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Systematic studies on East Palaearctic *Salticidae*, II¹. Redescriptions of Japanese *Salticidae* of the Zoological Museum in Berlin

[With 73 figures in the text]

Proper understanding of systematic relationships and evolution of *Salticidae* of Europe or North America is impossible without some knowledge of these spiders in the East Palaearctic Region, yet spiders of that area are insufficiently studied. The only better known part of East Palaearctic is Japan whose *Salticidae* were studied by a number of arachnologists, but even Japanese *Salticidae* need a thoroughful revision because of outdated descriptions of majority of species. Of 70 species of *Salticidae* quoted by YAGINUMA (1970), 60 were described during the 19th century (or in 1906) and majority of these was never studied again. Out of these 16 species were described by F. KARSCH and I have had the opportunity to study the types of 14 KARSCH species preserved in the Zoologisches Museum der Humboldt-Universität in Berlin. The present paper gives an account of these studies.

Acknowledgement. I wish to express my best thanks to Dr. M. MORITZ, the Curator of *Arachnida* in that Museum and to his assistant Frau FISCHER for their kind hospitality and assistance given during my work in Berlin. Various problems were discussed with my friend, Dr. W. STAREGA, and Mrs. T. BUSZKO has helped me with preparation of measurements for publication.

The paper contains descriptions and remarks on 15 species (including 2 unidentified) and short notices on another 5 species, these are:

Chrysilla versicolor (C. L. KOCH, 1846) — new for Japan,

Carrhotus xanthogramma (LATREILLE, 1819) (= *Hasarius crinitus*

KARSCH, 1879, = *Carrhotus detritus* BÖSENBERG et STRAND, 1906),

Dendryphantès atratus (KARSCH, 1881) (= *Homalattus atratus* KARSCH, 1881),

¹ Cf.: [No. I] — Ann. zool., 28: 205–226.

- Evarcha albaria* (L. KOCH, 1878) (= *Hyllus lamperti* BÖSENBERG et STRAND, 1906),
Evarcha crassipes (KARSCH, 1881),
 "Hasarius" *doenitzi* KARSCH, 1879,
Hyllus fischeri BÖSENBERG et STRAND, 1906,
Icius linea (KARSCH, 1879) (= *Jotus linea* KARSCH, 1879),
Icius pupus (KARSCH, 1879) (= *Ictidops pupus* KARSCH, 1879),
Marpissa elongata (KARSCH, 1879) (= *Icius elongatus* KARSCH, 1879),
Marpissa magister (KARSCH, 1879) (= *Icius magister* KARSCH, 1879),
Marpissa milleri PECKHAM, 1894,
Marpissa pulla (KARSCH, 1879),
Marpissa vittata (KARSCH, 1879),
Myrmarachne japonica (KARSCH, 1879),
Phidippus procus KARSCH, 1879,
Plexippus setipes KARSCH, 1879 — new for the Soviet Union,
Plexippus sp. 1,
Plexippus sp. 2,
 "Telamonia *cylindrata*" (KARSCH, 1879).

The only KARSCH species from Japan I was not able to find in the Berlin Museum collection is *Sitticus basalis* (KARSCH, 1879).

Chrysilla versicolor (C. L. KOCH, 1846)

- Plexippus versicolor* C. L. KOCH, 1846: 103, f. 1165,
Maevia picta C. L. KOCH, 1848: 72¹,
Attus versicolor: WALCKENAER, 1847: 426,
Cyrtanota picta: SIMON, 1864: 324,
Cyrtanota versicolor: SIMON, 1864: 325,
Chrysilla versicolor: THORELL, 1890: 275.

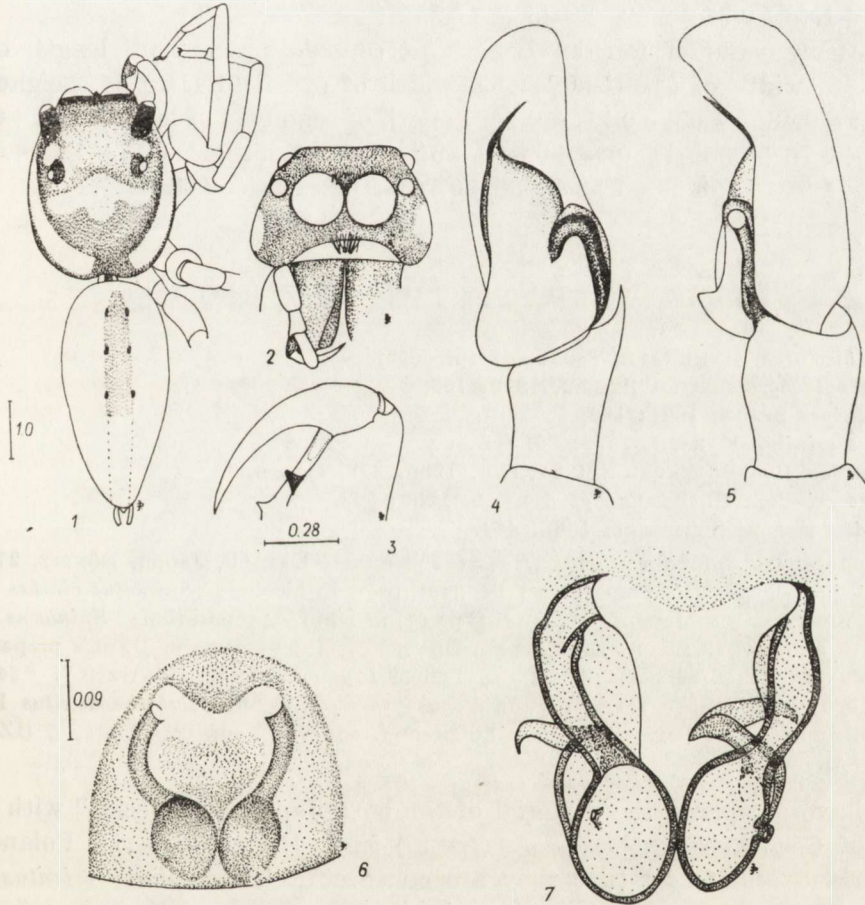
Material: "*Plexippus versicolor* KOCH*, fig. 1165, 1624 — Bintang Kotty" [presumably Bintang Island, N. E. off Sumatra, 1°0'N, 104°10'E] — 1 ♂ — Holotype — dry collection; "*Hasarius versicolor* C. L. KOCH, Japan, DOENITZ" — 1 ♂, 1 ♀, 1 juv. — alcohol collection.

The species was not reported yet from Japan. It is closely related to the type-species of the genus — *Chrysilla lauta* THORELL, 1887, I studied in the Museo Civico di Storia Naturale in Genova, but differs in details of genital organs. The external appearance of the dry holotype is quite similar to Japanese specimens so I assume that they are conspecific.

The general appearance of the male from Japan is shown in fig. 1, it corresponds well with that of holotype but coloration of the Japanese specimen

¹ The type of *Maevia picta* is also preserved in Berlin Museum, unfortunately I overlooked it during examination of the dry specimens collection.

is faded due to prolonged preservation in alcohol: dark areas are black on the holotype and pale areas strikingly white, covered with white scales. There is only a weak trace of an intensely dark, longitudinal stripe on the abdomen of the Japanese specimen, the extent of that stripe on the holotype is marked with broken lines in fig. 1. Femur, patella and tibia are blackish-brown with contrasting broad ring of white scales on tibia I in holotype. The same segments



Figs. 1-7. *Chrysilla versicolor* (C. L. KOCH, 1846) — specimens from Japan. 1-5 — male, 6-7 — female. 1 — general appearance, 2 — face, 3 — cheliceral dentition, 4-5 — male copulatory organ, ventral and lateral views, 6-7 — epigynum before and after maceration.

are pale fawnish in the Japanese male with slightly paler ring on tibia I covered with semitransparent and almost invisible scales. Face dark with group of white scales medially above eyes I. Difference in size of lateral and median eyes I considerable (fig. 2). Coloration of the female is entirely faded now. Structure of the male copulatory organ as in figs. 4-5, that of female as in

figs. 6–7. Chelicerae elongated with single tooth on inner posterior margin (fig. 3).

Measurements of male (Japanese specimen). Length of cephalothorax 2.70, length of eye field 1.13, width of eye field I 1.73, width of eye field III 1.59, height of cephalothorax 1.32. Ratios: *a* 0.42, *b* 1.08, *c* 0.66, *h* 0.49. Length of abdomen 3.41. Length of segments of legs: I 0.73 + 1.67 + 1.94 + 1.32 + 2.21, II 0.67 + 1.62 + 1.51 + 0.94 + 2.00, III 0.70 + 1.73 + 1.44 + 0.89 + 2.00, IV 0.65 + 1.73 + 1.46 + 0.81 + 2.02. Ratio *d* 1.12.

Measurements of female. Length of cephalothorax 2.38, length of eye field 1.13, width of eye field I 1.59, width of eye field III 1.54, height 1.16. Ratios: *a* 0.48, *b* 1.03, *c* 0.71, *h* 0.49. Length of segments of legs: I 0.54 + 0.84 + 0.92 + 0.78 + 1.35, II 0.49 + 0.84 + 0.81 + 0.67 + 1.35, III 0.57 + 1.11 + 0.92 + 0.76 + 1.54, IV 0.59 + 1.32 + 1.30 + 0.76 + 1.62, Ratio *d* 1.41.

Carrhotus xanthogramma (LATREILLE, 1819)

Aranea bicolor WALCKENAER, 1802: 247 (preoccupied),

Salticus xanthogramma LATREILLE, 1819: 103,

Attus lanipes SIMON, 1871: 189,

Hasarius crinitus KARSCH, 1879: 86, **syn. n.**,

Carrhotus detritus BÖSENBERG et STRAND, 1906: 358, **syn. n.**,

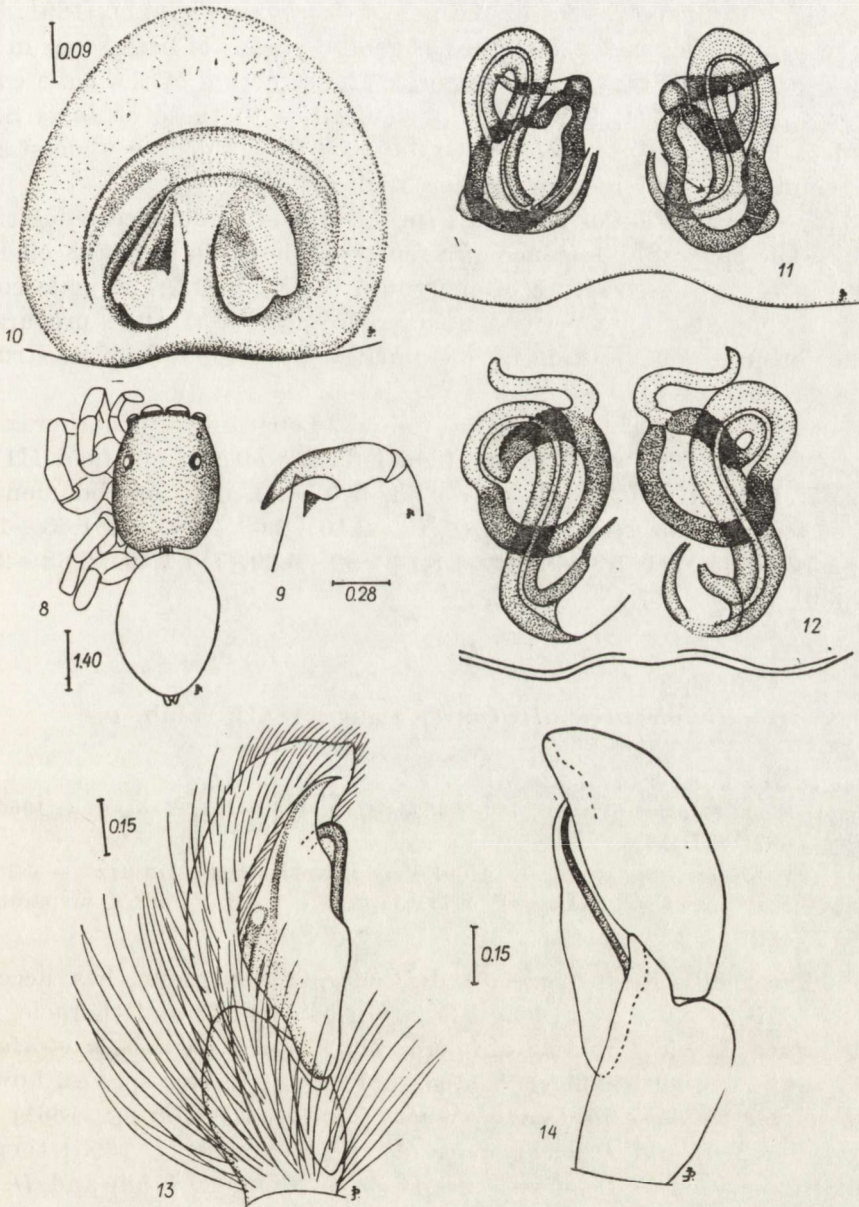
Hasarius crinitus: BÖSENBERG et STRAND, 1906: 368,

?*Carrhotus pichoni* SCHENKEL, 1963: 444.

