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Description of two new caddisflies and the probable adults of Philocrena trialetica LEPN. from the Caucasus

(Trichoptera)

With 22 Figures

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Sofia

Two species labelled „*Rhyacophila* n. sp." were found by the author in the collection of the Zoological Institute, Leningrad. Labelled by Prof. S. G. LEPNEVA, later on they have remained undescribed. One of them was mentioned by LEPNEVA (1957) as „*Rhyacophila mitarbiensis* n. sp." This is a nomen nudum. The specimens of the second „*Rhyacophila*" are considered here as the probable adults of *Philocrena trialectica* LEPN. – a genus and species described and known so far after the larva. Finally, a large series of a new species of genus *Asynarchus* was found there.

Rhyacophila lepnevae n. sp. (Figs. 1–6)

Rhyacophila mitarbiensis: LEPNEVA, 1957 (nomen nudum)

The material does not contain flying forms but pupae only, some of which males with fully developed genitalia. Lenght of ♂ pupa, 13 mm.

Genitalia ♂: Dorsal apical lobe of 9th tergite in dorsal view bulb-shaped, a little longer and narrower than the praeanal appendages (Fig. 2); the latters laterally obtuse, dorsally acute. 10th segment's anal sclerites and apical band present on Figs. 1[1]) and 3. Aedeagus with broad base, abruptly passing into a slender apical tube; the latter feebly upturned, with a long but shallow praeapical excision, forming a distinct although small point. Ventral lobe absent. Parameres sabre-shaped, twisted in the middle, with laterally acute, dorsoventrally somewhat excised apices (Figs. 1, 5–6). Inferior appendages: the coxopodite parallel-sided, longer than the harpago; the latter with a shallow excision on the distal margin, forming a very small, acute dorsal lobe and another, much longer and obtuse ventral lobe (Fig. 4).

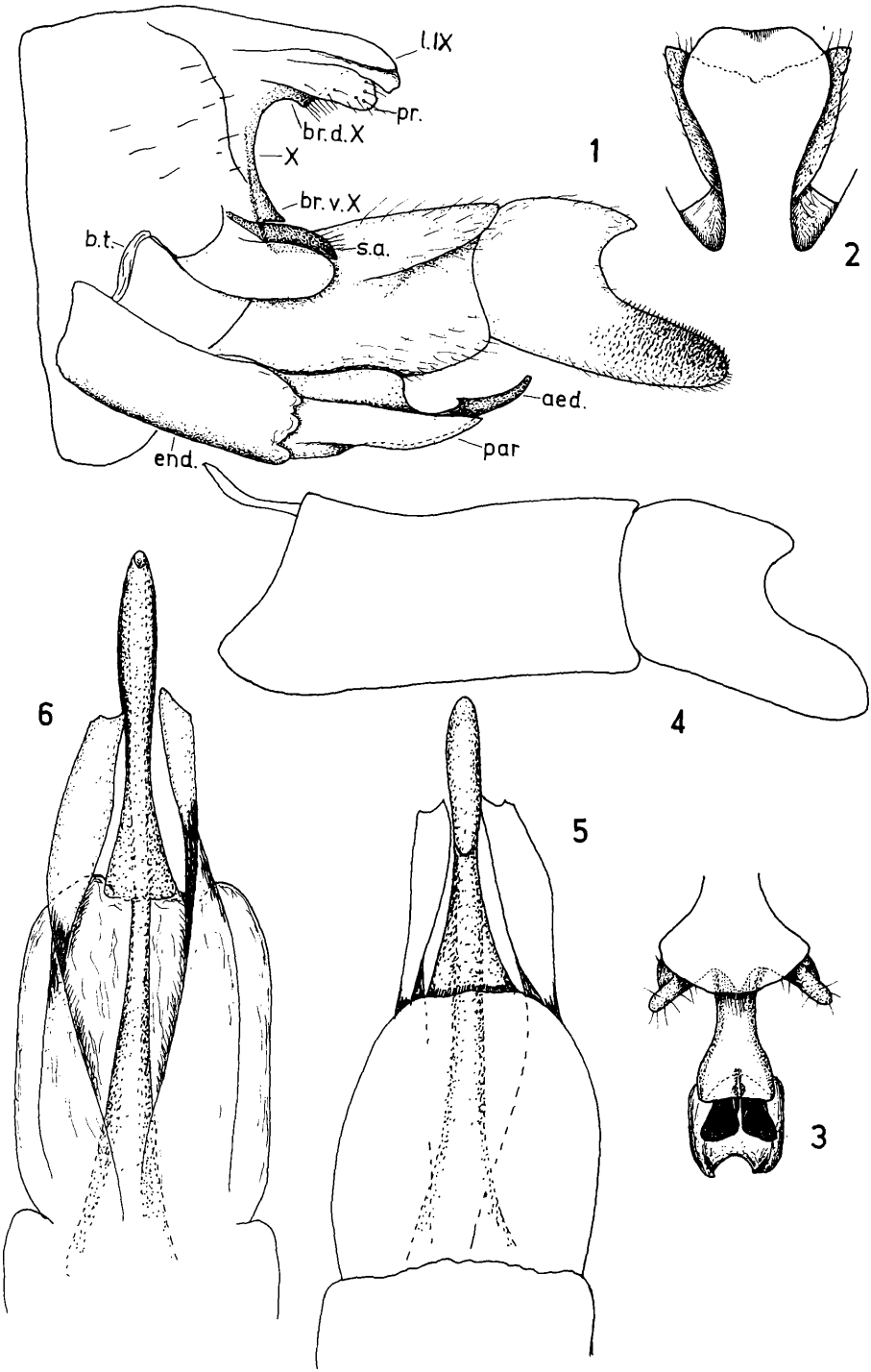
♀ Unknown.

