Ann. Naturhist. Mus. Wien	85/B	157—169	Wien, September 1983

A Contribution to the Millipede Fauna of Iran (Diplopoda)

By Sergei I. Golovatch [1])

(Mit 19 Textabbildungen)

Manuskript eingelangt am 30. November 1982

Summary

Several small collections of the millipede families Caspiopetalidae, Julidae, Cambalidae, and Paradoxosomatidae from Iran happened to contain, along with six already known forms, i. e. *Amblyiulus zarudnyi* Lohm., *Ommatoiulus caspius* (Lohm.), *Nannolene kaiseri* Maur., *Tetrarthrosoma broelemanni* (Verh.), *Strongylosoma kordylamythrum* Att. and *S. lenkoranum* Att., three new species and a new subgenus: *Bollmania gracilis* sp. n. (Caspiopetalidae), *Amblyiulus persicus* sp. n. and *Megaphyllum* (*Persebrachyiulus* subgen. n.) *iranicum* sp. n. (Julidae). A key is provided to all the seven hitherto known species of the Asian genus *Bollmania* Silv.

Zusammenfassung

Es wurde festgestellt, daß einige kleine Diplopoden-Sammlungen der Familien Caspiopetalidae, Julidae, Cambalidae und Paradoxosomatidae aus dem Iran, neben sechs bisher bekannten Formen, d. h. *Amblyiulus zarudnyi* Lohm., *Ommatoiulus caspius* (Lohm.), *Nannolene kaiseri* Maur., *Tetrarthrosoma broelemanni* (Verh.), *Strongylosoma kordylamythrum* Att. und *S. lenkoranum* Att., noch drei neue Arten und eine neue Untergattung enthalten: *Bollmania gracilis* sp. n. (Caspiopetalidae), *Amblyiulus persicus* sp. n. und *Megaphyllum* (*Persebrachyiulus* subgen. n.) *iranicum* sp. n. (Julidae). Ein Schlüssel wird für alle sieben heute bekannten Arten der asiatischen Gattung *Bollmania* Silv. gegeben.

The millipede fauna of Iran being so far very poorly known, the more agreeable it was to receive for study through the kind assistance of Dr. J. Gruber, Vienna, the small materials of the diplopod orders Callipodida, Julida, Spirostreptida and Polydesmida collected in Iran in 1970 and 1972 by expeditions of the Naturhistorisches Museum in Wien (NHMW) (s. Pretzmann, 1973, 1974). Besides, Prof. Dr. J. Martens, Mayence, was kind enough as to send me for loan the Iranian Paradoxosomatidae he and Dr. H. Pieper had collected in 1978 and had donated to the Senckenberg Museum, Frankfurt a. M. (SMF). In addition, the few specimens of the Julidae from NW Iran obtained in 1941 by Dr. V. N. Beklemishev, Moscow, and now preserved in

[1]) Sergei I. Golovatch, Laboratory of Soil Zoology, Institute of Evolutionary Animal Morphology and Ecology, USSR Academy of Sciences, Moscow V-71, Leninsky prospekt 33, USSR.

the author's collection have been treated as well. All the above materials have happened to contain nine identifiable forms, including three new species and one new subgenus described herein.

I am most grateful to Dr. J. Gruber and Prof. Dr. J. Martens for the opportunity to study the materials under their care. All the loans, except for a few duplicate specimens retained in my collection as indicated hereinafter, have been returned to the respective museums, with all the types at the NHMW.

Callipodida

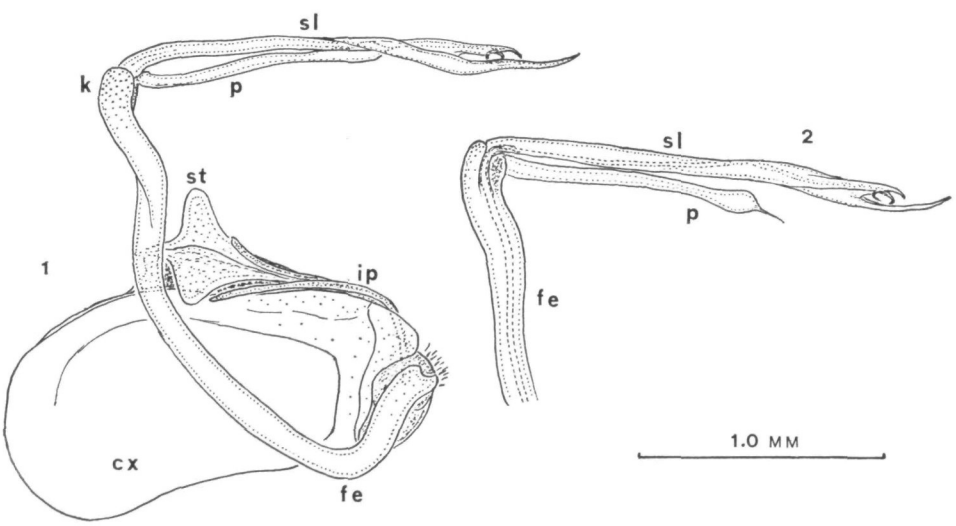
Caspiopetalidae

Bollmania gracilis sp. n. (Figs. 1—2)

Material: Iran, river valley 50 km W of Shiraz, under stones, slope with oak bush, 1 ♂ (holotype), 1 juv. — IV. 1970, leg. G. Pretzmann (No. 36, 1970; ♂: NHMW 1658, juv.: NHMW 1659).

