

Asianellus, a new genus of the subfamily Aelurillinae (Araneae: Salticidae)

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A new genus, *Asianellus* gen. n., is proposed to accommodate the *festivus* species group of *Aelurillus* Simon (or *Phlegra* Simon). Four species are recognized: *Asianellus festivus* (C.L. Koch), comb. n. (= *pichoni* Schenkel, syn. rev.); *A. potanini* (Schenkel), comb. n.; *A. ontchalaan* sp. n.; and *A. kazakhstanicus* sp. n. Descriptions, illustrations and distribution maps are provided for all species.

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Introduction

Two species, *festiva* C.L. Koch and *potanini* Schenkel, which are currently assigned to the genus *Phlegra* Simon, have had a confused taxonomic history. The former species (*festiva*) has been placed either in genus *Aelurillus* Simon (e.g., Prószyński 1971a, b, 1976, 1979, Dunin 1984b, Nenilin 1985, Bohdanowicz & Prószyński 1987), or in *Phlegra* (e.g., Harm 1977, Wesolowska 1981a, Flanczewska 1981). The latter species (*potanini*) was originally placed in *Phlegra* (Schenkel 1963, Wesolowska 1981b, Yin & Wang 1979), but later transferred to *Aelurillus* (Prószyński 1982). Finally, Prószyński (1990) proposed that both species belong to *Phlegra*.

However, a detailed study of the structure of the embolus, which is usually hidden in the deep cymbial pocket, did not support Prószyński's (1990) classification of these two species. As already noted by Zyuzin (1985) and Sierwald (1990) in the spider families Lycosidae and Pisauridae, respectively, the appearance of the apical division of the genital bulb, in which the embolus is included, is usually diagnostic at the generic level. It now appears that the same significance

can be ascribed to the embolus structure in Salticidae.

Both debated species and two new species described below (the *festivus* species group), have a thin, spiralled embolus (Figs 6, 9), very different from the large, flat and hook-shaped embolus found in other species currently assigned to *Phlegra* or *Aelurillus*. The female genitalia also exhibit notable differences between *Aelurillus*, *Phlegra* and the *festivus* species group, e.g., with respect to the spermathecae: *Aelurillus* has compact, strongly sclerotized spermathecae without noticeable insemination ducts (see Weiss 1979: figs 2, 4, 11); *Phlegra* has a chambered type of spermathecae in which the insemination ducts are usually very short and wide (except for the *bresnieri* species group showing rather long, tube-like insemination ducts), being terminated by closely fused chambers of numerous loops (see Prószyński 1979: figs 257-267); and the *festivus* species group has characteristic tube-chambered spermathecae (Figs 19, 22, 56), with the insemination ducts appearing as rather thin tubes, while the receptacle and terminal parts of ducts are modified into a chamber of fused loops. Similar major

differences are seen in the epigynal structure: *Aelurillus* usually has transverse epigynal flaps covering the copulatory pores; *Phlegra* is characterized by deep fossae in which the copulatory pores are hidden; and the *festivus* species group shows the epigyne as a flat plate with a pair of small, widely separated copulatory pores and a clearly visible epigynal pocket (Figs 17-21, 55).

Obviously, *Aelurillus*, *Phlegra* and the *festivus* species group each possesses a distinctive type of genitalia reflecting a different way of functioning (Weiss 1979). The *festivus* species group differs in having a clear embolic-epigyne engaged mechanism (see Weiss 1979: figs 21-29). We conclude from this that *Aelurillus*, *Phlegra* and the *festivus* species group represent three independent (monophyletic) lineages within the Aelurillinae. Therefore, in this paper we establish a new genus, *Asianellus* gen. n., to accommodate the members of the *festivus* species group.

A provisional key for separating the three genera is given as follows:

1. Metatarsi I,II without pro- and retrolateral spines; leg IV always longer than leg III; ratio leg IV/leg III more than 1.25 *Phlegra*
 – Metatarsi I,II with both pro- and retrolateral spines (their pattern 1-lap.); ratio leg IV/leg III less than 1.25 2
2. Anterior part of eye field covered with numerous short erect spines (= rod hairs) (Fig. 14); embolus spiralled, widened at apex (Figs 3-9); spermathecae tube-chambered (Figs 19, 22, 56) *Asianellus*
 – Anterior part of eye field without spines, covered with hairs only (if rod hairs present, the embolic membrane always present); male palpal femora often with rounded convexity (bump-like) and covered with long hairs; spermathecae compact *Aelurillus*

Material and methods

The work is based on museum collections and new materials mainly derived from Siberia, the European part of Russia and the Caucasus. Specimens for this study were borrowed from the following museums: ISE – Zoological Museum of the Institute for Systematics and Ecology of Animals, Novosibirsk; ZMMU – Zoological Museum of the Moscow State University, Moscow; IZW – Institute of Zoology, PAN, Warszawa; ZIP – Zoological Institute, Russian Academy of Science, St. Petersburg; HNHM – Hungarian Natural History Museum, Budapest; NMNH – Museum nation-

al d'Histoire Naturelle, Paris, France.

In most cases the names of collectors are abbreviated as follows: Mr A. V. Abramov (A.A.); Dr P. M. Dunin (P.D.); Dr D. V. Logunov (D.L.), Mr O. V. Lyakhov (O.L.); Dr M. T. Sternbergs (M.S.); Mr V. K. Zinchenko (V.Z.); Dr A. A. Zyuzin (A.Z.).

Abbreviations used in figures and the text are (see Figs 1,2,17-19): AME – anterior median eyes; ap. – apically; BH – basal haematodocha; C – cymbium; CP – copulatory pores; d. – dorsally; DH – distal haematodocha; DTA dorsal tibial apophysis; E – embolus; EP – epigynal pocket; Fm. – femur; ID – inlet ducts; Mt. – metatarsus; pr. – prolaterally; Pt. – patella; rt. – retrolaterally; SD – seminal ducts; St – subtegulum; T – tegulum; Tb. – tibia; v. – ventrally; VTA ventral tibial apophysis.

The sequence of leg segments in measurement data is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are in mm. The lengths of spiders in the size classes adopted are those used by Davies & Zabka (1989): "small", less than 4.0 mm; "medium", 4.0-8.0 mm; "large", more than 8.0 mm.

Genus *Asianellus* gen. n.

Type species: *Euophrys festivus* C.L. Koch, 1834.

Etymology. – The generic name refers to the Asiatic distribution of the genus. Gender masculine.

Diagnosis. – Species of *Asianellus* share the following combination of characters: eye field in both males and females covered with rod hairs (Fig. 14); iridescent scales on male carapace present; ratio leg IV/leg III less than 1.25; length of abdomen longer than its width by less than 1.5 times; embolus in male palp of spiral form similar to that in *Langona* (Figs 1-5); epigyne with rather small, widely separated copulatory pores (Figs 17-21); fossae absent; insemination ducts exhibiting thin, slightly curved tubes with chambered ends (Figs 19, 22); and inlet ducts straight (Fig. 19).

Description. – Medium to large spiders ranging from about 4.5 to 8.5 mm in length. Sexes usually alike in general body form, but differing in coloration. Males often dark-brown or black with slightly distinct colour markings of paired longitudinal stripes. Males may differ from females in having dorsal scutum and contrasting dark-coloured scopula on tarsi I, II. Females either

monochromatic yellow-brown to light-brown with irregular dark patches or with pair of longitudinal dark stripes. Carapace: general form; fovea present. Eyes: in three rows; posterior row usually as wide as anterior row or slightly wider; middle row about midway between ALE and PLE; quadrangle length between 34 and 45 percent of carapace length; forepart of eye field always densely covered with short erect spines (Figs 14-16). Clypeus: medium, height about 58 to 75 percent of AME diameter; vertical or slightly backward sloping. Chelicerae: medium, more or less subvertical; promargin with two medium fused teeth; retromargin with 1 medium tooth. Maxillae: more or less parallel. Sternum: oval. Pedicel: short, usually not visible in dorsal view. Abdomen: general shape; spinnerets subequal in length, but anteriors usually slightly thinner than posteriors. Legs: subequally developed; all pretarsi with well-pronounced pulvillae (foot pads); leg formula IV,III,II,I or IV,III,I,II. LEG Spination: tibiae I,II v. 1-1-2ap.; tibiae III,IV d. 1-0; metatarsi I,II pr., rt. 1-1ap., v. 2-2ap.; metatarsi III,IV 6 ap. Female palp: general form, without apical claws. Male palp: usually with two tibial apophyses (VTA, DTA) (e.g. Figs 2, 24); cymbium pocket closed; embolus thin, spiral (nearly like circle), usually widened at tip (Figs 3-9); seminal ducts rather simple (Figs 48, 54). Female genitalia: copulatory pores small (Fig. 17-21); fossae absent; epigynal pocket present (Fig. 18); internal structure usually

visible through integument; insemination ducts rather thin, tube-like, weakly sclerotized (Figs 19, 22, 56).

