Ephemerida.
By Esben-Petersen, Silkeborg.

The collection of Ephemerida, which I received through Dr. Philipp Zaitzev, to whom I am very much indebted and thankful for forwarding it to me, is very interesting. It showed that the Ephemerid Fauna of the investigated localities is very much like that of Arctic Scandinavia. We find again 3 genera: Chitonophora, Sparrea and Metreopopus which have hitherto only been found in Norway and Sweden. Besides that we see that the Arctic Ephemerid Fauna is far from being sufficiently explored, and that we may expect to find many new forms, as soon as the researches are proceeded with.

The species found in the collection were the following:

1. Chitonophora Aroni Eat.
2. Baetis verius Curt.
4. Siphurus Linnavarus Etn.
5. Siphurus aestivalis Eat.
6. Siphurus sp.
7. Aemetopus fragilis Alb.
8. Metreopopus norvegicus Etn.
9. Eddyurus hyalinus sp. nov.
10. Heptagenia bipunctata sp. nov.

Aemetopus fragilis Alb. did not occur in the collection, but I have seen a single specimen from the Ural Government at the river Ular, collected by Mr. Basile Bostanjoglo, Moscow.

The collection contained many specimens, both dried and in alcohol, and we see, that Baetis verius occurred frequently. It was interesting to find, in the rich material of larva,
the nymphs of *Sparra norvegica* and *Metrelops norvegicus*. They were previously described by Dr. S. Bengtsson, to whom I am also very thankful for his generosity in presenting to me materials of several imagines and larvae described in his «Beiträge zur Kenntnis der paläarktischen Ephemeriden».

**A. Imagines.**

**Fam. Ephemerellidae.**

This family, Section 6 of the Genera in *A Rev. Mon. of rec. Ephem. or Mayflies* by A. E. Eaton, contains 3 genera: 2 European-American (*Ephemerella* Walsh. and *Chitonophora* Bengtss.) and 1 Asiatic (*Teleganoedes Etn.*). The two first named genera are separated from each other in the following way:

a. Hind femur and tibia about of equal length; hind tibia a little longer than hind tarsus. .......... *Ephemerella*.

b. Hind tibia much longer than hind femur and about twice the length of hind tarsus. .......... *Chitonophora*.

**Genus Chitonophora.**

*S. Bengtsson: Beiträge zur Kenntnis der paläarktischen Ephemeriden, Lund* 1900.

Apart from the differences already pointed out, it may still be noticed that the anterior tibia of the male of the *Chitonophora* is a little longer than femur and that the tarsus is about twice as long as the tibia. Anterior tarsus, tibia and femur of the female almost of equal length. 2. joint of the forceps of the male terminates in a sharply marked quadrangular dilatation.

![Fig. 1. Chitonophora Aroni Eat. Legs of the male.](image)

The type for the genus is *Chitonophora Auricillii Bengtss.* from Northern Sweden, and to this genus also belong *Chitonophora mucronata Bengtss.*, from the same localities, and *Ephemerella Aroni Eat.* from Norwegian Finnmarken and Finland.
Chitonophora Aroni Eat.


The species was described by Eaton in the above named paper, where he also gave a figure of genitalia of δ. As I have at hand richer material of the species than Eaton, I will supplement his description and give a better drawing of the genitalia of the male. I have compared the Russian specimens with the type-specimen, which is placed in my collection, and they agree very well.

δ. Imago (in alcohol). Head pitchy brown. The upper part of the eyes yellowish red, the lower part bluish black. Abdomen ventrally light with a faint brownish tinge; 8th segment, laterally, with a brown black streak. Length 10 mm.; anterior wing 10.5 mm.; setae 13 mm.

♀. Subimago (dried). Thorax shining, reddish brown. Abdomen greyish black above, paler towards apex. Hind borders of segments pale. Venter light brown, greyish black towards side margins; the two hindmost segments, light brown without dark margins. Setae greyish black, basally reddish white, without distinct annulations. Legs, yellowish brown; tarsi greyish black. Fore wings, faintly fumigated; hind wings with a pale yellow tinge. Subcosta and radius in the fore wings, greyish yellow; the other longitudinal main veins, pale greenish grey; cross veins indistinct.

3 specimens, dried, collected 16.—17. VII 1909 at the Kara river, tundra of Kara, Gov. of Tobolsk.

2 specimens in alcohol, collected 17. VII 1909 at the Kara river, tundra of Kara, Gov. of Tobolsk.