Description: Holotype 45 mm long and 2.4 mm wide, of 63 (—2) body segments. Paratype 16 mm long and 1.1 mm wide, consisting of 52 (—5) segments. Colour uniform pink-yellowish-brown, light. Dark brown only a wide transverse band beginning at level of antennal sockets and extending backward as far as anterior part of eye fields. Vertex marble brown almost until occiput. Antennae (especially apices of joints) and some larger crests on dorsum brown to dark brown. Eye fields subtriangular, composed of ca. 40 black ocelli each.

Supralabral setae 2+2, labral ones 10+9. Frons densely and shortly pubescent. Collum flattened in the middle, carinate, especially well carinate laterad, with 3+3 sublateral anterior and 2+2 paramedian more medial and



Figs. 1—2. *Bollmania gracilis* sp. n., ♂ holotype: 1. right gonopod (lateral view), 2. distal half of left gonopod (mesal view).

rather short batons in two arched forward transverse rows well within anterior half of collum. Body significantly broadens from ring 6 onward, parallel-sided until last 10—12 segments which gradually taper toward telson. From metazonite 2 onward, each tergum well carinate, the longitudinal crests being alternate smaller (S) and larger (L). On mid-body rings, beginning from the axial suture laterad, the arrangement is $S_1—L_1—\ldots—S_6—L_6$. If L_1 is rather small and only a bit smaller than L_2, the crest L_3 is significantly thicker than both L_1 and L_2, but, in it turn, still smaller than the thickest L_4 which reminds a paratergum and always carries an ozopore lying ca. ⅓ of the metazonite length off the crest's anterior end. L_5 and L_6 subequal, only a little thicker than S_5 or S_6 which are of L_1 and L_2 size. Below L_6 there are a number of arched oblique striae growing thinner ventrad. Tergal batons sit a bit dorsad of L, their formula being as follows: [2])

Segments	Baton series				
	a	b	c	d	e
1	(P)	(P)	A	A	A
2—4	A	A	A	A	A
5	A	P	P	A	P
6 — penultimate	P	P	P	P	P

The batons of hind rings better preserved, up to 7+7 in a row. Tergal surface mat, well shagreen on prozona; suture between pro- and metazona and prozona proper regularly longitudinally striate, the striae on prozona being gently directed dorsad.

Legs long and slender, with tarsal brushes and coxal sacks; pairs 1 and 2 somewhat reduced.

♂. — Frons distinctly flattened, demarcated from vertex by a gentle swelling along the dark band, without tubercles. Antennae very long and slender, almost reaching the end of ring 7. Latter's pleural projections oblique and directed backward, mesally channel-like, attached to gonopod telopodites in situ. Coxae 2, 4—6 each with a distinct conical projection directed both forward and ventrad and a little poorer developed on coxa 6.

Gonopods (Figs. 1—2) very long and slender, telopodites in situ crossing each other. Sternum (st) with a pair of chitinous round-triangular swellings; coxae (cx) directed along the main axis, subquadrate, each bearing a long, slender, brown, filiform inner process (ip) with several short hairs at base; femorite (fe) very long and slender, much curved, distally with evidence of torsion, apically with a porous field (k), surmounted by a flexible, long and slender solenomerite (sl) at its base bearing a long slender process (p) and

[2]) For additional information see HOFFMAN & LOHMANDER, 1964; (P) means in fact a conventional posterior position as the hind row on collum lies but a little behind the anterior A.

ending in a shorter branch which is provided with two minute hooks subdorsally sheathed by a longer branch; seminal groove runs all along inner side of telopodite.

Remarks: Six species of *Bollmania* have hitherto been described: *B. orientalis* (SILVESTRI, 1895) with two varieties from the Kopetdagh Mts., Turkmenia, *B. serrata* LOHMANDER, 1933, *B. nodifrons* LOHMANDER, 1933 and *B. oblonga* GOLOVATCH, 1979 from Tadjikistan, *B. nematogona* (ATTEMS, 1951) from Central Iran, and *B. kohalana* (ATTEMS, 1936) from Punjab, North India (s. reviews by JEEKEL, 1955 and HOFFMAN, 1979). Besides, *Bollmania* has been recorded from caves of Afghanistan (LINDBERG, 1961, 1962) and perhaps occurs even in South China (GOLOVATCH, 1981). As one can see, the range of this still poorly known genus is very large and extends far beyond Middle Asia s. l. as was thought before (GOLOVATCH, 1979).

As no keys have been elaborated to embrace all the six hitherto known species, it seems useful to provide a tentative one herein to incorporate *gracilis* sp. n. The key presented below is chiefly based on male genitalia.