Material and localities All the material originates from the region of Bakuriani, Georgian SSR, USSR. As typical series following samples containing mature pupae were indicated:

Rivulet Mitarbi, 4 km from Bakuriani (Station 156, sample 221), T° = 12°, depth 0.1–0.4 m, 13. 8. 1953, 4 mature pupae (♂♂) and 11 praepupae (cf. *lepnevae* n. sp.), leg. A. TSHISTIAKOVA. Rivulet Bakurianka, Bakuriani (Station 161, sample 228), 17. 8. 1953, 1 ♂ pupa, leg. A. TSHISTIAKOVA. The same locality, Station 184, sample 272, 29. 8. 1953, 4 ♂♂ pupae and 4 praepupae (cf. *lepnevae* n. sp.), leg. A. TSHISTIAKOVA. Station 285, sample 391 (near the hydro-electric power plant), 24. 8. 1954, 2 ♂♂ pupae, leg. L. ZHILTZOVA.

A ♂ pupa from Station 184 designated as Holotype One paratype (♂ pupa)

[1]) The abbreviations on Fig. 1 after SCHMID (1970).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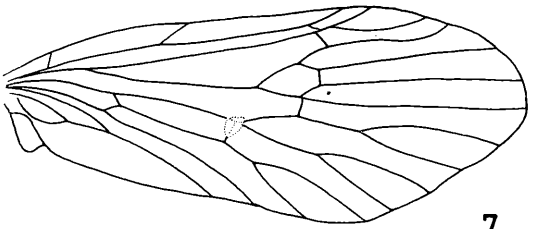

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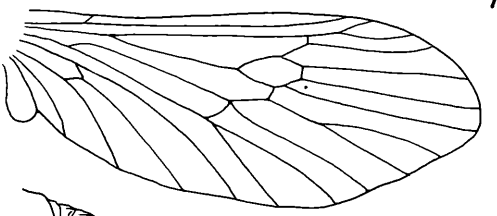