Relationships. – The absence of fossae indicates affinity to *Aelurillus* and *Langona* Simon. Other genitalic characters (e.g. spiral embolus, shape of the spermathecae, and absence of the flaps or fold) allows us to assume that *Asianellus* is probably more closely related to *Langona*.

The occurrence of rod hairs on the dorsal side of carapace immediately behind the anterior eye row (Figs 14-16), which is regarded as apomorphic, is characteristic of all *Asianellus* species and of some species of *Aelurillus* and *Langona*. Rod hair ultrastructure, as viewed by scanning electron microscopy (Fig. 15-16), exhibits a chitinous stiff tube of about 60-75 nanometers in length open at the apex (arrowed in Fig. 15) and densely covered with small finned spines resembling the marginal spines of scales (cf. Hill 1979: fig. 6c). Although these rod hairs are still an oddity among Salticidae and their function (olfaction?) remains to be determined, it seems safe to regard them as a new type of pore hairs in spiders (sensu Foelix 1989).

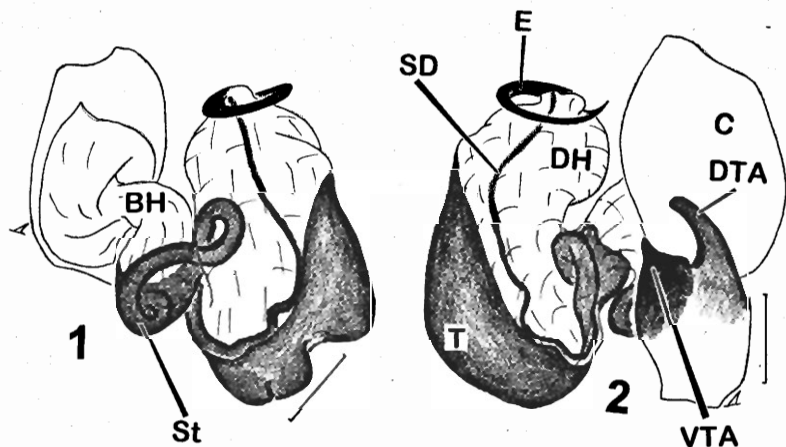
Composition. – *Asianellus* gen. n. includes the following four species:

A. festivus (C.L. Koch, 1834, *Euophrys*), **comb. n.**

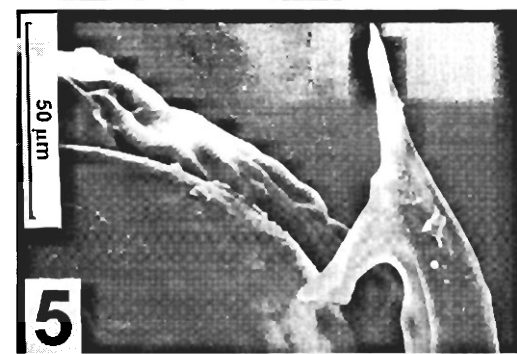
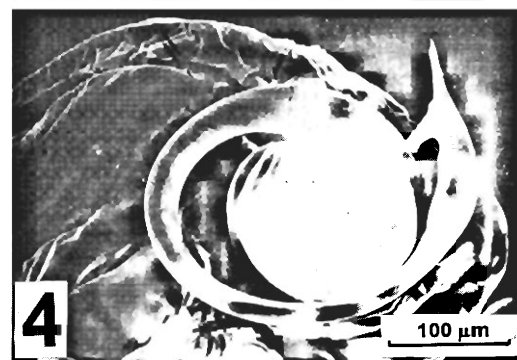
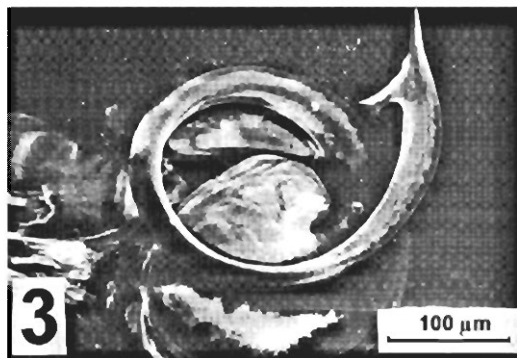
A. ontchalaan **sp. n.**

A. kazakhstanicus **sp. n.**

A. potanini (Schenkel, 1963, *Phlegra*), **comb. n.**



Figs 1-2. Expanded male palp of *Asianellus festivus*: (1) median view; (2) lateral view. Abbreviations as explained in the text. Scale 0.25 mm.



Figs 3-5. Male palp of *Asianellus festivus*: (3) Tuva specimens; (4-5) holotype of *Phlegra pichoni*.

Distribution. – The genus *Asianellus* exhibits a Palearctic, temperate trans-Eurasian distributional range.

Natural history. – The species of *Asianellus* are typical terrestrial Salticidae, preferring steppes and other arid localities, where they can be found near rocky outcrops and stony areas, including talus (Logunov 1992).

***Asianellus festivus* (C. L. Koch, 1834) comb. n.**

(Figs 1-5, 8, 10, 17-19, 23-28, 35, 39)

Euophrys festivus C.L. Koch, 1834: 123.

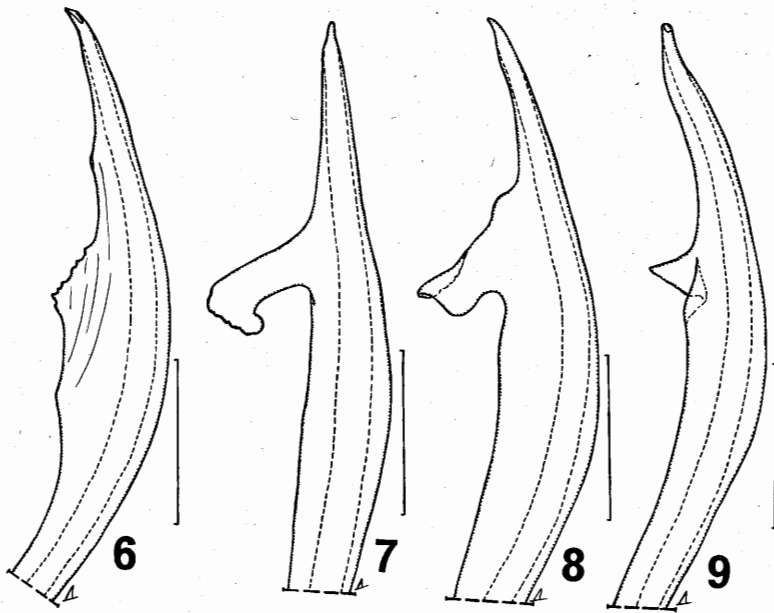
Attus melanotarsus Grube, 1861: 170.

Aelurillus festivus: Legotai & Tarasyuk 1964: 55; Tyshchenko 1971: 80; Saveljeva 1970: 85; 1979: 144; Miller 1971: 133, figs 24-25; Pichka 1974: 28; Pichka & Skuffjin 1981: 12; Prószyński 1971a: 209-210, figs 7-9; 1971b: 233-236, figs 2-7; 1976: fig. 2, map 1; 1979: 302; 1990: 282; Dunin 1979: 36; 1984a: 58; 1984b: 130, fig. 1; 1988: 38; Sternbergs 1981: 131; Panteleeva 1982: 91; Yaginuma 1986: 222, fig. 123.4; Krasnobajev & Ovtsharenko 1986: 96; Legotai 1988: 19; Izmailova 1989a: 150, fig. 148; 1989b: 162; Pakhorukov & Efimik 1988: 31; Eskov 1988: 142; Danilov 1989: 166; Krasnobajev 1990: 86; Poltchaninova 1990: 99; Zhong-qi 1990: 318, fig.338; Logunov 1992: 48-49.

