II	III	IV	palp	I	II	III	IV	
Fe	1.80	1.72	1.42	1.87	0.75	Fe	1.75	1.75	1.45	1.82
Pa	0.45	0.45	0.40	0.40	0.25	Pa	0.52	0.50	0.45	0.50
Ti	1.77	1.70	1.27	1.77	0.31	Ti	1.75	1.60	1.27	1.77
Mt	1.65	1.60	1.27	1.77	—	Mt	1.52	1.50	1.25	1.70
Ta	1.02	1.00	0.75	0.95	0.67	Ta	1.02	0.95	0.75	0.92

Chaetotaxy not differing from that of *pinnata*. Femora spineless, patellae with two short dorsal spines. Anterior tibiae, beside the usual d-spines, with one l' and one l''-spine, and one pair of v-spines, sometimes reduced to a single v' or v''-spine; posterior tibiae with one l', one v'-spine and a pair of short apical lateral spines. Metatarsi I and II spineless, III with one d and one v-spine, IV with one d, one v, and one l'-spine.

Length of d''-spine on tibia I 0.22 mm in males, 0.25-0.29 mm in females; position of this spine 0.25-0.33, diameter of tibia I at base of d''-spine 0.16-0.20 mm in females, 0.15-0.16 mm in males. Tm I 0.69-0.72; only one trichobothrium present on metatarsi (cf. *scopigera*).

Male palp (figs. 14, 15). Tibia without the conspicuous ventral prolongation of *pinnata*, more regularly shaped with widest part in the middle. Cymbium (length 0.67 mm) with a proximal projection which points backwards rather than dorsad (cf. *pinnata*) and bears nine modified spines on its lateral surface from the tip downwards, followed by three unmodified short spines. Paracymbium large, with a short and curved anterior branch, and with the relatively broad central part prolonged backwards into a slender tip, which curves in dorsal direction; and moreover with a short meso-dorsal branch, arising halfway between the posterior tip and the very base of the element where it is connected with the cymbium, this meso-dorsal branch with a broad, curved tip, that touches the ventral surface of the palpal tibia. Median apophysis less conspicuous than in *pinnata*. Other elements comparable with

pinnata in general shape, except for the embolus, which is shorter proportionally than in *pinnata*.

Epigyne (fig. 16) and vulva (figs. 12, 13). Epigyne much shorter than in *pinnata* and *scopigera*. In the ventral aspect tip appearing blunt, indented medially and with a cleft on the ventral and posterior surfaces; postero-lateral surfaces broadly impressed, the impressions bordered at the meso-anterior sides by a sclerotized (reddish brown), curved lamellar ridge. Entrances to the vulval tubes situated on ventral surface in front of the mesal cleft and between the two lamellar ridges. Vulva showing several loops of membraneous tube leading from either entrance to the receptacula seminis (course to be followed by the embolus indicated by consecutively numbered arrows); receptacula seminis with their tips pointing in posterior direction and situated rather centrally.

Distribution. — For forty years after its discovery in England, the present species, then known under the name of *Mengea warburtonii*, seemed restricted to the British Isles. Only then it was found in France (Simon, 1929, and later Denis, 1934), at two localities in the north-west only. From Germany we have an early record by Dahl (1909) of *Pedinella marchica*, which was recognized as conspecific with the present species by Wiehle (1956). During the last two decennia the species has also been found in Scotland (Cooke, 1967; Merrett, 1967), the Netherlands (Chrysanthus et al., 1959; Hulsebos, 1961; Van Helsdingen, 1963), Denmark (Larsen & Bøggild, 1970), Finland (Lehtinen, 1964), Poland (Pilawski, 1963) and Czechoslovakia (Miller, 1951; Buchar, 1968). Many new records for the British Isles and Germany have also been published. As to the number of records the British Isles still outdo all other countries.

The species is rare but locally abundant, and it can be collected in large numbers when one happens to find the preferred habitat (cf. Herzog, 1968). All authors agree in that the species occurs in extremely wet situations, as do the other species of the genus. The records range from July (few), through August and September.

