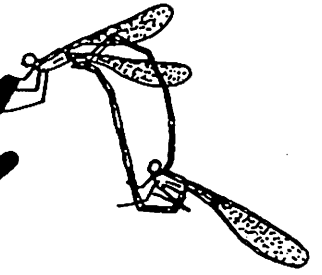


Selysia



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PETER MILLER - A TRIBUTE

Prof. Dr. P.S. Corbet
ICAPB, Ashworth Labs
West Mains Road
Edinburgh EH9 3JT, United Kingdom

Dr Peter Miller died on 24 March 1996. He was in Uganda with his wife Kate when struck down with the illness that caused his death in Oxford, England a short time later. A life-long interest in natural history, combined with outstanding ability and a commitment to excellence, led Peter to make impressive contributions to four fields of endeavour: entomological research, education, nature conservation and human relationships.

Peter was born on 20 May 1931 in Edinburgh, Scotland. As an undergraduate of Downing College, University of Cambridge, he obtained First Class Honours in Part One and Part Two of the Natural Sciences Tripos and received the Frank Smart Prize in Zoology in his final year. He remained at Downing College as a Junior Research Fellow to pursue a Ph.D., studying the control of respiration in locusts and dragonflies under the supervision of Professor V.B. (later Sir Vincent) Wigglesworth FRS. Peter and Kate then went to Uganda, where Peter was a Lecturer in the Zoology Department at Makerere College (now Makerere University), Kampala from 1959 to 1962. In Uganda he made field and laboratory observations of dragonflies and acquired an abiding affection for the tropics, manifest finally in his recent decision to devote several months each year to teaching entomology at Makerere, while collecting material for a proposed book on the dragonflies of Uganda.

From 1962 until retirement in 1994 Peter was Lecturer in Zoology at Oxford University where he was Fellow and Tutor at the Queen's College. He soon became highly respected internationally for his entomological research, especially on physiology and neural control, primarily of respiration, but also of rhythmic and motor behaviour, ventilation and learning. In 1972 he was awarded the prestigious Medal of the Zoological Society of London.

Odonatology benefited greatly from Peter's decision in the early 1980s henceforth to focus his research on dragonflies. His advanced skills - for perceiving and interpreting subtle behavioural actions, for micro-anatomical dissection and for quantifying neural processes - enabled him to reveal much of the behavioural framework on which dragonfly reproduction is based. A steady stream of detailed publications came from Peter's desk, and odonatologists soon came to anticipate and welcome his papers for the stimulating ideas they contained and for the pleasure and excitement they could be relied upon to give, with their wide scope and their exploration of connections between physiology, behaviour and ecology. Few entomologists publish observations on topics as diverse as drought adaptation of eggs, foraging, roosting, colour change, territoriality, courtship, mating and sperm displacement. A glimpse of the breadth of Peter's knowledge of dragonfly biology can be obtained from reading his book on British dragonflies, especially the second edition published in 1995. This book, which includes reports of his own recent work, is a model of its kind, and a fitting tribute to his commitment to excellence and precision, his enjoyment of dragonflies, and his passionate dedication to their conservation.

Peter played active and constructive roles in SIO and in the British Dragonfly Society, in which, as Vice-President, he contributed in important ways, directly by organising the programme for the annual Indoor Meeting and by his conservation initiatives, and indirectly by his conspicuous enthusiasm and the encouragement he gave to odonatologists, especially younger ones. It is appropriate that the *Peter Miller Memorial Appeal*¹ has been established to further the aims in education, research and conservation that he held so dear.

Those privileged to know Peter personally will have compelling memories of his wisdom, gentleness, modesty

¹ Information can be obtained from Jill Silsby, 1 Haydn Avenue, Purley, Surrey CR8 4AG, United Kingdom

and charm. Odonatologists as well as odonatology have been enriched by his life.

FROM THE EDITORS DESKS

This is the first of our attempts to widen the attraction and interest of SELYSIA. Here we present reports from odonatologists in the north-, east- and eastern-central parts of Europe, in the Caspian region and in Kazakhstan. The reports deal with Odonata in their respective countries/regions and with current odonatological activities. The next issue will deal with the suggested amendments to our constitution. The Working Party's task has been much more complicated than was ever envisaged and there is serious danger that, as a result of "Option 1", SIO itself will be forced out to existence. It would be interesting to know how many members would be willing to let this happen. In our view, SIO fills a very valuable niche and it would be tragic were it to fold up. This is not to say ODONATOLOGICA, etc are not vitally important: BOTH are needed. Your opinion would be very welcome.

Should Council (and SIO members themselves) be successful in reorganizing the Society, future issues of SELYSIA will cover other regions of the world and, in addition, we plan special subject issues. We believe they will lead to fruitful contacts between members and a better understanding of the needs of dragonflies themselves. The next issue in this series will cover the indo-pacific region (Australia, New Guinea, Malaysia, Indonesia, Pacific Islands etc.). Contributions will be very welcome so PLEASE let us have them!

Jill Silsby
Martin Schorr

PRESENT OUTLINES OF ODONATOLOGY IN FINLAND

Dr. Pekka Valtonen
Kaukolankuja 2
FIN-36200 Kangasala, Finland

Dr. Matti Hämäläinen
Department of Applied Zoology
P.O. Box 27
FIN-00014 University of Helsinki, Finland

Many-sided studies carried out by Prof. K.J. Valle in 1920-1950's formed a firm basis to our knowledge of the species composition and distribution of Finnish dragonflies. Although the number of people actively collecting or studying dragonflies has always been small in Finland, Odonata (comprising 52 local species) is undoubtedly one of the best known insect orders in the country.

At present hardly more than a dozen people show active research or collecting activity on dragonflies in Finland. This is in strong contrast to the number of lepidopterologists in the country; Lepidopterological Society of Finland alone has ca. 850 members, most of them active. Finnish odonatologists do not have their own forum, but

have participated in activities of national or local entomological societies.

Mapping of distribution

The latest distribution maps were published by Pekka Valtonen in 1980 (Notulae Entomol. 60: 199-215). After that *Ischnura pumilio* has been added to the Finnish list (2 records so far, Espoo, 1984, and Åland Islands 1995). New records have considerably changed the picture of distribution of some species, notably *Coenagrion armatum*, *Brachytron pratense*, *Aeshna crenata*, *Somatochlora sahlbergi* and *Leucorrhinia pectoralis*.

Two groups of species are under special monitoring at present.

- expansive species: *Ischnura pumilio*, *Aeshna cyanea*, *Aeshna serrata osiliensis*, *Libellula depressa* and possibly *Leucorrhinia pectoralis*.

- regressive species: *Aeshna crenata* and possibly *Somatochlora arctica*.

Accumulating distribution data of all species is continued, although at present no definite plans exist for publishing updated maps. Dr Pekka Valtonen continues to act as mapping coordinator.

Follow-up of protected and threatened species

In Finland, these two categories are not "synonymics". In 1994 four dragonfly species were legally protected in Finland, viz. *Aeshna viridis*, *Leucorrhinia albifrons*, *L. caudalis* and *L. pectoralis*. Only the first of them has been included in the national "red list" as threatened and undoubtedly deserves to be protected. On the other hand the "European Union - protection" of three *Leucorrhinia* species in Finland has raised conflicting emotions. Although very threatened in Central Europe, these species have never even been considered in workshops for threatened insects in Finland. No odonatologist, no entomological society, nor any other knowledgeable body, was consulted beforehand, and the first news of the protection came from newspapers when the statute was announced. Protecting a fairly common species, like *L. albifrons* in Finland, decreases the overall respect for the status of protected insect species. At present dragonflies are disproportionately represented among the 32 protected insect species in Finland.

Specimens of all protected animal and plant species have officially been furnished with a monetary value in Finland. At present the scale is FIM 100 - 58000; for insects FIM 100 - 10000 (One US\$ is equal to ca. 5 FIM). All *Leucorrhinia* rank in the lowest value - 100 FIM, but the value of each specimen of *A. viridis* is 2500 FIM. This means that if you show up collecting *A. viridis* illicitly, you have to compensate 2500 FIM for every netted specimen. In addition you may have to pay a fine.

The latest official national "red list" (1991) contains three species under "threatened" status: *Coenagrion puella*, *Aeshna viridis* and *Libellula fulva*. Three species are listed "in need of monitoring": *Aeshna crenata* "declining", *Somatochlora sahlbergi* "rare" and *Nehalennia speciosa* "poorly known". Status of the six species is being monitored.

Taxonomical problems

Taxonomy of European dragonflies is still far from established. A few open questions dealing also with Finnish populations are mentioned here. Are the Finnish populations of *Calopteryx splendens* homogenous in regards to their subspecific status? What is the real status of *Aeshna osiliensis*, good species or a subspecies of *serrata*? How about the "nigrescens-like" populations of *Sympetrum striolatum* in the Åland Islands? What is the real status of *Somatochlora metallica abocanica*? Dr Anders Albrecht plans to work on the question of *S. striolatum*.

Other individual projects

Dr Anders Albrecht and Kristian Westman (Zoological Museum, Univ. Helsinki) collect larval material of Finnish species. They are developing cheap freeze-drying methods for preservation of larvae and adults and aim to publish an identification guide suitable for Finnish larvae. Heikki Hirvonen (Dept. of Ecology and Systematics, Univ. Helsinki) carries out studies on predator-prey relationship of *Lestes*, *Aeshna* and *Leucorrhinia* larvae inhabiting rock-pools.

Dr Matti Hämäläinen continues his studies on the taxonomy and faunistics of oriental dragonflies.

At least two students (Nina Laurenne from Univ. Helsinki and Esa Korkeamäki from Univ. Jyväskylä) are working on their Master's theses dealing with population ecology of dragonflies.