1(10) Gonopod solenomerite (= 2nd joint of telopodite) with a process at very base 2
2 (3) Basal process of solenomerite thick, stout, with evidence of torsion... ..... *B. orientalis* (SILV.)
3 (2) Basal process of solenomerite more or less thin, slender, without evidence of torsion 4
4 (7) Basal process of solenomerite quite short, about as long as $^1/_5$ of the total length of solenomerite; gonofemoral apex with a small, but distinct projection 5
5 (6) Basal process of solenomerite baton-shaped, surmounted by a couple of setae; inner gonocoxal process (ip) long and filiform..... ..... *B. nematogona* (ATT.)
6 (5) Basal process of solenomerite blade-shaped, without apical setae; inner gonocoxal process wanting ..... *B. kohalana* (ATT.)
7 (4) Basal process of solenomerite much longer, slender; apex of gonofemorite without distinct projections 8
8 (9) Basal process of solenomerite only a bit shorter than a half of the total length of solenomerite..... *B. serrata* LOHM.
9 (8) Basal process of solenomerite distinctly longer than a half of the total length of solenomerite ..... *B. gracilis* sp. n.
10 (1) Solenomerite with a process well distad of its base..... 11
11(12) Frons, though flattened, without tubercle at its posterior edge; inner coxal process of gonopods very long, loop-shaped; gonofemoral apex with a field of minute setae ..... *B. oblonga* GOL.
12(11) Frons with a small, but distinct tubercle at its posterior edge; inner process of gonocoxae shorter and filiform; apex of gonofemorite without setae ..... *B. nodifrons* LOHM.

Julida

Julidae

Amblyiulus zarudnyi LOHMANDER, 1932

Materials: NW Iran, Canyon Sefidruda, zone of wet forests, 1 ♂, 2 ♀♀, 1 juv. — 25. X. 1941, leg. V. N. BEKLEMISHEV (Coll. GOLOVATCH); Iran, 68 km SW of Yezd, village before pass, gardens, 2 ♂♂, 2 ♀♀ — IV. 1970, leg. G. PRETZMANN (No. 29, 1970; NHMW 1660); Iran, N end of Keredj, bald dry slope, under stones, 1 ♂, 1 ♀ — IV. 1970, leg. G. PRETZMANN (No. 64, 1970; NHMW 1661).

Remarks: This species heretofore known only from its locus typus in Arabistan, Iran, seems to be a little variable as regards the gonopod structure. The specimens from the NHMW have the base of the inner subapical tooth (LOHMANDER's m) of the promerite extending more laterad and reaching that of the lateral tooth (LOHMANDER's l), as well as a bit broader end of the mesomerite (LOHMANDER's ms) as compared with the typical ones. As for the male from Sefidruda, its gonopods fit the original description and drawings (LOHMANDER, 1932) practically completely.

Amblyiulus persicus sp. n. (Figs. 3—7)

Material: Iran, 10 km N Keredj, side canyon with rocks, rich vegetation, under stones, 1 ♂ (holotype), 1 ♀ — IV. 1970, leg. G. PRETZMANN (No. 63, 1970; ♂: NHMW 1662, ♀: NHMW 1663).

Diagnosis: Well distinguishable from all the hitherto known related species of the genus quite richly represented in the Irano-Caucaso-Anatolian region (s. reviews by LOHMANDER, 1932, 1936) by a peculiar combination of both somatic (e. g. poor pigmentation, absence of eyes and of cheek modifications etc.) and gonopod characters (e. g. presence of a large lobe-like inner and a very large acute outer process at distal part of promerite, configuration of opisthomerite etc.).

Description: Body up to ca. 30—33 mm long and 1.0—1.1 mm wide (holotype and paratype, respectively), consisting of 57 (—3) segments excluding telson. Colour uniform light grey-yellowish, only defensive pores with glands sometimes seem dark grey through transparent tegument. Anal valves light brownish. Body slender, with a slight, but distinct anterior constriction, caudad gently tapering. No eyes. Antennae moderately long, clavate (joints 5 and 6), reaching end of segment 4; joint 5 subapically with a complete corolla of very long bacilli; joint 6 only laterally with 2—3 smaller batonnets. Vertigial suture distinct. Vertigial hairs 1+1, supralabral setae 2+2 or 3+3, labral ones 10+10. Segments with moderately long, thin and dense hairs in a row just in front of very thin and even limbus. Prozona finely shagreen. Metazona regularly and not very densely striate, 5 to 6 striae in a square with its side being the lateral length of a mid-body metazonite. Ozopores lie as far back as

⅓ of a mid-body metazonite's length behind the suture which does not curve at pores' level. Telson very densely setose; epiproct wanting; anal valves rather convex, not margined; subanal scale not projecting caudad beyond the valves' contour, regularly and moderately convex, setose. Legs rather long, slender, with a long setoid at base of claw.

♂. — Mandibular cheeks without modifications. Leg-pair 1 hook-like; uncus quite strongly curved, without apical spine. Ventral edges of ring 7 each with a prominent round lobe. Sole pads on tibiae and postfemora very well developed, gradually come to naught at posteriormost leg-pairs.

