



SELYSIA

THE NEWSLETTER OF THE SOCIETAS INTERNATIONALIS ODONATOLOGICA
AND THE U.S. NATIONAL OFFICE

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Johnson City, Tennessee

March 1, 1988

CONGRATULATIONS!

In March 1987 Professor Philip Corbet was elected a Fellow of the Royal Society of Edinburgh. His many odonatological friends throughout the world congratulate him on this well-deserved honor.

INDIAN ODONATOLOGY, THE JOURNAL

B.K. Tyagi
Vector Control Research Centre
Medical Complex, Indira Nagar
Pondicherry - 605006, INDIA

The Indian National Office is publishing a journal entitled *INDIAN ODONATOLOGY* at irregular intervals, but at least one issue every two years. The first volume will be published in early December 1987. The journal is edited by noted odonatologists from all over the world. The cost of each issue to individual subscribers has been fixed as follows: Indian Rs. 60 for those in India and neighboring countries; Indian Rs. 70 for those in Southeast Asian countries; and U.S. \$20 for those in overseas and European countries. More detailed information, including library/institution subscription rates, may be obtained by writing to me.

DRAGONFLY POSTCARDS AVAILABLE

Kaye Mash
Old Thatch, 12, Havelins, Stourpaine
Blandford, Dorset DT11 8TH, UNITED KINGDOM

I have produced a series of postcards and fold-over cards with envelopes which feature reproductions of my own original drawings of 12 British odonates: *Pyrrosoma nymphula*, *Agrion splendens*, *Platynemis pennipes*, *Lestes sponsa*, *Aeshna cyanea*, *Anax imperator*, *Brachytron pratense*, *Cordulegaster boltonii*, *Libellula depressa*, *Libellula quadrimaculata*, *Sympetrum scoticum*, and *Sympetrum striolatum*. I am offering these for sale as 1) sets of 12 postcards at £ 5.50, and 2) sets of 4 fold-over cards plus envelopes at £ 3.50. These may be ordered from me at the address above; please include a bank draft made payable to me for the amount of your order.

FIRST DRAGONFLY SANCTUARY ESTABLISHED

An article in *TIME* (21 September 1987) by Y. Ishikawa brings some good news for dragonfly conservationists -- a report on the successful efforts of Mitsutoshi Sugimura to establish a dragonfly sanctuary park in Nakamura, Japan. The World Wildlife Fund is supporting the project in an effort to "blend nature conservation with tourism". Japan was called Akitsushima, the island of dragonflies, in ancient mythology; and it still hosts about 200 species. The tombo are revered as harbingers of bumper crops, and are the subject of a popular children's song, Aka-tombo. The town of Nakamura is hoping that this unique dragonfly sanctuary will not only help preserve local dragonfly populations, but will also be an important tourist attraction. [See also *SELYSIA* 16(2):2]

1987 NORTH AMERICAN ODONATOLOGICAL SYMPOSIUM

Jerrell J. Daigle
2166 Kimberly Lane
Tallahassee, Florida 32301 USA

The fourth annual North American Odonatological Symposium was held in Arizona on August 16-22. The participants were Everett (Tim) D. Cashatt, Daniel Cashatt, David Bohlen, Jim Wiker from Illinois with Jerrell J. Daigle and Sidney W. Dunkle representing Florida. The enthusiastic group collected mainly in the Chiricahua Mountains near Portal and the San Bernadino Ranch near Douglas. Highlight species included *Aeschna dugesi*, *A. multicolor*, *Anax walshinghami*, *Archilestes grandis*, *Argia extranea*, *A. nahuana*, *A. oenea*, *A. tonto*, *Coryphaeschna luteipennis florida*, *Cordulegaster diadema*, *Erpetogomphus compositus*, *E. lampropeltis*, *Hesperagrion heterodoxum*, *Libellula saturata*, *Oploniaeschna armata*, *Paltothermis lineatipes*, *Platemis subornata*, and *Progomphus borealis*.

