

## Data to the Knowledge of the Distribution of Stone Flies (Plecoptera) in Hungary

By

S. ÚJHELYI\*

The Hungarian stone fly fauna is yet incompletely known. With regard to the meagre data of early Hungarian literature, MOCSÁRY and PONGRÁCZ had summarized the available information. PONGRÁCZ recorded 16 plecopteran species from the present area of Hungary, but the occurrence of two of them, namely *Perla maxima* Sc. and *Protonemura lateralis* PICT., is still open to doubt. The former one was recorded from Budapest, Pilismarót, and Kőszeg; it has not been captured since. It seems probable that the name refers to another taxon, since the nomenclature of the *Perla* species was rather uncertain in early times and clarified only in recent years. The species inhabits, incidentally, the high montane streams of the Alps and the Carpathians.—The other species was recorded by MOCSÁRY—under the name *Nemura*—from Besnyő, Gödöllő, and Visegrád. These data almost certainly refer to erroneous identifications, since the species, living above 700–800 m, had not yet been found in even the highest streams of the country since MOCSÁRY's time.

The other 14 species were later shown to occur in Hungary by SÁTORI's (1938, 1939a,b) collectings, and recently by AUBERT's (1966) paper. One of SÁTORI's species, *Protonemura fumosa* RIS, should be deleted from our list, since this stone fly occurs only in the Alps; the rather similar *P. auberti* ILLS. and *P. aestiva* KIS are the ones which inhabit the lower mountainous ranges. At the time of SÁTORI's collecting activities, these two latter species were as yet undescribed, and the species occurring in the low mountains of Germany had also been considered *P. fumosa*. This is why SÁTORI identified the species inhabiting the Mts. Mátra and Bükk as *fumosa*, though his specimens in all probability represented *aestiva*.

According to the data published hitherto, and excluding the three species cited above, 37 stone fly species have to date been shown from Hungary. My own collections increased this number by 11, hence we may now list 48 species occurring in the country. Results up to now represent merely the beginnings of information on our stone fly fauna. I have collected mainly in the Mts. Pilis, Börzsöny, and Mátra, and merely to some extent in the Mts.

\* Dr. SÁNDOR ÚJHELYI, Orvosi Fizikai Intézet (Institute of Medical Physics), Budapest, VIII. Puskin u. 9.

Bükk and Sátor. The stone fly fauna of this range should further be investigated, and even more so the Transdanubia and the almost wholly unknown stone fly fauna of our larger rivers and streams in the plains. We are still far from being able to draw zoogeographical and chorohistorical inferences on the basis of the recently available data concerning the stone flies, as has been done by several authors for better explored areas.

The data submitted below all originate from my own collectings; the specimens are preserved in 70 per cent alcohol in my collection.

I am indebted to BÉLA KIS for the control of my identifications referring mainly to species described by him.

### Family Taeniopterygidae

**Brachyptera risi** MORT. — Mts. Pilis: 1 May, 1964, 3 ♀; 17 May, 1964, 3 ♀, Dömös; Mts. Börzsöny: 9 May, 1965 1 ♂, 9 ♀, Kemencepatak; 24 May, 1966, 1 ♂, 3 ♀, Királyrét; 8 May, 1966, 1 ♀; 5 May, 1966, 12 ♀; 2 July, 1967, 1 ♀, Nagyvasfazékpatak; 9 May, 1965, 2 ♂, 1 ♀, Rózsapatak; Mts. Mátra: 19 May, 1965, 1 ♀, Mátrafüred; 19 May, 1965, 3 ♀; 1 May, 1966, 1 ♀, Csatornapatak.

The species was first published from Hungary by AUBERT (1966). I found it in the Mts. Pilis only in the shady and cold Szőkeforrás brook on the northern side of the range, whereas the species occurs in both the higher southern and northern streams in the Mts. Börzsöny. The species ranges to the east and west of Hungary, as well as in the north to Scandinavia, in the medium high mountains.

**Brachyptera seticornis** KLP. — Mts. Börzsöny: 8 May, 1966, 4 ♀, Királyrét; 6 May, 1966, 2 ♂, 28 ♀; 16 April, 1967, 9 ♂, 7 ♀; 2 July, 1967, 2 ♂, Nagyvasfazékpatak; — Mts. Mátra: 20 April, 1966, 3 ♂, 3 ♀, Mátrafüred; 19 May, 1965, 3 ♂, 14 ♀; 1 May, 1966, 1 ♂, 1 ♀, Csatornapatak; 28 May, 1967, 1 ♂, 1 ♀, Hidaspatak; Mts. Sátor: 12 May, 1966, 1 ♀, Kövecsespatak, Telkibánya.

This species, too, was first recorded by AUBERT (1966) from Hungary. Its range resembles that of the preceding species, frequently occurring together with it.

**Rhabdiopteryx hamulata** KLP. — Mts. Börzsöny: 26 April, 1959, 1 ♀, Királyrét.

The species was described by Klapálek in 1902, on the basis of some specimens preserved in formol and with the locality Budapest; they have been submitted to him by Mocsáry. As far as I know, the species has not been collected since. Nothing is known about its life history; owing to the published locality, it was assigned to the fauna of the Danube.