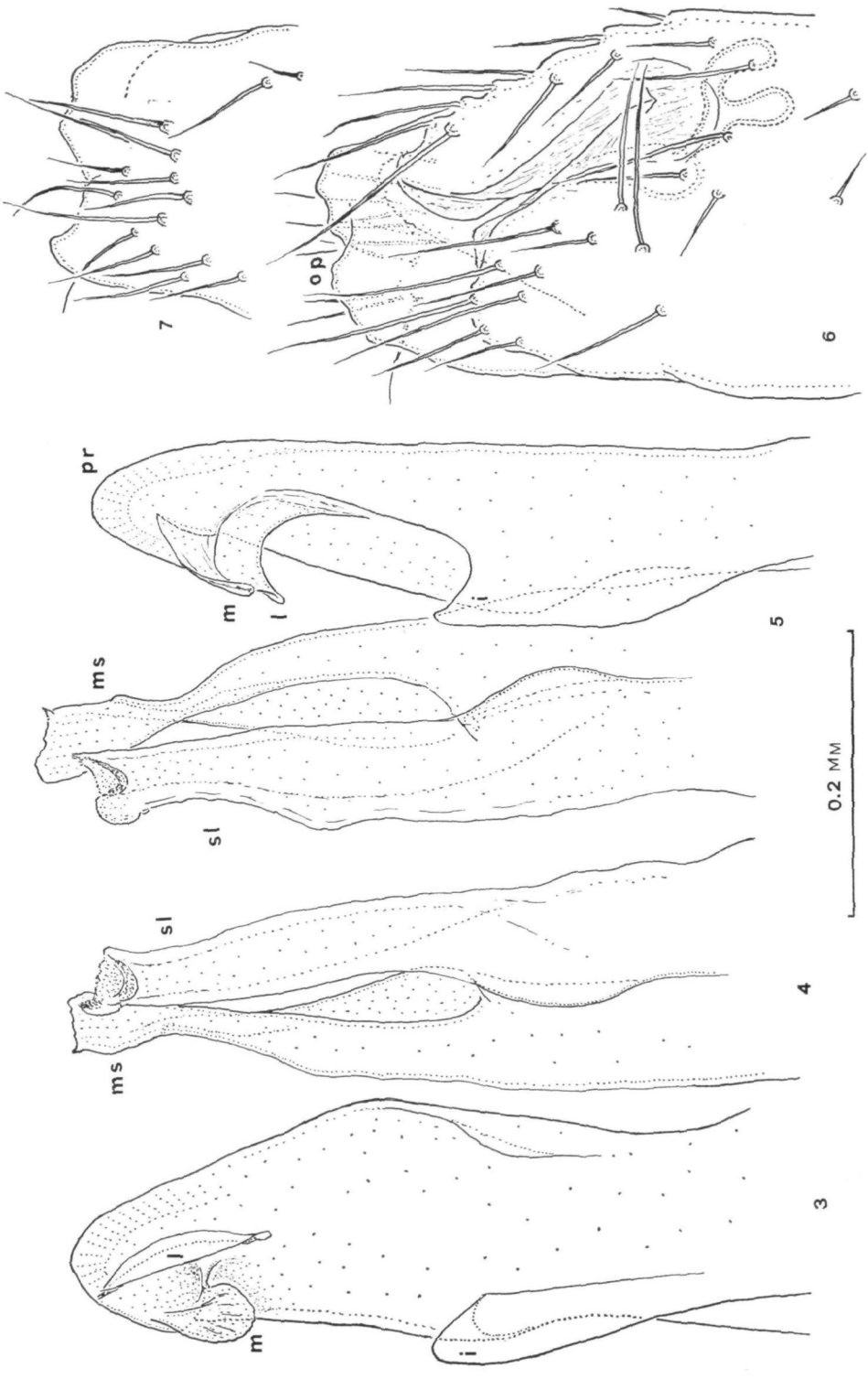
Gonopods (Figs. 3—5) rather simple, both pairs subequally high. Promerite (pr) slender, apically gently rounded, medially only a bit broader than parabasally, with a large hyaline inner lamina (i) at base, distally with a smaller and round inner (m) and a larger and acute outer lobe (l). Mesomerite (ms) a little higher than solenomerite (sl), hyaline; solenomerite thicker, apically with a pseudofovea.

♀. — Antennae a little shorter. Vulvae (Figs. 6—7) densely setose, stout; operculum higher than bursa, concave at the apex, orally densely setose.

Megaphyllum (*Persebrachyiulus* subgen. n.) *iranicum* sp. n. (Figs. 8—10)

Materials: Iran, 163 km NE of Shiraz, under stones, 1 ♂ (holotype), 1 ♀ — IV. 1970, leg. G. PRETZMANN (No. 32, 1970; ♂: NHMW 1664, ♀: NHMW 1665); Iran, 10 km E of Hamadan, at bank of a stream, 2 ♀♀ — IV. 1970, leg. G. PRETZMANN (No. 59, 1970; NHMW 1666).

Description: Holotype male ca. 18 mm long and 1.1 mm wide, of 39 (—1) segments; head and collum of holotype lost by accident. Paratypes females ca. 16—17 mm long and up to 1.3 mm wide, of 38 (—1) or 39 (—1) segments. Colour very similar to that of *Brachyiulus* spp., grey-brown. Head marble brown, with scattered lighter markings and spots, labrum and vertex light yellowish, a wide transverse dark brown band between the black eye fields. Antennae brown. Collum marble yellowish, brown along margins. Body with two whitish longitudinal bands divided by a very thin black axial line and each laterally touching a broad black-brown stripe with the ozopores in the middle. Further ventrad, the colour turns from dark into grey-brown. Prozona laterally especially dark marble brown; metazona mainly lighter, with a hind third well light and transparent. Legs light brown to yellowish. Anal valves brown, margined yellowish. Body slender, with a poor anterior constriction, caudad gently tapering. Ca. 35 ocelli in a round-subtriangular eye field from each side. Antennae rather long, slightly clavate (joints 5 and 6), with a few batonnets along the apical margin of joints 5 and 6, the ones on the latter being especially small, few and situated only laterally. Vertigial setae long, 1+1, vertigial suture well visible. Supralabral setae 2+2, labral ones 10+10. Body rings with long hairs along hind margin (4+4 or 5+5 on mid-body segments), gradually becoming denser toward telson. Limbus simple, without peculiarities. Prozona finely shagreen, metazona regularly and not very densely and



Figs. 3—7. *Amblyiulus persicus* sp. n., ♂ holotype (3—5), ♀ paratype (6—7): 3. promerite (caudal view), 4. posterior gonopod (mesal view), 5. both gonopod pairs (mesal view), 6. vulva (caudal view), 7. distal part of operculum (frontal view)

deeply striate, 5 striae in a square with its side being the length of a mid-body metazonite. Ozopores lie in the suture, open immediately behind it; the suture does not curve at the pores' level, quite distinct. Telson setose, anal valves not margined, moderately convex, densely setose all over the surface; epiproct thin, practically straight, relatively long, pointed, without claw at the apex.