Phlegra festiva: Harm 1977: 69-72, figs 2a,b, 10-12, 14a,b; Weiss 1979: 246-248, figs 21-25; Wesolowska 1981a: 46-47, figs 2-4; Paik 1985: 47, figs 17-27; Heimer & Nentwig 1991: 514, figs 1374.2-4; Peng et al. 1993: 168-169, figs 590-597.

Phlegra pichoni Schenkel, 1963: 438-440, fig. 251; Wesolowska 1981b: 153-154, figs 77-80; Yin & Wang 1979: 10-11, fig. 20.

Material examined. – AZERBAIJAN. Agdash Distr.: Kotavan, Bank of Kura River, 3.VIII.1985 (A.A., ISE), 1♂; Zakatal'skij Reserve, Dzhar, 750 m, 14.VII.1981 (P.D., ISE), 1♂. Shemakha Distr.: Pirkulinskij Reserve, 25.V-5.VI.1984 (D.L., ISE), 1♂, 1♀. Nagorno-Karabakhskaya AR: Shusha, Dashanty Canyon, 7.VII.1988 (P.D., ISE), 1♂. Ismailly Distr.: environs of Tazakent, 23.VI.1986 (P.D., ZMMU), 1♂. RUSSIA. Bashkortostan [Bashkiria]: Bashkirskij Reserve, 2.VIII.1977 (coll.?, ZIP), 1♂, 1♀. Altai: mouth of the Tchulyshman River, 23.VII.1990 (coll.?, ISE), 1♀. Novosibirsk Area: Togutchinskij Distr., 5-7 km SW of Lebedevo, 250-300 m, 22-25.VII.1992 (D.L., ISE), 1♂. Khakassia: Askizskij Distr.: 8 km E of Biriktchul', 1100 m, 16-18.VII.1990 (D.L., ISE), 1♀; 3 km W of Biriktchul', 1000-1100 m, 18.VII.1990 (D.L., ISE), 4♀; same distr. 25-27 km NE of Askiz, near Abakan River, 15.VII.1990 (D.L., ISE), 1♂, 1♀. Shira Distr.: Shira Lake environs, 21.VI.1990 (D.L., ISE), 1♀; same distr., 3-5 km E of Shira, Itkul' Lake, 21-22.VI.1990 (D.L., ISE), 6♂, 20♀; Nizhnyaya Sogra, 20.V.1990 (S.V.Lukiyantsev), 1♂. Irkutsk Area: Slyudyanskij Distr., Zun-Murino, 1.VII.1975 (V.G.Shilenkov, ZIP), 1♂; "Padun on the Angara River", 1867 (Czekanowski, ZIP), 30♂, 21♀. Buryatia: Severo-Baikal'skij Distr., Baikal'skij Entomological Reserve, 18.VI.1978 (D.B.Verzhutski, ZMMU), 5♀; Barguzinskij Reserve, Severnyi Cordon, 30.VII.1990 (M.S., ISE), 1♂. Tuva: Ovyurskij Distr., 13-15 km N of Khandagaity, 25-26.VII.1993 (D.L., ISE), 1♂; same district, NE bank of Ubsu-Nur Lake, 760 m, 18.VII.1993 (D.L., ISE), 2♀; Tes-Khemskij Distr., 5 km E of Khol'-Oozhu, valley of Arys-kanny River, 15.VII.1993 (D.L., ISE), 6♀. Maritime Province: Ussuriyskij Distr., Ryazanovka, Jule 1979 (G. Belova, ZIP), 1♂; same area, Ussuriyskij Reserve, 3.VII.1975 (M.S., ISE), 1♀; environs of Ussuriysk, 27-29.IV.1990 (A.V.Barkalov, ISE), 3♂; Furugel'ma Island, 18-



Figs 6-9. The embolar apices in *Asianellus* spp.: (6) *A. kazakhstanicus*; (7) *A. potanini*; (8) *A. festivus*; (9) *A. ontchalaan*. Scale 0.1 mm.

21.VII.1975 (M.S., ISE), 2♂, 1♀; Khasanskij Distr., Posjet Bay, 6 km SW of seaport, 3.IX.1988 (L.A.Nesov, ISE), 1♀. MONGOLIA: Suche-Bator [Suchbaatar], 6.VIII.1963 (coll.?, IZW), 1♂; Selenginskij Aimak, Shamor, 29.VII.1982 (K.M., ZMMU), 1♂. CHINA. "Hangtscheou, Tschekiang" [south of Shankhai], 1925 (Pichon, MNH, holotype of *Phlegra pichoni*), 1♂.

For additional material studied, see Logunov (1992) and Logunov & Wesolowska (1992).

Diagnosis. – The species is closely related to *A. potanini* and *A. ontchalaan*. Males can be easily distinguished by the unicoloured black face (Fig. 39) and the structure of the embolus (Figs 3-5, 8). Females sometimes can be confused with those of *A. ontchalaan*, but their body size is twice as large as that of the latter species. Also, some slight differences can be found in the epigynal and vulval structure (Figs 17-22), as well as in body coloration (Figs 27-28).

Distribution. – A trans-Eurasian temperate species (Fig. 35).

Habitat. – See Logunov (1992).

Remarks. – *Phlegra pichoni* Schenkel, 1963 was erroneously synonymized with *A. potanini* by Wesolowska (1981b). Referring to Figs 7 and 8 it can be seen that the species differs both in the

structure of the embolic tip and the tibial apophysis, while the embolic structure of *P. pichoni* cannot be distinguished from that of *A. festivus* (Figs 3-5). Consequently, we follow the former opinion of Prószyński (1971a) and consider this species as a junior synonym of *A. festivus*. It should be noted that the clypeal coloration in males of this species varies. All males from Siberia have a black clypeus densely covered with black hairs (Fig. 39), while Asian and Caucasian specimens, including the holotype of *P. pichoni*, possess a yellow to yellow-brown clypeus covered with brown or lighter hairs.

Description. – Male. Measurements. Carapace 2.95-3.75 long, 2.23-2.75 wide, 1.40-1.68 high at PLE. Ocular area 1.33-1.43 long, 1.55-1.84 wide anteriorly and 1.55-1.93 wide posteriorly. Diameter AME 0.40-0.50. Abdomen 2.85-3.25 long, 2.18-2.75 wide. Cheliceral length 0.80-1.13. Clypeal height 0.28-0.35. Length of leg segments: leg I- 1.55-1.83 + 0.95-1.15 + 0.85-1.03 + 0.68-0.83 + 0.65-0.75; leg II- 1.53-1.88 + 0.88-1.05 + 0.83-1.00 + 0.73-0.85 + 0.58-0.63; leg III- 2.052.50 + 1.03-1.20 + 1.08-1.30 + 1.33-1.60 + 0.70-0.80; leg IV- 2.15-2.45 + 0.90-1.00 + 1.03-1.35 + 1.60-1.98 + 0.60-0.88. Leg spination. Leg I: Fm. d. 0-

1-5; Pt. pr. 0-1-0; Tb. pr. 1-2, rt. 1-0 or 1-1, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg II: Fm. d. 0-1-2-5; Pt. pr. and rt. 0-1-0; Tb. pr. 1-1-1 or 2-3, rt. 1-1, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg III: Fm. d. 0-1-3-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 2-2, rt. 1-1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 1-1-2ap. Leg IV: Fm. d. 0-1-2-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 2-2, rt. 1-1-1-1, v. 2-2ap.; Mt. pr. and v. 1-1-2ap., rt. 2-1-2ap. Coloration. Carapace yellowish-brown to dark-brown, covered with long brown hairs, with two slightly marked longitudinal bands of white hairs behind PLE. Forepart of eye field densely covered with short hard spines. Clypeus yellow to black, usually covered with long black/brown shining hairs (Fig. 39). Sternum brown to dark brown. Maxillae and labium yellowish to brown. Chelicerae yellow to brown, covered on front with black shining hairs. Dorsum dark grey-brown with two slightly marked longitudinal brown bands. Scutum present. Venter greyish-yellow. Book-lung covers same colour. Spinnerets grey to brown. Legs yellow, often with grey patches. Tarsi I, II and metatarsi I brown with dense black scopula. Palp: femur yellow distally, brown proximally; patella and tibia yellow; cymbium and tegulum brownish. Tibia and patella covered dorsally with white hairs. Palpal structure as in Figs 1-2, 23-26.