To my knowledge the records from Poland and Czechoslovakia indicate the eastern boundary of the known distribution in Europe. The only known locality in Siberia is Krasnoyarsk on the Yenisey River, the type-locality of *Linyphia vidua*. So far *A. vidua* has not been recorded from the European part of the U.S.S.R. The first record for North America is given in this paper. We may expect additional records from the Nearctic Region.

Material examined.

Canada. — 1 ♂, 1 subadult ♀, Ontario, Sturgeon Falls, 22.vii.1948, W. J. Gertsch, W. Ivie, T. B. Kurata (AMNH).

England. — 1 ♀ 1 ♂, Norfolk, Horsey Warren, ix.1959, P. Merrett (his private collection).

Netherlands. — 2 ♀, Gelderland, Voorst, 29.ix.1961, P. J. van Helsdingen (ML).

U.S.S.R., Siberia. — 1 ♀, Krasnoyarsk, 9-12.x.1875, Nordenskiöld and Stuxberg (holotype of *Linyphia vidua* L. Koch; MS)

Allomengea pinnata (Emerton)

(figs. 17-23)

Microneta pinnata Emerton, 1915, Trans. Connecticut Acad. Arts Sci., 20: 152, figs. 1-1a (descr. ♂, Saskatchewan; *M. plumosa* in explanation of figures); 1920, Trans. R. Canad. Inst., 12: 320 (catalog; Saskatchewan, New Hampshire). Freitag, Ozburn & Leech, 1969, Canad. Ent., 101: 1332 (Ontario, cit.).

Allomengea pinnata; Holm, 1960, Zool. Bidr. Uppsala, 33: 125 (comb. nov.; is different from *A. scopigera* (Grube) and *A. warburtoni* (O.P.-Cambridge)). Ivie, 1967, Journ. New York Ent. Soc., 75: 130 (synon.). Van Helsdingen, 1972, Zool. Verh., 124: 9 (catalog).

Linyphia ontariensis Emerton, 1925, Canad. Ent., 57: 68, figs. 5a-e (descr. ♀ and subadult ♂; Ontario). Kurata, 1939, Canad. Field Nat., 53: 82 (faunal list; Ontario). Ivie, 1967, Journ. New York Ent. Soc., 75: 130 (= *Allomengea pinnata*).

Helophora ontariensis; Blauvelt, 1936, Festschr. Strand, 2: 154, figs. 101-104 (comb. nov.; descr. ♀; Ontario, New York). Chamberlin & Ivie, 1947, Bull. Univ. Utah, 37 (10): 56, fig. 79 (Alaska). Hackman, 1954, Acta Zool. Fennica, 79: 5, 51 (Newfoundland). Ivie, 1967, Journ. New York Ent. Soc., 75: 130 (= *Allomengea pinnata*).

In Bonnet (1957) the species is to be found under *Linyphia ontariensis* Emerton (p. 2521) and *Microneta pinnata* Emerton (p. 2901).