♂. — Mandibular cheeks with a good round antero-ventral lobe. Leg-pair 1 (Fig. 8) hook-like, uncus quite strongly curved, without apical spine. Penes small, subcylindrical, round at the apex. Ventral edges of ring 7 each with a moderate round subtriangular submedial projection. Epiproct a bit longer, next to pointed. Subanal scale subtriangular, broad, with 2+2 long hairs at a beak-like caudal spine well extending beyond the contour of the anal valves. Sole pads very well developed on tibiae and postfemora almost all along the body, absent only on very last legs.

Gonopods (Figs. 9—10) with subequally long pro- and opisthomerite. Promerite (pr) very simple, slender, basally with a long flagellum (fl) distally finely serrate, as well as with a small basal inner swelling. Opisthomerite large, massive, laterally at mid-length with a round hyaline lamina (l) and a ridge distad of it, mesally with a hyaline lobe sheathing the flagellum channel, distally with a distinct caudal mesomerite process bent inward, apically with a membraneous solenomerite (sl) with a good phylacum-like outgrowth in front (j) and a well-developed pad behind it (po).

♀. — Mandibular cheeks, legs, ring 7 without modifications. Epiproct shorter, *Brachyiulus*-like. Subanal scale only a bit extending beyond the contour of the anal valves due to absence of the caudo-median spine. Vulvae ordinary, rather stout, setose both on bursa and operculum which are subequally high.

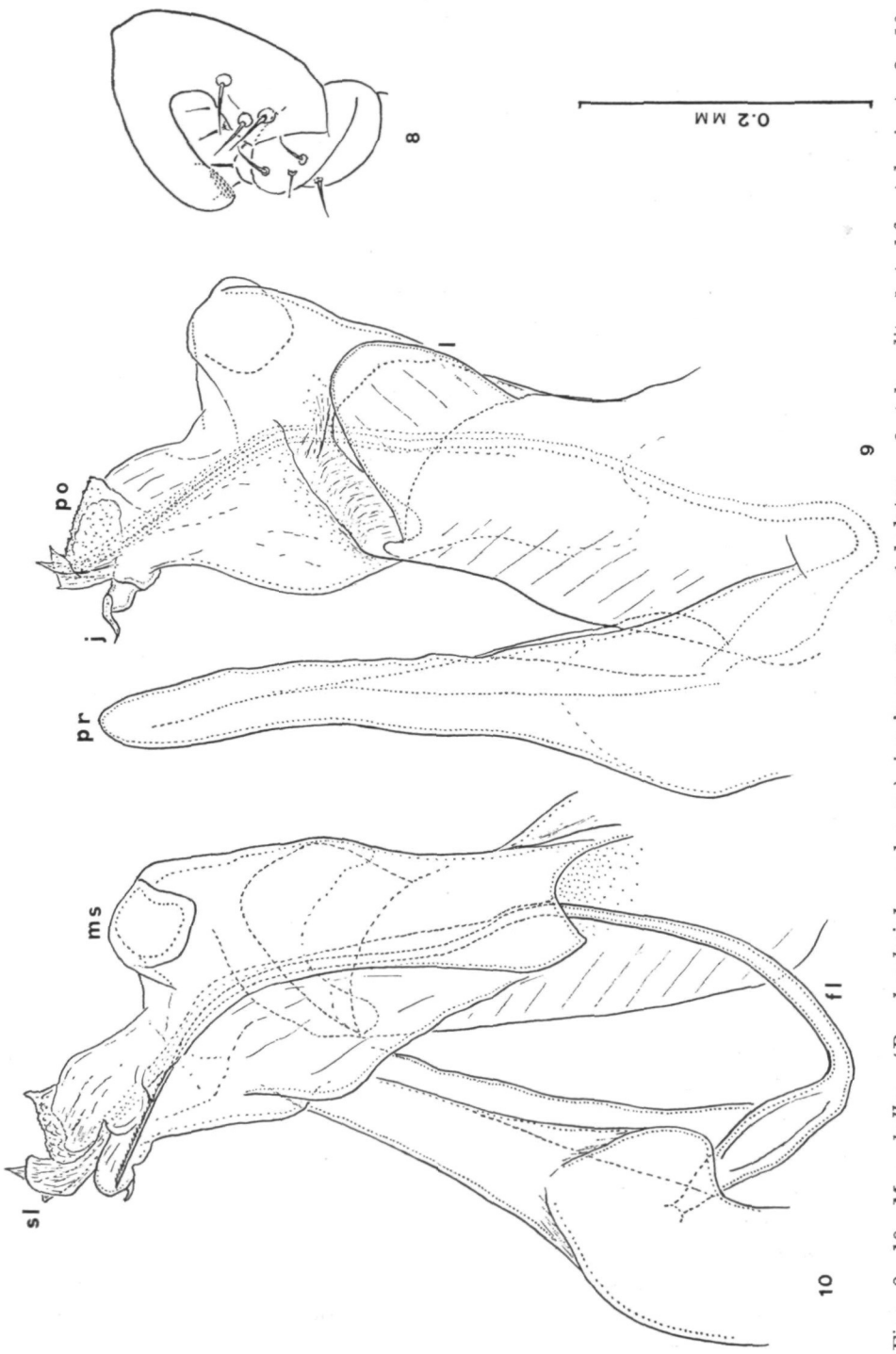
Remarks: The new species possesses such a combination of characters that seems warranting a separate subgenus:

Persebrachyiulus subgen. n.