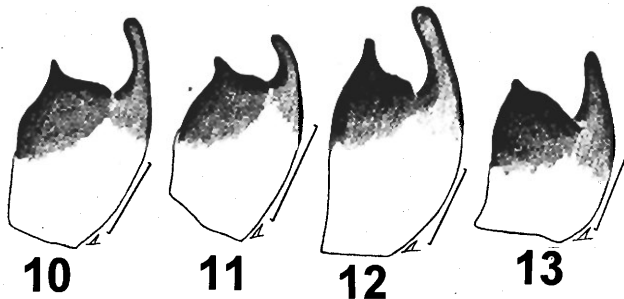
Female. Measurements. Carapace 3.00-4.15 long, 2.18-3.05 wide, 1.30-2.13 high at PLE. Ocular area 1.18-1.40 long, 1.50-1.88 wide anteriorly and 1.50-2.08 wide posteriorly. Diameter AME 0.43-0.50. Abdomen 3.58-4.38 long, 2.83-3.38 wide. Cheliceral length 0.83-1.38. Clypeal height 0.28-0.50. Length of leg segments: leg I- 1.40-1.98 + 0.93-1.20 + 0.78-1.05 + 0.53-0.80 + 0.53-0.68; leg II- 1.43-2.00 + 0.88-1.25 + 0.73-1.00 + 0.58-0.85 + 0.53-0.68; leg III- 1.932.93 +

1.00-1.43 + 1.00-1.48 + 1.20-1.78 + 0.73-0.98; leg IV- 2.05-2.83 + 0.95-1.38 + 1.20-1.70 + 1.50-2.13 + 0.73-0.98. Leg spination. Leg I: Fm. d. 1-1-1-4; Tb. pr. 1-2, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg II: Fm. d. 1-1-5; Tb. pr. 1-1, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg III: Fm. d. 1-1-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 2-2, rt. 1-1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 1-1-2ap. Leg IV: Fm. d. 1-1-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 2-2, rt. 1-1-1-1, v. 1-1-2ap.; Mt. pr. and v. 1-1-2ap., rt. 1-1-1-1-2ap. Coloration. Carapace brown with black "veins", sides look black in dorsal view. Median part of carapace white, covered with white hairs. Eye field black, forepart densely covered with short erect spines. Clypeus yellow to yellow-brownish, densely white haired. Sternum greyish-yellow. Maxillae and labium yellowish-brown. Chelicerae brown. Dorsum dark grey with pair large dark brown patches and small patches of white and brown hairs scattered over dorsum. Venter and abdomen sides yellow with numerous small spots of brownish hairs. Book-lung covers yellow to greyish-yellow. Spinnerets brown. Palps yellow, but proximal parts of femora and coxae greyish. Legs yellow with brownish rings and patches. Structure of epigyne and spermathecae as in Figs 17-19.

Asianellus kazakhstanicus sp. n.

(Figs 6, 13, 33-34, 37, 40-43)

Material examined. - Holotype, ♂, KAZAKHSTAN. Pavlodar Area, Ekibastuzskij Distr., 6 km SE of Shiderty, valley of Shiderty River, I.VIII.1992 (O.L., ISE, 1414). Paratypes: RUSSIA. Novosibirsk Area: 20-25 km SW of Karasuk, 28-30.VI.1989 (V.P.Pekin, ISE, 1415, 2916), 1 ♂, 1 ♀.



Figs 10-13. Tibial apophysis of *Asianellus* spp.: (10) *A. festivus*; (11) *A. ontchalaan*; (12) *A. potanini*; (13) *A. kazakhstanicus*. Scale 0.2 mm.

Etymology. – The species name refers to the type area of northern Kazakhstan.

Diagnosis. – This species is closely related to *A. ontchalaan*, but males can be distinguished by a pair of brown vertical bands on clypeus (cf. Figs 37 and 38), as well as by the distal shape of the embolus (Figs 6 and 9) and the structure of the tibial apophysis (Figs 11 and 13). Females have distinguished colour markings of abdomen (Fig. 34).

Distribution. – Probably the steppe zone of West Siberia (Fig. 43).

Description. – Male. Measurements. Carapace 2.85 long, 1.13 wide, 1.25 high at PLE. Ocular area 1.08 long, 1.38 wide anteriorly and 1.33 wide posteriorly. Diameter AME 0.35. Abdomen 2.70 long, 2.08 wide. Cheliceral length 0.65. Clypeal height 0.25. Length of leg segments: leg I- 1.50 + 0.80 + 0.75 + 0.63 + 0.55; leg II- 1.38 + 0.83 + 0.73 + 0.60 + 0.55; leg III- 1.90 + 0.88 + 0.95 + 1.18 + 0.75; leg IV- 2.05 + 0.93 + 1.18 + 1.53 + 0.78. Leg spination. Leg I: Fm. d. 0-1-1-5; Pt. pr. 0-1-0; Tb. pr. 1-2, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg II: Fm. d. 1-2-5; Pt. 0-1-0; Tb. pr. 1-1, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg III: Fm. d. 1-3-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 2-2, v. 1-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Fm. d. 1-2-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1-1, v. 2-0-2ap.; Mt. pr. and rt. 2-1-2ap., v. 1-1-2ap. Coloration. Carapace brownish with pair of longitudinal yellowish bands immediately behind PLE. Eye field black, anteriorly covered with erect rod hairs. Clypeus with two vertical brown bands (Fig. 37). Sternum, maxillae and labium yellow. Chelicerae brown, anterior sides dark brown. Abdomen yellow-white, dorsum with two longitudinal dark brown stripes. Book-lung covers yellow. Spinnerets dark-brown. All legs yellow, but tarsi I brownish. Palpal structure as in Figs 40-42.

Female. Measurements. Carapace 3.70 long, 2.90 wide, 1.55 high at PLE. Ocular area 1.40 long, 1.65 wide anteriorly and 1.75 wide posteriorly. Diameter of AME 0.40. Abdomen 5.35 long, 3.90 wide. Cheliceral length 1.08. Clypeal height 0.38. Length of leg segments: leg I- 1.75 + 1.05 + 1.05 + 0.65 + 0.70; leg II- 1.85 + 1.10 + 1.00 + 0.80 + 0.70; leg III- 2.55 + 1.25 + 1.30 + 0.78 + 0.90; leg IV- 2.85 + 1.20 + 1.75 + 1.95 + 0.95. Leg spination. Leg I: Fm. d. 0-1-1-5; Tb. pr. 1-2, v. 1-1-1ap.; Mt. pr. 1-1ap., v. 2-2ap. Leg II: Fm. d.