I have collected my single female specimen on the shores of a tributary stream of the Danube, 12 km from its mouth. This raises the possibility that it does not inhabit the Danube but rather the tributary streams. This assumption may be substantiated by two considerations: on the one hand, early authors and collectors had the custom to define areas rather removed from the capital as still a part of Budapest, on the other, streams had at that time still existed which emptied their waters into the Danube but which flow now in regulated courses and whose fauna have since then become extinct,

owing to the regulating operations and the recent pollution of the water.

The venation of my exemplar displays some differences against KLAPÁLEK's description (Fig. 1). It is characteristic of the venation of the genus *Rhabdiopteryx*, and it highly resembles that given by ILLIES in 1957 for *Rh. thienemanni* in the original description. However, the venation somewhat deviates

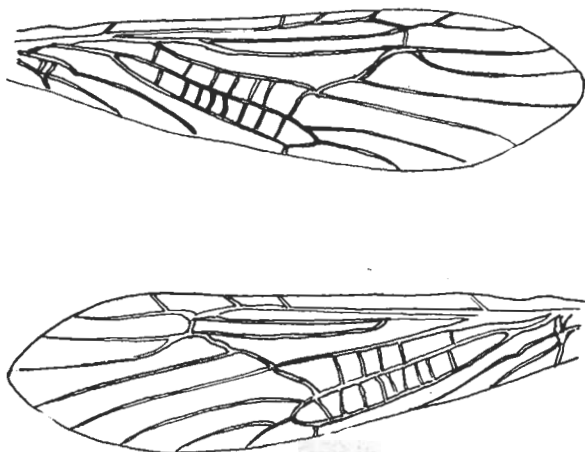


Fig. 1. *Rhabdiopteryx hamulata* KLP. Right and left forewing

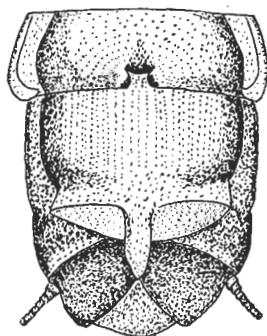


Fig. 2. *Rhabdiopteryx hamulata* KLP. Caudal end of female abdomen (inferior view)

on the two fore wings: there are two cross-veins on the right, and one on the left wing, anteriorly to the termination of the subcosta in the costal field; *Rs* branches in both wings, the stalk is very short, in contrast to KLAPÁLEK's description ("...die Gabel gewöhnlich so lang, wie ihr Stiel"); *Cu*<sub>1</sub> emits one branch on the right wing and two on the left; the membrane is fumous brown, whereas the area of the pterostigma and from then on the two sides of the cross vein are darker than the other portions of the wing. In the description of *thienemanni*, ILLIES stated that the new species stands nearest to hamu-

lata. The similarity appears also in the venation of the two species. The ninth abdominal segment is very characteristic of this species (Fig. 2), since it emits a long lingulate process from its posterior margin, agreeing in its main features with KLAPÁLEK's figure. RAUŠER (1962) ascribes to the species an importance separating associations. The investigation of the occurrence and life history of the very rare and interesting species is an important future task.

**Taeniopteryx nebulosa** L. — 8 April, 1966, 1 ♀, Ipolydamásd.

The species was known from Budapest, Pilismarót, and Simontornya. It was now found now also in the river Ipoly, and it probably occurs in also our other larger streams.

#### Family Nemouridae

**Amphinemura borealis** MORT. — Mts. Sátor: 31 May, 1957, 1 ♂, Kemencepatak.

This rare species is considered a boreo-alpine relict. WINKLER (1957) found it along the river Hernád in Slovakia; the occurrence in the Mts. Sátor probably joins this habitat of the Carpathian relict. The species is new for our fauna.

**Amphinemura standfussi** RIS — Mts. Bükk: 24 June, 1967, 2 ♀, Sebesvíz.

The species occurs in the medium high mountainous ranges, being more frequent in West Europe and local only in the Alps, becoming gradually rarer eastwards. Only a few localities are known from Slovakia and Transylvania. The species is new for our fauna.

**Nemoura avicularis** MORT. — Mts. Börzsöny: 1 May, 1958, 2 ♀, Diósjenő.

According to ILLIES (1953), also this species is boreo-alpine. There is one datum from Hungary; SÁTORI recorded it from the Mts. Bükk. Some localities are known from Austria and Czechoslovakia; as yet unknown from Roumania.

**Nemoura cambrica** STEPH. — Mts. Pilis: 1 May, 1940, 5 ♂, 3 ♀; 1 May, 1964, 28 ♂, 29 ♀; 17 May, 1964, 20 ♂, 42 ♀, Dömös; 24 May, 1964, 1 ♂, 5 ♀, Bükköspatak, Szentendre; — Mts. Börzsöny: 12 April, 1959, 9 ♀; 26 April, 1959, 1 ♂; 24 April, 1966, 4 ♂, 42 ♀, Királyrét; 8 May, 1966, 21 ♂, 65 ♀; 5 June 1966, 7 ♂; 16 April, 1967, 62 ♂, Nagyvasfazékpatak; 3 April, 1967, 16 ♂, 12 ♀, Szénapatak; — Mts. Mátra: 20 April, 1966, 5 ♂, 16 ♀; 1 May, 1966, 21 ♂, 19 ♀, Csatornapatak; 2 June, 1966, 1 ♂, 2 ♀, Csörgőpatak; 9 April, 1967, 28 ♂; 20 April, 1967, 9 ♂, 25 ♀; 29 May, 1967, 54 ♂, 95 ♀, Hidaspatak; — Mts. Bükk: 1 May, 1967, 4 ♂, Csikorgópatak; 2 May, 1967, 3 ♂, Garadnapatak; 1 May, 1967, 44 ♂, Sebesvíz; — Mts. Sátor: 13 May, 1966, 1 ♂, Nagypatak, Telkibánya.