Fam. Baetidae.

Genus Baetis.

Baetis vernus.

Eaton: A. Rev. Men. of recent Ephem. or Mayfl. 1883—8.

Many specimens present, some pinned, others in alcohol. 25. VII — 23. VIII 1909; at tundra of Kara, Pe-mal and Pyderata.

Fam. Siphloridae.

Genus Siphlorus.

Siphlorus Linnaeaus Eatn.

Of this rare species, which was described from a single specimen in the Linnean Museum in London, and afterwards was found in numbers at Aal in Norway, there is a pinned specimen, δ, without setae, in the collection (found at 29. VIII. 1909, on the river Longot-johan).

The specimen agrees very well with the description given by Eaton. The fore legs, dark yellowish brown, the hind legs yellowish white. All the femora with a dark distal band; knees dark, and the joinings of the tarsal joints with dark annulations. The venter of most segments with markings as shown in Fig. 3b.

Fig. 3. Siphliurus Linnaeum Etn. Ventral view. a Subimago, ϕ, from Sweden. b Imago, δ, from the river Longot-johan.

Fig. 4 Siphliurus Linnaeum Etn. Dorsal view of penis and of basis of forceps.

When I have given Siphliurella Thomsoni as synomomous with the species of Eaton, it is according to a minute examination of original description and comparison with a couple of specimens, δ and ϕ, subimagnes from Småland, forwarded to me by Dr. S. Bengtsson.

I cannot follow S. Bengtsson in constituting a new genus on differences as to the proportional length of legs and tarsi within this genus. These variations, alluded to by Eaton (A Rev. Mon. of recent Ephem. or Mayfl. Lond. 1883—88 pag. 214), and also occurring, for instance, between Siphliurus aestivalis Etn. (Siphl. spinosus Bengts.) and Siphliurus lucustris Etn. (Siphl. Zetterstedti Bengts.), are of great specific but of no generic value. Regarding the shape of the penis the species is most allied to the Siphliurus aestivalis.

Siphliurus sp.

A single, defective specimen δ, is present (found 25. VII. 09 at the Kara river). It is doubtless a new species.
Besides this there is a subimagó \( \varphi \), in alcohol, which specimen cannot be referred to any of the previously described species. It is found 17. VIII. 09 at the Kara river.

Sparrea norvegica E.-Peters.


*Potameis elegans* S. Bengtss. Lunds Univ. Årskrift 1909.

The genus and species are based upon specimens from Karasjok in Norwegian Finnmarken. Afterwards specimens have been found in Sweden. In the collection there is 1 pinned specimen from the tundra of Kara, 13. VII. 09 and 1 \( \delta \), subimagó, in alcohol, from the Kara river, 22. VII. 09.

After having read S. Bengtsson’s description of the species and seen specimens from his collection, I have been convinced that *Potameis elegans* is the same as *Sparrea norvegica*.

![Fig. 5. Sparrea norvegica E.-Peters, \( \delta \).](image)

**Fam. Ametropidae.**

**Genus Ametropus Alb.**

*Ametropus fragilis* Alb.


As mentioned before, this species did not occur in the collection, but I have seen a single specimen, subimagó, collected by Mr. Basile Bosshajoglo, Moscow, at the river Ular, 48° 56' lat., Ural Government. The specimen has lost its legs and got the body accidentally compressed, but I am inclined to consider the specimen as a *A. fragilis*.

**Genus Metretopus Etn.**


Bengtsson, Polarktischen Ephemeriden, Lunds Univ. Årskrift 1909.

The description of this genus and species was based upon specimens found in Norway. Later on examples were discovered in several places in Sweden.

I have several specimens before me. Dried and pinned: 2 \( \delta \delta \) and 1 \( \varphi \) imag. 1 \( \varphi \) subimag. 23. VIII. 1909 from, Jenser-Ken. In alcohol: 1 \( \delta \), imag. 14. VIII. \( \delta \) 256 from the river Nemsj-jaha; 1 \( \varphi \) subimag. 19. VIII. \( \delta \) 269 from the Pyderata river; 1 \( \varphi \) subimag. 17. VIII. \( \delta \) 264 from the Pyderata river; 1 \( \varphi \) subimag. 21. VIII. \( \delta \) 277 from the river Niada-jaha; 1 \( \varphi \) subimag. 20. VIII from the Pyderata river.
Fam. Ecdyuridae.
Genus Ecdyurus Etn.