Material: "*Spinattus cinctus* [*Hasarius crinitus*¹] KARSCH, Japan, DÖNITZ, 2766" – 1 ♀ syntype – in DAHL's preparation, 1 ♀ syntype – in alcohol: "*Spinattus cinctus* [*Hasarius crinitus*] KARSCH, Japan" – 1 ♀ syntype (?) in DAHL's preparation; "*Spinattus cinctus* [*Hasarius crinitus*] (KARSCH) 2924 Japan, DÖNITZ" – 1 ♂ syntype in DAHL's preparation; "*Carrhotus detritus* BÖSENBERG + STRAND. Typus! Japan Saga. W. DÖNITZ S.", "2430" – 2 ♀♀ – syntypes (Senckenberg-Museum, Frankfurt a. M.); "6. *Carrhotus detritus* Bös. et STRAND. Japan, 27.V.1955. Mt. Buna, Shiga pref. coll. T. YAGINUMA" – ♀, ♂ (IZ PAN-Warszawa).

I have compared the material of the both Japanese "species" with specimens of *Carrhotus xanthogramma* (LATR.) from Eastern Siberia, Poland and Switzerland and found that they are conspecific. The names "*crinitus*" and "*detritus*" should be therefore recognized as synonyms of the name "*xanthogramma*". *Carrhotus pichoni* SCHENKEL, 1963 most probably belongs also here but I had no specimens at my disposal.

¹ The name "*cinctus*" is a mistake for the name "*crinitus*". "*Spinattus*" is presumably an unpublished name of DAHL. In the collection register, the number 2924 from the below-mentioned DAHL preparation is followed by the note: "*Hasarius crinitus* KARSCH*, 2 spin. Japan, DÖNITZ, ibidem p. 86, 33". As the label on the slide is "*Spinattus cinctus*" I am sure there is clearly a case of mistake and these specimens should be considered syntypes of *Hasarius crinitus*.



Figs. 8-14. *Carrhotus xanthogramma* (LATREILLE, 1819) - types of *Hasarius crinitus* KAR SCH 1879. Female: 8 - general appearance, 9 - cheliceral dentition, 10-11 - epigynum before and after maceration, 12 - displaced spermathecae in another specimen. 13-14 - male copulatory organ.

Relationships between an Oriental and a Palaearctic species may appear suspicious so I have checked Javanese specimens of *Carrhotus viduus* (C. L. KOCH, 1846) — the type-species of the genus *Carrhotus* THORELL, 1891. There are distinct similarities in the structure of genital organs of both sexes in these two species so I think they are congeneric. The structure of the male copulatory organ in *Carrhotus* shows certain similarities to those of *Icius* SIMON, 1876 and to *Telamonia castriesiana* (GRUBE, 1861) but deeper understanding of these similarities will require further studies.

The present condition of KARSCH's specimens makes detailed redescription impossible. The general appearance of a female is shown in fig. 8, its cheliceral dentition in fig. 9, the structure of epigynum in figs. 10–12. The male copulatory organ is mounted on a permanent microscopic slide (DAHL's preparation) in a rather inconvenient position for examination; some details of its structure are given in figs. 13–14.

The measurements of female are as follows. Length of cephalothorax 5.32, length of eye field 2.03, width of eye field I 3.22, width of eye field III 3.29, height 2.87. Ratios: *a* 0.38, *b* 0.98, *c* 0.63, *h* 0.54. Length of abdomen 5.95. Length of segments of legs: I 1.40 + 1.75 + 2.10 + 2.03 + 2.80, II 1.33 + 1.68 + 1.75 + 1.54 + 2.94, III 1.33 + 2.03 + 1.82 + 1.82 + 3.29, IV 1.40 + 2.38 + 2.10 + 1.75 + 3.01. Ratio *d* 1.15.

***Dendryphantes atratus* (KARSCH, 1881), comb. n.**

Homalattus atratus KARSCH, 1881: 39,

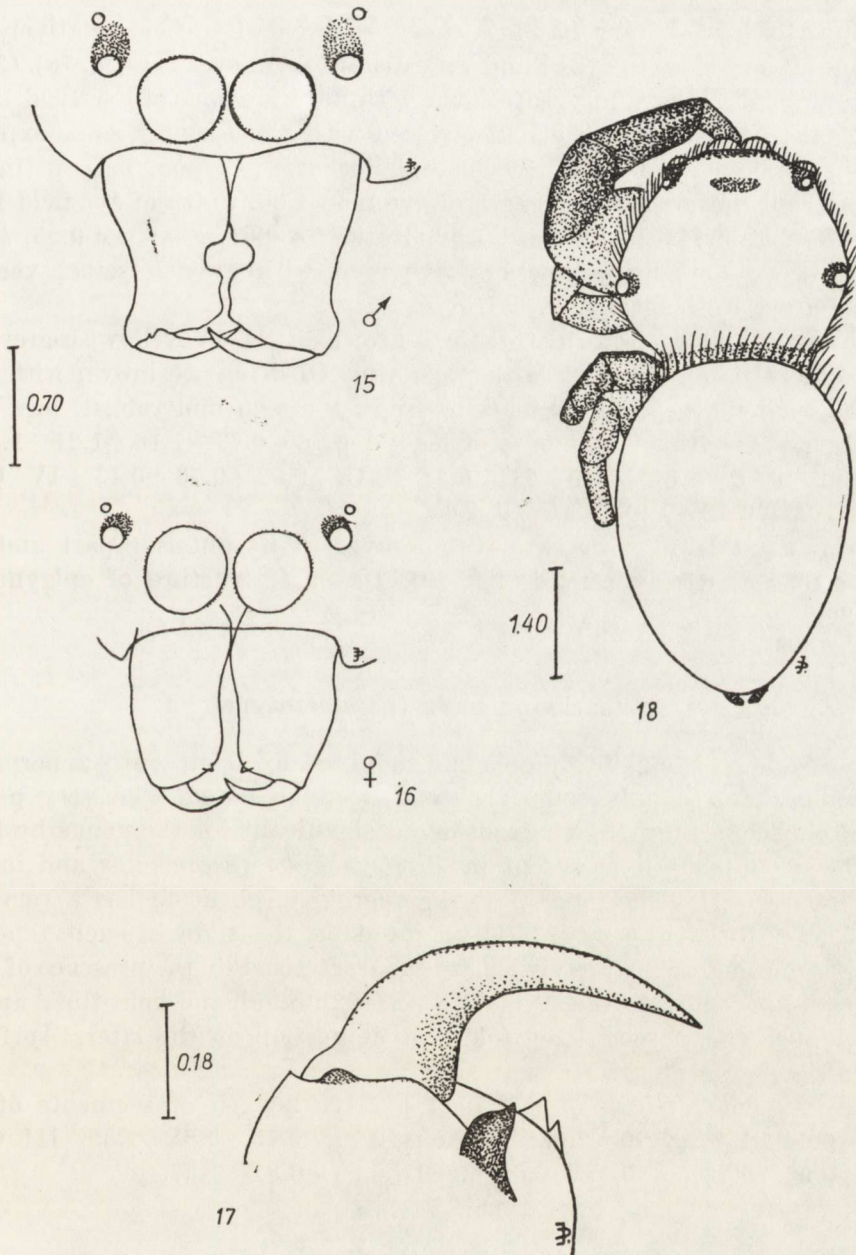
Rhene atrata: BÖSENBERG et STRAND, 1906: 355, SAITO, 1959: 157, YAGINUMA, 1960: 106,

‡*Rhene ipis* FOX, 1937: 18¹.

Material: "*Homalattus atratus* KARSCH. Typen. 3563. Japan, DÖNITZ" — 1 ♀ — lectotype (new); "*Rhene atrata* (KARSCH). 3563. Japan" — 1 ♂ in DAHL's preparation — paralectotype (new).

The difference between *Rheneae* and *Dendryphanteae* groups lies, according to SIMON (1897–1903: 518), in length relation of cephalic and thoracic parts. That difference appears unclear although in ♂ of *Dendryphantes atratus* the cephalic part is distinctly longer. The genital organs in this species, however, are very similar to those in *Dendryphantes fusconotatus* (GRUBE, 1861) (PRÓSZYŃSKI 1971: 210) and *Dendryphantes thorelli* KULCZYŃSKI, 1895; there are also some similarities to *Dendryphantes hastatus* (CLERCK, 1758) and *D. rudis* (SUNDEVALL, 1832). These species appear therefore to be related and most probably congeneric. I do not know yet, however, how to account for very distinct differences in proportions and shape of cephalothorax in *D. atratus*.

¹ *Rhene ipis* FOX is most probably a synonym of *D. atratus* (KARSCH), unfortunately I have not seen the types and therefore the synonymy remains uncertain.



Figs. 15-18. *Dendryphantes atratus* (KARSCH, 1881) - types. 15-16 - chelicerae in male and female, 17 - cheliceral dentition, female, 18 - general appearance of female.

Description of female (lectotype)

Cephalothorax very flat and short, rounded. Eye field relatively very long, eyes II very close to eyes I and very distant from eyes III (fig. 18). Colours faded now: cephalothorax appears fawn with anterior part of eye field brown, eyes lateral surrounded with black. Covered with whitish grey setae expanded horizontally above anterior margin of cephalothorax. Clypeus narrow (fig. 16). Length of cephalothorax 2.70, length of eye field 1.65, width of eye field I 1.73, width of eye field III 2.75, height 1.62. Ratios: *a* 0.61, *b* 0.63, *c* 0.95, *h* 0.60.

Abdomen dorsally yellow now, covered with greyish setae, ventrally yellowish-grey, its length 4.05.

Sternum yellowish-fawn. Coxae I brownish, II–IV yellowish-grey. Maxillae and labium brownish with paler tips. Chelicerae brown with single large tooth on inner posterior margin. Legs I brown and robust, legs II–IV fawnish-grey. Length of segments of legs: I 0.76+0.73+1.16+1.21+1.89, II 0.65+0.62+0.78+0.81+1.40, III 0.54+0.78+0.62+0.73+0.43, IV 0.62+1.05+1.03+0.92+1.81. Ratio *d* 1.65.

Epigynum large with two oval grooves in its anterior part and with posterior margin deeply carved (fig. 19). Internal structure of epigynum as in fig. 20.

Remarks on male (paralectotype)

The specimen is cut into pieces and mounted by DAHL onto a permanent microscopic slide, so only some characters can be noted. The very peculiar shape of chelicerae (fig. 15) was considered significant for the genus SIMON (1897–1903: 635) but it is absent in *Dendryphantes fusconotatus* and in some other related species. The inner posterior margin of chelicera has a very large tooth. The copulatory organ is mounted on the slide in such a position that only some characters are visible, it is characterized by the presence of a conductor equal in length to the stylus (figs. 21–22). Small and bent tibial apophysis articulates with a sclerotized fold and depression on the lateral surface of cymbium.