A characteristic species of the medium high mountains. It is rather interesting to note that, according to literature, it is not frequent in the neighbouring countries but the frequentest one in Hungary, occurring in masses in rivers and streams with rocky bottom and free of vegetation, in April–May. The species is insensitive against water temperature and rapidity of flow; judging by its numbers, it favours the quick-flowing and cold streams. This frequentest of our species had hitherto escaped the attention of our collectors. It was first mentioned by SÁTORI (1939b) from two brooks of the Mts. Sátor, then by AUBERT (1966) from the Kemencepatak in the Mts. Börzsöny.

**Nemoura cinerea** RETZ. — Mts. Pilis: 15 May, 1960, 1 ♀, Bükköspatak, Szentendre; — Mts. Börzsöny: 17 April, 1960, 25 ♂, 6 ♀, Katalinvölgy, Nógrád-  
verőce; 9 May, 1965, 31 ♂, 23 ♀, Kemencepatak; 8 May, 1965, 2 ♂, 2 ♀,  
Nagyvölgy; 2 July, 1967, 10 ♀, 5 June, 1966, 2 ♂, 2 ♀, Nagyvasfazékpatak;  
18 June, 1967, 1 ♂, 12 ♀, Szénpatak; 24 April, 1966, 1 ♀, Királyrét; — Mts.  
Mátra: 19 May, 1965, 1 ♂, Mátrafüred; 1 May, 1966, 1 ♂, Csatornapatak;  
28 May, 1967, 1 ♀, Hidaspatak; — Mts. Bükk: 30 April, 1967, 3 ♂, 4 ♀,  
Garadnapatak; 24 June, 1967, 1 ♂, Sebesvíz; — Mts. Sátor: 13 May, 1966,  
1 ♂, Nagypatak, Telkibánya; 1 May, 1965, 4 ♂, 12 ♀, Jósvafő. — 28 April,  
1958, 1 ♂, Veregyháza.

The species is the most euryoecic and thus the most widely distributed one  
in Europe. It favours slowly flowing streams with a dense vegetation; it  
occurs in most flowing waters in the plains but, as evinced by the mountain  
data, it can be found in smaller individual numbers in also the more rapidly  
flowing and colder brooks.

**Nemoura dubitans** MORT. — 3 April, 1960, 2 ♂; 7 April, 1965, 5 ♂, 2 ♀,  
Veregyháza.

The species was first recorded from Hungary by SÁTORI (1938), on the basis  
of a single female exemplar deriving from the lake Hámori in the Mts. Bükk.  
It is really an insect of the plains, and though occurring as well in plainy as in  
hilly regions in Europe, it is now here frequent. It was only recently recorded  
from Czechoslovakia, but not yet shown from Rumania. Strikingly, it occurs  
in divers habitats usually together with *N. sciurus*. Also at Veregyháza,  
merely one or two dubitans exemplars fall to great numbers of *sciurus*. A survey  
of the brooks in the plains will probably result in showing a much wider  
distribution than hitherto known.

**Nemoura flexuosa** AUB. — Mts. Pilis: 15 May, 1960, 1 ♂, Bükköspatak,  
Szentendre; — Mts. Börzsöny: 29 March, 1959, 3 ♂, 8 ♀, Nagy Börzsöny;  
1 May, 1958, 3 ♂, Diósjenő; 5 June, 1966, 1 ♂, Nagyvasfazékpatak; 3 April,  
1967, 1 ♂, Szénpatak; — Mts. Mátra: 9 April, 1967, 34 ♂, 2 ♀, Hidaspatak; —  
May, 1967, 6 ♂, Csikorgópatak; 2 May, 1967, 1 ♂, Garadnapatak; 1 May,  
1967, 19 ♂; 24 June, 1967, 4 ♂, 8 ♀, Sebesvíz.

The species was first mentioned by AUBERT (1966), from the Mts. Pilis  
and the Börzsöny. It is very similar to *N. marginata* PICT and *N. erratica*  
CLASS; the former occurs in the higher mountains, the latter in the lower  
ones in the west. The specimens cited agree in all respects with those identified  
by its author from the Mts. Pilis and Börzsöny.

**Nemoura sciurus** AUB. — 7 April, 1965, 64 ♂, 33 ♀, Veregyháza; — Mts.  
Börzsöny: 16 April, 1967, 4 ♂; 8 May, 1966 1 ♂, 1 ♀, Nagyvasfazékpatak; —  
Mts. Mátra: 1 May, 1966, 1 ♂, Csatornapatak; 28 May, 1967, 1 ♂, Hidaspatak.