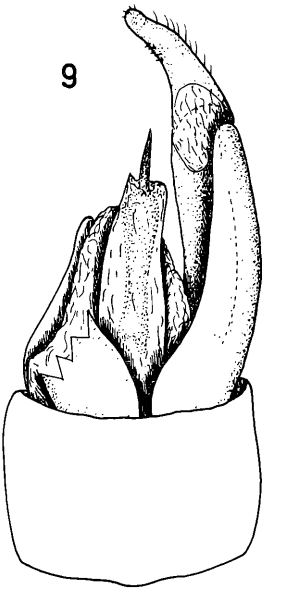

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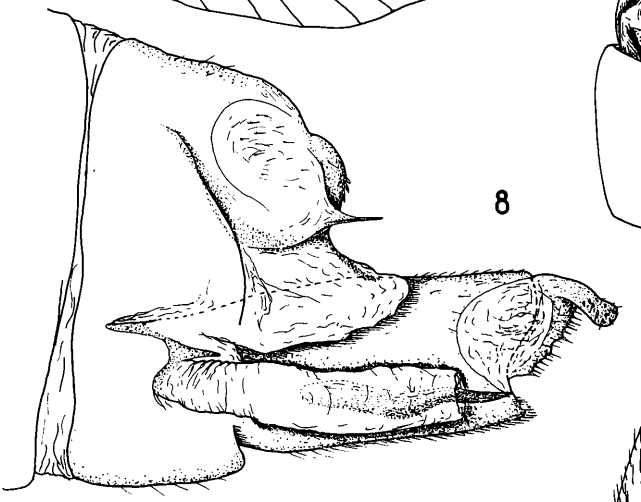

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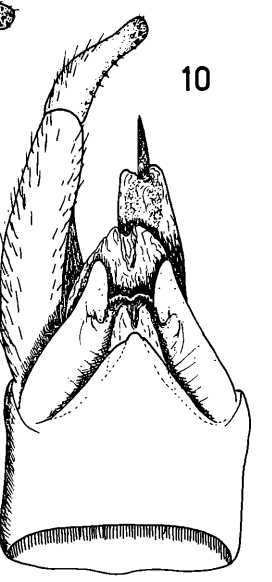

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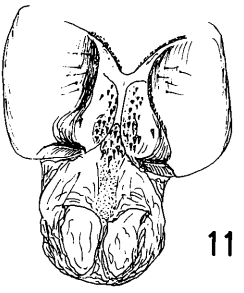

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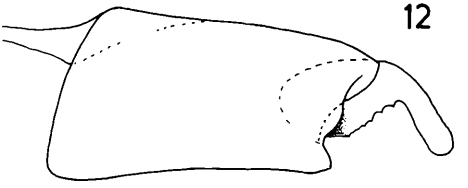

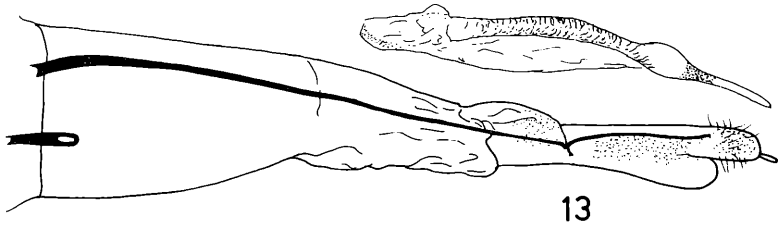

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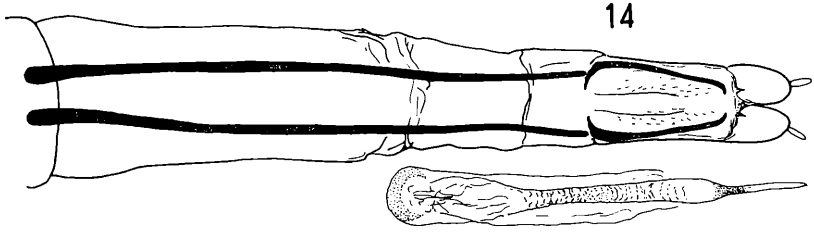