A successful side trip to the upper Gila River in New Mexico added the famous *Erpetogomphus heterodon* and a couple males of *Ophiogomphus arizonicus*. The east fork of the Gila River North of Silver City certainly ranks as one of the most beautiful of all mountain streams in North America.

The 1988 meeting location has not been finalized yet. Those being considered are Arkansas and Mexico City, if someone would like to host next year's meeting, please let me know and I will get the word out.

SELYSIA

A Newsletter of Odonatology

Edited by
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 Johnson City, Tennessee 37614 USA

This newsletter is designed to disseminate facts and news about the activities of Odonatologists and Odonatology. It is not intended as a journal nor an organ for the publication of articles or technical papers. 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, and edited from 1970-1986 by Dr. Minter J. Westfall, Jr., at the University of Florida. With V. 13, #1 (1 March 1984) it was recognized as the official newsletter of the Societas Internationalis Odonatologica as well as the U.S. National Office of S.I.O.

SELYSIA is issued semi-annually, 1 March and 1 September. Items submitted should reach the editor no later than one month before publication date.

This newsletter is produced as a public service of the Department of Biological Sciences, East Tennessee State University.

IMIZU HILLS DRAGONFLY HABITAT ENDANGERED

Dr. Kunio Suzuki
 College of Liberal Arts, Toyama University
 3190 Gofuku, Toyama City, 930 JAPAN

As a citizen of the earth, I would like to inform you of how wildlife is endangered in "Imizu Hills" located at the south of our town Kosugi-machi, Toyama Prefecture, Japan. Further, if I may, I would like to ask you for your support in our effort to save the natural areas and wildlife inhabiting there. Five years ago, I wrote a similar letter to many biologists of the world concerning essentially the same situation in "Kureha Hills" in Toyama City. In the case of "Kureha Hills," due to your effort and support the development project in "Kureha Hills" was reduced to some extent.

Kosugi-machi, with population of approximately 30 thousands, lies nearly half-way between two big cities Toyama and Takaoka in the central part of Toyama Prefecture, central Honshu (main island), Japan. The town potentially belongs to temperate ever-green broad-leaved forest biome. However, owing to heavy and intensive landuse by man for the past centuries (in particular the last 20-30 years!), natural ecosystems in the area have been very much diminished and become virtually extinct. Only some fragments of the natural ecosystems are recognized in very small and limited places. Imizu Hills in Kosugi-machi are, along with Kureha Hills in Toyama City, one of such rare cases. Although the hills do not have virgin status, the area is actually the only place where we can still see comparatively well-preserved natural ecosystems representing those of the low elevations of Toyama Plain.

A total of 58 Odonata species belonging to 11 families have been recorded so far from Imizu Hills as shown in the following table.

A list of Odonate Species from Imizu Hills, Toyama Prefecture, Honshu, Japan (After Suzuki *et al.*, 1985, 1987; *Bull. Toyama Sci. Mus.*, Nos. 8 & 11)

I. Family Agrionidae [Japanese name: Ito-tombo Ka]

- *1. *Agrion lanceolatum* Selys [Ezo-ito-tombo]
- *2. *Cercion calamorum* (Ris, 1916) [Kuro-ito-tombo]
- *3. *Cercion hieroglyphicum* (Brauer, 1865) [Sesuji-ito-tombo]
- 4. *Cercion sieboldii* (Selys, 1876) [Oo-ito-tombo]
- 5. *Ceriagrion melanurum* Selys, 1876 [Ki-ito-tombo]
- 6. *Ischnura asiatica* Brauer, 1865 [Asia-ito-tombo]
- *7. *Mortonagrion selenion* (Ris, 1916) [Moton-ito-tombo]

II. Family Platycnemididae [Monosashi-tombo Ka]

- 8. *Copera annulata* (Selys, 1863) [Monosashi-tombo]

III. Family Lestidae [Ao-ito-tombo Ka]

- *9. *Lestes sponsa* (Hansemann, 1823) [Ao-ito-tombo]
- 10. *Lestes temporalis* Selys, 1883 [Oo-ao-ito-tombo]