AUBERT recorded it first, from the Kőhegy. The species seems to favour  
streams of abundant waters in the plains or hilly regions, but smaller individual  
numbers occur also in montane streams. The above localities are the only  
known ones in the Carpathian Basin; it is rare also in North Europe.

**Nemourella picteti** KLP. — Mts. Pilis: 9 Oct., 1966, 1 ♂, Szőkeforrás, Dömös;  
— Mts. Börzsöny: 24 April, 1966, 2 ♂, Királyrét; 9 May, 1965, 1 ♂, 1 ♀,  
Rózsapatak; 8 May, 1965, 2 ♂, 3 ♀, Nagyvölgy; 2 July, 1967, 1 ♀, Nagyvas-  
fazékpatak; — Mts. Mátra: 28 April, 1965, 1 ♂, Kallók völgye; 20 April,

1966, 2 ♂, 1 ♀; 1 May, 1966, 1 ♀, Csatornapatak; 9 April, 1967, 2 ♂, 3 ♀; 20 April, 1967, 1 ♂, 1 ♀; 5 June, 1967, 5 ♂, 5 ♀, Hidaspatak; — Mts. Bükk: 1 May, 1967, 1 ♂, Csikorgópatak; 30 April, 1967, 3 ♂, 3 ♀, Garadnapatak; 1 May, 1967, 1 ♂, 2 ♀, Sebesvíz; 12 June, 1955, 4 ♂, 19 ♀, Szalajkavölgy; 2 May, 1965, 2 ♂, 10 ♀, Jósavfő.

We have similarly few data of also this species. SÁTORI recorded it (1939b) from the Mts. Mátra and Bükk, Aubert from Zebegény. Actually, however, this insect is much more widely distributed than expectable from the above data; up to now, I have found it in every locality where I collected. Though it is present in small numbers in rapid streams free of vegetation, masses may occur in brooks with a dense coastal vegetation or in those winding across meadows.

**Protonemoura aestiva** KIS — Mts. Börzsöny: 8 May, 1966, 3 ♂, 1 ♀; 5 June, 1966, 3 ♀; 18 Sept., 1966, 1 ♀; 2 July, 1967, 5 ♂, 2 ♀, Nagyvasfazékpatak; — Mts. Mátra: 1 May, 1966, 1 ♂, Csatornapatak; 29 May, 1967, 1 ♂, 2 ♀, Hidaspatak; — Mts. Bükk: 1 May, 1967, 1 ♀, Csikorgópatak; 2 May, 1967, 1 ♂, Garadnapatak; 1 May, 1967, 5 ♂, 6 ♀; 24 June, 1967, 36 ♀; 1 Sept., 1967, 2 ♀, Sebesvíz.

KIS described the species from Transylvania (1964); as far as I am informed, it has not yet been collected elsewhere. The species is probably advancing from the southeast, and should be present also in the Slovakian Carpathians. In Hungary, it occurs in springs at 600 m a.s.l., or in the waters of streams not far from the spring.

The species rather resembles *Pr. fumosa* RIS, occurring in the Alps, and *Pr. auberti* ILLS., frequent in the medium high mountains of Germany north of the Alps. In all probability, it was this species which SÁTORI recorded from Hungary (1938, 1939b) as *Pr. fumosa* since this latter does not occur in Hungary. The species is new for our fauna.

**Protonemura intricata** RIS — Mts. Pilis: 17 May, 1967, 1 ♂, Szőkeforrás, Dömös; — Mts. Börzsöny: 9 May, 1965, 9 ♂, 1 ♀, Kemencepatak; 24 April, 1966, 5 ♂, 1 ♀, Királyrét; 8 May, 1966, 1 ♂; 2 July, 1967, 8 ♂, 13 ♀; 5 June, 1966, 16 ♂, 12 ♀, Nagyvasfazékpatak; — Mts. Mátra: 19 May, 1965, 6 ♂, 5 ♀, Mátrafüred; 19 May, 1965, 2 ♂, 2 ♀, Csatornapatak; 9 May, 1965, 3 ♂, 5 ♀, 28 April, 1965, 7 ♂, 1 ♀, Kallók völgye; 2 June, 1965, 29 ♂, 40 ♀, Csörgőpatak; 28 May, 1967, 1 ♀, Hidaspatak; — Mts. Bükk: 24 June, 1967, 1 ♀, Sebesvíz; — Mts. Sátor: 31 May, 1957, 1 ♂, 5 ♀, Kemencepatak; 11 May, 1958, 1 ♂, Kőkapu.

The species was mentioned only by SÁTORI (1939b), from the Mts. Mátra and Bükk. It is frequent in all European brooks of the medium high mountainous areas.

**Protonemura praecox** MORT. — Mts. Pilis: 1 May, 1964, 2 ♀, Szőkeforrás, Dömös; — Mts. Börzsöny: 24 April, 1966, 3 ♀, Királyrét; 16 April, 1967, 8 ♂, Nagyvasfazékpatak; 3 April, 1967, 1 ♂, 24 ♀, Szénpatak; — Mts. Mátra: 20 April, 1966, 5 ♂, 4 ♀, Mátrafüred; 28 April, 1965, 3 ♂, 4 ♀, Kallók völgye; 1 May, 1966, 3 ♀, Csatornapatak; 9 April, 1967, 10 ♂, 48 ♀, Hidaspatak; — Mts. Bükk: 2 May, 1967, 4 ♀, Garadnapatak; 1 May, 1967, 5 ♀, Csikorgópatak; 1 May, 1967, 4 ♀, Sebesvíz.