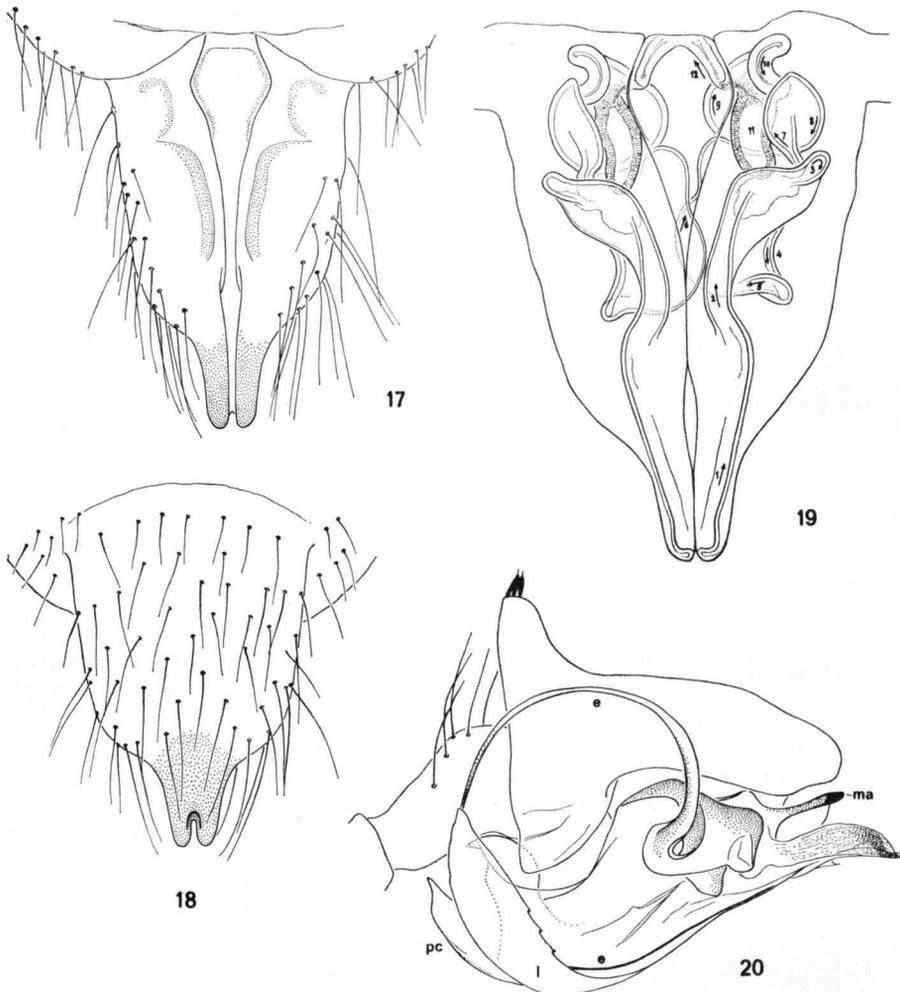
Types. — ♂ holotype of *Microneta pinnata* Emerton, from Prince Albert, Saskatchewan, Canada, in MCZ (examined). The original material of *Linyphia ontariensis* could not be located.

Description. — Measurements in mm. Male, total length 3.6-4.3; cephalothorax, length 1.87-2.32, width 1.42-1.72; chelicerae, length 0.97-1.02, width 0.39-0.47. Female, total length 3.7-5.2; cephalothorax, length 1.6-2.27, width 1.27-1.82; chelicerae, length 0.70-1.05, width 0.36-0.50.

Cephalothorax brown, of variable intensity, with darker radiating streaks and margins. Eyes of subequal size, AME hardly smaller than PME, the latter separated by 0.5-0.7 of their diameter; distance from PLE slightly less than one diameter. AME closer together, separated by one-fourth or less of their own diameter, removed from the PME by one diameter of the latter. Lateral eyes touching, ALE slightly larger than PLE, but neither very different from PME, PME with black triangles in front and behind. Height of clypeus 0.20-0.23 of length of cephalothorax in the males, 0.18-0.21 in females.

Chelicerae brown, a shade darker than the cephalothorax; strong and slightly diverging on apical halves in males, with parallel outer surfaces in females. Four strong dorsal teeth, of equal size and build and evenly spaced, in females basalmost tooth slightly shorter than others; four small teeth in ventral row, close together and near the tip of the chelicera. Stridulating files distinct. Mouthparts and sternum with light grey suffusion on brown and light brown integuments, respectively.

Legs uniformly yellow-brown. Rather long and slender, length femur I



Figs. 17-20. *Allomengea pinnata* (Emerton). 17, epigyne, dorsal view; 18, epigyne, ventral view; 19, vulva, dorsal view; 20, male palp, mesal view. 17, 18, $\times 70$; 19, $\times 93$; 20, $\times 56$.

1.15-1.25 times length cephalothorax in the males, 1.0-1.2 times in the females; 1/d tibia I ca. 12 in males, 8.5-10.5 in females. Legs I and IV about equal in length. Measurements in mm (specimens from Fowl Meadow Reservation, Massachusetts):

	♂					♀				
	I	II	III	IV	palp	I	II	III	IV	
Fe	2.50	2.37	1.90	2.47	1.15	Fe	2.37	2.25	1.92	2.50
Pa	0.62	0.57	0.52	0.52	0.35	Pa	0.67	0.62	0.55	0.57
Ti	2.47	2.27	1.67	2.37	0.49	Ti	2.25	2.12	1.60	2.30
Mt	2.40	2.25	1.75	2.40	—	Mt	2.05	1.97	1.57	2.12
Ta	1.42	1.32	0.92	1.20	0.82	Ta	1.25	1.17	0.87	1.10

Chaetotaxy. Femora spineless, patellae with two very short dorsal spines.