Ecdyurus hyalinus sp. nov.

♂. Imago (drici). Thorax above dark brown, shining, with the sides paler. 1st, 9th and 10th segments dorsally dark brown; 8th segment dark brown in front, with a U-shaped, pale brown figure.

Fig. 6. Ecdyurus hyalinus sp. nov. Tibiae and tarsi of ♂.

Segments 2 to 7 of abdomen colourless, water-clear and transparent. Apical border of each of segments 2 to 7 dorsally of a dark brown colour as the thorax. From the above mentioned dark border, at each side, two dark spine shaped figures, forming a U, are projecting forwards, reaching the middle of each segment. On the middle of abdomen, on most segments, two very narrow longitudinal, brown lines are perceptible. The pleura with a fine brown line; being darker at the distal end, especially in the 6th and 7th segments. Underside colourless. 8th and 9th segments with a flesh coloured tinge. On 8th segment are two longitudinal, short streaks at the base. Setae yellow brown, at the base with narrow darker annulations at the joinings. Legs yellowish brown; fore tarsi paler. All the femora with two dark brown

Fig. 7. Ecdyurus hyalinus sp. nov. a Apex of abdomen, with penis from beneath. b Penis from above.
rings and with dark brown apex; all the tibiae with a dark brown ring at the tip and a paler one in the middle. Forewings yellow brown. Wings hyaline; longitudinal veins slightly darker than the membrane. Costa, subcosta and radius with a yellowish tinge. Pterostigmatic region with yellowish tinge, branched and and anastomosed cross veinlets.

Length 1.1 cm.; fore wing 11.5 mm.; setae 23 mm.

One specimen ♂, captured 17. VII. 1909 at the Kara river.

Easily recognized by its pale abdomen, dark ringed femora and tibiae and by its hyaline wings.

Genus *Heptagenia* Walsh.

*Heptagenia bipunctata* sp. nov.

♀. Imago (dried). Head pale yellow. Eyes greyish blue and with a short purple streak before their fore margin. Prothorax above pale yellow with two purple red longitudinal bands, which are broadest behind. Meso- and metathorax above pale yellow with a faint purple red spot in front and with smaller spots of the same colour between the wings.

Abdomen above rich yellow and with a purple red longitudinal band, being narrower on the 8th segment and indistinct on the 9th and 10th. On the dorsum of each segment at the side margins is a purple subtriangular spot, being prolonged and pointed in front, while at the hind margin it is so broad, that it touches the longitudinal middle band. But this is only the case with the spots on the 1st to

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Fig. 8. *Heptagenia bipunctata* sp. nov. Legs of ♀.

Fig. 9. *Heptagenia bipunctata* sp. nov. Fore wing of ♀.
5th segments; on the 6th to 8th segments they become gradually narrower, and on the 9th to 10th they are indistinct. Underside of the body rich yellow. Setae yellowish white with narrow, slightly reddish annulations at the joinings. Legs yellow; claws yellowish grey. Anterior femora with two purplish red bands, one in the middle and one at apex. Middle and hind femora with an indistinct brownish red ring towards apex. Wings hyaline with yellowish tinge. Fore wings in the marginal and submarginal areas tinged with rich yellow; in the pterostigmatic region the yellow colour has a reddish tint. The marginal area, in the hind wings, only tinged with yellow at the base. Longitudinal nervures light greyish yellow; the cross veins dark greyish yellow in the fore wings, paler in the hind wings. In the fore wing, in the middle of subcosta, is a larger, conspicuous, oblong, dark dot. A smaller one is placed just behind it on the subradius.

Length 12 mm.; fore wing 15.5 mm.; setae 20 mm.

In the collection was a female, preserved in alcohol, taken the 31. VIII. 1909 at the Obi river (Sango-pan).

Besides this one I have seen a ♀, collected by Mr. Basile Bostanjoglo in a valley at the Volga, near Moscow, 8. VI. 1909. The description is given from the last named specimen.

It is a fine and conspicuous species, easily recognized by its strongly pronounced purplish red colour and by the two dots on subcosta and subradius.

B. Larvae.

Baetis sp. l.

Nymph. Light reddish brown. Head and thorax, with a fine pale median line. A few darker spot are visible on the upper side of thorax and abdomen. Underside unicolourous. Femora slightly darker than tibiae and tarsi. Middle seta most often the shorter. Autunnae dark at the base, paler towards apex. Length 7—8 mm.; setae 5 mm. Several specimens present.