Probably owing to its early appearance in the season, the species had

hitherto escaped the attention of collectors, though it is frequent in the springs and brook waters near them in all European medium high mountains. The species is new for the fauna of Hungary.

#### Family Leuctridae

**Leuctra digitata** KMP. — Mts. Börzsöny: 18 Sept., 1967, 2 ♂; 25 Sept., 1967, 1 ♂, 2 ♀, Nagyvasfazékpatak.

A boreo-alpine species, rare also in the neighbouring countries; it is most frequent in Scandinavia. New for the fauna of Hungary.

**Leuctra hippos** KMP. — Mts. Pilis: 2 May, 1954, 3 ♂, 6 ♀; 15 May, 1960, 5 ♀, Bükköspatak, Szentendre; 1 May, 1964, 1 ♂, 5 ♀, Szőkeforrás, Dömös; — Mts. Börzsöny: 9 May, 1965, 3 ♀, Kemencepatak; 9 May, 1965, 4 ♂, 7 ♀, Rózsapatak; 12 April, 1959, 1 ♂, 2 ♀; 8 May, 1966, 1 ♂, 3 ♀; 24 April, 1966, 1 ♂, 12 ♀, Királyrét; 16 April, 1967, 1 ♂, 11 ♀, Nagyvasfazékpatak; 3 April, 1967, 26 ♂, 15 ♀, Szénapatak; 29 March, 1959, 9 ♂, 6 ♀, Nagyborzsöny; 1 May, 1958, 1 ♂, 4 ♀, Diósjenő; — Mts. Mátra: 9 May, 1965, 4 ♀; 20 April, 1966, 1 ♂, 35 ♀, Mátrafüred; 19 May, 1965, 13 ♀; 1 May, 1966, 7 ♀, Csatornapatak; 28 April, 1965, 2 ♂, 4 ♀, Kallók völgye; 9 April, 1967, 3 ♀, Hidaspatak; — Mts. Bükk: 30 April, 1967, 1 ♂, Garadnapatak; 1 May, 1967, 1 ♂, 2 ♀, Háromkúti valley; — Mts. Sátor: 13 May, 1966, 1 ♂, 4 ♀, Telkibánya.

In literature referring to our home fauna, we find only AUBERT's datum (1966) from the Mts. Börzsöny, even though this is our most frequent *Leuctra* species in the medium high mountains. It is also frequent in similar localities in the neighbouring countries.

**Leuctra inermis** KMP. — Mts. Bükk: 2 May, 1967, 1 ♂, 1 ♀, Garadnapatak; 1 May, 1967, 1 ♂, Csikorgópatak.

The species is frequent at altitudes around 1,000 m in the neighbouring countries. New for the fauna of Hungary.

**Leuctra nigra** OL. — Mts. Mátra: 20 April, 1966, 2 ♂, 3 ♀, Mátrafüred; 1 May, 1966, 2 ♂, 2 ♀, Csatornapatak; 29 May, 1967, 2 ♂, 4 ♀, Hidaspatak; — Mts. Sátor: 13 May, 1966, 10 ♀, Nagypatak, Telkibánya.

Similarly to the above species, also this one is frequent in high brooks (up to 1500 m) with rocky and stony bottoms. The species is new for the fauna of Hungary.

**Leuctra pseudosignifera** AUB. — Mts. Börzsöny: 19 March, 1967, 42 ♂, 40 ♀; 16 April, 1967, 1 ♂, 5 ♀, Nagyvasfazékpatak; 3 April, 1967, 36 ♂, 123 ♀, Szénpatak; — Mts. Mátra: 9 April, 1967, 74 ♂, 111 ♀, Hidaspatak; — Mts. Bükk: 1 May, 1967, 2 ♀, Sebesvíz.

The species occurs in the higher parts of mountains and the alps in Central Europe, but it is rare everywhere. New for the fauna of Hungary.

#### Family Capniidae

**Capnia bifrons** NEWM. — Mts. Pilis: 1 April, 1956, 31 ♂, 2 ♀; 9 March, 1958, 25 ♂, 22 ♀; 5 March, 1967, 9 ♂, 4 ♀, Bükköspatak, Szentendre; 1 May, 1964, 1 ♀, Szőkeforrás, Dömös; — Mts. Börzsöny: 19 March, 1967, 1 ♀, Nagyvasfazékpatak.

The species was recorded from Hungary only by AUBERT. It occurs everywhere, together with *Perla burmeisteriana*. This joint occurrence can be observed also in the Bükköspatak at Szentendre, wherein *Capnia bifrons* shows the highest individual numbers. The joint occurrence refers, however, merely to locality and not to period, since *Capnia bifrons* is our earliest stone fly species, while *Perla burmeisteriana* flies in May–June.