Ti I	d'' v' l'' d'	, in females (v''v'') instead of v'
II	d'' v' l'' d'	, in females (v''v'') instead of v'
III	d'' v' l' d' (l'_a l''_a)	
IV	d'' v' l' d' (l'_a l''_a)	

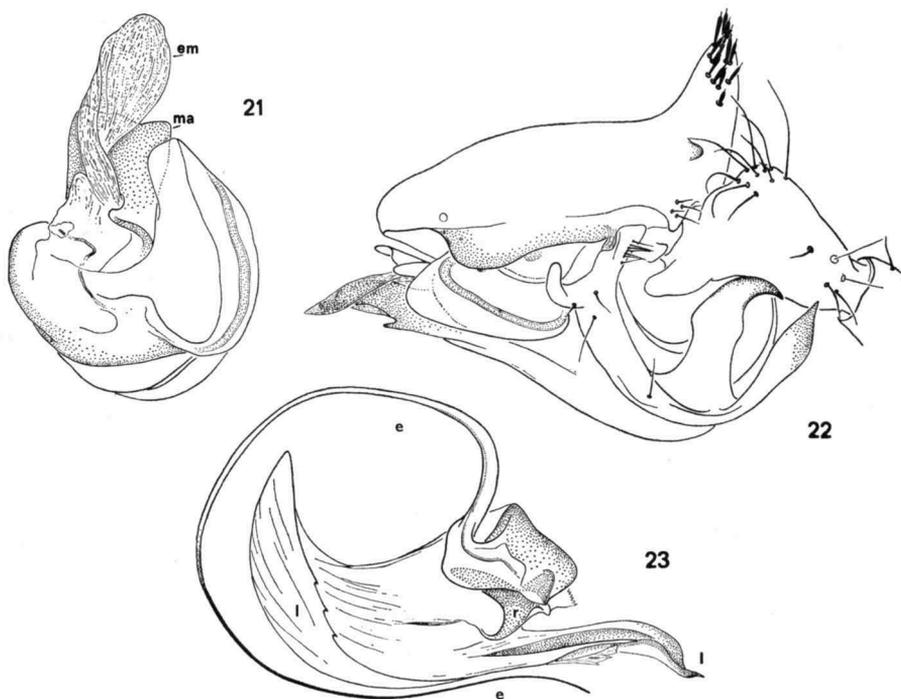
Mt I-II spineless; III one d-spine; IV one d and one v-spine. Chaetotaxy variable as to the v-spines of tibia I and II in that a v''-spine occasionally can be found on these tibiae in males, while exceptionally the v''-spine may be missing in females.

Length of d''-spine on tibia I 0.20-0.22 mm in males, 0.29-0.36 mm in females; diameter of tibia I 0.19-0.23 mm in males, 0.19-0.26 mm in females. Position of d''-spine on tibia I 0.23-0.33. Tm I 0.66-0.75; only one trichobothrium present on all metatarsi (cf. *scopigera*).

Abdomen. Females rather darkly pigmented on ventral and lateral surfaces, with a pattern of dark triangles, V-shaped bands and cross-bands on the lighter, grey to beige-coloured dorsal surface; pattern restricted to posterior two-thirds. Males more uniformly dark, pattern faintly discernible or absent.

Male palp (figs. 20-23). Tibia ventrally prolonged into a blunt projection; dorsal surface bulging, abruptly descending distally to connection with cymbium; most elevated parts bearing thick spines. Cymbium (length 0.77-0.86 mm) with a conspicuous proximal horn, which curves in dorsal direction and bears about 15 modified spines on its lateral surface from the tip downwards. Paracymbium very large, only narrowly connected with cymbium, with a short arm close to the base, curved in anterior direction, and with a long, forked branch which curves backwards, the fork situated at the ventral-most part of the element, with an outer and an inner branch; outer branch about straight, blade-like and with sharp tip, inner branch also blade-like, but

curved backwards and lying with the curved apical part against the concave ventral surface of the tibia. Subtegulum and tegulum small and not very conspicuous in the lateral aspect of the palp (fig. 22). Median apophysis (figs. 20, 21, *ma*) a short and broadly truncated element, the embolic membrane (*em*) attached to the base. Spermduct leaving tegular section near base of median apophysis and embolic membrane and entering the embolic section (fig. 23) along the radix (*r*), which lies as a small element close to the base of the embolus (*e*). Embolus long and thread-like, its apical half in