Measurements. Width of eye field I 1.66. Length of segments of legs: I 0.76+0.94+1.48+1.39+2.02, II 0.63+0.72+0.76+0.81+1.39, III 0.63+0.81+0.63+0.72+1.35, IV 0.67+0.99+0.99+0.81+1.57.

Evarcha albaria (L. KOCH, 1878)

Hasarius albarius L. KOCH, 1878: 780,

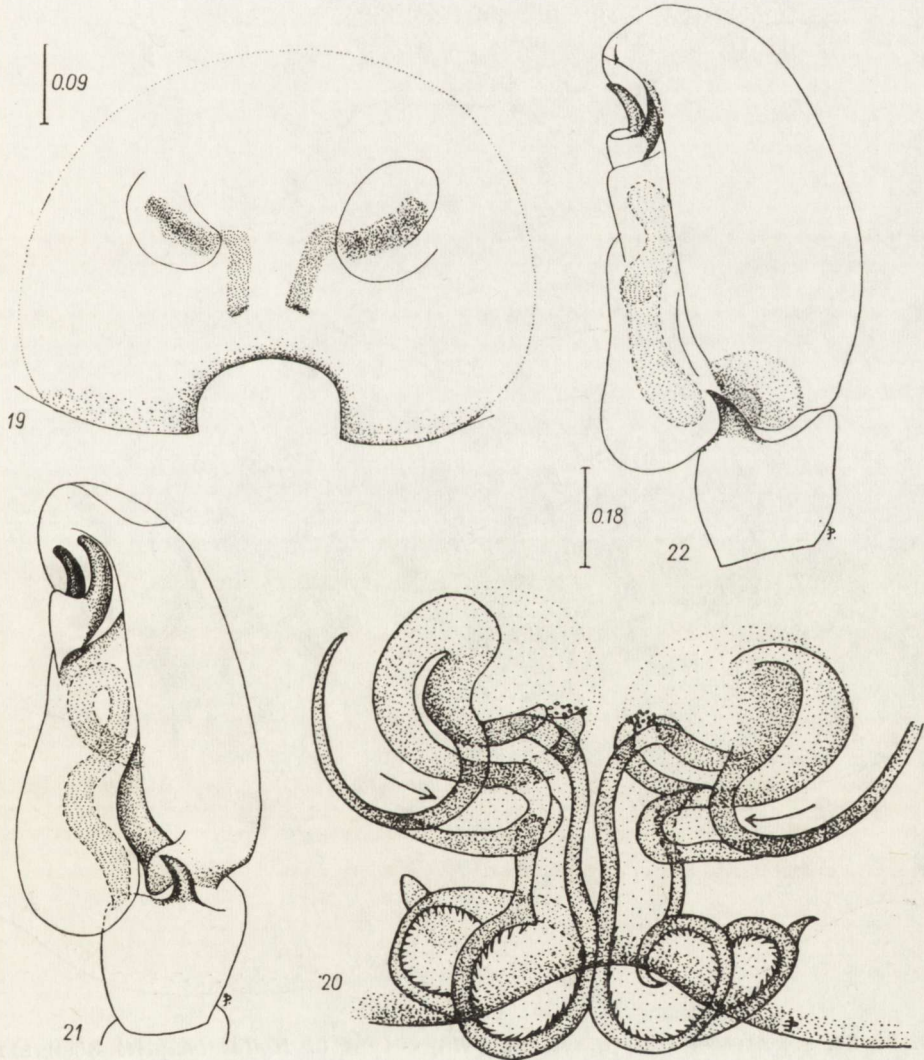
Ergane albifrons KULCZYŃSKI, 1895: 32,

Evarcha albaria: SIMON, 1897–1903: 697–698,

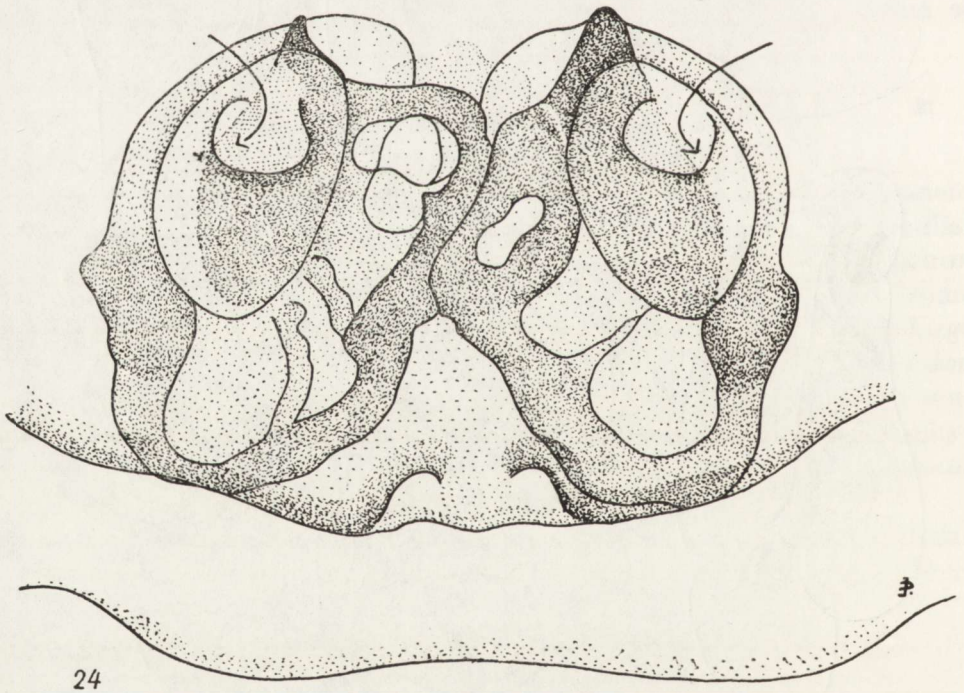
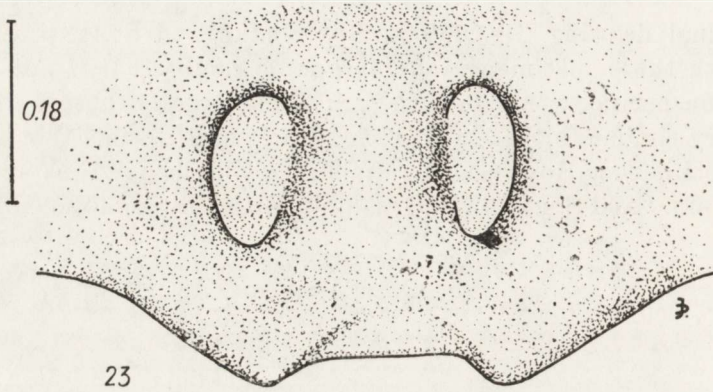
Hyllus lamperti BÖSENBERG et STRAND, 1906: 356 (part.: ♀), **syn. n.**

Material: "*Hyllus lamperti* Bös. + STR., 1906, 3 ♀, p. 356. Könnte Typen sein? [Could these be types] Japan". "10066" - 3 ♀♀ in a rather poor condition.

The original drawing (fig. 369 in BÖSENBERG and STRAND 1906) agrees quite well with these specimens and there is no doubt that if not types they are at least conspecific with types. In turn the internal structure of epigynum (fig. 24) is very similar to that in *Evarcha albaria* so I assume that these females are conspecific too. However, the male of *Hyllus lamperti* as shown in fig. 360 in BÖSENBERG and STRAND (1906) is quite different from male of *E. albaria*



Figs. 19-22. *Dendryphantes atratus* (KARSCH, 1881) - types. 19-20 - epigynum before and after maceration, 21-22 - male copulatory organ, two different lateral views.



Figs. 23-24. *Evarcha albaria* (L. KOCH, 1878) – type of *Hyllus lamperti* BÖSENBERG et STRAND, 1906. Epigynum before and after maceration.

and certainly belongs to a different species. Finding out systematic position of that male will require additional studies.

Owing to poor condition of the specimens, I abstain from making a detailed description. The shape and internal structure of epigynum is shown in figs. 23–24.

Evarcha crassipes (KARSCH, 1881)

Plexippus crassipes KARSCH, 1881: 38.

?*Evarcha crassipes*: PRÓSZYŃSKI et STARĘGA, 1971: 272.

Material: "*Plexippus crassipes* KARSCH, Japan¹. DÖNITZ, Typen, 3561" — 1 ♀ (with epigynum mounted on a permanent slide) — lectotype (new), 9 ♂♂, 6 ♀♀, juv. — paralectotypes (new); "*Menemeroides crassipes* KARSCH, DÖNITZ, Japan" — 1 ♀ in DAHL's microscopic preparation.

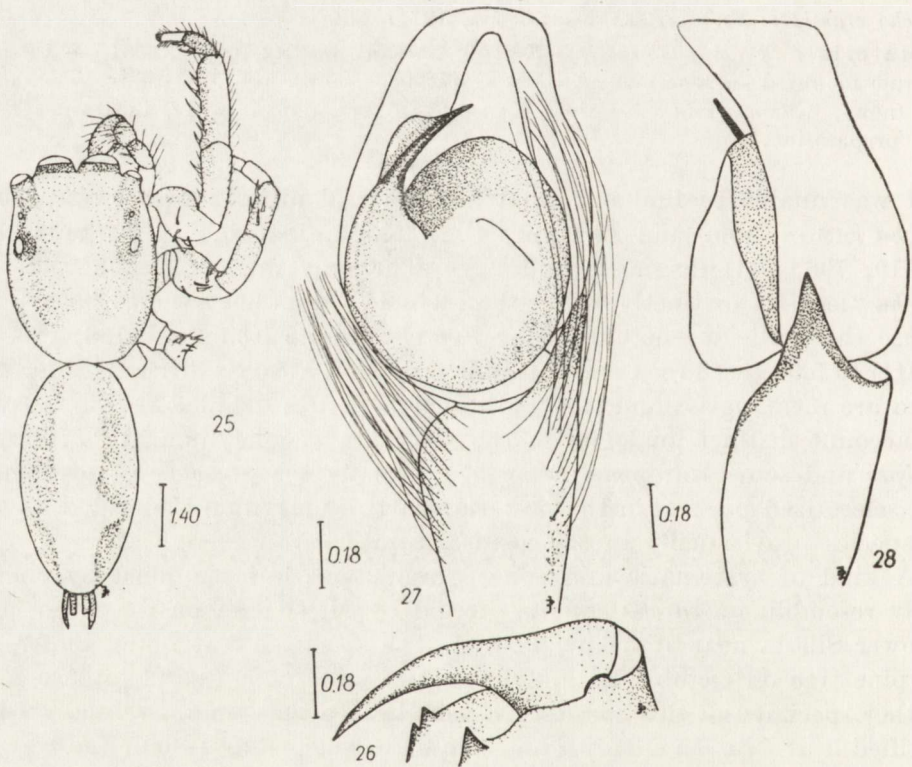
I was unable to find out what are the real differences between genera *Evarcha* SIMON, 1902 and *Plexippus* C. L. KOCH, 1846 in SIMON (1897–1903: 516–519, 708, 734) diagnoses and keys. The only measurable character for *Evarcha* "legs III distinctly longer than legs IV" does not seem to be practical because that ratio in the checked ♂ *Evarcha falcata* (CLERCK, 1758) was 4.90 (leg III) to 5.31 (leg IV). I can conclude only that SIMON's differences for these genera are meaningless and that both genera need a detailed revision. Taking into account distinct analogies in the structure of epigynum of "*Plexippus*" *crassipes* and some European *Evarcha*, especially the presence of presumably blind sclerotized pockets in the posterior part of epigynum, I decided to place this species provisionally in the genus *Evarcha*.

A kind of systematic and zoogeographic puzzle is supplied by single ♀ closely resembling *Evarcha crassipes* found by M. CZAJKA on the Ślęza Massif in Lower Silesia near Wrocław, Poland. The specimen was found under bark of a pine tree on October 20th, 1960 and in spite of long and intense search no other specimen of this species was found since that time. Originally I have identified it as *Evarcha crassipes* and quoted as such (PRÓSZYŃSKI and STARĘGA 1971). Now I think that there are some differences in the structure of epigynum in the Silesian and Japanese specimens of *Evarcha crassipes* so I am not entirely certain of that identification. The problem whether Silesian and Japanese specimens are really conspecific and if so how it happened that one specimen appeared in Lower Silesia, thousands kilometers from Japan, cannot be solved without more material.