ANNOTATIONS TO DANISH ODONATA AND ODONATOLOGY

Mogens Holmen
Gadeledsvej 48
Gadevang
DK-3400 Hillerød, Denmark

Status of the Danish fauna of Odonata

52 species of Odonata have been recorded from Denmark - 18 Zygoptera and 34 Anisoptera. A list of the species and their current status (largely IUCN threat categories and brief notes upon distribution, life-cycle and habitats) has recently been prepared (HOLMEN & PEDERSEN 1996). In 1996 species of Odonata will for the first time be included in the revised "red list" of Danish plants and animals, which includes also notes about main biotops and threats (PEDERSEN & HOLMEN in press).

4 species have disappeared from Denmark during this century (*Onychogomphus forcipatus*, *Epitheca bimaculata*, *Leucorrhinia caudalis* and *L. albifrons*) and several are still decreasing. Main reasons are eutrophication/pollution, over-growing, filling and regulation of habitats. During later years the filling in and regulation of habitats have ceased somewhat, partly because of new legislation. At the same time the introduction of fish and duck has become a serious problem in many smaller lakes and ponds.

Species that may have increased seem few. *Libellula depressa* perhaps is one such species, which has benefited from the establishment of many new ponds. Since ca. 1930 *Lestes barbarus*, *L. virens vestalis*, *Ischnura pumilio*, *Nehalennia speciosa*, *Aeshna subarctica elisabethae*,

Anax imperator, cf. *Hemianax ephippiger* (medium sized larvae found 1995) and *Somatochlora arctica* have been added to the Danish fauna. The very recent records of *A. imperator* and cf. *H. ephippiger* are probably due to warmer climatic conditions during the early 1990's, but most of the mentioned species have probably been continuously breeding in Denmark for centuries, though not discovered earlier. *L. albifrons* disappeared from its single locality during the 1960's.

Protection of species

After their specification in appendix 2 to the Bern Convention, the following species in 1991 became protected in Denmark: *Ophiogomphus cecilia*, *Aeshna viridis* and *Leucorrhinia pectoralis*. None of these can be collected or killed without special permission from the national Forest and Nature Agency. *L. albifrons* and *L. caudalis* were not protected, as they are considered extinct in Denmark². PEDERSEN & HOLMEN (1994) provided a publication on the protected species, with notes on biology, habitats and all Danish records known then. A few additional localities have been discovered recently.

The Danish "red list" only serves as a recommendation for the protection of species and their habitats, and as a basis for creating new general strategies for nature protection. However, along with the Danish general rules on protection of various types of biotopes, it may serve directly to protect some of the important sites - if the authorities become aware of the local odonate faunas.

Studies of the Danish fauna

Information on Danish Odonata has mainly been gathered and published by just a few persons. During the 18th century O.F. Müller recorded and described in detail about half our species (e.g. MÜLLER 1764), but it was not until the school teacher P. Esben-Peterson, from mid Jutland, more than a century later began to study the group, that things really began to happen. He provided the first keys to the Danish species (ESPEN-PETERSON 1900, 1910), and during the beginning of the century added considerably to the knowledge of the taxonomy and distribution of the species. At the same time, C. Wesenberg-Lund at the Copenhagen University freshwater biological laboratory studied the biology of our Odonata as well as other taxonomical groups (mainly in northeastern Zealand - e.g. WESENBERG-LUND 1913/1914).

During the middle of the century others contributed to the knowledge, but less intensively. Records of Odonata were often a result of investigations mainly aimed at other taxonomical groups or freshwater fauna in general. K.O. Leth and E.W. Kaiser provided a fairly large collection of specimens and a few publications on Odonata. During the second half of the century C.F. Jensen and F. Jensen of the Århus Natural History Museum have sampled freshwater insects, including Odonata, from a large number of sites, particularly from running waters and larger lakes. Lately, the sampling of freshwater insects in running waters and larger lakes has increased

² Appendix 4 to the EEC Habitats Directive of 1992 means protection for the same species, and its appendix 2 makes important populations of *O. cecilia* and *L. pectoralis* part of the background for the 1996 establishment of protected areas.

enormously, as it has become part of a monitoring of the environment, carried out by authorities. However, the Odonata themselves are usually not used as indicator organisms, though their larvae are sometimes sampled.

C.F. Jensen (1972) published a list on the status of the Danish species of Odonata, but more recent knowledge about many species was clearly poor. During the 1970's P. Nielsen at the Copenhagen Zoological Museum began the study and collecting of Danish Odonata, but mainly based on the systematic and vicariance biogeography of Zygoptera from other parts of the world. He provided, e.g., information about Danish Odonata for the publication on the status of the European fauna by van TOL & VERDONK (1988) and produced the key in SANDHALL (1987), but later left for other work in Greenland. B. Vestgaard Petersen (1983, 1984) and M. Holmen (1988a, b) also produced keys and some notes on the Danish Odonata, mainly based on published records and their own rather limited studies of the fauna in eastern Jutland, and northeastern Zealand. Recently, O. Fogh Nielsen (1995) produced a more popular publication on Danish Odonata, including a key to the males and a number of colour plates. He has also recorded species from many localities. In 1990 H. Pedersen privately started his "Projekt GOMPHUS", an atlas project aimed at providing a more detailed knowledge of the distribution and status of Danish Odonata. Literature records and data from collections have now been gathered in a database, supplied with records from H. Pedersen's recent field excursions to most parts of the country and from a number of other contributors. The revised list of Danish Odonata, the contribution to the Danish "red list", and the paper on protected species, mentioned above, are more or less based on this project.

In 1996 the third annual meeting of the Nordic Odonatological Society will be held at Ry in mid Jutland, arranged by O. Fogh Nielsen. This meeting may well represent the largest number of people particularly interested in Odonata ever gathered in Denmark (presently the society has only three Danish members, all of whom are non-professionals, and only one has Odonata as his favourite taxonomical group!).

Important Danish collections

- Zoological Museum, University of Copenhagen (including type material of e.g. I.C. Fabricius - has home page on the Internet).
- Natural History Museum, University of Århus.
- Bio/consult, Århus (private firm).
- Mr. Henning Pedersen, Viborg (with database of "Projekt GOMPHUS")
- Mr. Ole Fogh Nielsen, Ry.

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A SHORT HISTORY OF ODONATOLOGY IN LATVIJA

Dr. Zandis Spuris
Mierla iela 19-6
LV-2169 Salaspils, Latvija

First steps towards knowledge of Latvian dragonflies were made at the end of the 18th century. 8 to 10 species were known to J.B. Fischer (1731-1793), who published some notes on Odonata in 1778, 1784 and 1791. The knowledge increased when J.H. Kawall (1799-1881), in 1864, and A. Bruttan (1824-1893), in 1878, published further contributions to the Latvian dragonflies. Altogether 26 species were known by the end of the 19th century, but very little was known of their distribution in Latvia.

In 1942 the zoologist and hydrobiologist Bruno Berzins (1909-1985) published a very important catalogue of 47 species occurring in Latvija. His list of dragonflies, based on 164 localities, spread over the whole of Latvija. For the first time so-called southern or mediterranean species such as *Ischnura pumilio*, *Aeshna isosceles*, *Aeshna mixta* and *Anax imperator* were recorded for Latvija. Regrettably B. Berzins settled at the end of 1944 in Sweden, where he worked in the Institute for Limnology at the University of Lund. Generally he is known as a spe-

cialist in Rotatoria, and is author of the chapter "Rotatoria" in the famous standard book on limnology of Prof. Dr. Joachim Illies "Limnofauna Europaea".

I first met Mr. Berzins in the autumn of 1940 when, as a schoolboy, I returned on my vacations to Riga. B. Berzins was the most important person to support my interest in dragonflies. May I venture to tell my personal story of how I became interested in dragonflies?

Born in Riga in 1923, at the age of 14 I first became interested in nature. Publications, which stressed the lack of information on dragonflies were the reason I started the work on dragonflies. I ordered two books on dragonflies (E. May, 1933: *Libellen oder Wasserjungfern. Tierwelt Deutschlands* 27, and E. Schmidt, 1929: *Libellen, Odonata, Die Tierwelt Mitteleuropas* 4(1b)), and started in the summer of 1940 to observe and collect dragonflies. When, in the autumn of 1940, I met B. Berzins in the Hydrobiological Station of the University of Latvia, I was surprised to have found *Sympetma paedisca*, which was unknown to Berzins for the Latvian dragonfly fauna. He looked long at my specimen before finally confirming my identification.

First results of my work on dragonflies are considered by B. Berzins in his publication of 1942 (*Beitrag zur Kenntnis der Odonatenfauna Lettlands. Folia zool. hydrobiol.* 11: 329-350). My first odonatological publication was issued in 1943 (*Quelques données nouvelles sur la faune odonotologique de la Lettonie. Folia zool. hydrobiol.* 12). Because of this publication I was able to contact Erich Schmidt, Germany. My studies in biology, and the complicated times after the World War II prevented further publications. It was not until 1951, that I could publish my second odonatological paper (on southern elements in the Latvian Odonata fauna). Additionally, in the post-war period it was almost impossible to publish short faunistic notices.

In the following years dragonflies had to remain a hobby for me, because administration assigned me other jobs. In spite of this I was successful in publishing a book on the dragonfly fauna of Latvia; by then (in 1956) 53 species, including *Sympetrum fonscolombi*, were known to Latvia. In 1963 I published the odonate fauna of 103 localities (*Latvijas Entomologs* 7), which can be considered as a first systematic mapping of Odonata in Latvia. In 1980 it was possible to publish a catalogue of 54 species including *Coenagrion concinnum* (*C. johanssoni* Wallengren, 1894) which was new to the Latvian dragonfly fauna (*Latvijas Entomologs* 23); this catalogue was completed by a bibliography of the workers on Latvian odonata, which I hope is complete. Furthermore all citations of faunistic literature were built in this catalogue, and annotations as to the abundance of species were made. Completing data to the odonate fauna of Latvia were published in *Latvijas Entomologs* 33, 1990 and 1992 in *ACTA HYDROENTOMOLOGICA LATVICA* 2.