Figs. 21-23. *Allomengea pinnata* (Emerton). 21, tegular section of male palp with median apophysis (*ma*) and embolic membrane (*em*); 22, male palp, lateral view; 23, embolic section with radix (*r*), embolus (*e*) and lamella (*l*). 21, $\times 77$; 22, 23, $\times 56$.

the unexpanded palp lying concealed in the proximo-ventral folded brim of the lamella. Lamella (figs. 20, 23, *l*) large, its proximal part broad, curved, with the brim broadly overlapping to the mesal side; distal half narrow, tapering to a sharp, twisted tip, invaginated so as to form a narrow gutter, which probably serves as a guidance for the embolus when it is forced into the epigyne.

Epigyne (figs. 17, 18) and vulva (fig. 19). Epigyne large and conspicuous,

projecting obliquely from the ventral surface of the abdomen, diminishing gradually in width from broad base to three-fourths of length, then suddenly narrowing to a slender, apically indented tip; slender part of the epigyne slightly more sclerotized than the broad basal part. Hairs present on ventral and lateral surfaces, except close to the tip. Dorsal surface with a median groove, that widens near the base to give room to a median posterior plate-like structure. Cleared vulva (fig. 19) showing the pair of long and irregularly winding, membraneous tubes, that lead from the entrances, at the tip of the epigyne in the ventralmost end of the median groove, towards the receptacula seminis; the course that should to be followed by the long embolus of the male palp (fig. 20, *e*) indicated by consecutively numbered arrows. Receptacula seminis situated rather centrally, surrounded by the coils of the membraneous tubes, their free tip directed towards the tip of the epigyne. Fertilization-ducts short, running directly from bases of receptacula to dorsal surface of the median posterior plate, where they end as open grooves.

Distribution and habitat. — As usual, data on the habitat were hardly ever recorded in the literature on this species, nor on the labels in the collections. Emerton (1920) mentioned "moss in spruce bog" for his Saskatchewan specimen, while Hackman (1954) indicated that his Newfoundland specimens were found "on open wet ground among litter and debris". I have collected this species in roughly the same situation at two localities in Massachusetts, viz., Fowl Meadow Reservation near Dedham, Suffolk Co., and in a nameless boggy area near Lexington, Middlesex Co., just outside Boston's Circumferential Highway 128. Both localities constitute open marshy areas. At these localities the specimens were found hanging under large horizontal webs in the darkest places, viz., the tunnels and cavities below and through the large tussocks of grasses and their heavy layers of half decayed vegetation, that had accumulated over the years.

The collecting dates mentioned in the literature, as well as those taken from the collection labels range from August to September. In the second half of July I collected subadult specimens, that moulted later in captivity. My latest record dates from the 6th of November (a single ♀ from Fowl Meadow Reservation S. of Boston).

How common *A. pinnata* can be is very distinctly demonstrated by a large series, in the American Museum of Natural History, New York, from Hay River (town) on the border of the Great Slave Lake at the end of the Mackenzie Highway, North West Territories, Canada. Here the late Wilton Ivie, together with his wife Jean, collected 185 ♀ and 96 ♂ on a single day (8.viii.1965), and apparently at one locality, which shows that the species must have been very abundant there. It also demonstrates a 2:1 sex-ratio. As

a rule it is difficult to estimate sex-ratios from hand-sampled collections, because the number of specimens is too small. The series reported upon above clearly shows that even early in their period of adulthood (August through September) males were in the minority. This does not necessarily mean that this is the usual sex-ratio of the species. It may as well indicate that the peak of the mating-period had past and the males were already declining in number.