Promerite slender, simple and high, without processes; flagellum thin and long. Opisthomerite large, high, massive, with a distinct caudal mesomerite process and a conspicuous lateral lamina; no row of setae along flagellum channel; a good pad behind and a good phylacum-like projection in front of solenomerite.

Type species: *Megaphyllum iranicum* sp. n.

Among the numerous allies and subgenera of the large Ancient Mediterranean genus *Megaphyllum* Verh. (formerly *Chromatoiulus* Verh., cf. Hoffman, 1979) the new subgenus *Persebrachyiulus* seems to be especially closely related to *Megaphyllum* s. str. as both have a more or less simple promerite, a mesomerite process, an apical pad behind solenomerite, no row of setae along the flagellum channel etc. However, the new subgenus is well distinguishable from all the related forms by the most simple promerite, massive opisthomerite, and large lateral lamina on the latter.



Figs. 8—10. *Megaphyllum* (*Persebrachyiulus* subg. n.) *iranicum* sp. n., ♂ holotype: 8. *telopodite* 1 (*subfrontal view*), 9—10. gonopods (lateral and mesal views, respectively)

The only other *Megaphyllum* known so far in Iran, *M. loeffleri* (ATTEMS, 1951), endemic in the Hyrcanian Province within the USSR and Iran, is the type species of the independent, monotypical subgenus *Iraniulus* ATT. It is thus quite obvious that both *Persebrachyiulus* subg. n. and *Iraniulus*, each represented but by a single disjunct species, are relicts of the distant past (perhaps the Miocene) exhibiting the easternmost outposts of the range of *Megaphyllum* s. l.

Ommatoiulus caspius (LOHMANDER, 1928)

Materials: NW Iran, Canyon Sefidruda, zone of wet forests, 2 ♀♀ — 25. X. 1941, leg. V. N. BEKLEMISHEV (Coll. GOLOVATCH); Iran, 3 km S of Chalus, small side valley, forest, under stones, 2 ♀♀, 2 juv. — IV. 1970, leg. G. PRETZMANN (No. 69, 1970; NHMW 1667); Iran, 21 km N of Amol, 1 ♂ juv., 3 ♀♀ — IV. 1972, leg. G. PRETZMANN (No. 50, 1972; NHMW 1668); Iran, 30 km E of Sari, 16 ♀♀, juv. — IV. 1972, leg. G. PRETZMANN (No. 56, 1972; NHMW 1669); Iran, Ramsar, 2 juv. — IV. 1972, leg. G. PRETZMANN (No. 60, 1972; NHMW 1670).

Remarks: The species is endemic in the Hyrcanian Province within the USSR and Iran and exhibits the easternmost outpost not only of the genus *Ommatoiulus* LATZ., but of the whole subfamily Ommatoiulinae. Nowadays this genus is absent in Asia Minor, a fact permitting with a fair certainty to regard the Hyrcanian endemic form as another relict of the distant past.

Spirostreptida

Cambalidae

Nannolene (*Chiraziulus*) *kaiseri* MAURIÈS, 1983 (Figs. 11—19)

Materials: Iran, oasis 95 km N of Bandarabass, spinney of palms, 1 ♀ — IV. 1970, leg. G. PRETZMANN (No. 17, 1970; NHMW 1671); Iran, 19 km W of Shiraz, swampy clayey canyon, 5 ♂♂, 4 ♀♀ — IV. 1970, leg. G. PRETZMANN (No. 42, 1970; NHMW 1672), 1 ♂ (Coll. GOLOVATCH); Iran, Kor River bank ca. 5 km NE of Persepolis, meadow, 2 ♀♀ — IV. 1970, leg. G. PRETZMANN (No. 48, 1970; NHMW 1673).

Remarks: This species described but very recently, also from South Iran (MAURIÈS, 1983), is most interesting as regards both morphology and zoogeography. Morphologically, it is very conspicuous in being eyeless, having rather good tergal crests (Fig. 11), densely setose promentum (Fig. 12), practically nonmodified male leg-pair 1 (Fig. 13) with a simple gula (b) in front of it, a disto-dorsal field of tiny bacilliform sensillae on antennal joint 5 (Fig. 14), simple and independent penes (Fig. 15) setose apically, and most peculiar gonopods. The anterior ones are provided with a pair of exceedingly long and thin flagellae (fl); somewhat shorter telopodites (te), setiferous and bearing a good posterior finger (p), very finely serrate at margin; longer blade-like inner

coxal processes (i) also finely serrate at hind margin. The posterior pair has a long anterior spine in front of a shorter sack covered with mainly curved short setae (Figs. 16—19). Some of the above characters seem a little variable, but there can be no doubt whatever that the present material is conspecific with that studied by MAURIÈS (1983). The material from the NHMW has all proved to be represented by adults consisting of 51 (—2) to 66 (—1) and of 53 (—4) to 63 (—1) body segments in males and females, respectively. Zoogeographically, the rediscovery of a true cambalid in Iran not only confirms the "credibility" of *Chiraziulus* which has unexpectedly enlarged the known range of the Cambalidae previously thought to be restricted to North and Central America, the Hawaii and Australia (HOFFMAN, 1979), but also encourages the view of a highly relict character of *Chiraziulus* which perhaps warrants a full generic status. However, until a number of cambalid genera from California have been redescribed (s. HOFFMAN, 1979) it seems really better to follow MAURIÈS' (1983) cautious subgeneric category erected for the Iranian species.