Summarizing, I wish to say that distribution of the Latvian dragonflies is quite well known, with one exception: *Aeshna subarctica elisabethae* is probably new to our country, because very few investigations have been made in bogs, and the species is known from Estonia. It is necessary to point out that, in the standard book on the European dragonflies (Askew 1988), the distribution of some of the Latvian dragonflies is not mapped correctly.

A short outview to the future of dragonflies in my country: today many dragonfly habitats are in quite good situations. Even some great peat-bogs are almost untouched. Anyone who visits Latvia to study dragonflies will not leave disappointed. But the economic situation of Latvia will, without doubt, lead to increasing demands on nature and dragonflies habitats.

REMARKS ON THE ODONATOLOGICAL SITUATION AND ACTIVITIES IN POLAND

Rafal Bernard
Department of General Zoology
Adam Mickiewicz University
Fredry 10
61-701 Poznan, Poland

72 species of dragonflies have been recorded in Poland, including *Coenagrion scitulum*, observed only once, and ephemeral but breeding *Hemianax ephippiger*, recorded for the first time in 1992 and invaded the country in 1995.

The history of odonatology in Poland (in present borders) began in the first decades of the 19th century and was made by both Polish and foreign (mainly German) researchers. It must be stressed, however, that there were always few odonatologists here. Today there are 6-7 professionals and 4 amateurs in Poland but, for most of them, dragonflies are only one of the subjects of study. Therefore, from the odonatological point of view, the area of Poland is explored weakly (ca. 30-35%) and very unequally. The level of odonatological exploration has been relatively high only in some regions of central and southern Poland, i.e. Wielkopolska (Great Poland), Górny Śląsk (Upper Silesia) and some massifs of the Carpathians. From the rest of the country, data are mostly scarce, fragmentary, limited to small, dispersed areas. The narrowest is our knowledge about northern and eastern Poland. Taking into consideration an abundance of waters in the northern lake districts, the percentage of investigated territories there don't exceed 15-20%. In such a situation, when there are so many and such large unexplored areas, it is too early to present a reliable mapping scheme of the odonate fauna for the whole country. The number and activity of odonatologists, significantly increasing in the last years should make this possible in the first decade of the 21st century.

Data from Poland are widely dispersed and hardly obtainable. Making use of them is also limited by an almost total lack of general publications summing up the data from the whole country. Therefore, I decided to prepare two helpful publications. A bilingual (Polish and English) odonatological bibliography of Poland (in present borders), including more than 300 publications and enriched by some additional useful information, is in the final stage of preparation (in cooperation with A. Labeledzki). It will be published probably by the beginning of 1997. Also in the first half of 1997 I am planning to publish (in English) an annotated list of dragonflies of Poland with short comments about the status of particular species.

Polish regulation, blindly imitating the Bern Convention, provided protection for 7 species, but unfortunately mostly

not rare and not endangered in Poland. Therefore, preparation of the Red List of dragonflies of Poland is necessary in order to increase efforts for protection of the biotops inhabited by species which really are rare and endangered in the country. On the basis of the present state of knowledge and some extrapolation such a provisional Red List is now being prepared (by the author and G. Tonczyk), and should be published in 1997.

Polish researchers always concentrated mainly on faunistic and, to a lower degree, ecological studies (especially habitat preferences). Morphology, anatomy, taxonomy and behaviour have been investigated rarely. The interest of the author of this note focuses especially on an ecological niche, relationships between coexisting species, behaviour, biogeography and relationships between climatic changes and odonate fauna. Recently Polish odonatologists have carried out inventory and ecological studies, mainly in some unexplored areas. Special attention has been paid to changes in the abundance and distribution of some "southern" and "south-eastern" species, caused by the climate warming in the last years. One of the priorities is also a search for localities and studies of some rare and vulnerable species, e.g. *Nehalennia speciosa*, whose situation in Poland is poorly known and seems to deteriorate.

For more detailed information about Odonata and odonatology in Poland as well as the Polish literature, please contact the author.

DRAGONFLY RESEARCH IN THE CZECH REPUBLIC

Dr. Lubomír Hanel
ZO CSOP Vlasim
S.K. Neumannova 496
258 01 Vlasim, Czech Republic

A first catalogue of Czech Republic dragonflies was published by KREJCI (1889 and 1890), who additionally compiled keys for determination of adults, and partly, of larvae. At the end of the 1970's 71 species were known for the territory of the Czech Republic (TEYROVSKY 1959, 1977, ZELENY 1980), in which the status of e.g. *Coenagrion scitulum*, *Nehalennia speciosa*, *Lestes macrostigma*, *Gomphus simillimus* and *Leucorrhinia albifrons* has to be confirmed. The most important dragonfly collections are deposited in the museums of Prague and Opava.

Regretably there are only a few localities with detailed investigations and lists of species, which enable us to monitor the dragonfly communities over a long period of time. For example, faunistic data is available from Polabí (pools and banks of the river Labe, Central Bohemia); these are covering periods from 1889-1890, the 1940-1950's and actually 1993-1995. Faunistic data is also available from the most extended Czech peat-bog near Rejvíz in northern Moravia; odonatological investigations were undertaken in 1929-1933, during the 1940's and 1950's and also in 1992. The analyses (preliminary results) show a marked decline in the number of species from a long-term point of view.

TEYROVSKY (1977) compiled the faunistic odonatological data in a catalogue for the former Czechoslovakia.

For Bohemia and Moravia (now Czech Republic) he lists 71 species.

More detailed studies from certain regions of the Czech Republic are presented for Moravia by TEYROVSKY (1926, 1950), PERUTIK (1955) and KONDELKA (1985). PUDIL (1935) describes the dragonfly fauna of southern Bohemia. The publications of KREJCI (1899), FRIC & VAVRA (1901) and HANEL (1995) deal with Central Bohemia.

ZELENY (1980) published a key to the native larvae in Czech Republic. DOLNY & ASMERA (1989) classified the Czech dragonflies according to selected habitat types. And the bibliography of hitherto known papers and studies of the Czech dragonflies comprises about 70 publications.

In addition to these faunistic publications, some authors deal with the distribution of genera and species scarce in the Czech Republic [e.g.: ASMERA (1982): *Sympetrum pedemontanum*; ASMERA & DOLNY (1994): *Cordulegaster*; ASMERA & DOLNY (1990): *Leucorrhinia*; ASMERA & DOLNY (1989): *Crocothemis erythraea*].

To sum up, the current knowledge about the Czech dragonflies, their habitats and status is surprisingly scarce in the face of the distinctiveness of these insects. To progress with odonatology in the Czech Republic it will be necessary to encourage interest in dragonflies, and to provide a common and broad basis for odonatological activities (e.g. monitoring).

One step towards this, is the publication of a small book³ called "Monitoring of dragonflies in the Czech Republic". This is first of all a key to determine adults and larvae, with 245 pen-and-ink drawings and 44 colour photos on 78 pages. The key is a contribution to the European Nature Conservation Year 1995. This key will guarantee a correct determination of the Czech dragonfly species, and will enable us to map dragonflies and their habitats. The main aim is to obtain adequate data on the distribution of our dragonfly species for the purpose of preparing a Red List and an atlas of dragonfly distribution in the territory of the Czech Republic.

This publication can be obtained, but stocks are limited, from the author.

ODONATOLOGY IN BULGARIA, WITH SPECIAL CONSIDERATIONS TO THE RHEOPHILOUS BULGARIAN ODONATA

Prof. Dr. Venelin L. Beschovski
Bulgarian Academic of Sciences
Institute of Zoology
Boul. Tzar Osvoboditel 1
BG-1000 Sofia, Bulgaria

Odonatology is not well represented among the biological sciences in Bulgaria. At present only two people are working continuously with Odonata. Their main interests are diversity of odonate communities in different parts of the country, and biocoenological investigations on Odonata as an element of the rheophilous communities of the rivers. In the framework of traditional investigations on the

³ The literature cited is to be found in this book.

macrozoobenthos of rivers quite interesting material on ecology and distribution of the rheophilous dragonflies in Bulgaria was collected. Faunistic data on the Bulgarian dragonflies, especially the dragonflies of the stagnant waterbodies, are sparse.

In the past years I concentrated on the rheophilous dragonflies under different objectives: species composition and distribution in different Bulgarian rivers, ecological adaptation of larvae to different kinds of habitats and zoogeography of the dragonflies of Bulgaria and the Balkan Peninsula. Parallel to these investigations I worked on a Bulgarian Fauna of Odonata which compiles the present knowledge, and provides keys for determination of imagines and larvae of the dragonfly-fauna of the Balkan Peninsula. The results of this work are published as Volume 23 of the FAUNA OF BULGARIA.

Dipl. Biol Milen Georgiev Marinov (Boul. Macedonia N 112, BG-7500 Silistra) is interested in the distribution of the Bulgarian dragonflies. Special emphasis is given to the dragonfly-fauna of the Bulgarian high mountains, and the ethology of Odonata. M. Marinov investigated the dragonflies of the protected area from Srebarna, and could add interesting data to the Bulgarian dragonflies living in mountains above 2000m a.s.