Allomengea pinnata is a strictly North American species that has been recorded from the following regions and states: Newfoundland (Hackman, 1954), New Hampshire (Emerton, 1920), New York (Blauvelt, 1936), Ontario (Emerton, 1925; Kurata, 1939), Saskatchewan (Emerton, 1915) and Alaska (Chamberlin & Ivie, 1947). The collections of the Museum of Comparative Zoology at Cambridge, Massachusetts, and particularly of the American Museum of Natural History at New York, supplied numerous additional records. The gaps in the distribution can largely be filled in now, while the range has been extended southwards to New Jersey and Colorado. The species clearly reaches the west side of the Rocky Mountains in Alaska, where it has been found as close to the Pacific Ocean as Haines and Skagway in the southern part of the state where it borders British Columbia.

Material examined.

Nova Scotia. — 1 ♀ 10 ♂, Canard, 5.ix.1956, C. Dondale (CNC).

New Brunswick. — 1 ♂, Green River, 13-20.viii.1963, on soil, D. L. Haynes (CNC).

New Hampshire. — 1 ♂, Falls of Ammonoosuc, Mt. Washington, 24.viii.1915, E. B. Bryant (Emerton, 1920; MCZ). 3 ♀ 2 ♂, Durham (MCZ).

Massachusetts. — 2 ♀, Holliston, viii.1928 (MCZ). 4 ♀ 1 ♂, Holliston, 9.ix.1928, N. Banks (MCZ). 7 ♀, Holliston, 15.ix.1928, N. Banks (MCZ). 9 subadult ♀, 7 subadult ♂, Fowl Meadow Reservation near Dedham S. of Boston, Suffolk Co., 22.vii.1970, P. J. van Helsdingen (1 ♂ adult on 24.vii.1970, others in viii; all in ML). 1 ♀, 1 subadult ♂, same locality, 7.viii.1970, P. J. van Helsdingen (ML). 1 ♀, same locality, 6.xi.1970, P. J. van Helsdingen (ML). 4 ♀ 3 ♂, marshy area outside Route 128 near Lexington, Middlesex Co., 1.ix.1970, P. J. van Helsdingen (ML).

New York. — 2 ♀, Beaver River Flow, Trail to Mt. Stillwater, Herkimer Co. 8.viii.1931, C. R. Crosby & L. I. Davis (Blauvelt, 1936; AMNH). 2 ♀, Sloatsburg, 20.ix.1934, W. J. Gertsch (AMNH).

New Jersey. — 2 ♀, Ramsey, 20.viii.1934, W. J. Gertsch (AMNH).

Wisconsin. — 1 ♀, Dane Co., University of Wisconsin Arboretum, viii.1967, marshy grassland (Collection of Department of Zoology, University of Wisconsin).

Ontario. — 1 ♀, Wolf River, 40 mi. E. of Port Arthur, 6.viii.1948, W. J. Gertsch & T. B. Kurata (AMNH). 1 ♀, Lake of the Woods, 18 mi. N. of Rainy River, 8.viii.1948, W. J. Gertsch & T. B. Kurata (AMNH). 2 ♀, Nipigon, 12.viii.1948, W. J. Gertsch & T. B. Kurata (AMNH). 1 ♀, Algonquin Park, Lake Opeongo, 17.viii.1948, W. J. Gertsch & T. B. Kurata (AMNH).

Saskatchewan. — 1 ♂, Prince Albert, in spruce bog, 1914 (holotype of *Microneta pinnata*; MCZ).

North West Territories. — 185 ♀ 96 ♂, Hay River (town) at S. border of Great

Slave Lake, 8.viii.1965, J. & W. Ivie (AMNH). 1 ♂, Lady Evelyn Falls, 10.viii.1965, J. & W. Ivie (AMNH). 1 ♂, Stagg River Camp, 12 mi. SE. of Rae, 14.viii.1965, J. & W. Ivie (AMNH). Many ♀♀ and ♂♂, 5 mi. SE. Ft. Providence (river), 15.viii.1965, J. & W. Ivie (AMNH).