IV. Family Calopterygidae [Kawa-tombo Ka]

- *11. *Calopteryx atrata* Selys, 1853 [Haguro-tombo]
- 12. *Calopteryx cornelia* Selys, 1853 [Miyama-kawa-tombo]
- *13. *Mnais nawai* Yamamoto, 1956 [Oo-kawa-tombo]
- 14. *Mnais* sp. [Hiura-kawa-tombo] (undescribed new species)

V. Family Anisoptera [Mukashi-yamma Ka]

- 15. *Tanypteryx pryeri* (Selys, 1889) [Mukashi-yamma]

VI. Family Gomphidae [Sana-tombo Ka]

- *16. *Anisogomphus maacki* (Selys, 1872) [Miyama-sanae]
- 17. *Asiagomphus melaenops* (Selys, 1854) [Yama-sanae]
- *18. *Asiagomphus pryeri* Selys, 1883 [Kiuro-sanae]
- *19. *Gomphus postocularis* Selys, 1869 [Hon-sanae]
- *20. *Ictinogomphus clavatus* (Fabricius, 1775) [Uchiwa-yamma]
- *21. *Sieboldius albardae* Selys, 1886 [Ko-oni-yamma]
- 22. *Trigomphus melampus* Selys, 1869 [Ko-sanae]

VII. Family Cordulegasteridae [Oni-yamma Ka]

- 23. *Anotogaster sieboldii* (Selys, 1854) [Oni-yamma]

VIII. Family Aeschnidae [Yamma Ka]

- *24. *Aeschna juncea* (Linnaeus, 1858) [Ruriboshi-yamma]
- 25. *Aeschna nigroflava* Martin, 1908 [Oo-ruriboshi-yamma]
- *26. *Aeschnophlebia longistigma* Selys, 1883 [Ao-yamma]
- 27. *Anax nigrofasciatus* Oguma, 1915 [Kurosui-gin-yamma]
- 28. *Anax parthenope julius* Brauer, 1865 [Gin-yamma]
- *29. *Gynacantha japonica* Bartenev, 1909 [Katori-yamma]
- 30. *Oligoaeschna pryeri* (Martin, 1909) [Sarasa-yamma]
- *31. *Planaeschna milnea* (Selys, 1883) [Mirun-yamma]
- *32. *Polycanthagyna melanictera* (Selys, 1883) [Yabu-yamma]

IX. Family Corduliidae [Ezo-tombo Ka]

- *33. *Epitheca marginata* (Selys, 1883) [Torafu-tombo]
- 34. *Somatochlora uchidai* Ferster, 1909 [Takane-tombo]
- 35. *Somatochlora viridiaenea* (Uhler, 1858) [Ezo-tombo]

X. Family Macromiidae [Yama-tombo Ka]

- 36. *Epophthalmia elegans* (Brauer, 1865) [Oo-yama-tombo]
- *37. *Macromia amphigena amphigena* Selys, 1871 [Ko-yama-tombo]

XI. Family Libellulidae [Tombo Ka]

38. *Crocothemis servilia* (Drury, 1770) [Shojo-tombo]
39. *Deileia phaon* (Selys, 1883) [Kofuki-tombo]
40. *Libellula quadrimaculata asahinai* Schmidt, 1957 [Yotsuboshi-tombo]
- *41. *Nannophya pygmaea* Rambur, 1842 [Haccho-tombo]
42. *Orthetrum albistylum speciosum* (Uhler, 1858) [Shiokara-tombo]
43. *Orthetrum japonicum* (Uhler, 1858) [Shioya-tombo]
44. *Orthetrum triangulae melania* Selys, 1883 [Oo-shiokara-tombo]
45. *Pantala flavescens* (Fabricius, 1798) [Usubaki-tombo]
46. *Pseudothemis zonata* (Burmeister, 1839) [Koshiaki-tombo]
- *47. *Ryothemis fuliginosa* Selys, 1883 [Cho-tombo]
48. *Sympetrum baccha matutinum* Ris, 1911 [Ko-noshime-tombo]
- *49. *Sympetrum cordulegaster* (Selys, 1883) [Onaga-akane]
- *50. *Sympetrum croceolum* (Selys, 1883) [Ko-tombo]
51. *Sympetrum darwinianum* (Selys, 1883) [Natsu-akane]
52. *Sympetrum eroticum eroticum* (Selys, 1883) [Mayutate-akane]
53. *Sympetrum frequens* (Selys, 1883) [Aki-akane]
54. *Sympetrum infuscatum* (Selys, 1883) [Noshime-tombo]
- *55. *Sympetrum kunkeli* (Selys, 1884) [Maiko-akane]
56. *Sympetrum parvulum* (Bartenev, 1912) [Hime-akane]
57. *Sympetrum risi risi* Bartenev, 1914 [Risu-akane]
- *58. *Sympetrum speciosum speciosum* Oguma, 1915 [Neki-tombo]