¹ BÖSENBERG and STRAND (1906: 366) quote specimens of this species collected by DÖNITZ from Yunohama Mts. near Saga (Kiushiu Island, N. from Nagasaki), there are no details on the label.

Description of male and female

External appearances of male and female of this species are so similar that I decided to describe these together. The general appearance is shown on fig. 25. Cephalothorax is brown now with surroundings of eyes lateral black, there is a stripe of white setae along the dorsal surface. Eyes II located half way between eyes I and III, their distance from eyes III is equal to 1.13 of diameter of the latter. Lateral margins of eye field parallel in male, slightly narrowing anteriorly in female. Clypeus narrow, face type II.



Figs. 25–28. *Evarcha crassipes* (KARSCH, 1881) – types, male. 25 – general appearance, 26 – cheliceral dentition, 27–28 – copulatory organ, ventral and lateral views.

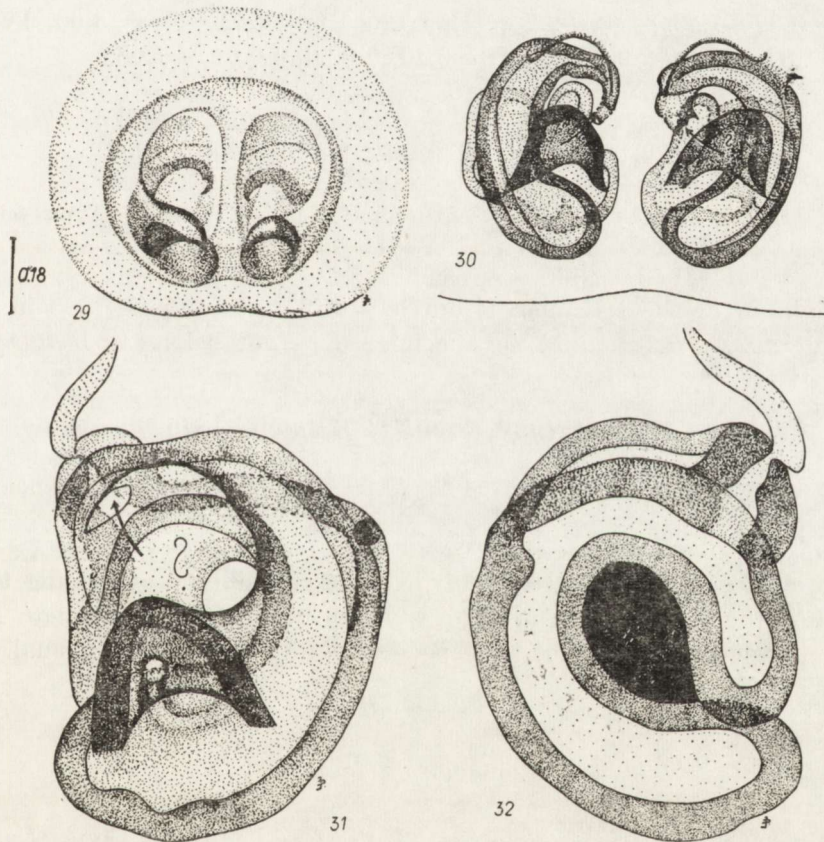
Abdomen dorsally faded and appearing pale yellow now. There is a median longitudinal white streak expanded cross-like in the $\frac{2}{3}$ rds of abdomen, the streak is surrounded by grey bands. The coloration of fresh specimens must be apparently much darker and more contrasted. Ventral surface yellowish with grey median streak and dots.

Sternum and coxae yellow, maxillae and labium brown, white tip-

ped. Chelicerae brown with single large tooth on inner posterior and two teeth on inner anterior margin (fig. 26).

Male copulatory organ simple with large oval bulbus and short stylus with expanded flat lateral projection. Tibia relatively long, tibial apophysis simple (figs. 27-28).

Epigynum with two grooves anteriorly, separated by a median ridge, there are two sclerotized and apparently blind pockets in the posterior part of epigynum (fig. 29). Copulatory openings barely visible and located in the



Figs. 29-32. *Evarcha crassipes* (KARSCH, 1881) — types, female. 29-30 — epigynum before and after maceration, 31-32 — details of a spermatheca, ventral and dorsal views.

bottom of grooves, in the middle of their length just near the median ridge. The course of copulatory canals and spermathecae are very difficult to trace owing to heavy sclerotization of the latter. Their appearance on DAHL's preparation is shown on fig. 30, more details found on macerated and freshly mounted epigynum are shown on figs. 31-32, but some details still need more clarification.

Measurements of male (paralectotype). Length of cephalothorax 4.04, length of eye field 1.84, width of eye field I 2.79, width of eye field III 2.79, height 2.56. Length of abdomen 4.95. Length of segments of legs: I 1.30 + 1.75 + 2.20 + 1.80 + 2.83, II 1.08 + 1.35 + 1.71 + 1.53 + 2.34, III 0.99 + 1.62 + 1.44 + 1.26 + 2.43, IV 0.90 + 1.93 + 1.80 + 1.21 + 2.65. Ratios: *a* 0.45, *b* 1.00, *c* 0.66, *d* 1.25, *h* 0.63.

Measurements of female (lectotype). Length of cephalothorax 4.72, length of eye field 1.89, width of eye field I 2.97, width of eye field III 3.10, length of abdomen 5.67. Length of segments of legs: I 1.12 + 1.30 + 1.71 + 1.75 + 2.16, II 1.12 + 0.99 + 1.53 + 1.62 + 2.25, III 1.12 + 1.80 + 1.71 + 1.48 + 3.06, IV 1.21 + 2.11 + 1.84 + 1.39 + 2.92. Ratios: *a* 0.40, *b* 0.96, *c* 0.64, *d* 1.08.

Hyllus fischeri BÖSENBERG et STRAND, 1906

Material: “? *Hyllus fischeri* Bös. + STRAND 1906 p. 358 ♀. Könnte Typus sein. Japan (Saga) DÖNITZ” – 1 ♀.

Epigynum of the specimen is entirely different from fig. 383 in BÖSENBERG and STRAND (1906), and the specimen does not belong to *Hyllus fischeri*.

“*Hasarius*” *doenitzi* KARSCH, 1879

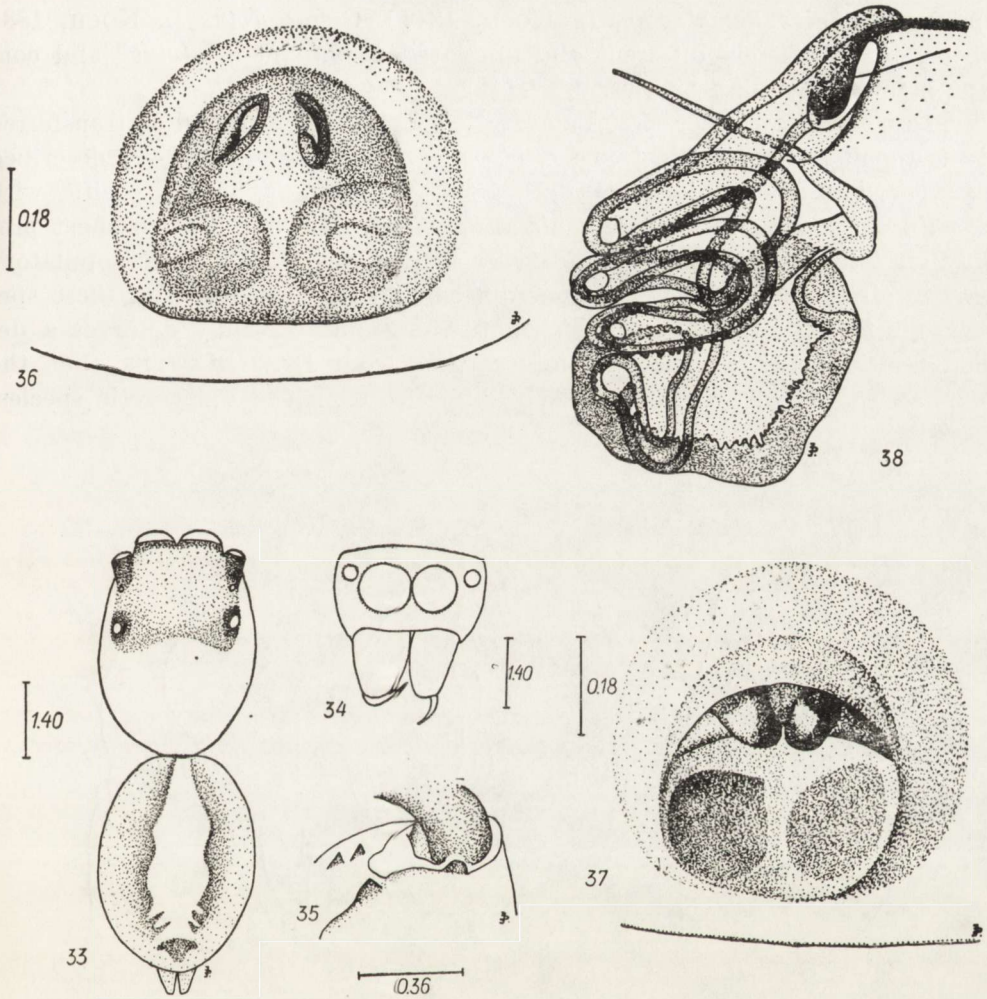
Material: “*Hasarius doenitzi* 2765 Type. KARSCH. Japan [leg.] HILGENDORF” – 1 ♀ syntype.

The cheliceral dentition (fig. 35) excludes possibility of placing this species in the genus *Hasarius* SIMON, 1871, which belongs to *Fissidentati*. As I am not certain yet where to place this species I quote it here provisionally under its original combination.

Remarks on female

The general appearance as in fig. 33, the face in fig. 34. Clypeus very narrow, covered with long white setae. Length of cephalothorax 3.69, length of eye field 1.75, width of eye field I 2.52, width of eye field III 2.47, height 2.11. Ratios: *a* 0.48, *b* 1.02, *c* 0.70, *h* 0.57.

There are remnants of median paler streak on the abdomen. Epigynum may appear different depending on its degree of sclerotization (figs. 36–37). Copulatory openings are located anteriorly and the area behind them is depressed with two darker spots, corresponding with spermathecae, visible through sclerotized wall. Copulatory canals form a complicated coil, spermatheca bag-shaped and heavily sclerotized (fig. 38).



Figs. 33–38. "*Hasarius*" *doenitzi* KARSCH, 1879 – type, female. 33 – general appearance, 34 – face, 35 – cheliceral dentition, 36–37 – epigynum in a less and a more sclerotized specimen, 38 – spermatheca.