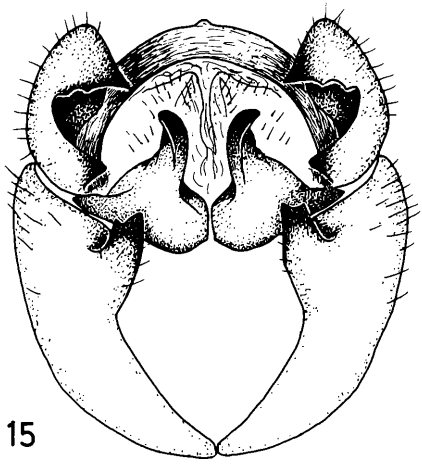

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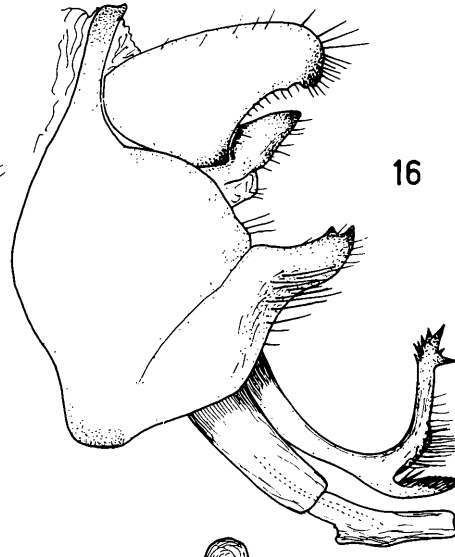

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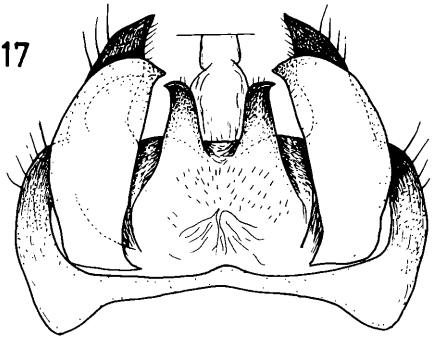

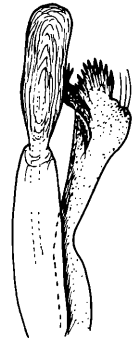

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in author's collection, the other types in coll. Zool. Institute, Academy of Sciences USSR, Leningrad.

Discussion *Rh. lepnevae* n. sp. belongs to the group of *vulgaris*. There is no close related species to it among the other Caucasian representatives from this group. After the shape of the harpago it is somewhat resembling both *Rh. forcipulata* MART. and *Rh. subovata* MART., but most of the other structures are entirely different. Some other genital elements (10th segment, the aedeagus) correspond well to those of the Iberian species *Rh. martynovi* MOS.

Main features individualizing the new species, are the form of the dorsal lobe of 9th segments, the shape of parameres and the absence of ventral lobe of aedeagus.

Philocrena trialetica LEPN., the adults (Figs. 7–14)

Two striking rhyacophilid males were found with the label of Prof. S. LEPNEVA *„Rhyacophila (?) mirabilis* n. sp." Further on, an undetermined female collected in the same locality was found to correspond well to these males. Being habitually very similar to *Rhyacophila*, these insects demonstrate at the same time some important particularities, which does not allow to be referred to that genus.[2])

Bearing in mind that from the very same locality LEPNEVA (1956) described a peculiar rhyacophilid larva, creating for it the new genus *Philocrena*, it seems to me much more reasonable to suggest these adults are the unknown forms of *Philocrena trialetica* LEPN. than to assume the coexistence of two different rhyacophilid genera besides *Rhyacophila*. Nevertheless, this question cannot be ultimately answered for the present.

Description Pale insects, general colour yellowish. Palps after the *Rhyacophila*-type – the two basal joints of maxillar palps short, the other longer and slender, terminal one acute. Ocelli present. Fore wing relatively broad, with parabolic apex. Membrane yellowish, the distal part somewhat whitish spotted. Cross-veins and Cu darker; a hyaline spot in the region of M-Cu cross-vein (Fig. 7). Two cross-veins between C and Sc. R bifurcated. Forks 1–5 present. Hind wing hyaline, with fork 4 absent. Discoidal cell present in both wings, closed and short. Length of fore wing, ♂ 12–13.5 mm, ♀ 14 mm. Spurs 3,4,4.