#### Family Perlodidae

**Isogenus nubeculum** NEWM. — 5 April, 1965, 1 ♂, Budapest; — Mts. Bükk: 24 June, 1967, 1 ♀, Sebesvíz.

The species was known from the vicinity of the Danube and from Simon-tornya. Its occurrence in the Sebesvíz is rather interesting. I captured the specimen among the rocks of the very cold karst spring, about 600 m a.s.l. It is rare in the whole of Europe, inhabiting usually the larger rivers.

**Diura bicaudata** L. — Mts. Börzsöny: 5 May, 1966, 8 ♂, 1 ♀, Nagyvasfázékpatak.

A boreo-alpine species, inhabiting the lakes of Scandinavia, the Alps, and the High Tatra. It also occurs in the springs of the medium high mountains in Germany; WINKLER (1957) recorded it from a spring at 300 m a.s.l. in Slovakia. New for our fauna.

**Isoperla grammatica** POD. — Mts. Sátor: 13 May, 1966, 1 ♂, Nagypatak, Telkibánya.

There are only few data available with regard to this species. PONGRÁCZ listed (1914) Izsák, Visegrád, and Nagymaros as localities of its occurrence; AUBERT recorded the Kemencepatak in the Mts. Börzsöny. It is rather frequent in Slovakia, but rather few data are given for the Eastern Carpathians.

**Isoperla tripartita** ILLS. — Mts. Bakony: 16 July, 1958, 1 ♂, Szömörcepatak, Bakonybél; — Mts. Börzsöny: 8 May, 1966, 4 ♀; 5 June, 1966, 7 ♂, 4 ♀; 2 July, 1967, 4 ♂, 10 ♀, Nagyvasfázékpatak.

The species was heretofore known east of the Alps, from the neighbourhood of Vienna, the western ranges of the Carpathians, and from Hungary. According to the presently available literature, it is our most widely distributed *Isoperla* species.

#### Family Perlidae

**Perla burmeisteriana** CLSSN. — Mts. Pilis: 1 June, 1955, 2 ♂, 1 ♀; 11 May, 1958, 1 ♂; 15 May, 1960, 1 ♂, 2 ♀, Bükköspatak, Szentendre; — Mts. Mátra: 26 June, 1955, 4 ♂, 2 ♀, Mátrafüred; 19 May, 1965, 1 ♂, Csatornapatak.

The species occurs everywhere along the lower reaches of the streams in our medium high mountains.

**Perla marginata** Pz. — Mts. Börzsöny: 2 July, 1967, 1 ♀, Nagyvasfázékpatak; 18 June, 1967, 3 ♀, Szénpatak; — Mts. Mátra: 10 May, 1955, 1 ♀, Mátrafüred.

Of a similar distribution as the preceding species, but inhabiting the upper reaches of our streams.



**Chloroperla neglecta** ROST. — Mts. Pilis: 1 May, 1964, 8 ♂, 1 ♀; 17 May, 1964, 5 ♀, Szókeforrás, Dömös; — Mts. Börzsöny: 24 April, 1966, 1 ♂, 1 ♀, Királyrét; 9 May, 1965, 1 ♂, Kemencepatak; 5 June, 1966, 12 ♀; 2 July, 1967, 1 ♀, Nagyvasfazékpatak; 9 May, 1965, 1 ♀, Rózsapatak; — Mts. Mátra: 1 May, 1966, 3 ♂, 3 ♀, Csatornapatak; 19 May, 1865, 4 ♀, Kallók völgye; 28 May, 1967, 3 ♂, 7 ♀, Hidaspatak; — Mts. Sátor: 13 May, 1966, 2 ♂, 6 ♀, Nagypatak, Telkibánya.

The species is known from few localities in Europe and rather from the eastern regions: from the Riesengebirge, the Erzgebirge, Czechoslovakia, and Transylvania. According to recent data, it is the most frequent in Hungary. The species is new for our fauna.

**Chloroperla torrentium** PICT. — Mts. Pilis: 15 May, 1960, 1 ♂, 1 ♀, Bükköspatak, Szentendre; — Mts. Börzsöny: 9 May, 1965, 7 ♂, 4 ♀, Kemencepatak; 9 May, 1965, 1 ♂, Rózsapatak.

The species, is widely distributed in Europe but nowhere frequent.

**Chloroperla transsylvanica** KIS — Mts. Sátor: 12 May, 1966, 3 ♂, Kövecsespatak, Telkibánya; 13 May, 1966, 1 ♂, 4 ♀, Nagypatak, Telkibánya.

The species described from Transylvania, was found also in the Carpathians (Erdős Kárpátok; RAUŠER, 1963), it should be from there that it arrived also to the Mts. Sátor. New for the fauna of Hungary.

#### ZUSAMMENFASSUNG

##### *Beiträge zum Vorkommen der Steinfliegen (Plecoptera) in Ungarn*

Der Verfasser gibt über das sich mit der Verbreitung der Steinfliegen in Ungarn befassende Schrifttum einen Überblick und hält das Vorkommen der drei dort mitgeteilten Arten: *Perla maxima* SCOP., *Protonemura lateralis* PICT. und *Protonemura fumosa* RIS., die zufolge falscher Bestimmung der mitgeteilten Daten aufgenommen wurden, für unwahrscheinlich.