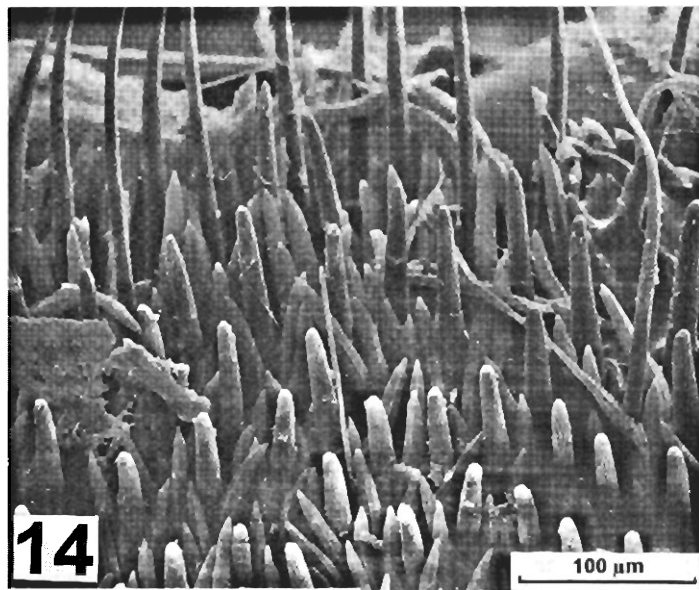
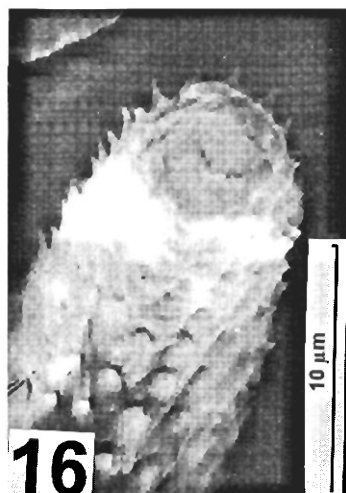
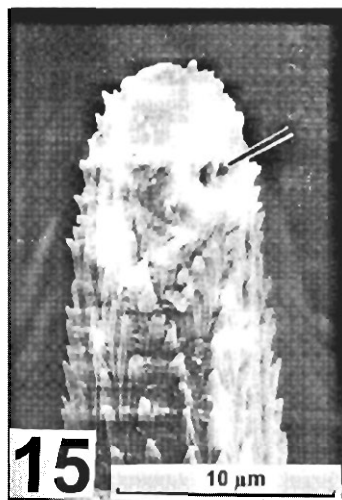
0-1-1-5; Tb. pr. 1-1, v. 1-1-1ap.; Mt. pr. 1-1ap., v. 2-2ap. Leg III: Fm. d. 0-1-1-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 1-1-3, rt. 1-1-2, v. 1-0-2ap.; Mt. d. 0-2-0, pr. and rt. 1-1-2ap., v. 0-1-2ap. Leg IV: Fm. d. 0-1-2-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-2, v. 2-0-2ap.; Mt. pr. and rt. 2-1-2ap., v. 1-1-2ap. Coloration. Carapace yellow with three longitudinal brown bands (1 medial, two lateral, on sides below PLE). Eye field black. Clypeus yellow, densely covered with white hairs. Sternum yellow. Maxillae and labium orange. Chelicerae yellowish-brown. Abdomen: dorsum yellow with two longitudinal brown band and lanceolate spot at anterior part (Fig. 34); sides yellow with brown spots; venter yellow. Book-lung covers yellow. Spinnerets brown. All legs yellow. Genitalia damaged during preparation, structure not drawn. Epigyne similar to that of *A. festivus*, but spermathecae have shorter inlet ducts and more massive terminal parts.

Asianellus ontchalaan sp. n.

(Figs 9, 11, 14-16, 20-22, 29-30, 38, 43, 44-48)

Aelurillus cf. *potanini*; Logunov 1992: 50, 51.

Material examined. – Holotype, ♂, RUSSIA. Tuva, 3-5 km N of Kyzyl, 700-800 m, 20.V.1989 (D.L., ISE,1206). Paratypes: RUSSIA. Tuva: 5♂, 6♀ (ISE,352), together with holotype; same locality, 20.V-7.VI.1989 (D.L., ISE, 355, 356), 5♂, 1♀; same locality, 1-20.V.1990 (D.L. & O.L., ISE, 337, 339, 340, 342, 343, 345), 5♂, 11♀ (D.L. & O.L., ZMMU, Ta-4621), 18♂, 11♀; same locality, 28.V-2.VI.1993 (D.L. & O.V.Gromov, ISE,1777), 8♂, 1♀; 5 km E Kyzyl, near airport, 700-800 m, 25.VI.3.VII.1989 (D.L., ISE,357,363), 4♂, 5♀; same locality, 7.V.1990 (D.L., ZMMU, Ta-4769), 1♂, 1♀. Ovyurskij Distr.: NE bank of Ubsu-Nur Lake, 760 m, 12.VI.1989 (D.L., ISE,359), 1♂; 15 km E of Oo-Shinaa, 17-19.VII.1993 (D.L., ISE, 1778), 1♀. Tes-Khemsij Distr.: 8-10 km W of Ak-Erik, valley of Tes-khem River, 29.V.1990 (O.L., IZW), 2♂, 1♀; 50 km W of Erzin, Shara-Nur Lake, 900-1000 m, 3.VI.1989 (V.Z., ISE, 360), 1♂. Erzin Distr.: Tere-Khol' Lake, Eder-Elezin Sands, 1150-1200 m, 3.VI.1989 (D.L., ISE, 346), 6♂; same locality, 16.V.1990 (O.L., ISE, 350), 1♂; 20-25 km W of Erzin, Ontchalaan Mt. Range, 1000-1200 m, 27.V-3.VI.1989 (D.L., ISE, 351, 353, 354, 358, 361), 14♂, 1♀; same locality, 24.V.1990 (V.D., ISE,338), 1♀; same locality, 26-29.05.1990 (O.L., ZMMU, Ta-4767,4785), 14♂, 1♀; 3-5 km E of Erzin, 1000-1200 m, 23-25.V.1990 (D.L., ZMMU, Ta-4768), 3♂, 2♀; same locality, valley of Erzin River, 1000 m, 23.V.1990 (D.L. & O.L., ISE,336), 9♂, 4♀. Ulug-Khemsij Distr.: 10-15 km SW of Shagonar, bridge on Tchaaty River, 8.05.1990 (D.L., ISE,347,362), 3♂, 2♀; 5-7 km E of Shagonar, Khairykan Mountain, 10.V.1990 (D.L., ZMMU, Ta-4771), 1♂. Kyzylskij Distr.: 23-25 km E of Kyzyl, 700 m, 30.VI.1990 (D.L., ISE,341), 3♀. Kaa-Khemsij

Figs 14-16. Rod hairs in *Asianellus ontchalaan*.

Distr.: 33-35 km E of Kyzyl, 5 km N of Sug-Bazhi, 900 m, 30.VI.1990 (D.L., ZMMU, Ta-4772), 1 ♀. Buryatia: Zaigraevskij Distr.: 10 km E of Onochoi, Bryanka River, 2.VI.1990 (S.N.Danilov, ZMMU, Ta-4789), 1 ♂.

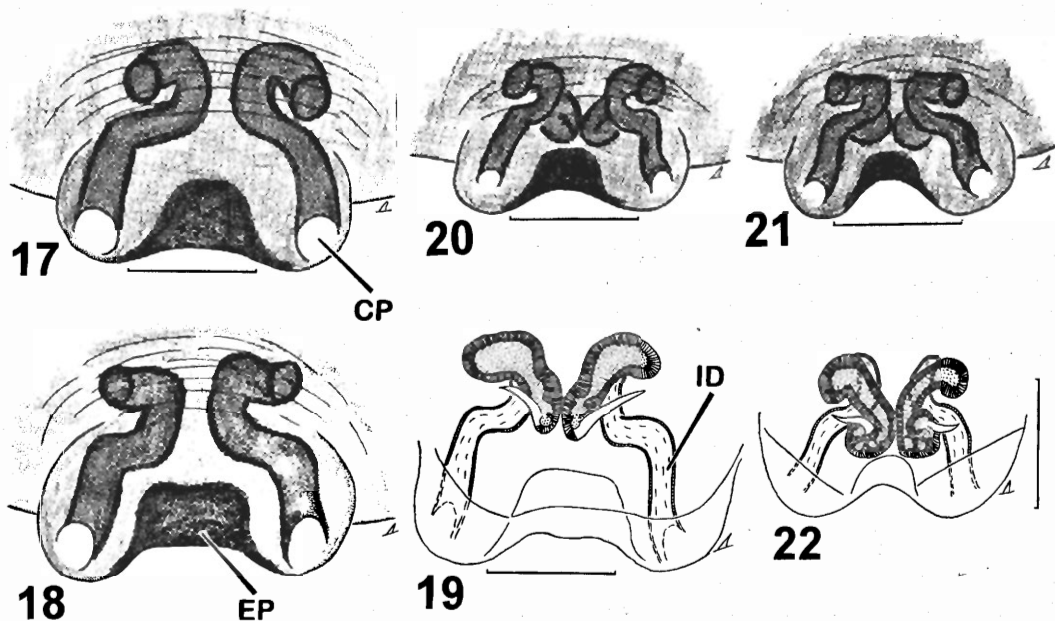
Etymology. – The species name is derived from the Ontchalaan Mt. Range (South Tuva, Ubsunur Hollow), where most specimens have been collected.

Diagnosis. – Males of this species, in comparison with those of *A. festivus*, can be recognized by having a face with three vertical white lines (Fig. 38); palp dorsally covered with both white and brown hairs; structure of the embolic tip (Fig. 9)

and smaller body size. Females can be separated by the shape of the epigyne (Figs 20-21) and more winding insemination ducts (Fig. 22).

Distribution. – Tuva and Buryatia in South Siberia (Fig. 43).