Alberta. — 1 ♀ 1 ♂, 9 mi. NW. of Whitecourt, 4.viii.1965, J. & W. Ivie (AMNH); 1 ♀, 10 mi. NW. of Whitecourt (AMNH). 1 ♀, Whitecourt, 17.viii.1965, J. & W. Ivie (AMNH). 1 ♀, 1 ♂, Gainford, 21.viii.1965, J. & W. Ivie (AMNH). 1 ♀, Camp near Carrot Creek, 25.viii.1965, J. & W. Ivie (AMNH).

Alaska. — 1 ♂, Skagway, 6.ix.1936, S. Williams (MCZ). 1 ♀, Matanuska Valley, 10-12.ix.1943, J. C. Chamberlin (Chamberlin & Ivie, 1947; AMNH). 1 ♀, Circle Hot Springs, 14.viii.1968, W. Ivie (AMNH). 1 ♀, Fort Yukon, 23.viii.1936, S. Williams (MCZ).

Colorado. — 2 ♀, Estes Park, 27.viii.1961, W. J. Gertsch & W. Ivie (AMNH).

Allomengea dentisetis (Grube) comb. nov.

(figs. 24-25)

Micryphantes dentisetis Grube, 1861, Bull. Acad. Imp. Sci. St.-Petersbourg, 4: 168 [reprint p. 11] (descr. ♂, Siberia).

Linyphia pigra L. Koch, 1879, Kongl. Svenska. Vet.-Akad. Handl., 16 (5): 36, fig. 25 (descr. ♀, Siberia). Syn. nov.

Allomengea pigra; Holm, 1973, Zool. Scripta, 2: 89, figs. 49-51 (lectotype selected).

Types. — Holotype ♂ of *Micryphantes dentisetis* Grube, from Irkutsk, Siberia, in the Zoological Museum of the Wroclaw University, Wroclaw, Poland (examined). Lectotype (♀) and paralectotype (♀) of *Linyphia pigra* L. Koch from Krasnoyarsk, Siberia in MS (examined).

Remarks. — *Allomengea dentisetis* exhibits only slight differences from *A. pinnata*. These differences are mainly found in the shape and size of the epigyne. Since the only available ♂ specimen lacks both palps and thus a set of valuable characters (see below), I prefer to postpone a decision on the status of this species — possibly a subspecies of *pinnata* — to the moment that more material, preferably males, becomes available.

Type of *Micryphantes dentisetis* Grube. My attention was drawn to this species because the descriptive remarks on the palp, as given by Grube (1861) ("Palpi . . . , articulo extremo trianguli angusti specie, subtus arcuati, apice setis pluribus fortibus vel spinis bidentibus vel tricuspidibus armato") clearly pointed to *Allomengea*. The specific status, however, is hampered by the loss of both palps. The remains of the holotype ♂ of *M. dentisetis* have been examined most carefully. They consist of a cephalothorax, a loose abdomen and many loose legs and leg segments. Both palps are missing from the patella onwards, and thus we have to base our opinion on other characters. The size of the specimen as given by Grube (total length 5 mm, length cephalothorax nearly 2.5 mm) is large for the two species so far recorded from Siberia, *A. scopigera* and *A. vidua*, even though my own measurements

of the length of the cephalothorax give only 2.02 mm. *A. vidua* is much too small (length cephalothorax 1.45-1.50 mm). *A. scopigera* is an impossible candidate for the following reasons: (i) all metatarsi have only one trichobothrium (0.70 on tibia I); (ii) none of the tibiae have more than one pair of v-spines (positions between 0.41 and 0.48; in *scopigera* two pairs); (iii) none of the anterior metatarsi bear v-spines. It should be mentioned here, that re-examination of the material of *A. scopigera*, recorded by Schenkel (1930) from Kamtchatka, showed that the eastern Siberian material in all the essential structural characters agrees with the European and North-American populations of this species. Therefore it must be concluded that *M. dentisetis* cannot belong to either species.

Prior to the discovery that *Limyphia pigra* in reality belonged in *Allomengea* I had considered it most likely that Grube's specimen was conspecific with *A. pinnata*. The size of the specimen and the chaetotaxy agreed sufficiently. Now that the females of *pigra* have become available I am convinced that *dentisetis* and *pigra* are conspecific, and that this species is closely allied with *pinnata* indeed, but might constitute a different species or at least belong to a different subspecies. For the time being it is maintained as a separate species.