Der Verfasser beschreibt dann das Material seiner eigenen Sammlung, in dem 11 für die ungarische Fauna unbekannt Arten vorgekommen sind. Er befaßt sich mit dem von ihm gesammelten Weibchen der Art *Rhabdiopteryx hamulata* KLP., das laut seines Wissens das erste neuere Vorkommen nach den bei KLAPÁLEK beschriebenen Exemplaren ist, in ausführlicher Weise. Das Schrifttum hielt diese Steinfliege für ein sich in der Donau entwickelndes Tier, jedoch weist die jetzige Angabe darauf hin, daß die Larve der Steinfliege nicht im Fluß, sondern in den in die Donau mündenden Bächen lebt.

Zuletzt bringt der Verfasser die wichtigsten Daten der in Ungarn vorkommenden Steinfliegenarten und schließt seine Abhandlung mit der Aufzählung des angeführten Schrifttums.

#### REFERENCES

1. AUBERT, J.: *Plecoptera*. In: *Insecta helvetica*. Lausanne, 1959, p. 1-140.
2. AUBERT, J.: *Notes sur quelques Plécoptères du Museum d'Histoire Naturelle de Budapest*. Ann. Hist.-nat. Mus. Nat. Hung., 58, 1966, p. 285-288.
3. DESPAX, R.: *Plécoptères*. In: *Faune de France*. Paris, 55, 1951, p. 1-280.
4. ILLIES, J.: *Die europäischen Arten der Plecopteren-Gattung Isoperla Banks (Chloroperla Pictet)*. Mit einem Beitrag zur Analyse der Verbreitungsgeschichte einer fließwasserbewohnenden Gattung. Beitr. Ent., 2, 1952, p. 369-424.
5. ILLIES, J.: *Beitrag zur Verbreitungsgeschichte der europäischen Plecopteren*. Arch. Hydrobiol., 48, 1953, p. 35-74.
6. ILLIES, J.: *Steinfliegen oder Plecoptera*. In: *Tierwelt Deutschlands*. Jena, 1955, p. 1-150.

7. ILLIES, J.: *Beiträge zur Kenntnis der Gattung Rhabdiopteryx Klap. (Plecoptera)*. Arch. Hydrobiol., 53, 1957, p. 455-464.
8. ILLIES, J.: *Steinfliegen, Uferfliegen, Plecoptera*. In: Die Tierwelt Mitteleuropas. IV, 2, Neubearbeitung, Leipzig, 1963, p. 1-18.
9. ILLIES, J.: *Plecoptera*. In: Limnofauna Europaea. Stuttgart-Jena, 1967, p. 220-229.
10. KIS, B.: *Zur Kenntnis der Plecopteren-Fauna Rumäniens*. Fol. Ent. Hung., 16, 1963, p. 67-82.
11. KIS, B.: *Zwei neue Plecopteren-Arten aus Rumänien*. Reichenbachia, 1, 1963, p. 299-302.
12. KIS, B.: *Beiträge zur Kenntnis der Plecopterenfauna Rumäniens*. Mitt. Schweiz. Ent. Gesell., 37, 1964, p. 164-172.
13. KLAPÁLEK, F.: *Zur Kenntniss der Neuropteroiden von Ungarn, Bosnien und Herzegovina*. Termr. Füz., 25, 1902, p. 161-180.
14. KLAPÁLEK, F.: *Plecoptera*. In: Die Süßwasserfauna Deutschlands. Jena, 8, 1909, p. 33-95.
15. MIRON, J.: *Beiträge zum Studium der Steinfliegen (Plecoptera) der Ostkarpathen*. Gewässer und Abwässer, 34/35, 1963, p. 81-92.
16. MOCSÁRY, S.: *Pseudoneuroptera*. In: Fauna Regni Hungariae. Budapest, 3, 1900, p. 23-27.
17. PONGRÁCZ, S.: *Magyarország Neuropteroidái*. Rovart. Lapok, 21, 1914, p. 122-126.
18. RAUŠER, J.: *K poznani dunajkych posvatek (Plecoptera)*. Zool. listy, 6, 20, 1957, p. 257-282.
19. RAUŠER, J.: *Zur Verbreitungsgeschichte einer Insectendauergruppe (Plecoptera) in Europa*. Prace brnen zakl. CS.A.V., 1962, p. 281-385.
20. RAUŠER, J.: *Verbreitungsgeschichte der tschechoslowakischen Plecopterenassoziationen*. Gewässer und Abwässer, 34/35, 1963, p. 115-119.
21. SÁTORI, J.: *Adatok a Bükkhegység rovarfaunájának ismeretéhez*. Állatt. Közlem., 35, 1938, p. 51-61.
22. SÁTORI, J.: *Insektenfaunistische Notizen aus dem Transdanubium im Mai und Juni 1938*. Fragm. Hung., 2, 1939, p. 31-32.
23. SÁTORI, J.: *Adatok a Bükk és a Mátra rovarfaunájához*. Állatt. Közlem., 36, 1939, p. 156-168.
24. SCHÖNEMUND, E.: *Steinfliegen, Uferfliegen, Plecoptera*. In: Die Tierwelt Mitteleuropas. IV, 2, Jena, 1927, p. 1-18.
25. WINKLER, O.: *Plecoptera slovenska*. Biologické práce, 3, 1957, p. 1-93.
26. WOJTAS, F.: *Die Plecopterenfauna Polens mit besonderer Berücksichtigung des Tatragebietes*. Gewässer und Abwässer, 34/35, 1963, p. 93-100.
27. ZWICK, P.: *Revision der Gattung Chloroperla Newman (Plecoptera)*. Mitt. Schweiz. Ent. Gesell., 40, 1967, p. 1-26.