Polydesmida

Paradoxosomatidae

Tetrarthrosoma broelemanni (VERHOEFF, 1940)

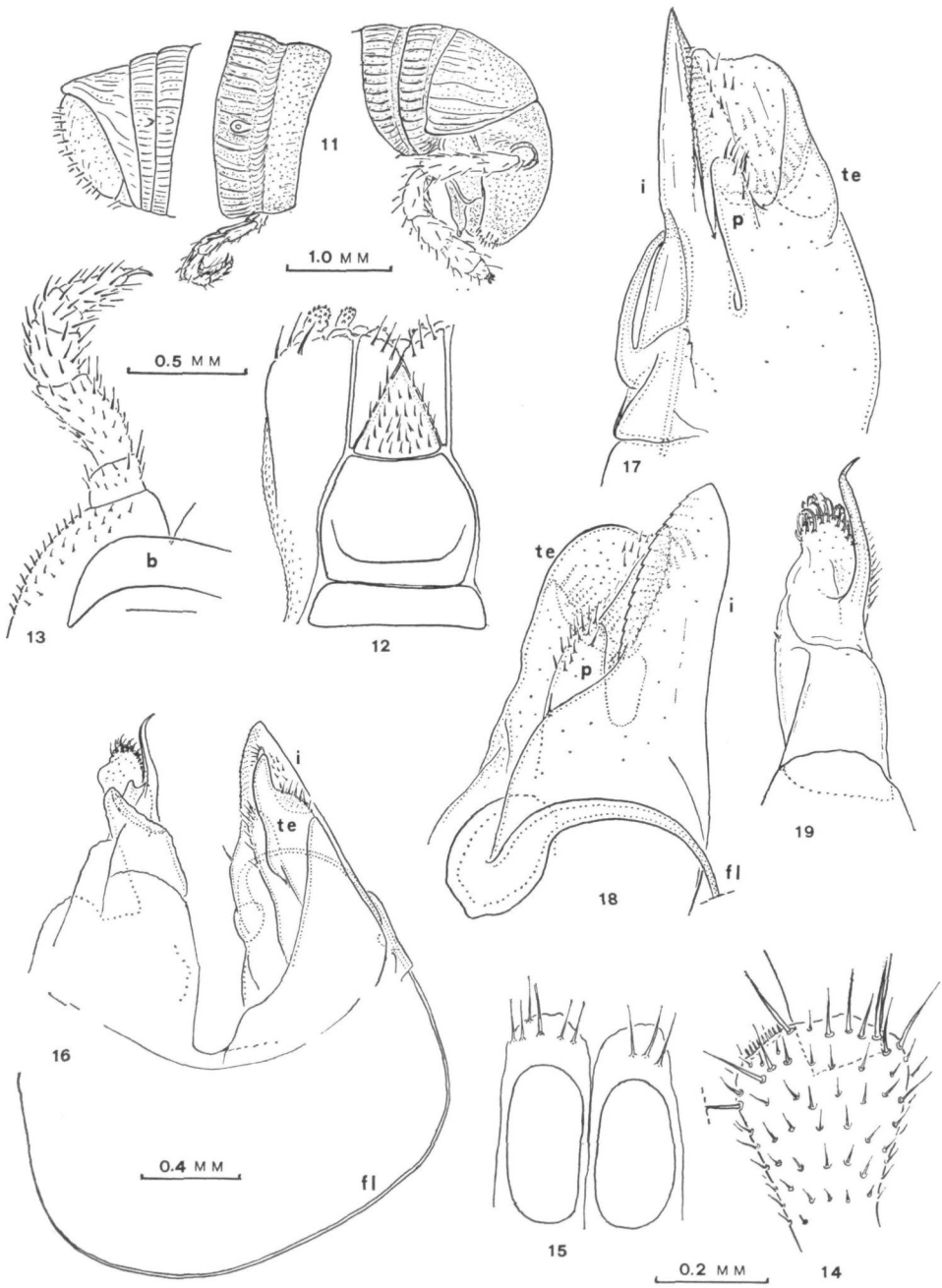
Material: Iran, Kor River bank ca. 5 km NE of Persepolis, meadow, 3 ♂♂, 2 ♀♀ — IV. 1970, leg. G. PRETZMANN (No. 48, 1970; NHMW 1674), 1 ♂ (Coll. GOLOVATCH).

Remarks: The material is in complete accordance with the good description and drawings of the "*Strongylosoma persicum* HUMBERT & SAUSSURE" given by BRÖLEMANN (1921) and later renamed by VERHOEFF (1940) as *S. brölemanni* (recte: *broelemanni*) (cf. HOFFMAN & LOHMANDER, 1968). I can verify that this species seems good, although one must keep in mind that until the original types of *T. syriacum* (HUMB. & SAUSS.) and *T. persicum* (HUMB. & SAUSS.) are located and restudied there will always be some doubt concerning the number and status of several species or subspecies of *Tetrarthrosoma* (HOFFMAN & LOHMANDER, 1968).