Description. – Male. Measurements. Carapace 2.25-2.60 long, 1.65-1.90 wide, 1.15-1.17 high at PLE. Ocular area 0.89-1.05 long, 1.25-1.45 wide anteriorly and 1.38-1.40 wide posteriorly. Diameter AME 0.31-0.40. Abdomen 2.13-2.25 long, 1.68-1.75 wide. Cheliceral length 0.60-0.68. Cly-

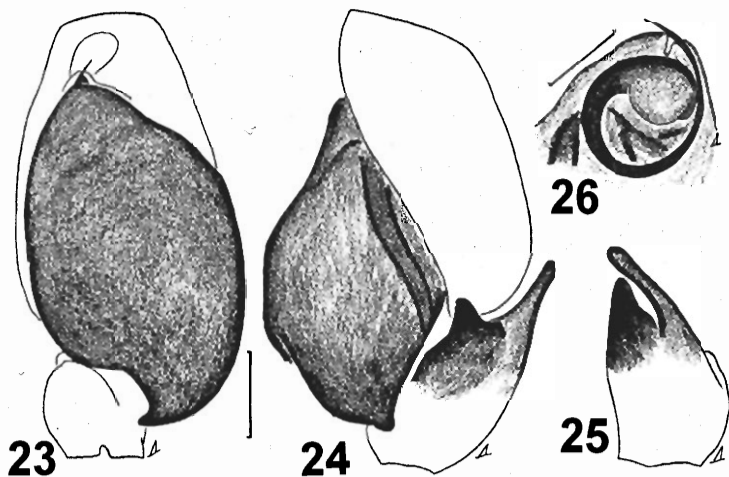


Figs 17-22. Epigyne (17-18, 20-21) and spermathecae (19, 22) of *Asianellus* spp.: *A. festivus* (17-19), *A. ontchalaan* (20-22). Scale 0.25 mm.

peal height 0.20-0.25. Length of leg segments: leg I- 1.15-1.33 + 0.63-0.78 + 0.58-0.70 + 0.43-0.48 + 0.48-0.53; leg II- 1.15-1.38 + 0.65-0.78 + 0.53-0.70 + 0.45-0.55 + 0.48-0.51; leg III- 1.48-1.70 + 0.75-0.93 + 0.75-0.88 + 0.88-1.13 + 0.63-0.65; leg IV- 1.60-2.15 + 0.73-0.88 + 0.95-1.13 + 1.13-1.40 + 0.68-0.75. Leg spination. Leg I: Fm. d. 0-1-1-5; Pt. pr. 0-1-0; Tb. pr. 1-2 or 1-3, rt. 0-1-0, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg II: Fm. d. 0-1-2-5; Pt. pr. and rt. 0-1-0; Tb. pr. 1-1-1, rt. 0-1-0, v. 1-1-2ap.; Mt. pr. 1-2ap., rt. 1-1ap., v. 2-2ap. Leg III: Fm. d. 0-1-3-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-2ap.; Mt. pr. 1-2ap., rt. 2-1-2ap., v. 2-2ap. Leg IV: Fm. d. 0-1-2-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 2-2ap.; Mt. pr. 1-1-2ap., rt. 2-1-2ap., v. 1-1-2ap. Coloration. Carapace yellowish-brown, sparsely covered with white hairs. Eye field black with three parallel lines of white hairs anteriorly. Median white line on clypeus (Fig. 38). Forepart of eye field densely covered with short erect spines (Figs 14-16). Clypeus greyish-yellow. Sternum yellow with brown margins. Maxillae and labium yellow. Chelicerae yellow with greyish tinge. Dorsum with two longitudinal dark

brown bands. Sides of abdomen and median band greyish-white, venter yellow. Scutum present, usually not visible under hair cover. Book-lung covers greyish-yellow. Spinnerets dark brown. Legs yellow with brownish sides of segments. Tarsi, metatarsis I and tarsi II dark brown, darker than remaining segments. Palp: femur, patella brownish-yellow; cymbium and tegulum dark brown. Patella, tibia, cymbium of palp densely white haired dorsally, covered with dense brown hairs on lateral sides. Palpal structure as in Figs 44-47.

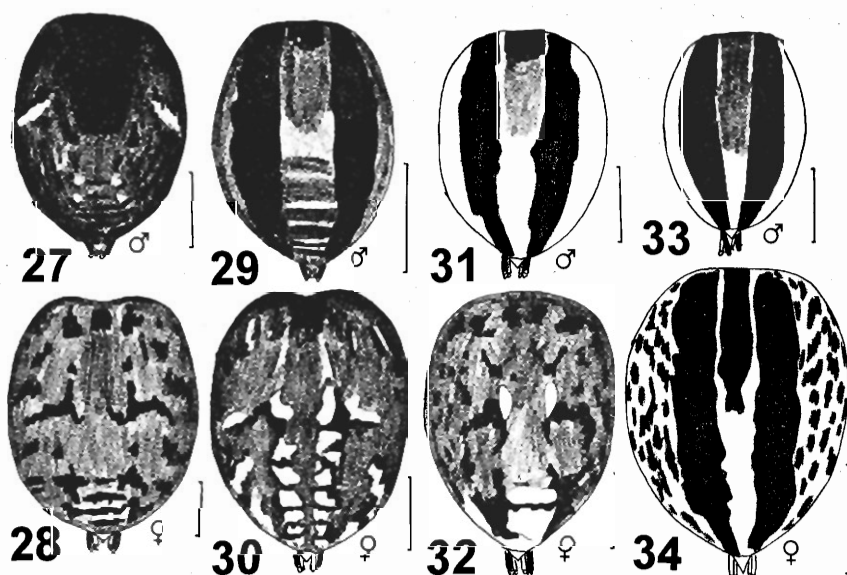
Female. Measurements. Carapace 2.73-3.08 long, 1.93-2.19 wide, 1.40-1.45 high at PLE. Ocular area 1.08-1.15 long, 1.25-1.45 wide anteriorly and 1.38-1.40 wide posteriorly. Diameter AME 0.35-0.38. Abdomen 3.00-3.50 long, 2.43-2.88 wide. Cheliceral length 0.90-1.00. Clypeal height 0.25-0.28. Length of leg segments: leg I- 1.45-1.50 + 0.75-0.88 + 0.63-0.78 + 0.50-0.68 + 0.50; leg II- 1.30-1.50 + 0.75-0.93 + 0.63-0.75 + 0.56-0.63 + 0.48-0.53; leg III- 1.75-2.03 + 0.78-0.90 + 0.90-1.03 + 1.03-1.25 + 0.65-0.83; leg IV- 1.93-2.20 + 0.88-0.95 + 1.23-1.43 + 1.35-1.55 + 0.65. Leg spination. Leg I: Fm. d. 0-1-1-3; Tb. pr.



Figs 23-26. Male palp of *Asianellus festivus*: (23) ventral view; (24) lateral view; (25) DTA and VTA, rear view; (26) embolus, apical view. Scale 0.2 mm.

1-2, rt. 0-1-0, v. 1-1-2ap. or 1-1-1ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg II: Fm. d. 0-1-2-3; Tb. pr. 1-1, rt. 0-1, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg III: Fm. d. 0-1-2-4; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 1-1-2, rt. 1-1-1, v. 1-2ap. or 1-1ap.; Mt. pr. 1-2ap., rt. 2-1-2ap., v. 1-1-2ap. Leg IV:

Fm. d. 0-1-1-3; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 1-1-1, v. 1-0-2ap.; Mt. pr. 1-1-2ap., rt. 2-1-2ap., v. 1-1-2ap. Coloration: comparison with males, females almost unicoloured. Carapace brownish with either single wide longitudinal band of white hairs or two stripes, narrower. Eye



Figs 27-34. Abdomen coloration in *Asianellus* spp.: *A. festivus* (27-28), *A. ontchalaan* (29-30), *A. potanini* (31-32), *A. kazakhstanicus* (33-34). Scale 1 mm.