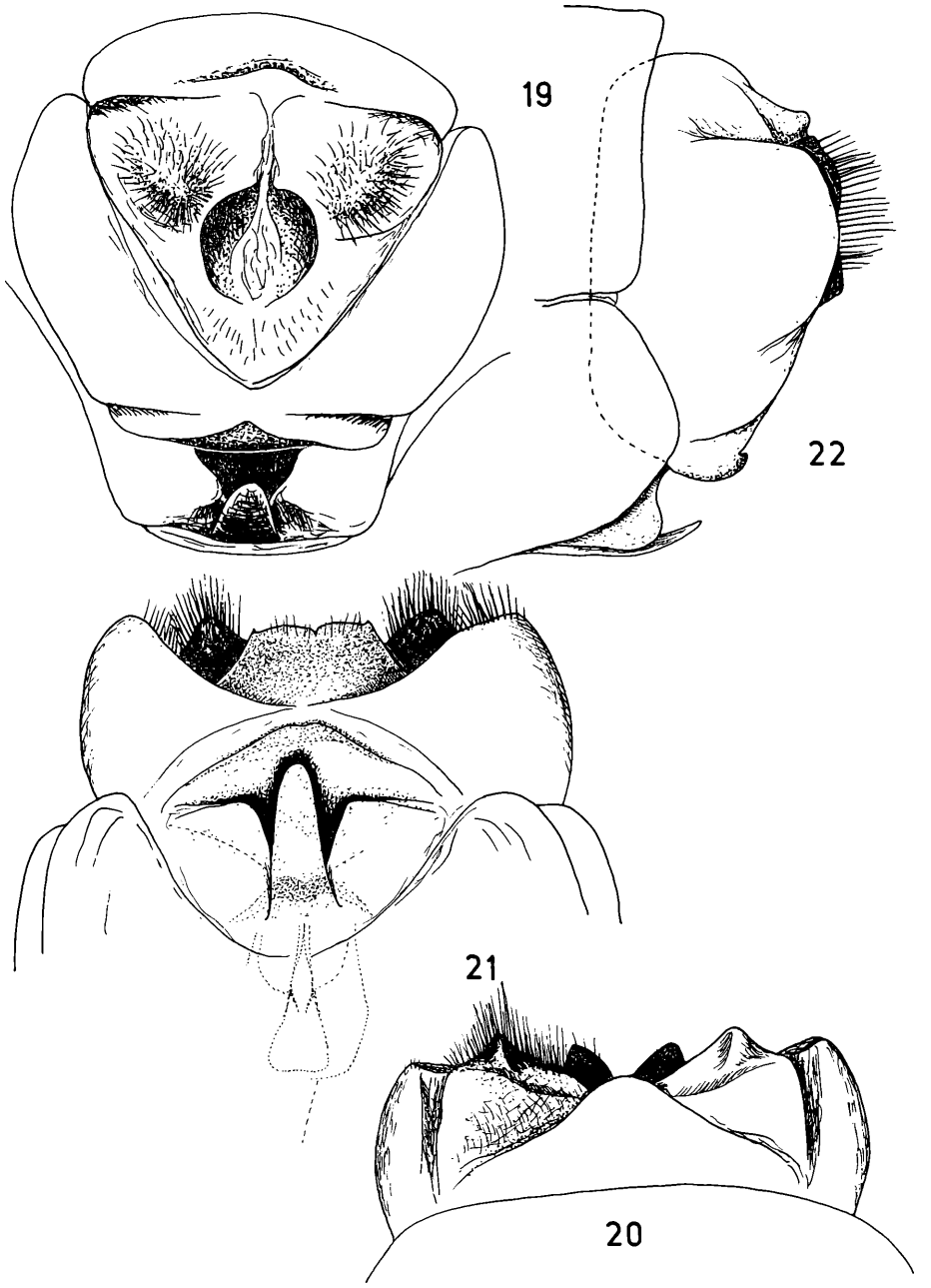
Genitalia ♂ 9th segment dorsally with proeminent triangle part (Fig. 10). 10th segment forming two lateral lobes, each with protruding apical part. The latter dorsoventrally flattened, laterally in form of horizontal point (Fig. 8); viewed dorsally (Fig. 10) it is elongate and obtuse. Ventrally the lateral lobes are marked by a darker, chitinous strip. Their dorsal parts in form of vast and shallow depressions, bearing sparse fine hairs. Medial part of 10th segment bilobed, each lobe with dence spinules along the mid line (Fig. 11). Ventral part of 10th segment in form of a vast membranous body situated above the phallic apparatus, with its apex slightly bilobed.