Due to the small number of people interested in dragonflies it follows that faunistic aspects are underrepresented in Bulgaria. With the exception of a few regional investigations, very little is known about the general distribution of Bulgarian dragonflies. In contrast to this, we have long-lasting quantitative material on the rheophilous biocoenosis of rivers, and the dragonfly fauna of these rivers. This enabled us to monitor the dragonfly fauna of rivers under the aspect of waterpollution, or damming of rivers.

In future special emphasis will be given to the biology of selected species, the problem of the range of subspecies in the Balkan Peninsula, and the ecological limits for some of the Bulgarian species.

I will add some annotations to the rheophilous Bulgarian Odonata. Many rivers in Bulgaria are characterised by seasonal changes of water quantity. During summer and autumn, in large cases, very little water flows in the river bed, and some of the rivers almost dry up. Odonata have to adapt to these natural conditions of varying water regimes. This ecologically difficult situation for dragonflies was intensified by anthropogenous influences on the rivers, such as an increasing urban population which started in 1957, and intensifying agriculture and industrial development. The results for the Bulgarian rivers are as following:

- Many dams and disersions were made for irrigation purposes, and for providing water resources for towns and industry.

- Growing towns and industries caused increasing water-pollution, while intensified agriculture caused a runoff from pesticides and fertilizers.

Due to this pollution most of our rivers are now characterised by mesosaprobic conditions. The bad water-quality leads to a deterioration of the structure of the rheophilous

communities, and is causing a decrease in numbers of odonate larvae in the biocoenosis.

Actually⁴ 13 rheophilous dragonfly species are present in Bulgaria. The larvae of these species prefer different types of running water: from fast running brooks to slow flowing rivers (see Tab.1).

Tab. 1: Bulgarian rheophilous Odonata

Family Species	Type of biocoenosis				
	1	2	3	4	5
Euphaeidae					
<i>Epallage fatime</i>	*				
Calopterygidae ⁵					
<i>Calopteryx splendens balcanica</i>					*
<i>Calopteryx virgo festiva</i>					*
<i>Calopteryx virgo meridionalis</i>					*
Platycnemididae					
<i>Platycnemis pennipes</i>					*
Aeshnidae					
<i>Caliaeschna microstigma</i>					*
Gomphidae					
<i>Gomphus flavipes</i>				*	
<i>Gomphus vulgatissimus</i>	*	*	*	*	
<i>Ophiogomphus cecilia</i>		*	*		
<i>Onychogomphus forcipatus</i>	*		*		
Cordulegastridae					
<i>Cordulegaster picta</i>			*		
<i>Cordulegaster heros</i>			*		
<i>Cordulegaster insignis</i>			*		
<i>Cordulegaster bidentatus</i>			*		

Type of biocoenosis: 1) lithorheophilous, 2) psammorheophilous, 3) argyrorheophilous, 4) pelorheophilous, 5) phytorheophilous species

I split the Bulgarian rheophilous Odonata into three different groups according to their sensitivity:

1.) Species whose distribution is restricted to a few regions of Bulgaria: *Epallage fatime*, *Calopteryx virgo meridionalis* and *Caliaeschna microstigma*.

E. fatime and *C. virgo meridionalis* are restricted to the rivers of the Strandjy Mountain in south-eastern part of Bulgaria. The first species is a member of the lithoreophilous communities, and it is only endangered in the river Ropotamo, where the larvae are threatened by the low water level in summer and autumn.

C. virgo meridionalis inhabits the small shadowed streams in the southern part of the Bulgarian Black Sea coast. The larvae are associated with the phytoreophilous macrozoobenthos. Adults look calm and even meek, people don't disturb them. It is a pleasure to walk along the streams under the branches of the trees, almost touching the blue-winged damselflies with one's hands.

C. microstigma is distributed in the rivers of the Black Sea coast from Turkey to the town of Blachik in the north of Bulgaria as well as in the south-west of Bulgaria. Larvae are endangered by the drying up of the rivers, and by water-pollution caused by pesticides and fertilizers.

⁴ From the extremely south-west of Bulgaria an old record of a further rheophilous damselfly, *Calopteryx haemorrhoidalis* is known (see BESCHOVSKI (1994): Fauna of Bulgaria 23, Odonata: 71).

⁵ Annotation from Martin Schorr: The subspecific rank of the Calopterygidae in Bulgaria has to be studied in detail. Current research on European Calopterygidae is trying to solve the Calopteryx-problem. Prior to a solution, the interpretations of Prof. Dr. Beschovski are to be accepted.

Fortunately the running waters in the Strandja Mountains are still unpolluted; the region is of high importance in the preservation of our Bulgarian rheophilous dragonfly fauna in the future.

2.) Species widely distributed, but with highly specialized larvae: *Calopteryx virgo festiva*, *Gomphus flavipes* and *Cordulegaster*-species.

C. virgo festiva is limited to the upper parts of the rivers with comparable good water quality; here the species is not endangered. Larvae of *G. flavipes* are living in the slow flowing, larger streams (e.g. Iskar, Maritza, Kamtzi, Danube), or confluences of smaller rivers. These slow-flowing rivers have suffered from intensive water-pollution and an accumulation of toxic substances in the sediment, which is the habitat of the larvae.

The *Cordulegaster* species are distributed all over the country, but their population density in most cases is very low. The larval stage of all the *Cordulegaster* species is spent in small brooks and rivers flowing in forested regions. These running waters are very vulnerable against pollution by the pesticides and fertilisers used in forest production. *C. insignis* and *C. picta* are restricted almost exclusively to the eastern part of our country.

3.) Widely distributed species which inhabit most of the Bulgarian rivers: chiefly the species from litho-, psammo- and phytoreophilous communities.

Litho- and psammorheophilous biocoenosis are developed in the upper, and, particularly, the middle parts of the rivers. In contrast to the lower parts, here the water-quality is not damaged to any extent by town or factories.

Members of the phytoreophilous associates like *Platycnemis pennipes* and *Calopteryx splendens ssp.* are widely distributed in Bulgaria and are not endangered.

It would be greatly appreciated if other European odonatologists would spread their activities into our country.

ODONATOLOGY IN ROMANIA

Catalin Vintila
Aquaterra
91 - 95 Splaiul Independentei
70603 Bucuresti 5, Romania

Odonatology in Romania has quite a long tradition starting in the middle of the 19th century, when e.g. C. Fuss and D. Czekelius reported on some species in Siebenbürgen. Research was intensified in the 50's and 60's, when H. Plattner, F. Cirdei and F. Bulimar published a lot of papers on Odonata. Cirdei and Bulimar made a sum up of the current knowledge on the Romanian dragonflies in their book from 1965, which was issued as volume VII(5) of the 'Fauna republicii populare Române': Insecta, Odonata (Ed.: Academiei Republicii Populare Române. Bucurest. 274 pp.). In 1979 a further important contribution to Romanian odonatology was made by A.Z. Lehrer and F. Bulimar, who published distributional maps of all the Romanian dragonfly species (Nymphæa 7: 343-393). In the 80's and the 90's very few odonato-

logical activities were conducted, partly due to political circumstances.

Currently no one is permanently working on dragonflies in Romania; my own odonatological work is done in the framework of the activities of the "Ecological society for wild flora and fauna protection, 'Aquaterra'". The main aim of this society is to build up structures to promote conservational and educational activities in our country.

To prepare a mapping project, which was proposed to the Ministry of Environment, I will compile field and detailed keys to determine adult and larval dragonflies. It is planned to finish the work on these keys by the end of 1996. I hope that this will help in awakening a new interest in Romanian dragonflies.

My personal odonatological library is open to the public in the headquarter of Aquaterra on the campus of the Biological Faculty of the University in Bucuresti.

I am interested in any exchange of experience with other odonatologists, especially on the problems of mapping dragonflies (field form, storing data system, etc.). We also plan to build up a photo-archive of dragonflies, but due to the poor financial support to Aquaterra we are unable even to buy a camera with macro lens. We would be very glad, if someone could help us, e.g. with an old one.

Phone/fax: +40-1-637 47 25

E-mail: aquater@bio.bio.unibuc.ro

ANNOTATIONS TO SOME ANCIENT GEOGRAPHICAL REGIONS IN ROMANIA

Martin Schorr
Waldfrieden 25
54314 Zerf, Germany

When studying European dragonflies one sometimes has to deal with publications such as the following:

Müller, A. (1930): Zur Kenntnis der Insektenfauna der Süddobrußscha und Südbessarabiens. Verh. u. Mitt. d. siebenbürgischen Ver. d. Naturwiss. z. Hermanstadt LXXIX-LXXX (1929-1930): 167-187.

St. Quentin, D. (1933): Beitrag zur Odonaten-Fauna der Bukowina. Buletinul facultatii de stiinte din Cernauti 6(1932): 41-62.

Czekelius, D. (1897): Beiträge zur Lepidopteren- und Odonaten-Fauna Siebenbürgens. Verh. u. Mitt. siebenbürgischen Ver. Naturwiss., Hermanstadt 46: 82-88.

Alexinschi, A. (1933): Contributini la cunoasterea faunei odonatelor din sudul Moldovei. Bul. soc. stud. in St. Naturale din Bucuresti IV: 66-71.

Cirdei, F. (1956): Contributiuni la fauna Odonatelor din Oltenia. Analele stintifice de Universitati 'Al. I. Cuza' din Iasi N.S. 2(1): 185-203.

Most of us are unfamiliar with recent European history, and the changing of borders of countries and states. Many of us don't know, e.g., Bessarabia which is unexpectedly, not an Arabian country! Therefore I take this opportunity to publish a map from Romania which helps interpret the situation in Romania in the first half of this century. The map was taken from Otten, S. (1996): Län-

der *Osteuropas: "Draculas Heimat" - Rumänien. Schul-*
fernsehen SÜDWEST 3, 4/96: 28-36.