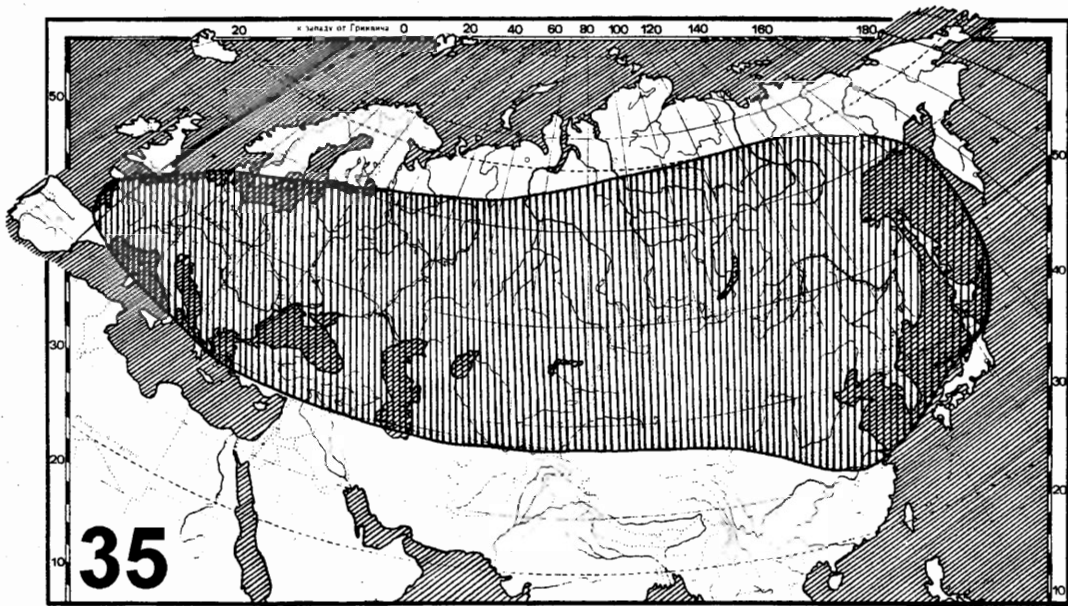


Fig. 35. Distribution of *Asianellus festivus*.

field black, its forepart densely covered with small, hard numerous spines (Fig. 14). Clypeus brownish-yellow, densely white haired. Sternum yellow to brown. Maxillae, labium yellow. Chelicerae yellow with brownish apical parts. Dorsum grey with pair of brown large spots, numerous sparse white and brown patches. Sides of abdomen greyish-yellow, venter yellow. Booklung covers greyish-yellow. Spinnerets brownish. Palp yellow. Legs yellow with numerous brownish rings and patches. Epigyne and spermathecae as in Figs 20-22.

***Asianellus potanini* (Schenkel, 1963) comb. n.**

(Figs 7, 12, 31-32, 36, 43, 49-56)

Phlegra potanini Schenkel, 1963: 436, fig. 250.

Aelurillus potanini: Prószyński 1982: 276-277, Figs 2, 4-5, 6, 8, 10-11.

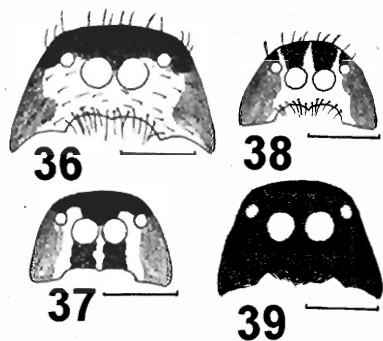
Material examined. – AZERBAIJAN. Kazakhskij Distr.: Kazakh, bank of Akstafachai River, 29.V.1981 (A.Z., ISE), 1♂. RUSSIA. Buryatia: Ulan-Ude, 24.VII.1990 (M.S., ISE), 1♂. MONGOLIA. Khenteiskij (Chentej) Aimak: 7 km NE of Somon Myotyon (Moton), 1200 m, 28.VII- 21.VIII.1965 (Exp. Kaszab, HNHM), 2♂, 2♀. [Mongolia?], S.B. Tumentsogy, plot No 3, 7.VIII.1983 (coll.?, ISE), 1♀. CHINA. Gansu [Kansu]: “Wahrscheinlich Kloster Dschoni” [apparently monastery Dzhoni on the way from Lebran to Dzhone],

24.05... (label illegible) (coll.?, NMNH, holotype), 1♂.

Diagnosis. – In comparison with *A. festivus* and *A. ontchalaan*, the LTA in males is more elongate (Fig. 12), with structure of the embolic tip (Figs 7, 51, 53) and face colour pattern (Fig. 36) noticeably different. Females can be separated by the shape of the epigyne and epigynal pocket (Figs 55-56).

Distribution. – Azerbaijan, Buryatia and Mongolia (Fig. 43). Apparently the range of this species is Kazakhstan-Mongolian subboreal.

Description. – Male. Measurements. Carapace 2.88 long, 2.20 wide, 1.13 high at PLE. Ocular area 1.23 long, 1.53 wide anteriorly and 1.53 wide posteriorly. Diameter AME 0.43. Abdomen 2.88 long, 2.33 wide. Cheliceral length 1.03. Clypeal height 0.25. Length of leg segments: leg I- 1.55 + 0.85 + 0.80 + 0.63 + 0.55; leg II- 1.60 + 0.83 + 0.80 + 0.69 + 0.63; leg III- 2.13 + 1.03 + 1.08 + 1.33 + 0.73; leg IV- 2.10 + 0.95 + 1.30 + 1.60 + 0.83. Leg spination. Leg I: Fm. d. 1-1-5; Pt. pr. 0-1-0; Tb. pr. 1-2, rt. 0-1-0, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg II: Fm. d. 1-2-4; Pt. pr. 0-1-0; Tb. pr. 1-1-1, rt. 1-1, v. 1-1-2; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg III: Fm. d. 1-3-5; Pt.



Figs 36-39. Male face in *Asianellus* spp.: *A. potanini* (36), *A. kazakhstanicus* (37), *A. ontchalaan* (38) and *A. festivus* (39). Scale 1 mm.

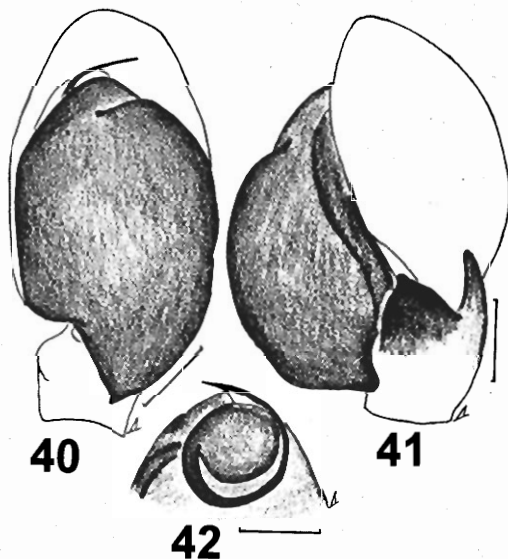
pr. and rt. 0-1-0; Tb. d. 1-0, pr. 2-2, rt. 1-1-1-1, v. 1-0-2ap.; Mt. d. 1-1-1ap, pr. and rt. 1-0-2ap., v. 2-2ap. Leg IV: Fm. d. 1-2-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. and rt. 2-2, v. 2-2ap.; Mt. d. 1-0, pr., rt. and v. 1-0-2ap. Coloration. Carapace yellowish-brownish with dark "veins", medially and on sides covered with brown hairs. Two longitudinal white stripes of hairs behind PLE. Eye field black, covered with greenish shining scales. Forepart of eye field densely covered with short erect spines. Clypeus yellow, with sparsely black hairs. Around eyes of first row white hairs. Sternum, labium yellow to brown. Maxillae, chelicerae yellow. Abdomen dark grey to grey with two longitudinal dark brown stripes of hairs on dorsum, sometimes stripes not marked in dark specimens. Scutum present. Venter yellow to grey-yellow. Book-lung covers same colour. Spinnerets brown. Legs yellow to yellow with brown patches and stripes. Tarsi, metatarsi I always darker than other segments. Palp: coxa, femur, patella, tibia yellow; cymbium and tegulum brownish. Patella and tibia dorsally densely white haired. Palpal structure as in Figs 49-54.