Strongylosoma kordylamythrum ATTEMS, 1898

Materials: Iran, Elburs Mts., Mazanderan, Klard, 20 km S of Amol, 500 m, 2 ♀♀ — 25. V. 1938, leg. J. MARTENS & H. PIEPER (SMF); Iran, Elburs Mts., Mazanderan, road S of Alamdeh, deciduous forest, 1450 m, 1 ♂ — 29. V. 1978, leg. J. MARTENS & H. PIEPER (SMF); Iran, Elburs Mts., Mazanderan, 11 km E of Alasht, western side of Talar valley, 1400 m, 2 ♂♂, 13 juv. — 27.—28. VI. 1978, leg. J. MARTENS & H. PIEPER (SMF).

Remarks: The species is widespread in the Caucasus, within the Hyrcanian Province it is also met with in North Iran.



Figs. 11—19. *Nannolene* (*Chiraziulus*) *kaiseri* MAURIÈS, 1983, ♂♂: 11. habitus (lateral view), 12. gnathochilarium (ventral view), 13. leg-pair 1 with gula (frontal view), 14. antennal joint 5, 15. penes (caudal view), 16. both gonopod pairs (lateral view), 17—18. anterior gonopod (right and left, caudal and caudo-mesal views, respectively), 19. posterior gonopod (latero-frontal view)

Strongylosoma lenkoranum ATTEMS, 1898

Materials: Iran, Azerbaijan, Makidi, Arasbaran Wildlife Refuge, 1650—1800 m, *Quercus* shrub, 9 ♂♂, 20 ♀♀, 48 juv. — 4.—5., 10.—15. VI. 1978, leg. J. MARTENS & H. PIEPER (SMF); Iran, Prov. Azerbaijan, between Makidi and Mahmudabad, 2000—2300 m, meadows, 4 ♂♂, 2 ♀♀ — 6. VI. 1978, leg. J. MARTENS & H. PIEPER (SMF).

Remarks: The species is known in the Caucasus (Lenkoran in Azerbaijan and Kartli in Georgia, as well as from Yerevan in Armenia), North-East Turkey (HOFFMAN & LOHMANDER, 1968) and North-West Iran (LOHMANDER, 1932).

References

ATTEMS, C. (1951): Die Myriopoden vom Iran gesammelt von der Expedition Heinz LÖFFLER und Genossen 1949/50. — Sitz.-Ber. österr. Akad. Wiss., Abt. I, **160**: 387—426. — Wien.

BRÖLEMANN, H. W. (1921): Myriapods from Mesopotamia and Persia collected by Mr. P. A. BUXTON. — Journ. Bombay Nat. Hist. Soc., **28** (1): 165—169. — Bombay.

GOLOVATCH, S. I. (1979): [The composition and zoogeographic relationships of the diplopod fauna of Middle Asia. Part 1.] — Zool. Zhurnal, **58** (7): 987—1001. — Moskva [in Russian].

— (1981): Some East-Asiatic millipedes (Diplopoda) in the collection of the Institute of Zoology of the Polish Academy of Sciences. — Ann. Zool. PAN, **36** (8): 161—168. — Warszawa.

HOFFMAN, R. L. (1979): Classification of the Diplopoda. — Mus. Hist. nat. Genève: 1—237. — Genève.

— & H. LOHMANDER (1964): The Diplopoda of Turkey. Parts 1, 2. — Mitt. Hamburg. Zool. Mus. Inst., **62**: 101—151. — Hamburg.

— (1968): The Diplopoda of Turkey. Part 3. — Ibid., **65**: 61—121. — Hamburg.

JEEKEL, C. A. W. (1955: Milliped miscellany II. — Ent. Ber., **15**: 412—417. — Amsterdam.

LINDBERG, K. (1961): Recherches biospéléologiques en Afghanistan. — Lunds Univ. Årsskr., N. F. 2, **57** (1): 1—39. — Lund.

— (1962): Recherches biospéléologiques en Afghanistan II. — Ibid., **58** (2): 1—15. — Lund.

LOHMANDER, H. (1932): Neue Diplopoden aus Persien. — Göteborgs Kungl. Vet.-o. Vitt.-Samh. Handl., (5B) **3** (2): 1—44. — Göteborg.

— (1936): Über die Diplopoden des Kaukasusgebietes. — Ibid., **5** (1): 1—196. — Göteborg.

MAURIÈS, J.-P. (1983): Cambalides nouveaux et peu connus d'Asie, d'Amérique et d'Océanie. I. Cambalidae et Cambalopsidae. — Bull. Mus. natn. Hist. nat. Paris, 4e Sér. 5 A (1): 247—276.

PRETZMANN, G. (1973): Bericht über eine Sammelreise nach Iran und Anatolien 1970. — Ann. naturh. Mus. Wien, **77**: 321—329. — Wien.

— (1974): Bericht über eine Sammelreise nach Iran im Frühjahr 1972. — Ibid., **78**: 453—455. — Wien.

VERHOEFF, K. W. (1940): Über Diplopoden aus der Türkei. — Rev. Fac. Sci. Univ. Istanbul, N. S., **5** (1—2): 1—49. — Istanbul.