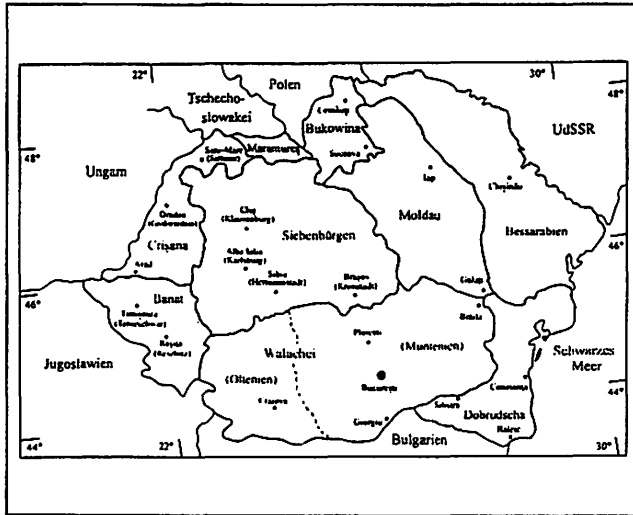


Fig. 1: Geographic regions in Romania prior to World War II.

ODONATOLOGY IN UKRAINE

Dr. Stanislav Gorb
Department of Insect Physiology
Schmalhausen Institute of Zoology
Chmelnickogo Str. 15
Kiev, 252601, Ukraine

Odonatologists in East Europe are mainly scientists, museum workers or students. There are very few non-scientific opportunities to study dragonflies.

Dr. Roman Pavljuk (University Lviv) is working on parasites of Odonata. He summarized literature and original data on dragonfly parasites in the Ukraine. After publishing the first report of *Hemianax ephippiger* in the Ukraine (S. Gorb in Acta Hydroentomologica Latvija 2) Dr. Pavljuk continues to study this locality near Lviv, where the emergence of *H. ephippiger* was observed. Additionally he has been collecting data on odonate fauna in the western part of Ukraine for several years.

Mrs Natasha Matushkina (Kiev University) works for her diploma on the skeleton-muscle organization and evolution of odonate ovipositor (joint project with S. Gorb). She found undescribed groups of muscles in Lestidae, and proposes possible pathways to reproduction of endophytic ovipositors in Odonata. Simultaneously she is listing the odonate fauna of the Kanev Nature Reserve (Cherkassey Province).

Mrs. Victoria Nesterova (Kiev University) works for her diploma on sensory organs and their innervation of labial mask in damselfly larvae using supravital methylene blue staining and scanning electron microscopy. This work will be invaluable in understanding the functional organization of the labial mask.

Dr. Victor Fursov (Institute of Zoology, Kiev) samples field and literature data on odonate egg parasites (Hyme-

noptera). He has made some fascinating field observations on behaviour of parasites, which settle on ovipositing damselfly females.

Prof. Dr. Valery Ermolenko (Institute of Zoology, Kiev) collected dragonflies in summer 1995 in the Danube Delta. Based on 435 specimens, 25 odonate species were collected from 6 localities. The finding of *Hemianax ephippiger* is the third of this species in the Ukraine. *Chalcolestes parvidens* described from Crimea by Artobolevski, and reported from Turkey, Iran, Italy and Greece was included in the fauna of Ukraine. The scarce previous data about the presence of *Cercion lindeni* in this region were confirmed. A short communication on this field trip is planned for publication in NOTULAE ODONATOLOGICAE.

Last summer was a very successful one for me: to answer the question how males of two sympatric *Coenagrion*-species (*C. puella* and *C. pulchellum*) recognize conspecific females I carried out field experiments with model presentation to males of both the species. More than 60 different models (pieces of males and females, male-female chimerae, recolored males) were used, and more than 6000 recordings were obtained. Now I am assessing sampled material to evaluate clues, which are most important in sexual behaviour of coenagrionid damselflies.

Using original and literature data I am trying to build up a data base on odonate fauna of Ukraine as a further base for the "Fauna of Ukraine". In 1992 E. Gorb and I had the opportunity of mapping Odonata in 4 districts of the Kiev Province using 10 km grid. Preliminary data will be published in ACTA HYDROENTOMOLOGICA LATVIA 4. Since 1992 there have been no opportunities to carry out further mapping in other areas.

For ten years, in a large area near Jagotin (Kiev Province) with more than 15 water bodies (lakes, streams, ponds, bogs) I carried out my observations on the dynamics of dragonfly fauna. I am able to confirm a northward extension of some primarily southern-distributed species: the number of localities with confirmations of *Erythromma viridulum*, and especially of *Orthetrum albistylum*, is rapidly increasing. New to the fauna of this region are *Orthetrum brunneum* and *Hemianax ephippiger*. The record of *H. ephippiger* in the Kiev Province is the north-easternmost of this species). A further "southern" species, *Crocothemis erythraea* was found by Prof. Dr. Ermolenko in the Poltava Province.

THE DRAGONFLY FAUNA OF THE CASPIAN BASIN

Prof. Dr. H. Dumont
University of Gent
Lab. Animal Ecology
Ledeganckstraat 35
B-9000 Gent, Belgium

Last year, I became involved in the environmental problems of the Caspian lake (it is only called a sea because of its tremendous size, about 400,000 km², but technically speaking, it is a true lake - in fact the largest in the world), in the framework of the global environmental facility, a fund operated jointly by UNDP, UNEP, and the

World Bank. This gave me an opportunity to collect first-hand information on the lake and its main tributary, the Volga river. The latter is one of the main (though not the only) causes of its problems, since it has been both extensively dammed, and is grossly polluted by Russian industry and agricultural runoff. Typical of the lake, which is N-S oriented, is a steep climatic gradient with continental waters in the north, where it is frozen for four months of the year, and mild mediterranean temperatures in the south (where it never cools below 10°C). Similarly, there is a gradient in salinity, from freshwater near the Volga mouth, to 12‰ in the south-east. The lake is of pre-pleistocene age, and lies in a fault (with a maximum depth, in the south, of nearly 1,000m), but has expanded and contracted on several occasions across the Pleistocene. At times, it even reached three times its present surface area, engulfing the Aral lake in the east, and establishing a contact with the Black Sea in the east. Glacial-deglaciation cycles were instrumental in these changes, although subsidence movements of the crust below the lake may also have been involved. Extending in the west and south are the Caucasus and Elburz mountains, extending east into the Kopet Dagh mountains of Turkmenistan. The east shore is mainly arid, the Kara-Kum desert. In the North and North-West extends the great Russian plain.

With such a diversity of habitats and climates, it is to be expected that the dragonfly fauna will be quite heterogeneous. In fact, little endemism is to be found along its shores, although we are not (yet) in a position to present a comprehensive account here. The narrow coastal zone between the Elburz and the lake in Iran, extending NW up to Lenkoran and East into Turkmenistan and even NW Afghanistan, has an endemic *Calopteryx*, *C. splendens orientalis* (I use subspecies notation for it because it readily hybridises with other regional forms, as most *Calopteryx* are now known to do, but explicit genetic analysis will be required to determine its true genetic distance from other *Calopteryx*; this sort of work, involving gene sequencing, is presently underway in my lab). I just recently described another endemic *Coenagrion australocaspicum*, from the same region (Dumont & Heidari, 1996, Bull. Ann. Soc. r. belge Ent. 132: 63-78), but this is a close relative of *C. puella*. The coastal zone of the south Caspian is, in fact, the easternmost part of the European deciduous forest, and the dragonflies there, apart from the species just cited, look extremely familiar to the European eye.

Some faunal break seems to occur in the east, where the Kopet Dagh is really a narrow wet wedge into a broad zone of great aridity, not only encompassing the Kara-Kum desert, but also the Lut and Kavir in Iran. Up to the Kopet Dagh, I found *Ischnura intermedia*, a species that I separated in 1974 from *I. forcipata*, widespread in central Asia as far as Nepal. That species is now also found (in the same paper with Hossein Heidari from Teheran that I cited above) in Eastern Iran, just at the eastern edge of the Kavir desert. Because these deserts, just like the Caspian lake itself, have greatly fluctuated in humidity/aridity across the Pleistocene, with the latest humid phase not more than few thousands years ago, it seems that both taxa became disjunct, and presumably speciated, only recently (whether they are really full species or not

may seem important to some; to me the history behind their origin is in fact far more fascinating than their status). When - earlier in this century - the soviets constructed a canal from the Amu Darya river in the east towards the town of Ashkabad at the foot of the Kopet Dagh, it opened a migratory pathway for dragonflies (among other aquatic organisms); *I. forcipata* and *intermedia* may meet and mix along the canal, just like *Calopteryx orientalis* and *Calopteryx samarcandica*. It would therefore be of great interest if a Turkmen odonatologist would study the fauna of the canal in detail. Such a study has not yet been undertaken, or at least, not published.

The Amu Darya river, which feeds Lake Aral, is a life artery of great biogeographical interest. Although I could not visit it (yet), I may safely say that it has more endemisms than any other regional river. For dragonflies, I suspect that *C. samarcandica* is one (although that species is, again, hard to characterize objectively; it may or may not be a form of *C. splendens intermedia* (or *ancilla*?) and, as said earlier, it hybridizes naturally with *C. splendens orientalis*. More research on the Amu Darya - Syr Darya rivers certainly looks promising for dragonflies; there may be surprises in the wings!

And, on the top of all this, it seems that the Amu Darya has changed its course many times in history, flowing either to the Aral lake, or turning west to the Caspian. The latest occurrence may even have been of historical age, thus adding to the zoogeographical puzzle of middle Asia.