This list seems to include almost all the species inhabiting Imizu Hills. Of them, *Mnais nawai* is biogeographically very important. Imizu Hills are one of the northernmost localities of this species in the region along the Japan Sea coast. The 24 species with asterisks(*) are rapidly decreased recently and their habitats in Toyama Prefecture are very limited. The number of Odonata species inhabiting the hills is very abundant notwithstanding very limited areas. Considering the fact that the hills are surrounded with such an urban area, Odonata fauna in the area should be regarded to be overwhelmingly rich. Moreover, it well indicates the fact that the natural ecosystems of Imizu Hills have been comparatively well preserved up to the present. However, the habitats of most of the species are quite limited today. Protection of such an Odonata fauna must inevitably result in preservation of water systems in the area and, in turn, protection of the whole natural environment in these hills.

Very much regrettably, the Municipal Government of Kosugi-machi has decided to promote several projects that construct three big golf courses and three big amusement facilities, covering an area of approximately 450 ha which is equivalent to more than 25% of the whole hills. And the Municipal Government of Toyama Prefecture intends to admit and support the policy of "Kosugi-machi" Construction of such facilities would inevitably result in drastic alterations of present status of the natural ecosystems in the area; in some cases this would mean total destruction of the natural ecosystems.

Most recently, some of the local residents who are concerned with the government's decision have formed an organization to protest the government against the development plan. Imizu Hills is a very important refuge and unreplaceable specimens of natural ecosystems of low elevation of Toyama district. The citizen's organization has been trying every possible method to save the natural area and to request the govern-

ment to withdraw, or at least to change, the plan. Nevertheless, nothing has been successful up to now.

Now, I would like to ask you for your help. I wonder if you could send a letter to each of the Municipal Governments of both Kosugi-machi and Toyama Prefecture protesting against such a development plan which would eventually destroy the remaining natural ecosystems.

Address to which the letter should be sent:

The Honorable Yutaka Nakaoki,
Governor of Toyama Prefecture
Prefectural Office of Toyama Prefecture
[Toyama Kencho]
1-7 Shin-Sogawa, Toyama City, 930 JAPAN

The Honorable Kazuo Mikami, Mayor of Kosugi-machi
Town Office of Kosugi-machi [Kosugi Machi Yakuba]
1511 Hibari, Kosugi-machi, Imizu-gun, 939-03 JAPAN

P.S. When you send a letter of protest to above responsible persons please send a copy to me at the same time.

[Editor's Note: The I.U.C.N. Odonata Specialist Group, meeting in Madurai, India on 17 January 1988, drafted a letter of support for Dr. Suzuki which was signed by many odonatologists attending the IX International Symposium of Odonatology.]

1987 U.S.A. COLLECTING TRIPS

Jerrell J. Daigle

2166 Kimberly Lane

Tallahassee, Florida 32301 USA

1987 was a very successful and rewarding year for collecting very rare American odonates from several states.

Williamsonia lintneri was common at Ponkapoag Pond near Boston, Massachusetts; it is a very early spring species and was the only odonate seen there in early May.