Figs. 1–6. *Rhyacophila lepnevae* n. sp., genitalia ♂: 1 – lateral; 2 – dorsal; 3 – 10th segment, caudal; 4 – left inferior appendage, lateral; 5 – phallic apparatus, dorsal; 6 – same, ventral. (Figs. 5+6 52×, the other figs. 21×)

Figs. 7–12. ? *Philocrena trialetica* LEPN., the adults 7 – wings; 8–12, genitalia ♂ 8 – lateral; 9 – ventral; 10 – dorsal; 11 – 10th segment, caudal; 12 – left inferior appendage, lateral. (Fig. 7 2×, the other figs. 21×)

Figs. 13+14. . *Philocrena trialetica* LEPN., genitalia ♀: 13 – lateral: 14 – dorsal.
Figs. 15–18. *Asynarchus zhiltzovae* n. sp., genitalia ♂ 15 – caudal; 16 – lateral; 17 – dorsal; 18 – phallic apparatus, ventral. (Figs. 13+14 11×, the outher figs. 21×)

[2]) Some preliminary discussions on this matter have been hold during the 3rd International Symposium on Trichoptera in Perugia, Italy (July–August 1980).



Figs. 19–22. *Asynarchus zhiltzovae* n. sp., genitalia ♀: 19 – caudal; 20 – dorsal; 21 – ventral; 22 – lateral. (Figs. 19–22 21×)

Its dorsal margin regularly curved, with a chitinous strip in the middle (Fig. 11). Phallic apparatus simple, composed of a long membranous theca and an elongate sclerotized part in it; caudally, the latter protruded in a strong, thorn-like processus (Figs. 8+9). Inferior appendages two-jointed. Coxopodite parallel-sided, twice as long as high (Fig. 12). Its distobasal corner free, rounded. Harpago characteristically shaped: the basal part short, $^2/_3$ as high as the coxopodite, with a row of hairs on its distal margin; dorsally the joint forming a long, slender and inwards turned piece. No black spines on the inner surface of the harpago.

Genitalia ♀ In general feebly sclerotized, simplified, with tubular telescopic segments (Figs. 13+14). 9th segment entirely membranous. Bursa copulatrix slender, very elongate and also feebly sclerotized.

Material and locality Georgian SSR, Bakuriani, rivulet Bakurianka (Station 122, sample 160 a), 27 7 1953, 2 ♂♂ in alcohol; the same locality (Station 135, sample 187), 3. 8. 1953, one ♀ (pinned), leg. L. ZHILTZOVA.

Discussion The female specimen is related with the males after the general resemblance between them, especially after the presence of closed discoidal cell both in front and hind wings.

The differential diagnosis of the probable adults of the genus *Philocrena* LEPN. and its only known species *trialetica* LEPN. is the following: Closed discoidal cell in both pairs of wings in both sexes; last abdominal segments with rather simplified structure, without strongly chitinized elements; in the male, 10th segment forming ventrally a vast membranous body, dorsally with two lateral lobes, each of them giving distally a flat horizontal appendage. Phallic apparatus in form of a simple membranous tube with a strong apical spine, caudally partly protruded, without parameres and lobes. Harpago without inner spinulate zone. In the female, last abdominal segments telescopic-tubular, without lobes, feebly sclerotized.

All other features of these insects (ocelli, palpi, spurs etc.) are well corresponding to those of the genus *Rhyacophila*. Although within the family Rhyacophilidae a closed DC could be found only in some genera of the subfamily Hydrobiosinae (entirely lacking in Holarctics), the real systematic position of genus *Philocrena* have been correctly found after the larva by LEPNEVA (1956).