Returning to *Calopteryx*, once one crosses the Kura river in Azerbaidjan, and certainly further North in the mountains of Dagestan, there is again *C. s. intermedia*, and the same is true for the lower Volga and Ural. But these rivers extend far into the West, in fact up to the Baltic. Here is where, more than a century and a half ago, Herman Hagen described *Calopteryx s. ancilla*. Both *intermedia* and *ancilla* look phenotypically similar, so they might well be identical. Again, only then DNA may be able to tell us and, hopefully, this will soon be the case.

In the meantime, much remains to be done in the Caspian area. Especially in the north, where the water is almost fresh, the lake itself must be inhabited by dragonflies - there are extensive coastal wetlands that must be paradises for Odonata. Not much has been done there, and my round trip was really too brief to allow me to catch more than a glimpse of the terrain. Chances are that I will soon return to the area, this time for the TACIS programme of the European Union. Surely, I will carry a dragonfly net in my bags!

DRAGONFLY HUNTING IN KAZAKHSTAN

Klaus Reinhardt
Biologisch-Pharmazeutische Fakultät
Friedrich-Schiller-Universität
Neugasse 23
D-07743 Jena, Germany

The Kazakh dragonfly fauna is fairly well-known from records by GRIGORIEV (1905), BELYSHEV (1961),

BRAGINA & HARITINOVA (1990) and VOLKMANN (1991). Otherwise our knowledge is scarce. In 1979, HARITONOV described a new species - *Ischnura aralensis*. From the odonatologist's point of view a trip to Kazakhstan is, thus, quite attractive. However, there is another attraction for a trip to Kazakhstan: it is very hard to get there! The first hurdle, the geographic one, might be the easier one: there are regular flights from Moscow to Almaty (Russian name: Alma-Ata). The second hurdle, the bureaucratic one, is much harder to solve: you need a personal invitation into Kazakhstan. Once you have got this, in one way or another, you have to apply for a visa. But only sometimes. With that visa you can book a flight ticket, which does not necessarily mean you will get the plane you booked for. The seat might well be sold, already.

I was lucky to get to Kazakhstan in 1992. A friend of mine and I planned to travel by boat along the river Ili (North of Amaty) until, eventually we arrived at Lake Balkhash (see Fig. 2), the second largest freshwater lake in Asia. We chose to travel in May/June since we heard from other travellers that there are only a few mosquitoes at that time.

A difficulty arose when we learned that none of the maps available to us (including American pilot and Russian military maps) are of use in the delta region. This is due to an (at least) annual change in the course of the river. Even hand-drawn maps from the local people were wrong.

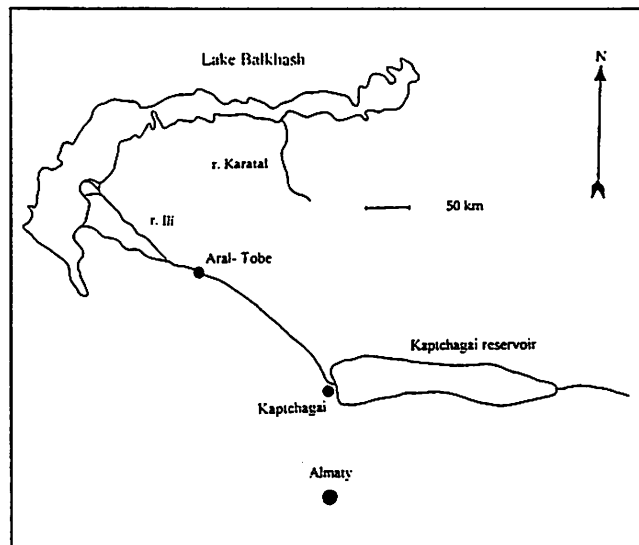


Fig. 2: Map of the Lake Balkhash region/Kazakhstan.

We started on May 21, 1992 behind the huge Kaptchagai reservoir that dams the river Ili. We expected the 450km journey to take about 20 days. The water temperature was 13°C, the air about 30°C. After one day we left the stony, hilly surroundings and reached the huge, flat floodplain of the river with hundreds of small backwaters, rivulets and islands. The main human activity was pasturing, partly in a semi-nomadic way. We spotted *Ischnura pumilio* and *I. elegans*, and *Sympetma paedisca*, the latter two in high reproductive activity. Out of the anisoptera, *Anax parthenope*, *Orthetrum albistylum* and

Libellula quadrimaculata were seen and caught. The first newly emerged *Calopteryx splendens* were observed on May 29, together with *Crocothemis erythraea*. In the dusk activity, the last *A. parthenope* were seen at 22:00 hrs local time, in the last minutes before complete darkness. Interestingly, also the European hobby (*Falco subbuteo*) extended its flight period into the dusk for hunting *A. parthenope*. The highlight was a small stream, a few kilometers before Aral-Tobe, where at a distance of 1km the following species and numbers were recorded: *Erythromma najas* 5 ind., *Lestes barbarus* 1 ind., *C. splendens* 20 ind., *A. parthenope* 60 ind., *O. albistylum* 150 ind., *L. quadrimaculata* 5 ind., *S. paedisca* 200 ind., *I. elegans* 1,000 ind., *Orthetrum brunneum* 2 ind., *I. pumilio* 1 ind., and *Aeshna isosceles* 5 individuals. These species are believed to represent nearly the whole spring dragonfly fauna of that region. Towards the south, to a more desert-like vegetation, with probably slightly saline lakes, *Lestes macrostigma*, *Enallagma cyathigerum*, *Ischnura fountainei* and *Sympetrum fonscolombi* appeared. In the delta area we were lost for four days and, during this time, our interest in birds, dragonflies or plants took second place to our efforts to regain our bearings. However, after those four days of just a 3 metre wall of reed to the left and a 3 metre wall of reed to the right, we reached open terrain on June 6, in the afternoon. Our reward was a dormitory of *L. quadrimaculata* which could be estimated in thousands. While refreshing myself next morning at the river bank I found two freshly emerged *Gomphids* and 5 exuviae. This material later enabled the depiction of the larva of *Gomphus flavipes lineatus* (SELDENBUSCH 1995).

By chance, we took the correct way into the Balkhash area and arrived there two days later. Here, we found 10 species (REINHARDT 1995), among them a few surprises. First of all, two heterochromatic and heteromorphic females of an *Ischnura*-species that appeared to belong neither to *I. senegalensis* nor to *I. fountainei*. They showed the highest similarity to *I. aralensis*. Since then, the identification has been questioned by DUMONT (1996) but it still remains unclear since the two females are as mentioned above, not only heterochromatic but also heteromorphic. When compared to material from *I. aralensis*, it still most closely resembles that species. A further interesting record was that of *E. najas*, a species that obviously occurs here in an isolated population, but we saw thousands of individuals.

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Cooperation

CALOPTERYGIDS WANTED (IN ALCOHOL 70%) FOR DNA WORK

Prof. Dr. H. Dumont
University of Gent
Lab. Animal Ecology
Ledeganckstraat 35
B-9000 Gent, Belgium

I recently started looking into the 18S RNA gene of *Calopterygids* with an aim at elucidating the phylogeny of the group at different taxonomic levels. This research is unfolding well, and we have now obtained a full sequence, about 2 kilobases long, of the small submit of the 18S gene of *Calopteryx splendens* and *C. virgo*. Now, we hope to extend this study to other species and genera. Unfortunately, we found that dry material is not very suitable for DNA extraction and PCR amplification, because the DNA molecule seems to dehydrate and become fragmented. Even long-preserved alcohol material leads to problems. What is required is specimens killed and preserved in alcohol for not more than a few months. Here, I launch a call for help to all colleagues to send us *Calopterygids* from their part of the world. In principle, a single specimen is sufficient (but it is better to have a few, just in case something goes wrong). Any species, any genus will be greatly welcome! My warmest thanks in anticipation!

Reviews

BOOK REVIEW: "DIE FEDERLIBELLEN EUROPAS"

Martin Schorr
Waldfrieden 25
D-54314 Zerf, Germany

This book on the European Platycnemididae is the first in a series called "Die Libellen Europas" ("The Dragonflies of Europe"), which will be issued in the following years as part of the traditional book-series "Neue Brehm-Bücherei", well known among ornithologists. Its scope is the treatment of family-, genus-, species- or subject-wise books on Odonata. So it will be possible to publish a

book on Platycnemididae as well as on *Libellula quadrimaculata* or the visual system of dragonflies. In the course of years this "biology of dragonflies" will be completed step by step. The next issues will be published in 1996 on the European Gomphidae (authors: O. Müller and F. Suhling) and the European Lestidae (R. Jödicke). Such a series is a challenge, which should be supported by active contributions, and by buying the books. The series is edited by Dr. Andreas Martens, Braunschweig (Germany) and Prof. Dr. Hansruedi Wildermuth, Ruti (Switzerland). Both the editors are well known odonatologists in Central Europe, and as authors in *Odonatologica*; I wish to point to the fact that they are profiled pedagogues which guarantees a well balanced presentation of odonatological information.

Structure, language and style of the book are logical and very clear. This book is, in the best sense, easy to read.

A. Martens divided the book into two parts: Part I: The platycnemid species on earth and in Europe, the determination of European species, and, this is highly appreciated, the species occurring east to Afghanistan. Furthermore he is describing in detail each of the "European" species: synonymy, morphology, name, distribution, phenology, habitat, status, remarks. This chapter (55 pages) is very informative, and very interesting to read, e.g. due to the author's annotations on science history of the referred species. As far as possible A. Martens tells the story of discovering the related 7 to 8 species (subspecies).

Part II. The most extensive part of the book deals with biology and ecology of *Platycnemis pennipes*. The author describes the population ecology of the imagines, the reproductive behaviour, the egg stage, the larval biology, the habitat choice (imagines), and the distribution of *P. pennipes* in Europe.

The book ends with advice on studying Platycnemididae (or Zygoptera), acknowledgements, literature and an index.