Description. — Measurements in mm. Male, total length not known; cephalothorax, length 2.02, width 1.57. Female, total length 4.2-4.5; cephalothorax, length 1.75, width 1.32-1.35; chelicerae, length 0.78-0.82, width 0.40-0.41.

Cephalothorax, chelicerae and legs light brown, the sternum suffused with grey. Abdomen cream-coloured with grey suffusion, a faint pattern of greyish chevrons dorsally (specimens probably discoloured in the course of nearly one-hundred years). Eyes as in *pinnata*, the PME separated by slightly less than their diameter from each other and from the PLE. Height of clypeus 0.17-0.18 of length of cephalothorax. Chelicerae with four teeth in either row. Stridulating files distinct.

Length femur I 1.17 times length cephalothorax in male, 1.08-1.11 in females; 1/d tibia I 11 in male, 8.5-9.0 in females. Measurements of segments in mm (paralectotype of *L. pigra*):

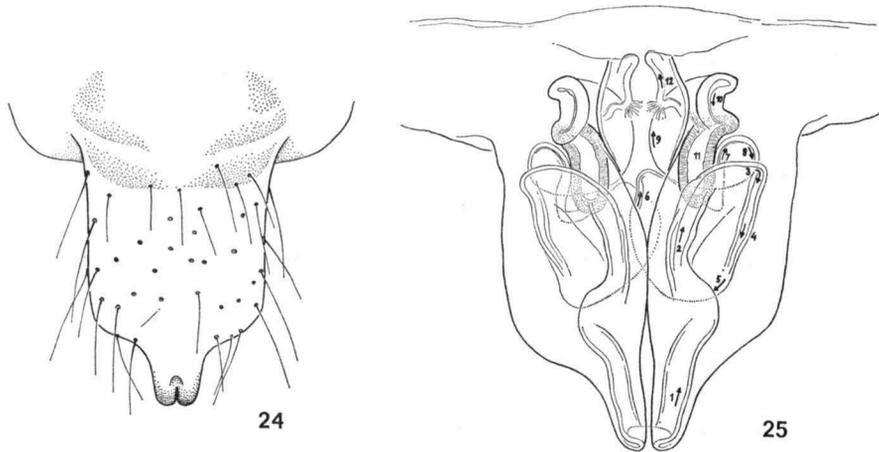
	♀			
	I	II	III	IV
Fe	1.90	1.85	1.55	1.95
Pa	0.55	0.52	0.47	0.50
Ti	1.85	1.75	1.35	1.90
Mt	1.72	1.65	1.32	1.82
Ta	1.07	1.00	0.77	

Chaetotaxy. As in *pinnata*, but all available specimens with a pair of v-spines on tibiae I and II (in *pinnata* this is variable, but in most males only a v'-spine is present).

Length of d''-spine on tibia I 0.27 mm in male (broken off in females); diameter of tibia I 0.20-0.21 mm. Position of d''-spine on tibia I 0.26 (♂) and 0.28-0.31 (♀). Tm I 0.67-0.71; only one trichobothrium present on all metatarsi (cf. *scopigera*).

Male palp. Both palps lost in only available specimen.

Epigyne (fig. 24) and vulva (fig. 25). Epigyne comparable in shape and build with *pinnata*, but projecting part shorter and more "broad-shouldered". Vulva showing just as many irregularly winding coils in the membranous tubes as in *pinnata*, but coils slightly more twisted and squeezed together. I expect the embolus of the male palp to be shorter than in *pinnata*, absolutely and relatively.



Figs. 24-25. *Allomengea dentisetis* (Grube). 24, epigyne, ventral view; 25, vulva, dorsal view. 24, $\times 70$; 25, $\times 93$.

Distribution. — Only recorded from Irkutsk and Krasnoyarsk in Siberia. Data on habitat and dates of collecting are not available.

Material examined.

Siberia. — 1 ♂, Irkutsk, leg. Maack (holotype of *Micryphantes dentisetis* Grube; in Zoological Museum, Wroclaw, Poland). 2 ♀, Krasnoyarsk on the Yenisey River, 1875, Nordenskiöld and Stuxberg (lectotype and paralectotype of *Linyphia pigra* L. Koch; in MS).

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