Fig. 10. *Baetis luridus* l. a Labium, b left mandible, c left maxilla.
9. VIII. 09 № 89, at the Talota river; 3. VIII. 09 № 93, at the tundra of Kara; 20. VIII. 09 № 274, on the Pyderata river; 27. VIII. 09 № 69 on the Stschutschja river.

The nymph is readily recognized by its very long tracheal gills, and it is quite probable that it belongs to Baèlis vernus Curt.

**Baèlis sp. II.**

**Nymph.** Regarding the shape of the mouthparts it is much like *Baèlis I*, but it differs from it by its shorter tracheal gills. Greyish. Head and thorax with a fine, pale median line. The borders of the abdominal segments — as a rule also those of the venter — darker. Middle seta considerably shorter than the two others. Length 4,5—5,5mm.; setae 3,5 mm.

![Diagram](image)

**Fig. 11. Baèlis larva I. Tracheal gills. a 7th gill, b 4th gill, c 1st gill.**

**Fig. 12. Baèlis larva II. Tracheal gills. a 7th gill, b 4th gill, c 1st gill.**

Several specimens present.

7. VII. 09 № 212, near mount Minisej; 9. VIII. 09 № 89, on the Talota river.

**Sparrea norvegica E.-Peters.**

As Bengtsson has described the larva, I only give a short description.

**Nymph.** Parallel sided. Head a little narrower than mesothorax. Upperside light brown, underside paler. Round the eyes a pale ring.

Overside of thorax and abdomen with several pale spots.
Antennae yellowish white, long and slender. Legs yellowish white and not densely haired. Setae of equal length, yellowish and with indistinct annulations at the joinings; the two uttermost hairy on their innerside, the middle one on both sides. Hair dark. Hind angles of 5th to 9th segments produced into short, broad and spiny teeth. 7 pairs of single tracheal gills on each of the 1st to 7th segments.

Length 10 mm.; setae 5 mm.

The characteristic shape of the mouthparts indicates that the genus must be placed near the Ameletus.

2 specimens are in the collection. 5. VII. 09 № 33, near mount Minisej.

Fig. 13. Sparrea norvegica E.-Peters. Nymph. a left maxilla, b left mandible.

Fig. 14. Sparrea norvegica E.-Peters. Nymph. a Labium, b Labrum.

Fig. 15. Sparrea norvegica E.-Peters. Nymph. a 4th tracheal gill, b Hind leg.

Siphurus aestivalis Etn.

Siphurus spinosus Bengtsson, Palzarktischen Ephemeriden, Lund. 1909.
A single larva was found. It agrees in all parts completely with the larva from Denmark. 15. VII. 09 № 49, at the tundra of Kara.

Siphurus sp.

5 larva were found of a species of Siphurus. I do not venture to regard them as belonging to any of the known imagines. I have seen the larva of Siphurus Linnaeus from Sweden.

22. VII. 09 № 62, near the mouth of the Kara river.

Metretopus norvegicus Eaat.

The larva of this species also is described by Bengtsson.

Nymph. Head small, only half as wide as the mesothorax. Ocelli large; front greyish yellow with yellow middle line. Thorax, wing sheaths and abdomen grey-yellow. On thorax a few small brownish dots are present.

On the wing sheaths is seen a dark line following

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Fig. 16. Metretopus norvegicus Eaat. Nymph. a Labrum, b Labium.

Fig. 17. Metretopus norvegicus Eaat. Nymph. a Left mandible, b Left maxilla.

Fig. 18. Metretopus norvegicus Eaat. Nymph. a 7th tracheal gill, b Hind leg.
the median nervure till the point where this is forked. Abdomen above with several, smaller and larger, brownish spots. Venter pale greyish yellow. Antennae, legs and setae pale greyish yellow. The middle joints of setae dark brown on the sides. Hind angle of segments terminating in a long, spiny tooth. Antennae thin and short. Setae equal in length; the two uttermost hairy on their inner side, the middle one on both sides. 7 pairs of nearly uniform tracheal gills being each apically broadly rounded and only with few tracheal branches. Length 13—14 mm.; setae 5 mm.

The larva is slender and much like the Baetis larva. A series of larva, in the nymphal stage, were present.

1. VIII. 09 № 89, at the tundra of Kara; 16. VIII. 09 № 262, on the Pyderata river; 21. VIII. 09 № 277 on the river Niada-jaha.