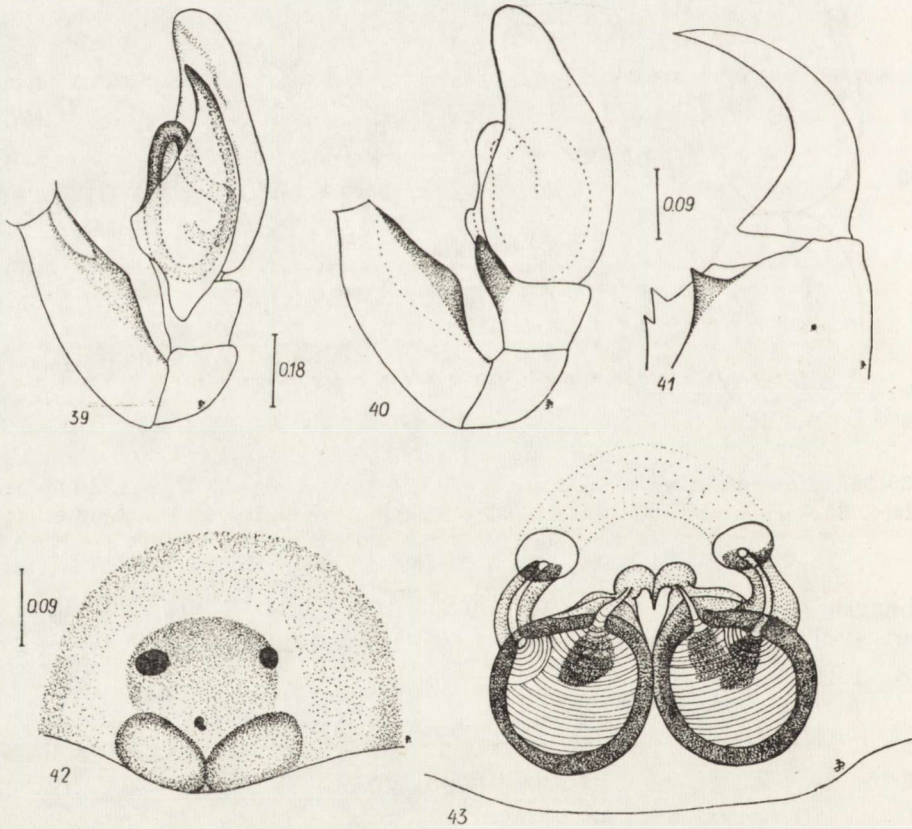
Length of segments of legs: I 0.85 + 1.03 + 1.44 + 1.30 + 2.11, II 0.90 + 0.99 + 1.30 + 1.21 + 1.98, III 0.99 + 1.53 + 1.39 + 1.30 + 2.25, IV 0.99 + 1.80 + 1.48 + 1.21 + 2.43. Ratio \bar{d} 1.06.

Icius SIMON, 1876

There is some confusion about East Palaearctic *Icius* species which cannot be entirely clarified yet. It is certain, however, that all four Japanese *Jotus* species belong to the genus *Icius* because of their distinct similarities to the

type-species *Icius hamatus* (C. L. KOCH, 1847). Genus *Jotus* L. KOCH, 1881 appears to be entirely different and unrelated to Japanese "*Jotus*" and contains a few Australian species.

There are a few other East Palaearctic species which should be transferred into the genus *Icius*, for instance *Ictidops pupus* KARSCH, 1879 — redescrbed below, or "*Attus*" *arenicolor* GRUBE, 1861, which may be conspecific with *Icius linea* KARSCH, 1879. *Telamonia castrisiana* (GRUBE, 1861) is most probably an *Icius* too. Owing to similarities in the structure of male copulatory organ in all these species it is rather difficult to find out which of these species are in fact conspecific and which not. The genus certainly deserves a detailed revision. I have received information from Dr. B. CUTLER that the American species of *Icius* are entirely different from the Palaearctic species.



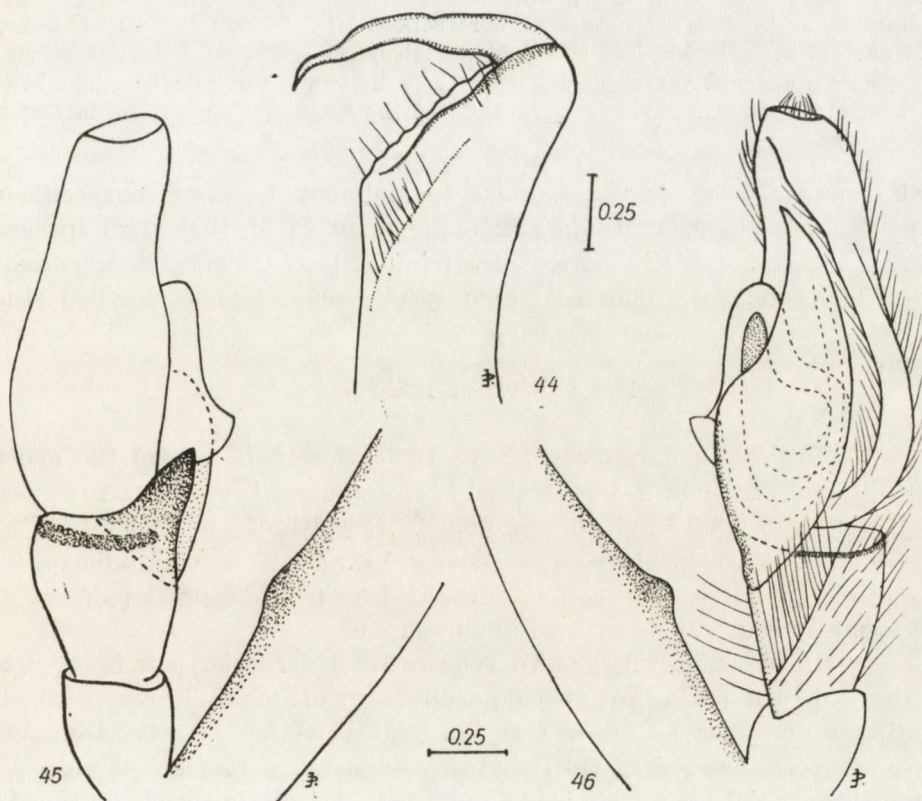
Figs. 39-43. *Icius linea* (KARSCH, 1879), — types. 39-40 — male copulatory organ, ventral and lateral views, 41 — female, cheliceral dentition, 42-43 — epigynum before and after maceration.

Icius linea (KARSCH, 1879), comb. n.*Evophrys linea* KARSCH, 1879: 90,*Jotus linea*: BÖSENBERG et STRAND, 1906: 337.

Material: "*Evophrys linea* KARSCH. 2927 Typen. Japan, leg. HILGENDORF" — 1 ♀ — lectotype (new), 2 juv. ♂♂ — paralectotypes; "*Kulczyńska linea* (KARSCH) 2927. Japan" — 1 ♀, 1 ♂ — mounted in DAHL's microscopic preparations — paralectotypes.

Owing to the very poor condition of specimens I am unable to give details of their appearance. Cheliceral dentition of female is shown in fig. 41, epigynum before and after maceration in figs. 42–43, male copulatory organ is shown in figs. 39–40.

Measurements of female (lectotype). Length of cephalothorax 1.74, length of eye field 0.73, width of eye field I 1.15, width of eye field III 1.17, height 0.82. Ratios: *a* 0.42, *b* 0.98, *c* 0.64, *h* 0.47. Length of abdomen 2.61. Length of segments of legs: I 0.36 + 0.54 + 0.57 + 0.54 + 0.89, II 0.38 + 0.45 + 0.52 + 0.50 + 0.77, III 0.36 + 0.70 + 0.56 + 0.50 + 0.97, IV 0.40 + 0.80 + 0.75 + 0.68 + 1.10. Ratio *d* 1.34.



Figs. 44–46. *Icius pupus* (KARSCH, 1879) — type. 44 — chelicera, 45–46 — male copulatory organ, latero-dorsal and ventral views.

Icius pupus (KARSCH, 1879), comb. n.

Ictidops pupus KARSCH, 1879: 85,

Aelurillus pupus: BÖSENBERG et STRAND, 1906: 356.

Material: "*Ictidops pupus* KARSCH, HILGENDORF, Japan, 2772. Type" — 1 ♂ — holotype — in DAHL's preparation.

There is no possibility to give detailed description of a specimen cut into pieces and mounted in an inconvenient study position on a permanent microscopic slide. The toothless chelicera is shown on fig. 44 and the copulatory organ on figs. 45–46.

Marpissa elongata (KARSCH, 1879), comb. n.

Icius elongatus KARSCH, 1879: 83,

Hycia elongata: YAGINUMA, 1960: 106.

Material: "*Icius elongatus* KARSCH* Japan 2675, DÖNITZ" — 1 ♂ dark — lectotype (new), 1 ♂ faded — paralectotype (new).

KARSCH wrote that the specimens were collected by DÖNITZ and HILGENDORF, the second name is not mentioned on the specimen label. The collection register mentions only single specimen under the number 2675 while there are two in the tube. I assume, however, that these small differences are insignificant and the specimens studied are in fact types of the species.

Marpissa elongata is very similar to and may be even conspecific with *Marpissa nobilis* (GRUBE, 1861) (PRÓSZYŃSKI 1971: 8), these two species are in turn closely related to *Mithion canestrinii* (NINNI, 1868) and *Marpissa salophila* TYSTSCHENKO, 1965. All these species require more detailed studies.

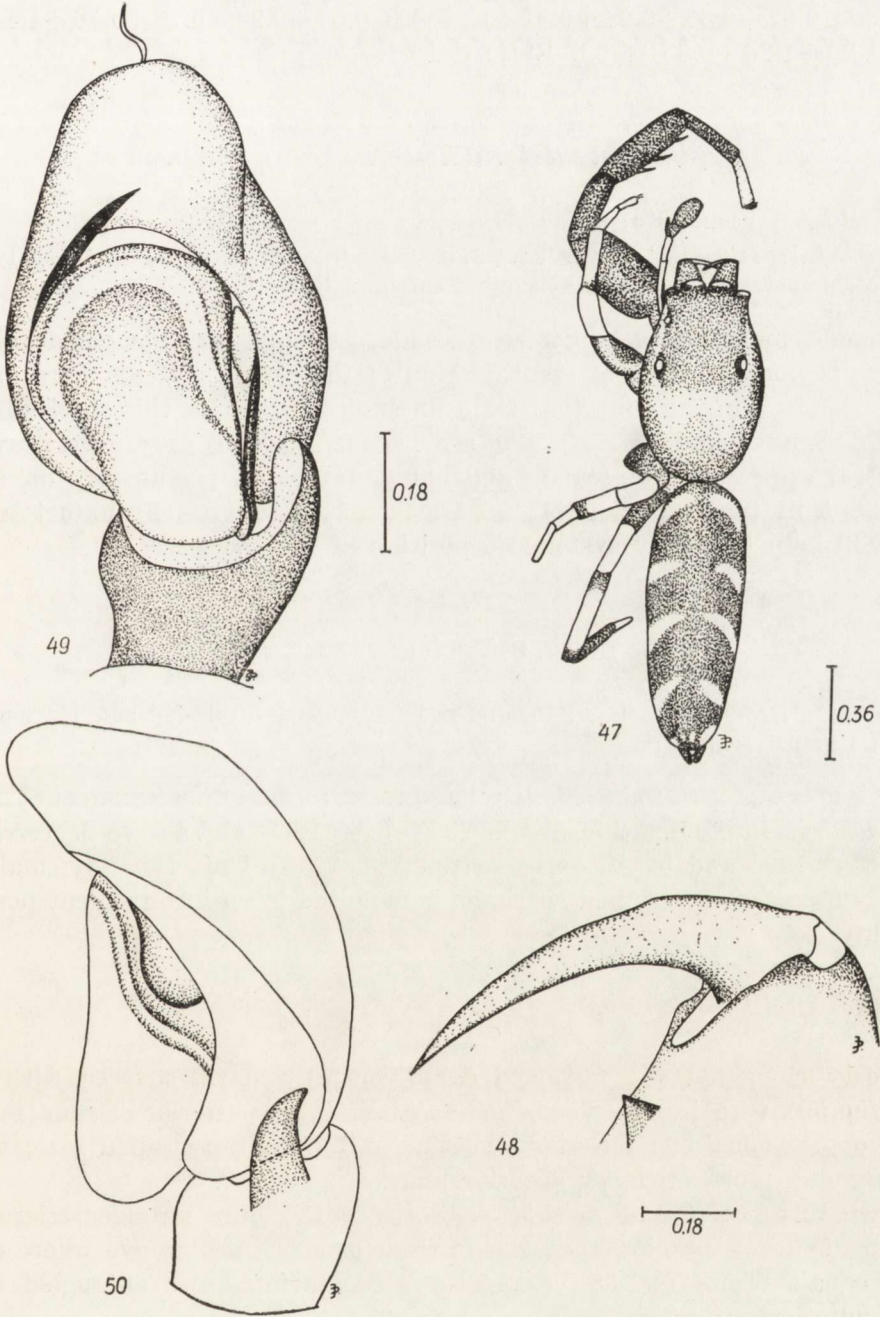
Description of male

Cephalothorax dark brown with two paler spots behind the eye field and white margin along the ventral edge of carapace. Clypeus narrow. Length of cephalothorax 2.88, length of eye field 1.17, width of eye field I 1.53, width of eye field III 1.53, height 0.99. Ratios: *a* 0.41, *b* 1.00, *c* 0.76, *h* 0.34.