*List of Plecopteran Species Occurring in Hungary*

Species	Locality	Month of flight	Reference Nr
<b>TAENIOPTERYGIDAE</b>			
<i>Brachiptera monilicornis</i>	Pécs	V—VI	22
<i>Brachiptera risi</i>	Pilis, Börzsöny, Mátra	IV—VII	2
<i>Brachiptera seticornis</i>	Börzsöny, Mátra, Sátor	IV—VI	2
<i>Brachiptera trifasciata</i>	Budapest		16
<i>Oemopteryx löwii</i>	Budapest, Pilis		16, 17
<i>Rhabdiopteryx hamulata</i>	Budapest	IV	17
<i>Taeniopteryx araneoides</i>	Budapest		2, 17
<i>Taeniopteryx nebulosa</i>	Budapest, Pilis, Simontornya, Ipoly		2, 16, 17
<b>NEMOURIDAE</b>			
<i>Amphinemura borealis</i>	Sátor	V—VI	
<i>Amphinemura standfussi</i>	Bükk	VI	
<i>Nemoura avicularis</i>	Bükk, Börzsöny	V	23
<i>Nemoura cambrica</i>	Pilis, Börzsöny, Mátra, Bükk, Sátor	IV—V	23
<i>Nemoura cinerea</i>	Entire country	IV—VII	16, 17
<i>Nemoura dubitans</i>	Bükk, Veresegyháza	III—IV	23
<i>Nemoura flexuosa</i>	Pilis, Börzsöny, Mátra, Bükk	III—VI	2
<i>Nemoura longicauda</i>	Börzsöny	IV	2
<i>Nemoura marginata</i>	Mátra, Bükk, Pécs	V—VI	22, 23
<i>Nemoura sciurus</i>	Budapest, Pilis, Börzsöny, Mátra, Veresegyháza	III—IV	2
<i>Nemurella picteti</i>	Pilis, Börzsöny, Mátra, Bükk, Jósvafő	IV—X	2, 23
<i>Protonemura aestiva</i>	Börzsöny, Mátra, Bükk	V—IX	
<i>Protonemura auberti</i>	Kőszeg	VIII	2
<i>Protonemura intricata</i>	Pilis, Börzsöny, Mátra, Bükk, Sátor	IV—VII	23
<i>Protonemura nitida</i>	Mátra, Bükk	VI—VII	21, 23
<i>Protonemura praecox</i>	Pilis, Börzsöny, Mátra, Bükk	IV—V	
<b>LEUCTRIDAE</b>			
<i>Leuctra albida</i>	Börzsöny		2
<i>Leuctra digitata</i>	Börzsöny	IX	
<i>Leuctra fusca</i>	Bükk	V	23
<i>Leuctra geniculata</i>	Alföld		6 p. 65
<i>Leuctra hippopus</i>	Pilis, Börzsöny, Mátra, Bükk, Sátor	IV—V	
<i>Leuctra inermis</i>	Bükk	V	
<i>Leuctra major</i>	Pilis	IX—X	2
<i>Leuctra nigra</i>	Mátra, Sátor	IV—V	
<i>Leuctra pseudosignifera</i>	Börzsöny, Mátra, Bükk	III—V	
<b>CAPNIIDAE</b>			
<i>Capnia bifrons</i>	Pilis, Börzsöny	III—IV	2
<i>Capnia nigra</i>	Pécs	V	22

Species	Locality	Month of flight	Reference Nr
<b>PERLODIDAE</b>			
<i>Isogenus nubecula</i>	Budapest, Csepel, Pilis, Simontornya, Szolnok, Bükk	V—VI	2, 16, 17
<i>Diura bicaudata</i>	Börzsöny	V	
<i>Isoperla grammatica</i>	Izsák, Pilis, Börzsöny, Sátor, Pécs	V	2, 17, 22
<i>Isoperla obscura</i>	Budapest, Csepel, Pilismarót, Szeged, Simontornya, Pápa	VII	2, 16, 17
<i>Isoperla tripartita</i>	Bakonybél, Börzsöny, Mecsek	V—VII	2
<i>Marthamea vitripennis</i>	Budapest		17
<i>Perla burmeisteriana</i>	Pilis, Börzsöny, Mátra, Bükk	V—VI	2, 17, 23
<i>Perla marginata</i>	Kőszeg, Börzsöny, Bükk	V—VII	2, 16, 22
<i>Chloroperla neglecta</i>	Pilis, Börzsöny, Mátra, Sátor	IV—VII	
<i>Chloroperla apicalis</i>	Budapest, Gyenesdiás		16, 17
<i>Chloroperla burmeisteri</i>	Visegrád		17
<i>Chloroperla torrentium</i>	Pilis, Börzsöny, Mátra	V	2
<i>Chloroperla transsylvanica</i>	Sátor	V	