Female. Measurements. Carapace 3.38 long, 2.40 wide, 1.53 high at PLE. Ocular area 1.33 long, 4.55 wide anteriorly and 1.64 wide posteriorly. Diameter AME 0.40. Abdomen 4.13 long, 3.25 wide. Cheliceral length 1.20. Clypeal height 0.30. Length of leg segments: leg I- 1.50 + 0.88 + 0.78 + 0.60 + 0.55; leg II- 1.58 + 0.88 + 0.80 + 0.68 + 0.35; leg III- 2.03 + 1.13 + 1.15 + 1.43 + 0.78; leg IV- 2.38 + 1.00 + 1.38 + 1.75 + 0.80. Leg spination. Leg I: Fm. d. 1-1-5; Tb. pr. 1-2, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v.2-2ap. Leg II:

Fm. d. 1-2-5; Pt. pr. and rt. 0-1-0; Tb. pr. and rt. 1-1, v. 1-1-2ap.; Mt. pr. and rt. 1-1ap., v. 2-2ap. Leg III: Fm. d. 1-2-5; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 2-2, rt. 1-1-1-1, v. 1-2ap.; Mt. d. 1-1, pr. and rt. 1-2ap., v. 1-1-2ap. Leg IV: Fm. d. 1-1-3; Pt. pr. and rt. 0-1-0; Tb. d. 1-0, pr. 2-2, rt. 1-1-1-1, v. 1-1-2ap.; Mt. pr. and v. 1-1-2ap., rt. 2-1-2ap. Coloration lighter and paler than in males. Carapace brownish-yellowish, eye field brown. Clypeus yellow to orange, densely white haired. Forepart of eye field with plot of short, hard spines. Sternum yellow with greyish tinge. Maxillae, labium yellow. Chelicerae yellowish-brownish. Dorsum yellowish-greyish, markings of two longitudinal stripes not well expressed. Book-lung covers yellow. Spinnerets brown. Palps yellow, but sometimes basal parts of femora with grey patches. Legs yellow with brown rings and patches. Epigyne and vulva as in Figs 55-56.

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Figs 40-42. Male palp of *Asianellus kazakhstanicus*: (40) ventral view; (41) lateral view; (42) embolus, apical view. Scale 0.2 mm.

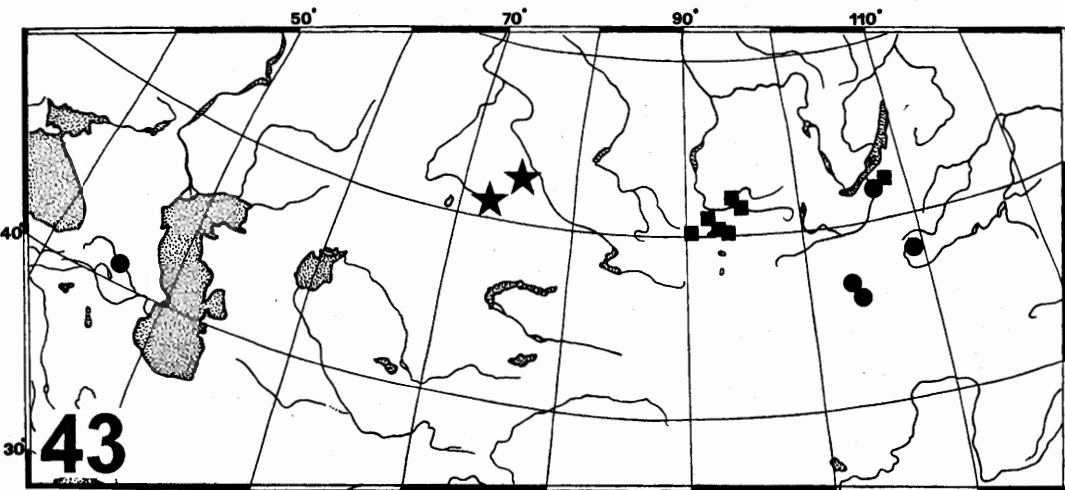
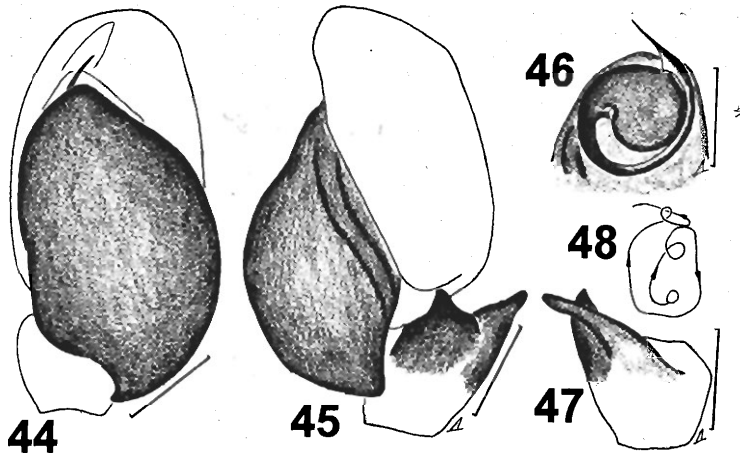


Fig. 43. Distribution of *Asianellus* spp. in Central Asia: *A. potanini* (circles), *A. ontchalaan* (squares), *A. kazakhstanicus* (stars).

the HNHM, for the opportunity to study materials from their museums. Thanks are due to Prof. J. Prószyński (Warszawa), who kindly read a draft of the manuscript and gave valuable suggestions and critical remarks for improving the paper. Dr A.A. Zyuzin critically checked the typescript regarding collection localities in Middle Asia, and we are much obliged to him. Finally, our thanks also go to Dr J. Berry (Indianapolis), for kind linguistic help. Finally, many thanks to anonymous referees who indicated a number of errors and defects in the typescript helping eliminate them. This work was partially supported by the International Science Foundation, grant RA6000 and grant KBN Nr. 6 P204 049 04 from the Polish Academy of Sciences.

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Figs 44-48. Male palp of *Asianellus ontchalaan*: (44) ventral view; (45) lateral view; (46) embolus, apical view; (47) DTA and VTA, rear view; (48) schematic course of seminal duct. Scale 0.2 mm.

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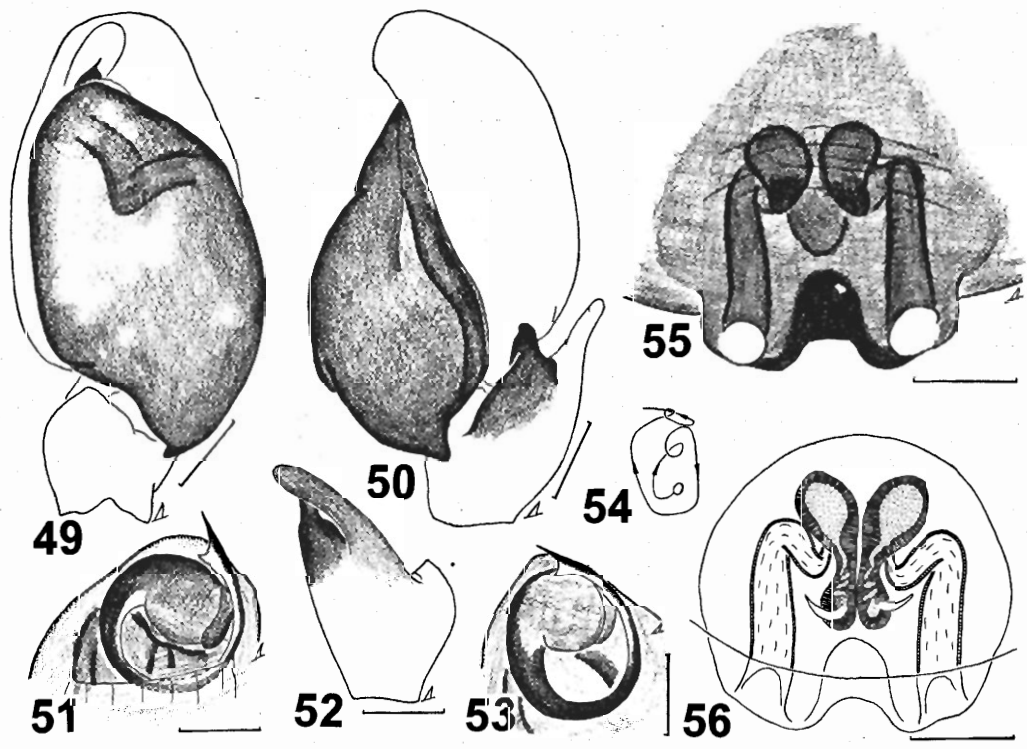
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Figs 49-56. Genitalia of *Asianellus potanini*: (49) male palp, ventral view; (50) ditto, lateral view; (51, 53) embolus, apical view; (52) DTA and VTA, rear view; (54) schematic course of seminal duct; (55) epigyne; (56) spermathecae. Scale 0.2 mm.