Abdomen narrow, elongated, blackish-brown now with 4 pairs of white spots laterally (fig. 47). Length of abdomen 4.05.

Sternum dark brown, coxae yellowish with anterior pair fawn, maxillae and labium dark brown, pale tipped. Chelicerae brown with single large tooth on inner posterior margin. Pedipalpal femur yellowish, patella, tibia and tarsus brownish. Copulatory organ has large oval bulbus and short stylus. Tibial apophysis large and bent, articulating with flattened and depressed lateral surface of cymbium (figs. 49–50).

Anterior legs brown, long and robust, remaining legs slender, fawnish



Figs. 47-50. *Marpissa elongata* (KARSCH, 1879) - type, male. 47 - general appearance, 48 - cheliceral dentition, 49-50 - copulatory organ, ventral and lateral views.

with darker femora. Length of segments of legs: I $0.81 + 1.44 + 1.84 + 1.30 + 2.07$, II $0.67 + 0.85 + 0.94 + 0.81 + 1.39$, III $0.67 + 0.99 + 0.76 + 0.76 + 1.44$, IV $0.63 + 1.26 + 1.26 + 0.85 + 1.62$. Ratio \bar{d} 1.65.

***Marpissa magister* (KARSCH, 1879), comb. n.**

Icius magister KARSCH, 1879: 83.

Material: "*Icius magister* KARSCH. ♀ 2736. Japan (leg. HILGENDORF)" — 1 ♀ syntype — in DAHL's preparation, remnants of another specimen in alcohol.

Female, mounted on a microscopic slide, has epigynum not yet developed so there is no possibility of identification of that specimen. As there are no other specimens in the collection I am unable to redescribe this species. However, BÖSENBERG and STRAND (1906: 353, figs. 133, 353) gave good drawings of general appearance of female and epigynum based presumably on specimens kept in the collection of the Senckenberg-Museum, Frankfurt a. M., these will help to clarify systematic position of the species.

***Marpissa milleri* PECKHAM, 1894**

Material: "*Marpissa milleri* PECKHAM, Japan" — 1 ♀ in alcohol and 1 ♂ mounted in DAHL's preparation.

This species seems to be closely related to *M. roemeri* BÖSENBERG et STRAND, 1906 as shown in the figs. 288, 3, 4 in YAGINUMA (1960) and also to *M. coreanica* SCHENKEL, 1963 and to *M. muscosa* (CLERCK, 1758). Unfortunately, male copulatory organ of the studied specimen is mounted in an inconvenient position for study.

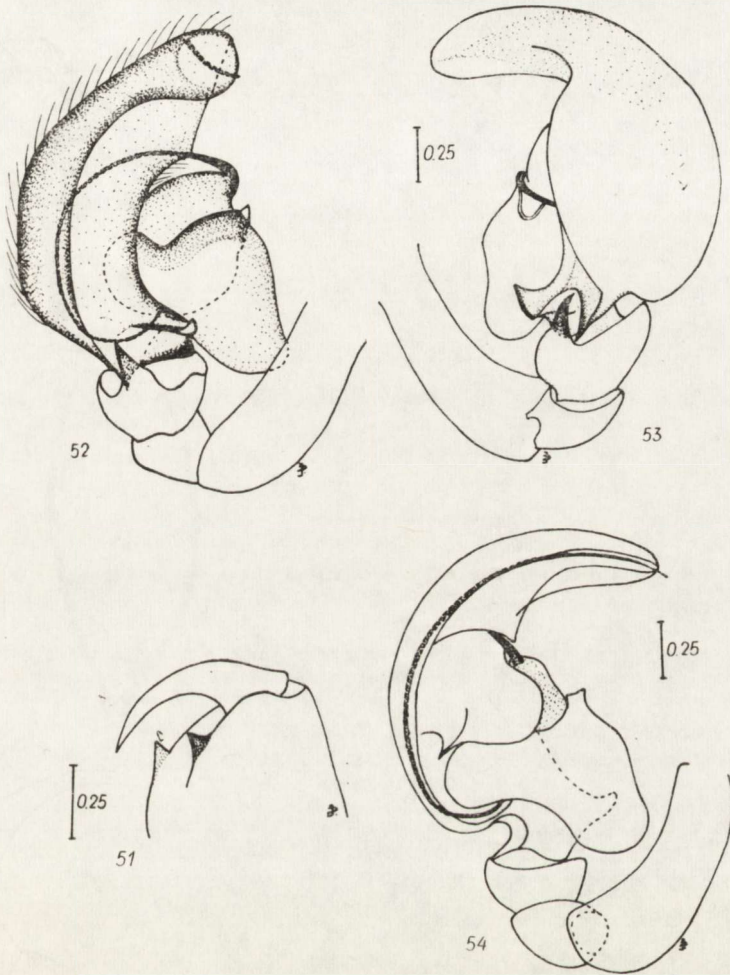
Description of female

Body elongated and flattened dorso-ventrally, dark, covered with long setae (fig. 56). Chelicerae with single tooth on inner posterior margin (fig. 58) and two teeth on inner anterior one. This differs in the studied male which has only one tooth on inner anterior margin.

Epigynum flat and weakly sclerotized, the only stronger sclerotized structure is a horse-shoe-shaped rim in front of a distinct groove where copulatory canals begin (fig. 58). Copulatory canals form two entangled knots drawn anteriorly (fig. 59).

Legs robust.

Measurements. Length of cephalothorax 4.36, length of eye field 1.80, width of eye field I 2.34, width of eye field III 2.38, height 1.57, length of ab-

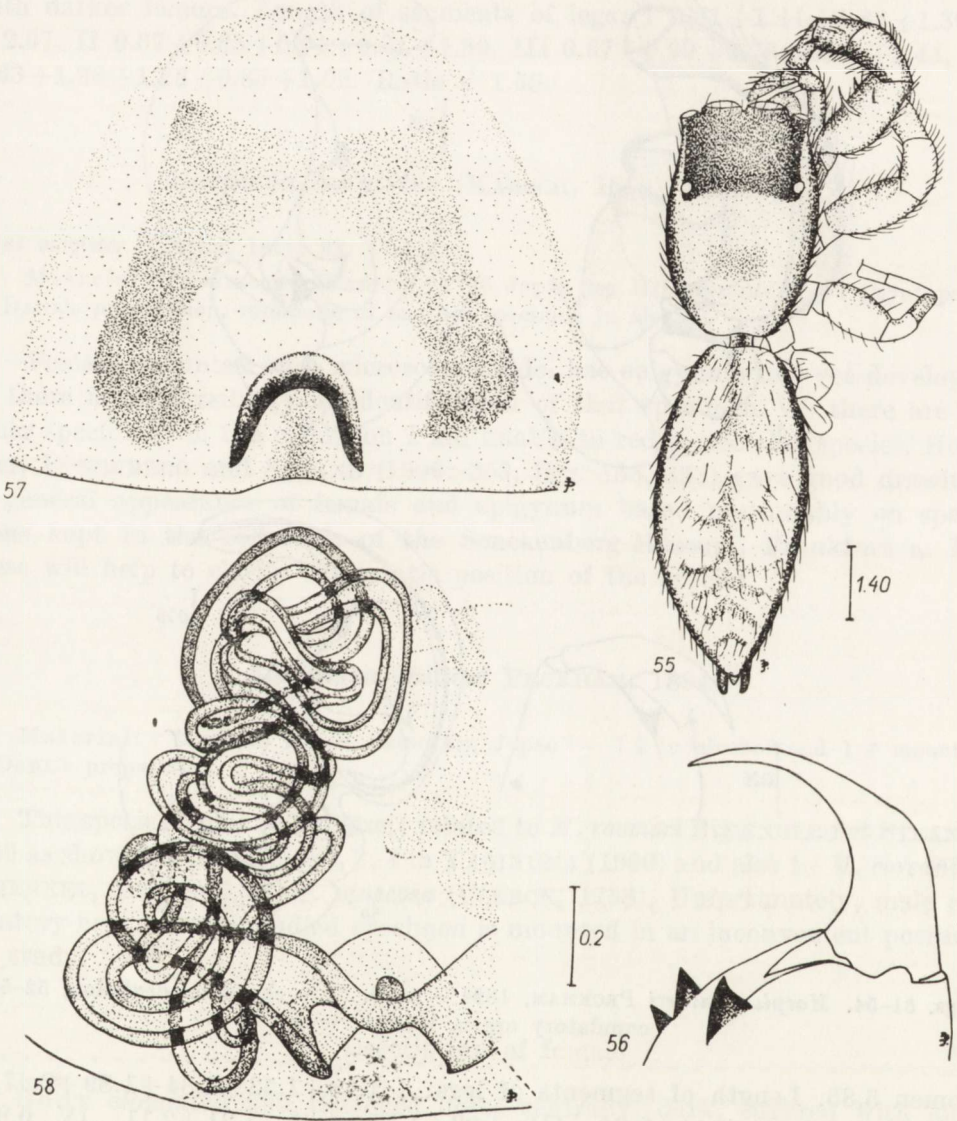


Figs. 51-54. *Marpissa milleri* PECKHAM, 1894 - male. 51 - cheliceral dentition, 52-54 - copulatory organ, lateral views.

pomen 5.85. Length of segments of legs: I 1.08+1.53+1.84+1.89+2.47, II 0.99+1.30+1.48+1.44+2.20, III 1.03+1.57+1.35+1.21+2.11, IV 0.99+1.84+2.02+1.48+2.52. Ratios: *a* 0.41, *b* 0.98, *c* 0.77, *d* 1.50, *h* 0.36.

Remarks on male

General appearance resembling that of female. Copulatory organ large with tip of cymbium elongated and bent, inner lateral surface of cymbium depressed and flattened with semicircular groove in its posterior part, articulating with short and bent tibial apophysis. Stylus very long, making a full circle around bulbus and extending up to the tip of cymbium (figs. 53-55).



Figs. 55–58. *Marpissa milleri* PECKHAM, 1894 – female. 55 – general appearance, 56 – cheliceral dentition, 57 – epigynum, 58 – spermatheca.

Marpissa pulla (KARSCH, 1879)

Marptusa pulla KARSCH, 1879: 87.

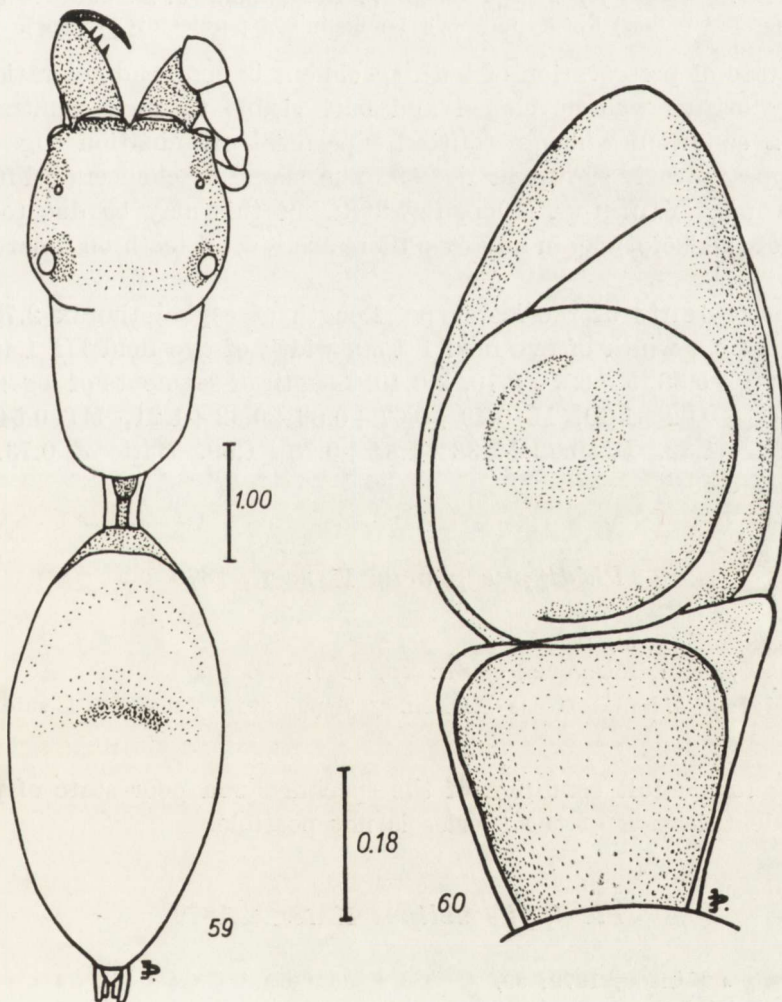
Material: “*Marpissa pulla* KARSCH* ♂ Japan” – 1 ♂ – holotype mounted in DAHL’s preparation containing legs, ventral parts of abdomen and thorax, eyes and chelicerae, remaining parts are kept in alcohol but both pedipalps are missing.