The second part of the book is based on many years of study by the author, and on some theses of students which were overseen by A. Martens at the Zoological Institute of the University of Braunschweig, Germany. A lot of interesting material is published for the first time, or didactically worked up.

Of course the scarcity of available material, and the limited state of our present knowledge of *P. pennipes* in all its aspects make it impossible, to present each section with an equal degree of authority. It is therefore inevitable that the author's special interest in egg-laying leads to this subject being worked out in more detail than others. There is a lot of reasearch still to be done.

In spite of this, I am sure in Central Europe there is no other book which presents such a bundle of information on the biology of any dragonfly species. So, it can be used as a text-book on zygopteran biology in Central Europe. It is a very fine book. No shortcomings, no faults? Of course, there are some.

I personally would wish a better presentation of the book, which is not cheap. It would have been nice to have colour plates with all the treated species. There is a strong heterogeneity in the quality of the figures. The computer graphs are in most cases easy to understand and visually

attractive. The black-and-white drawings, including the maps, seem unprofessional which is more than astonishing, because H. Wildermuth is one of the best illustrators of Odonata in Central Europe. It would be of very great advantage if H. Wildermuth would take over the illustrations in the book-series.

In detail it would be desirable (for an European) to have been shown the differences between the closely related genera *Platycnemis* and *Copera*. It is regrettable that the book does not provide help in determining the larvae of all the European Platycnemididae.

Chapter 5.3 referring to seasonal body measurements (length and weight) of *P. pennipes* does not help with interpretation of the phenomena. How can it be explained that late flying individuals are smaller than the early ones?

In chapter 5.5. A. Martens postulates that this species has a very little potential for dispersal (to fly beyond the marshes of rivers). This obviously must be wrong, because *P. pennipes* is a widespread species in the German low mountain ranges.

Chapter 6.4. (Egg-laying and substrate choice) conveys the impression that *P. pennipes* lays its eggs nearly exclusively in *Nuphar lutea* (this in spite of Tab. 10 which sums ca. 30 plants used for egg-laying]. This will of course be so in the Braunschweig-region, but not in the (German) low mountain range, where *N. lutea* is very rare, or missing. This chapter portrays a shortcoming in the book: most of the field studies were conducted in the Braunschweig-region. Studies from other German or European regions are almost totally lacking.

Chapter 9 (Habitat choice of the imagines) is a very short one; this is regrettable for all the conservationists in Europe. It remains unclear what the minimum factors in the habitat of this species are or could be.

The most serious shortcoming is that the book is written almost exclusively (with the exception of some citations) in German. Persons who don't read German will have serious problems in benefitting from this very fine book. A publisher (Spektrum-Akademischer Verlag) which claims to be international "..., Oxford" should guarantee that books published by it, have an extensive summary in English, and figures and tables with English captions. This could be easily done by adding an appendix in English for all odonatologists who don't speak German.

I could add some more shortcomings or little faults (e.g. citations, use of the term "fitness" on page 79) but, in spite of this, the book is a very good one. It is, in my opinion, the best contribution to Zygoptera in Europe, and it is an encouraging start to a very interesting book-project.

Martens, Andreas: Die Federlibellen Europas. Neue Brehm-Bücherei 626. ISBN 3-89432-458-9. DM 39,80.

Acknowledgement:

The production of this issue was supported by Faunistisch-Ökologische Arbeitsgemeinschaft (FÖA Landschaftsplanung), Auf der Redoute 12, D-54296 Trier, Germany.
Landscape Planning - Environmental Impact Assessment.

New Publications

ACTA HYDROENTOMOLOGICA 3

ACTA HYDROENTOMOLOGICA LATVICA (AHL) was founded by Dr. Z. Spuris, Salaspils (Latvija) and Dr. B. Kiauta, Bilthoven (The Netherlands) in 1991. Two issues were released when problems between the editors caused the discontinuation of the periodical.

In 1996 the Secretary-General of SIO was successful in finding four sponsors in Germany who supported the printing and mailing of AHL 3.

This issue of AHL will be very welcome among odonatologists with special interests in the palaearctic Odonata, because for the first time for some regions in the former USSR odonatological data are presented and published in a western congress language. The Komi Autonomous Republic was for many years a "closed country", where many prisoners had to work for the development of the so-called socialist system.

On 44 pages the following items will be found in AHL 3:

Gorb, S., Tkach, V., Gorbobchischyn, V.: The Odonata of the Daurisky Nature Reserve, Southern Transbaikalia (Russia).

Kosterin, O.E.: Dragonflies (Odonata) of the city of Omsk.

Spuris, S.: Some records of Odonata from the neighbourhood of Tallinn (Estonia).

Spuris, Z.: Some records of Odonata from the Komi Autonomous Republic.

Spuris, Z.: Catalogue of the insects of Latvia. 12. Dragonflies (Odonata), supplement.

Book reviews.

AHL 3 can be obtained for 10\$ (banknote) from *Martin Schorr, Waldfrieden 25, D-54314 Zerf, Germany*. The issue of AHL will be shipped by surface rate. If you should wish to receive the book by airmail bookrate please add further 6\$.

The selling of AHL will help a little bit to reduce the financial problems of SIO.

DRAGONFLIES OF SWEDEN, 2. EDITION

In 1985 Göran Sahlén published his book on Swedish Dragonflies (Sveriges Trollsländor). Due to the increasing knowledge on the Swedish Odonata it was necessary to release a second improved and extended version of the book. People interested in the book contact

Dr. Göran Sahlén
Entomologiska avdelningen
Zoologiska institutionen
Uppsala universitet
Villavägen 9
S-75236 Uppsala, Sweden

NEWSLETTER OF THE NORDIC ODONATOLOGICAL SOCIETY

The Nordic Odonatological Society is an informal society for contacts between Odonata-interested amateurs and scientists in the nordic countries Norway, Sweden, Finland and Denmark. It was founded on 18 June 1994 in Rakkestad, Norway. The society seeks to arrange yearly meetings, alternating between the countries, and to edit a yearly newsletter. It intends to promote all kinds of knowledge on Odonata.

For further information please contact

Hans Olsvik
N-6598 Foldfjorden, Norway

Tel./fax: +47 71645294
e-mail: olsvikha@telepost.no

SELYSIA will continue to be published. In the meantime, please send contributions to Jill Silsby, 1 Haydu Avenue, Purley, Surrey. CR8 4AG, United Kingdom.

XIV INTERNATIONAL SYMPOSIUM OF ODONATOLOGY

Up to now we have received no official information about the SIO-Symposium in Maribor on 13-18 July 1997. Therefore any information request should be sent to the organizer.

Mr. Mladen Kotarac
Antoliciceva 1
SL-62204 Miklavz na Dravskem polju, Slovenia

Tel/fax ++386-62-691-855
e-mail mladen.kotarac@guest.arnes.si

MORPHOLOGICAL ANALYSIS OF THE WING VENATION OF EXTANT DRAGONFLIES

Bechly, G. (1996): Morphologische Untersuchungen am Flügelgeäder der rezenten Libellen und deren Stammgruppenvertreter unter besonderer Berücksichtigung der Phylogenetischen Systematik und des Grundplans der *Odonata (Morphological analysis of the wing venation of extant dragonflies and their stem-group representatives with special reference to Phylogenetic Systematics and the ground-plan of crown-group Odonata).

PETALURA, special-volume 2. 402 pp, 111 figs., 3 tabs (in German, with English abstract and appendix). Price: 45,-\$ (within Europe: DM 72,- via Cheque or Eurocheque). Prepayment is required.

Günter Bechly
Breslauer Str. 30
D-71034 Böblingen, Germany

S.I.O.

MINUTES OF THE BUSINESS MEETING OF THE SIO HELD AT ESSEN

The Minutes of this meeting, reported in the last issue of Selysia 23(2), were of course provisional and subject to ratification, in the normal way, at the next Business Meeting.

Jill Silsby, Chairman

SELYSIA

Following the resignation of Martin Schorr as Editor (see page 15), Jill Silsby is prepared to take on the editorship until someone else is found. A tentative offer has been received from a member to take over the post and this is almost certain to materialize: all being well with SIO,

ADDITIONS AND CHANGES TO THE LIST OF S.I.O. MEMBERS

New members:

Mrs. Viola Clausnitzer, Kirchweg 5, D-35043 Marburg, Germany
Dr. Heinrich Fliedner, Louis-Segelken-Str. 106, D- 28717 Bremen, Germany
Dr. Norbert Lenz, Schillerstr. 23, 33330 Gütersloh, Germany
Wolfgang Lopau, Kuhstedtermoor 26, D-27442 Gnarrenburg, Germany
Asmus Schröter, Adolf-Strübe-Str. 17, D-79689 Maulburg, Germany
Thomas Stalling, Mönndenweg 26, D-79594 Inzlingen, Germany
Mr. S.P. (Steven) Jones, Hyfield, Chapel Hill, Brea, Camborne, Cornwall TR14 9BP, United Kingdom

Changes of addresses:

Dr. Jean-Guy Pilon, 576 Terrasse Magnan, Sainte-Thérèse, Qué., J7E 4Z4, Canada
Dr. Matti Hämäläinen, Dept Applied Zoology, P.O. Box 27, FIN-00014 University of Helsinki, Finland
Dr. Joachim Kuhn, Marktstr. 26, D-89143 Blaubeuren, Germany
Jens Kipping, Ringstr. 5/6, D-04600 Altenburg, Germany
Heiner Lohmann, Baseler Str. 11, D-79618 Rheinfelden, Germany
Stephen Henson, 15 School Road, Lingwood, Norwich, Norfolk NR13 4TH, United Kingdom

Cancellation of membership:

Stephan Richards, Dept of Zoology, James Cook University, Townsville, Qld 4811, Australia

Harald Heidemann, Au in den Buchen 66, D-76646
 Bruchsal, Germany
 Prof. Dr. Gerhard Jurzitza, Reinmuthstr. 27, D-76187
 Karlsruhe, Germany
 Martin Schorr, Waldfrieden 25, D-54314 Zerf, Germany
 Stephan Cham, 45, Weltmore Rd, Luton, Bedshire LU3
 2TN, United Kingdom

Current address unknown (Please help with finding the new address!):

Curt Nimz, P.O. Box 766, Manitou Spring, CO, 80829, USA

RESIGNATION OF THE SECRETARY GENERAL: PERSONAL ANNOTATIONS

In a letter dated 13 July to the President of SIO, Prof. Dr. J.-G. Pilon, Canada I declared my resignation as Secretary General of SIO, as member of SIO and as Editor of SELYSIA.