Asynarchus zhiltzovae n. sp. (Figs. 15–22)

Habitually *A. lapponicus* ZETT. much resembling. Fore wing greyish-brown, of specimens in alcohol reddish-brown. Female somewhat larger than male; length of fore wing, ♂ 11.0 mm, ♀ 11.5–13.5 mm.

Genitalia ♂ 9th segment in lateral view typically for the genus enlarged. Its ventral and especially its dorsal part very narrow (Fig. 17). Superior appendages large, convex, longer than broad, with their distal margins excised. Viewed caudally (Fig. 15), this excision appears to be much stronger than in lateral view; dorsally and ventrally it terminates in strong, black, inwards turned dents. The dorsal dent somewhat bigger than the ventral one, followed laterally by two small and low denticles on the edge of the excision. Intermediate appendages rather big for this genus, caudally protruding nearly as far as the superior ones. Laterally they are broad and triangular (Fig. 16); their tips curved slightly outwards both in caudal (Fig. 15) and dorsal (Fig. 17) view. Caudally, the lateral bulges of 10th segment triangular, with their apices situated between the superior appendages' bases and the middle angles of 9th segment. Inferior appendages without particularities, their free parts terminate in two blackish dents each, the subapical one being somewhat smaller.

Parameres bifid; the basal branch with a raw of strong, digitiform arranged spines (Fig. 18); the vertical branch slender, regularly up-curved, with several very strong terminal spines and a row of very fine hairs along the outer side of its basal half (Fig. 16). Aedeagus without particularities – unarmed, similar to the typical for the genus schema.

Genitalia ♀ Generally very shortened, almost without protruding parts. Dorsal part of 9th segment narrow, distally projected in a low triangle (Fig. 20). Ventral appendages of 9th segment very large but also short (Fig. 22). 10th segment forming two vast but low and densely haired pyramidal lobes. Two dark semicircled sclerites between them surround the perianal area (Fig. 19). Supragenital plate narrow, laterally convex. Subgenital plate trifid; central piece very long and lanceolate, lateral ones $^2/_3$ of the lenght of the medial piece (Fig. 21).

Material and localities The type series includes 35 specimens (21 ♂♂ and 14 ♀♀), four of which (females) in alcohol, the others pinned. It originates from the Teberda reserve, the region of the Baduk lake, Northern Caucasus and is labelled as follows: 2 ♂♂ and 2 ♀♀ „Teberda, 3rd Baduk lake (Station 255, sample 359), 9. 8. 1954" 6 ♂♂ and 4 ♀♀ „Teberda, river Baduk, floods (Station 256, sample 361), 13. 8. 1954" and 9 ♂♂ and 2 ♀♀ from the same place, 10. 8. 1954; 3 ♂♂ and 1 ♀ „Teberda, Baduk lakes, 21. 8. 1954" 1 ♂ from the same place, 17 8. 1954, and 1 ♀, 24. 8. 1954; 2 ♀♀ (in alcohol) „Baduk lake, 21.–22. 8. 1954" and 2 ♀♀ (in alcohol) from the same place, 24. 8. 1954. All insects are collected by L. ZHILTZOVA.

Holotype ♂ chosen among the insects from 10. 8. 1954. Four paratypes (1 ♂ and 3 ♀♀) in author's collection, the other material in the Zoological Institute, Academy of Sciences, Leningrad.

Derivatio nominis This species is named after the eminent plecopterologist and collector of caddis-flies Dr. L. ZHILTZOVA.

Discussion This new species clearly belongs to the group of *lapponicus* derived by SCHMID (1954). The male shows close relation with *A. lapponicus* – similar form of the superior and inferior appendages and similar structure of the parameres. The main difference is in the intermediate appendages, strongly developed in *A. zhiltzovae* n. sp. and rather reduced in *A. lapponicus*. The female, with its generally shortened genitalia, is resembling *A. thedeni* WALL. rather than *A. lapponicus*. Nevertheless, *A. zhiltzovae* n. sp. can easily be distinguished after the following combination of features: Male – superior appendages large, with two distal dents; intermediate appendages also very large; parameres with the apex of the superior branch characteristically thorned; Female – central piece of the subgenital plate lanceolate, considerably longer than the lateral pieces; genitalia in general very short.

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