The holotype does not permit redescription of the species. However, BÖSENBERG and STRAND (1906: 348) gave good drawing of female specimen identified as belonging to this species. I shall deal with that specimen in my next paper.

Marpissa vittata (KARSCH, 1879)

Marptusa vittata KARSCH, 1879: 87,

Marpissa vittata: BÖSENBERG et STRAND, 1906: 346.



Figs. 59-60. *Myrmarachne japonica* (KARSCH, 1879) — type, male. 59 — general appearance, 60 — copulatory organ visible through semitransparent skin.

Material: "*Denticulatus. Marptusa vittata* KARSCH* — DÖNITZ, 2921 (Japan)" — 2 juvenile specimens mounted in DAHL's preparation — syntypes.

There is no possibility of redescription of the species on these syntypes. There is another specimen of this species in the Senckenberg-Museum in Frankfurt a. M.

Myrmarachne japonica (KARSCH, 1879)

Salticus japonicus KARSCH, 1879: 82,

Myrmarachne japonica: SIMON, 1897–1903: 498–503, YAGINUMA, 1960: 109.

Material: "*Salticus japonicus* KARSCH* S. HILGENDORF J. N. 2918" — 1 subadult ♂ (with separated palpus) lectotype (new), 1 subadult ♂ paralectotype (new).

The state of preservation of both specimens is poor and coloration faded. Copulatory organs well developed and half visible through semitransparent cuticle — a condition which permitted superficial examination (fig. 60). The general appearance is shown in fig. 59. The shape of chelicerae differs from those drawn by YAGINUMA (1960, fig. 298) but this may be due to unadult condition of the lectotype, in any case there are several teeth on inner posterior margin.

Measurements of the lectotype. Length of cephalothorax 2.70, length of eye field 1.03, width of eye field I 1.30, width of eye field III 1.40, height 1.08. Ratios: *a* 0.38, *b* 0.93, *c* 0.79, *h* 0.40. Length of segments of legs: I 0.54 + 0.67 + 1.03 + 0.62 + 1.30, II 0.49 + 0.67 + 0.86 + 0.62 + 1.21, III 0.54 + 0.49 + 0.89 + 0.54 + 1.32, IV 0.62 + 1.38 + 1.54 + 0.73 + 1.89. Ratio *d* 0.73. Length of abdomen 3.43.

Phidippus procus KARSCH, 1879

Phidippus procus KARSCH, 1879: 88,

Dendryphantes procus: BÖSENBERG et STRAND, 1906: 354.

Material: "*Phidippus procus* KARSCH. ♂ Typus 2923. Japan" — 1 subadult ♂ — holotype.

Owing to unadult condition of the specimen and poor state of preservation the identification of the species is not possible.

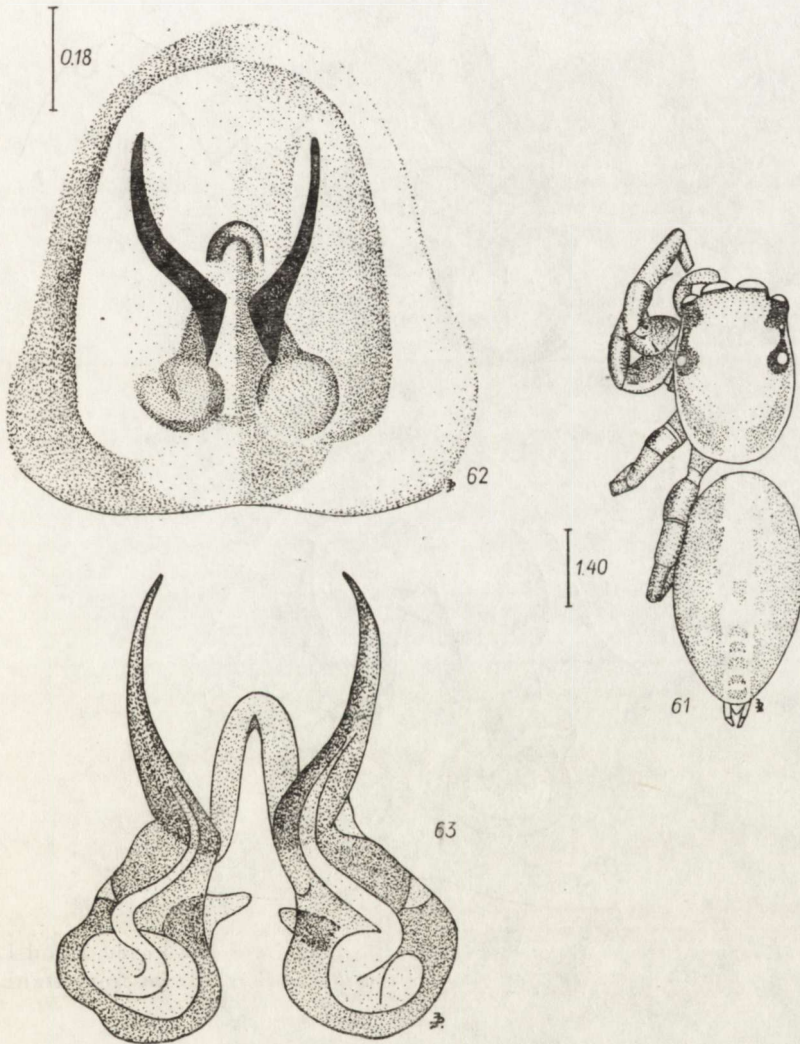
Plexippus setipes KARSCH, 1879

Plexippus setipes KARSCH, 1879: 89,

Dexippus berlandi SCHENKEL, 1963: 456, *syn. n.*

Material: "*Plexippus setipes* KARSCH. Typus. Chinchoxo (?) HILG.[ENDORF leg.] 2768" — 1 ♀ lectotype; "*Plexippus setipes* KARSCH Type" — 1 juv. ♀ — paralectotype;

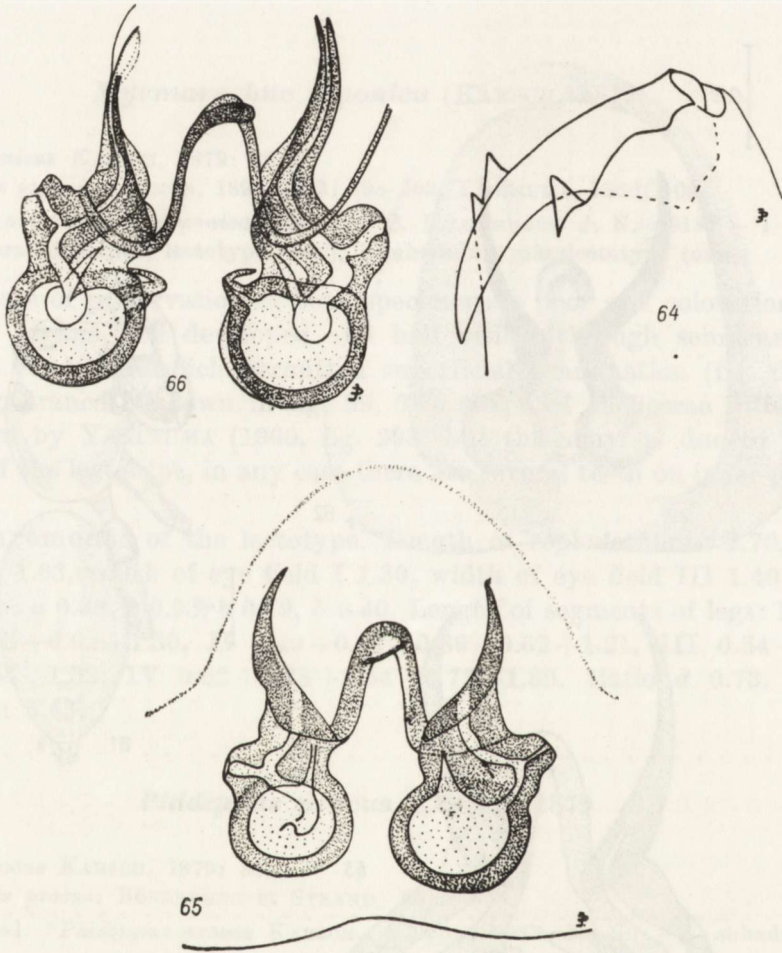
"*Plexippus setipes* KARSCH 2768 Japan" — 4 ♀♀ paralectotypes; "*Menemeroides setipes* KARSCH ♀ Japan" — 1 ♀ in DAHL's preparation; "*Menemeroides illigeri*¹ ♀ Krasnovodsk (a Caspian Sea port in Turkmenian SSR) HEYM. u. SAMT." — 1 ♀ in DAHL's preparation; "*Menemeroides illigeri*¹ ♀ KARSCH, Lenkoran (a Caspian Sea port in Azerbaijan SSR)" — 1 ♀ in DAHL's preparation.



Figs. 61-63. *Plexippus setipes* (KARSCH, 1879) — type. 61 — general appearance of female, 62-63 — epigynum before and after maceration.

¹ Wrong identification, nothing in common with *Menemerus illigeri* (AUDOUIN, 1827) specimens from SIMON collection (from Tunisia) I have checked for the purpose.

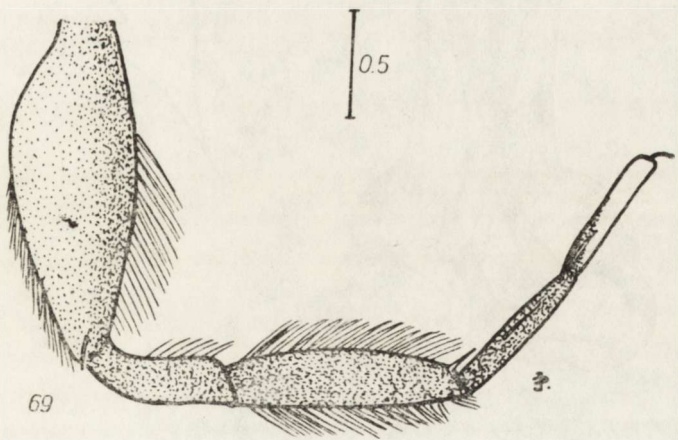
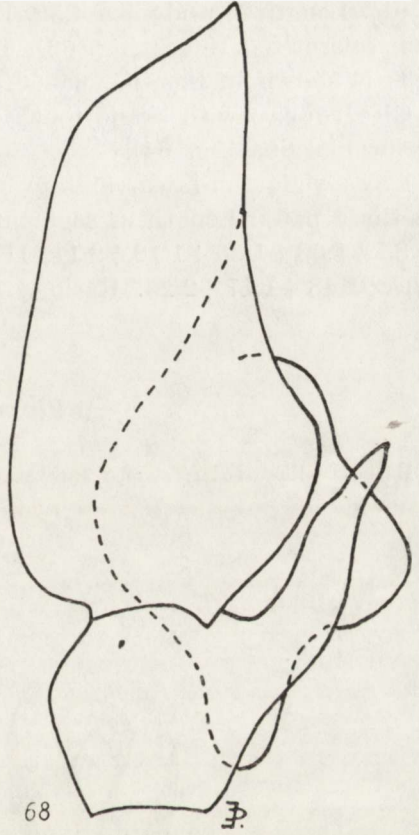
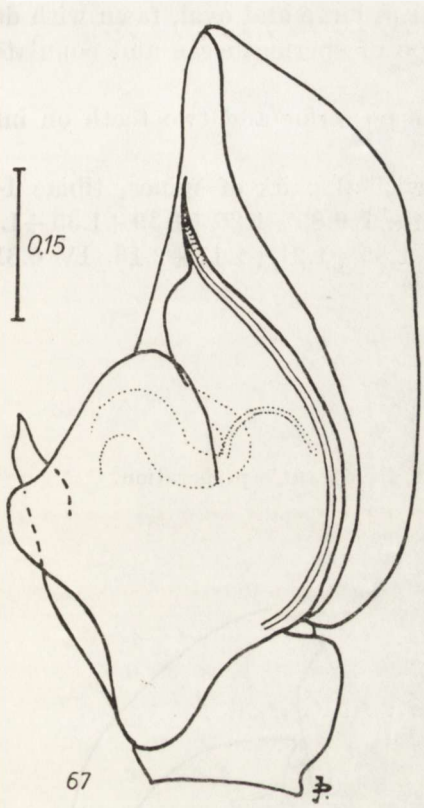
The species is closely related to *Plexippus paykulli* (AUDOUIN, 1827), type-species of the genus *Plexippus* C. L. KOCH, 1846, but not conspecific. The species has been not reported yet from the Soviet Union.