SIO is a complex system of official and personal relationships. Therefore I will not try to present the many details for this step but the main reasons to do so: an atmosphere of denunciation and descreditation created by Prof. Dr. B. Kiauta (BK), and Option 1.

1. Option 1 caused the loss of Odonatologica and the property of SIO. Furthermore BK tackles SIO as his property and is not willing to solve problems in an atmosphere of partnership and on the basis of the constitution of SIO. In spite of this he is spoiling on every opportunity.

2. Most of the members of the Council are unwilling to realize the serious consequences of Option 1 for SIO. And even on constitutional problems like the confirmation of the auditors (Art. 11, By-Laws of our Constitution) the Secretary General received hardly any reaction. The Business-Meeting in Essen failed to elect two auditors; it therefore was necessary to elect them by vote of the Council. Exactly 3 persons out of 27 members of the Council reacted on my proposal to elect or refuse René Hoess, Switzerland and Wolfgang Röske, Germany as auditors.

3. Instead of this some members declared that the Secretary General is not acting according to the votes of the Business Meeting in Essen in 1995. And a prominent member of a National Office wrote me, that he wouldn't accept decisions made by the Treasurer or the Secretary General, and he circled his letter to all National Offices.

4. There is no decision on Option 1 existing; the Business-meeting never discussed Option 1, and, additionally, had not all information available to make any decision. All we did in Essen, we accepted the Reports of the Secretary General and the President of SIO with some annotations to Option 1. But we never decided on the loss of the SIO-property and Odonatologica (see SELYSIA

23/2). (Persons interested in the validity of Option 1 can receive my letters to the Council and an expertise of a lawyer).

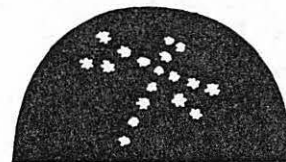
5. To save his position BK is disseminating wrong information, but he is not trying to find a solution of problems in cooperation with the Treasurer, President or Secretary General. Any amendment of Option 1 would solely depend on his goodwill.

6. In such a situation - the disrespect of the constitution, the disrespect of the tasks and duties of the legal officers of SIO and under the pressure of BK - I didn't see any perspective for my work. To avoid further damage from my person and my family I therefore had to resign.

7. The last month were difficult ones. I therefore will not fail to thank friends and colleagues who made constructive contributions to my work and provided a lot of help. Many thanks to Jill Silsby, Wolfgang Schneider, Heiner Lohmann, Jean-Guy Pilon, Mike May, Philip Corbet, Henri Dumont, Jan van Tol and Rainer Rudolph.

8. All my best wishes for SIO, and I hope the majority of the Council and the members of SIO will one day understand that SIO is more than Odonatologica and BK.

Martin Schorr



SELYSIA

A NEWSLETTER OF ODONATOLOGY

Edited by Martin Schorr, Waldfrieden 25, D-54314 Zerf, Germany and Jill Silsby, 1, Haydn Avenue, Purley, Surrey CR8 4AG, United Kingdom.
 SELYSIA is designed to disseminate facts and news about the activities of Odonatologists and Odonatology. The name is based upon that of the "Father of Odonatology", Baron Edmond de Selys-Longchamps. SELYSIA was founded in 1963 by Dr. B. Elwood Montgomery at Purdue University, edited from 1970-1986 by Dr. Minter J. Westfall, Jr., at the University of Florida, from 1987-1993 by Dr. Dan M. Johnson, at the East Tennessee State University, and in 1994 edited by Dr. M. May, Rutgers University, New Brunswick and Dr. M.J. Westfall, University of Florida, Gainesville.
 SELYSIA is issued semiannually, nominally on 1 February and 1 August. Items submitted should reach the Editor not later than two month before publication date.

BACK ISSUES OF S.I.O. PUBLICATIONS

The following publications can be obtained from the Treasurer of S.I.O. Please send your order to the OFFICE OF THE TREASURER, Heinrich Lohmann, Basler Str. 11, D-79618 Rheinfelden, Germany, or per Fax (+49 7623 20699), or per e-mail (Heinrich.Lohmann@t-online.de). The prices are net, in US Dollars and do not include forwarding costs and bank charges. Objects supplied remain the S.I.O. property till full payment has been received.

S.I.O. Rapid Communications (Suppl.):

- No. 4(A): Corbet, P.S., C.M. Scrimgeour, B. Kiauta. Author index for Odonatological Abstracts 1-4225 from Odonatologica Volumes 1-12. - 63 pp., 1984\$ 10.-
- No. 4(B): Corbet, P.S., C.M. Scrimgeour, J.E. Holmquist & B. Kiauta. A topic index for Odonatological Abstracts 1-4225 from Odonatologica Volumes 1-12. - 51 pp., 1984\$ 9.-
- No. 7: Montgomery, B.E.. Odonatological bibliography of Frederick Charles Fraser. - 14 pp., 1988\$ 6.-
- No. 8: Corbet, P.S. (Ed.). Current topics in dragonfly biology. - Vol. 3, 24 pp., 1988\$ 8.-
- No. 9: Jurzitza, G. Versuch einer Zusammenfassung unserer Kenntnisse über die Odonatenfauna Chiles. - 32 pp, 1989\$ 9.-
- No. 10: Mathavan, S. & P.L. Miller. A collection of dragonflies (Odonata) made in the Periyar National Park, Kerala, South India, in January, 1988. - 10 pp., 1989\$ 5.-
- No. 11: Pilon, J.G., I. Pilon & D. Lagacé. La faune odonotologique de la zone boréale du Québec. - 42 pp., 1990\$ 9.-
- No. 15: Pritchard, G. (Ed.). Current topics in dragonfly biology. - Vol. 5, 29 pp., 1992\$ 8.-

Odonatologica:

Volumes 1 (1972), 3 (1974), 17 (1988), 18 (1989), 19 (1990), 20 (1991), 21 (1992), 22 (1993).

\$ 31.- per volume; \$ 10.- per issue. We have several single issues and incomplete volumes in stock; please inquire!

Advances in Odonatology:

Volumes 1 (1982), 3 (1987), 4 (1989), 5 (1991), 6 (1994).....\$ 31.- per volume.

Abstract papers of the Symposia of Odonatology:

- No. 1: Ghent, Oct. 22-23, 1971
- No. 2: Karlsruhe, Sept. 20-23, 1973
- No. 6: Chur, Aug. 17-21, 1981
- No. 8: Paris, Aug. 18-25, 1985
- No. 11: Trevi, Aug. 18-25, 1991.....\$ 2.- per issue.

Selysia 24(1)

PROTEST OF THE TREASURER

On the basis of a lawyer's opinion I feel compelled to enter a protest against the alleged legality of "option one", as cited in SELYSIA 23(2), p. 16. - Option 1 causes some far-reaching structural and financial encroachments on the Society that are only possible by amendments of the Constitution:

The journal ODONATOLOGICA is no longer published by the Society. The Society suffers from having no more revenues, e.g. membership fees, subscription fees and special charges for the journal. The wealth of S.I.O. has been transformed into the private business account of Prof. B. Kiauta's "URSUS Scientific Publishers".

Proposed amendments to the Constitution should have been submitted in writing to the Secretary-General six months before the Essen meeting and to be circulated to the Membership well in advance of that meeting. No such amendments were made, and therefore most of the Members are not in the picture.

On the other hand, Prof. Kiauta did not keep to his promise, to "give annually for the Council's disposal a certain lump-sum, based on the number of membership subscriptions paid in western currencies, and which is to be used by Council for financing of some other SIO activities. Subject to a contract, SIO retains some 'benefit' in the journals, i.e. a small income". He only donated 4.000.- Dutch Guilders at his own discretion for the period of two years and without signing any contract with the Society. As a result, S.I.O. is nearly bankrupt.

The Treasurer of S.I.O. is personally liable for all financial affairs of the Society and each of its members. Therefore it is my duty to save those fees that had been paid by the membership to the Society in good faith (and not to Prof. Kiauta's private accounts), as long as decisions are not in accordance with the statutes. Neither the Council as a whole nor any of its members is empowered to act against the Corbet motion as carried by the Business Meeting (cf. Selysia 23(2), p.19), that "the existing Constitution of SIO, whether or not it is subsequently amended, be respected by all members of SIO".

Up to the Maribor Meeting the Treasurer finds no legally binding possibility to get back the journal ODONATOLOGICA and the SIO wealth (approx. 80.000.- Dutch Guilders) from Prof. Kiauta.

The affair has to be decided by the next Business Meeting, along with a discussion on the new Constitution and reorganisation of the Society.

Heinrich Lohmann

AFFILIATION OF IDF

The INTERNATIONAL DRAGONFLY FUND (IDF) has become provisionally affiliated to S.I.O. through adoption by the Council. Affiliation must be confirmed by the next Business Meeting.