Figs. 64–66. *Plexippus setipes* (KARSCH, 1879) – females from Krasnovodsk and Lenkoran, 64 – cheliceral dentition, 65–66 – epigynes after maceration (drawn from DAHL's preparations).

Description of female

Cephalothorax fawn now with dorsal surface yellowish, surroundings of eyes lateral black. Clypeus very narrow, face type I. Length of cephalothorax (measurements taken from the single better preserved specimen) 3.60, length of eye field 1.89, width of eye field I 2.43, width of eye field III 2.38, height 1.62. Ratios: *a* 0.52, *b* 1.02, *c* 0.78, *h* 0.45.



Figs. 67-69. *Plexippus* sp. 1. Male copulatory organ and leg I (drawn from a DAHL's preparation).

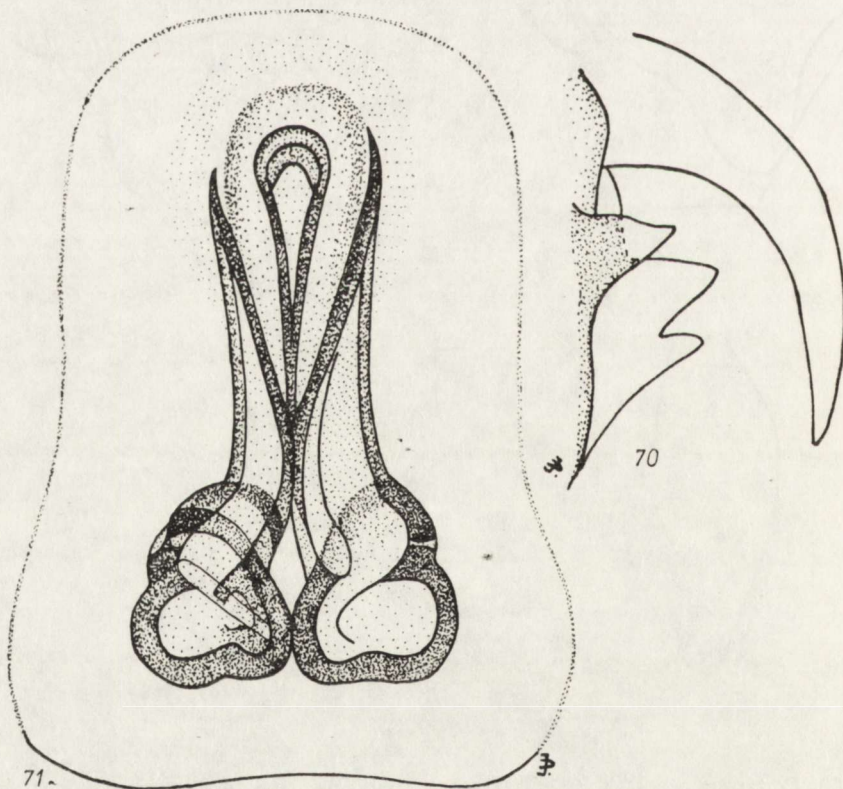
Abdomen greyish-yellow with paler indistinctly serrated median streak (fig. 61). Length of abdomen 4.50. Epigynum large and oval, fawn with dark brown sclerotized ridges (fig. 62). The shape of spermathecae and copulatory organs is shown in figs. 63, 65–66.

Chelicerae with single tooth on inner posterior and two teeth on inner anterior margins (fig. 64).

Legs yellowish-fawn, matatarsi I–II with 2 pairs of spines, tibiae I–II with three pairs. Length of segments of legs: I $0.85 + 1.26 + 1.39 + 1.35 + 1.93$, II $0.85 + 1.08 + 1.30 + 1.12 + 2.11$, III $1.03 + 1.35 + 1.21 + 1.17 + 2.16$, IV $0.81 + 2.07 + 1.48 + 1.17 + 2.25$. Ratio d 1.22.

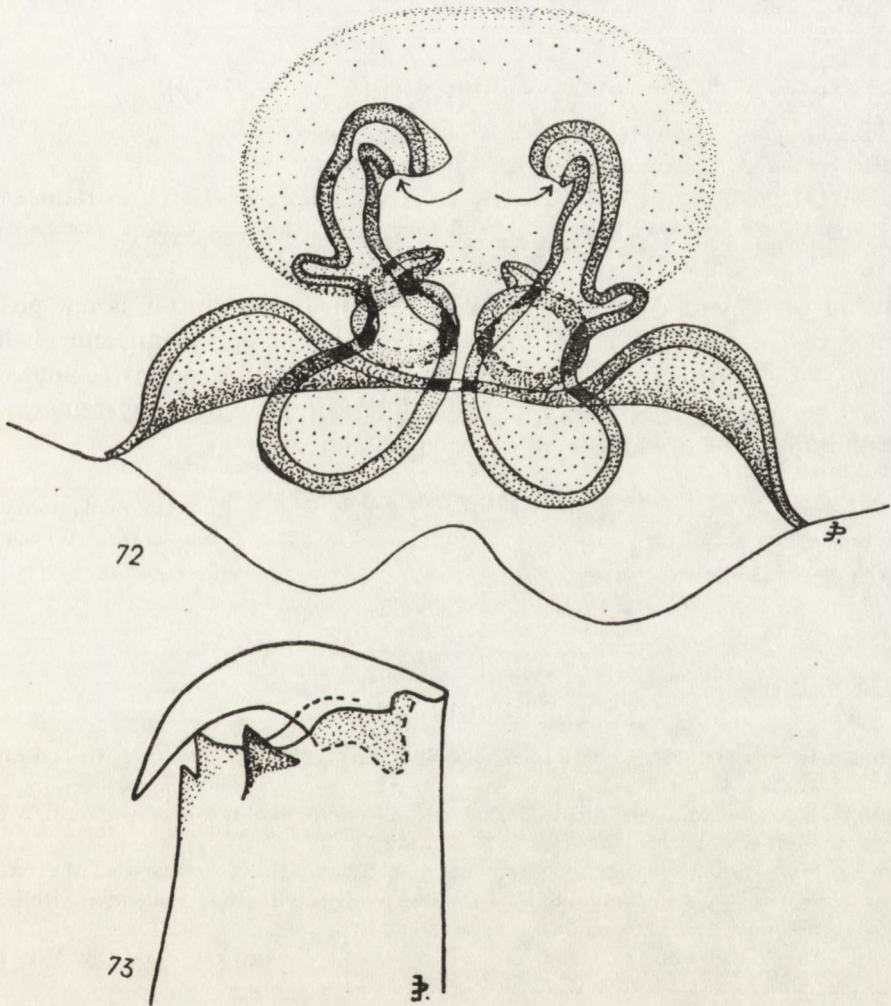
Plexippus sp. 1

Mater "*Verhoial:effella* ♂ 3560 Japan" – 1 ♂ in DAHL's preparation.



Figs. 70–71. *Plexippus* sp. 2. Epigynum after maceration and cheliceral dentition (drawn from a DAHL's preparation).

I suppose that this species is related to *Plexippus paykulli* but in the present condition of the specimen I cannot identify it. The structure of copulatory organ is shown in figs. 67-68, shape of leg I in fig. 69.



Figs. 72-73. "*Telamonia*" *cylindrata* (KARSCH, 1879) — type. Epigynum and cheliceral dentition (drawn from a DAHL's preparation).

Plexippus sp. 2

Material: "*Menemeroides*, *Verhoeffella* ♀. VOLCKENS, Japan" — 1 ♀ in DAHL's microscopic preparation.

The species is closely related to *P. setipes* and slightly less closely to *P.*

paykulli. The basic plan of internal structure of epigynum is identical in these three species, but proportions of spermathecae and copulatory canals, as well as size and location of vagina, are different (fig. 71). Cheliceral dentition is similar to *P. setipes* (fig. 70).

"*Telamonia*" *cylindrata* (KARSCH, 1879)

Maevia cylindrata KARSCH, 1879: 84,

Telamonia cylindrata: BÖSENBERG et STRAND, 1906: 331.

Material: "*Orienticius cylindratus* (KARSCH) ♀ 2919 Japan" — 1 ♀ in DAHL's microscopic preparation; I assume that it is the holotype and the only known specimen of the species.

Owing to present condition of the specimen its description is not possible. The only two details visible — internal structure of epigynum and cheliceral dentition are shown on figs. 72–73. It appears that the species is not related to *Telamonia castriesiana* (GRUBE, 1861) but finding out its systematic position will require examination of more specimens.

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STRESZCZENIE

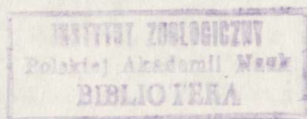
[Tytuł: Studia systematyczne nad wschodniopalearktycznymi *Salticidae*, II. Redeskrpcje japońskich *Salticidae* w zbiorach Muzeum Zoologicznego w Berlinie]

Właściwe rozumienie systematyki i ewolucji europejskich *Salticidae* nie jest możliwe bez poznania wschodniopalearktycznych przedstawicieli tej rodziny. Z najlepiej poznanej części Wschodniej Palearktyki – Japonii podano dotychczas 70 gatunków *Salticidae*, z tego 16 gatunków opisał F. KARSCH (1879, 1881). W oparciu o typy przechowywane w zbiorach Zoologisches Museum w Berlinie autor podaje redescrypcje i uwagi o 15 słabo znanych gatunkach KARSCHA oraz o 5 innych gatunkach. Spośród tych *Chrysilla versicolor* (C. L. KOCH, 1846) jest nowa dla fauny Japonii, natomiast *Plexippus setipes* KARSCH, 1879 jest nowy dla fauny ZSRR (Turkmeńska i Azerbejdżańska SRR).

РЕЗЮМЕ

[Заглавне: Изучение систематики *Salticidae* из восточной Палеарктики, II. Редескрипции японских *Salticidae* по коллекциям берлинского Зоологического музея]

Невозможно правильно оценить систематическое положение и эволюционное развитие европейских *Salticidae* без познания восточно-палеарктических представителей этого семейства. Для наиболее изученной части восточной Палеарктики — Японии, приведено до настоящего времени 70 видов, из которых 16 были описаны Ф. Каршем (Karsch 1879, 1881). На основании типов находящихся в Зоологическом музее в Берлине автор дает переописание и замечания о 15 слабо изученных видах Карша и 5 других видах. Среди них *Chrysilla versicolor* (C. L. Koch, 1846) является новым для фауны Японии, а *Plexippus setipes* Karsch, 1879 новым для фауны СССР (Туркменская и Азербайджанская ССР).



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