A group consisting of Ailsa and Nick Donnelly, Sid Dunkle and myself rediscovered *Ophiogomphus anomalus* in central Maine in mid-June; despite severe spring flooding, a few males and females were collected along four different rivers such as the Piscataquis and the Penobscot. *O. anomalus* has only been seen one other time in Maine since the original collections in 1898 and 1899.

In July, Ken Tennesen and Carl Cook joined me in catching the wary and elusive *Stylurus notatus* on the Wisconsin River in Wisconsin near Richland Center. *S. notatus* was fairly common over the river but was just too hard to catch. We did take a fair series, though. Tim Vogt also collected some *S. notatus* here later in the year.

Out west, Sid Dunkle and I collected *Erpetogomphus heterodon*, *Aeschna dugesi*, and *Coryphaeschna luteipennis florida* while attending the North American Odonatological Symposium in Arizona in August. Many thanks to Rosser, Jo, and little Phillip Garrison for scouting the area earlier and providing many localities. The desert surroundings were certainly a change from the forested eastern United States.

Finally, in September, I went to the famous Oak Creek Canyon near Sedona, Arizona and collected a few of the scarce, endemic *Aeschna persephone*. While present along the creek, they were few and far between.

The status of the three remaining rare and endangered anisoptera needs to be ascertained. *Gomphurus lynnae*, *Ophiogomphus edmunds*, and *Somatochlora hineana* are probably extinct now. Expeditions should be undertaken this year to uncover any existing populations. Maybe good fortune will smile once again in 1988.

IX INTERNATIONAL SYMPOSIUM OF ODONATOLOGY

Dan M. Johnson
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The Ninth International Symposium of Odonatology, the first held outside of Europe or North America, was held in Madurai, India during 18-23 January 1988. My own unofficial notes record participation by at least 52 people from 12 countries. Half of these participants (plus several students, spouses & children) were from India; 16 were from Europe; 8, from North America; and 4, from elsewhere in Asia.

Opening ceremonies were held in C.V. Raman Hall, School of Biological Sciences, at Madurai Kamaraj University at 9:00 hrs on Monday, 18 January. Professor M. Lakshmanan, Head of the School of Biological Sciences, welcomed the participants to the M.K.U. campus. Professor S. Krishnasamy, Vice-Chancellor of the University, referred to the role of dragonflies as messengers to Shiva in Indian folk literature, "Thiruvachacam". He also reminded us that in India "time is eternal" and, therefore, nothing is done hurriedly. Professor M.J. Westfall (U.S.A.) inaugurated the symposium with some remembrances of previous symposia. Professor B. Kiauta (The Netherlands) presented a Keynote Address, suggesting that India might be considered the birthplace of the Science of Odonatology because 1) the first written references to dragonflies appear in Tamil literature about 3000 B.C. and 2) Fraser's (1936) *Fauna of British India, including Ceylon and Burma. Odonata, Vol. III* was the first regional fauna book on dragonflies.

After a break for coffee and tea, the Scientific Program commenced with the following papers presented in a session chaired by M.J. Westfall:

- C. BLOIS & A. CLOAREC (France): Individual interactions and spatial distribution of *Anax imperator* L. (Odonata: Anisoptera: Aeshnidae) larvae; by A. Cloarec
- G. JACQUEMIN (France): The peat-bogs in the Vosges (North-Eastern France) and their dragonfly fauna
- W. SCHNEIDER (German Federal Republic): Zoogeography of middle Eastern Odonata
- C. UTZERI & L. DELL'ANNA (Italy): The onset of territoriality in *Libellula depressa* L. (Libellulidae); by C. Utzeri

After a delicious (and spicy!) introduction to South Indian cuisine in the courtyard of the Faculty Guest House, the scientific program continued (chaired successively by A. Kumar and J.G. Pilon) with the following presentations:

- S.H. CHOWDHURY (Bangladesh): Developmental biology of *Brachydiplax sordida* (Rambur)
- G. PRITCHARD (Canada): The life history of *Argia vivida* (Odonata: Coenagrionidae) at sites with different thermal regimes: the interaction between growth and diapause
- F. SCHALLER (France): Contribution of Odonata to insect endocrinology: a historical retrospective view
- K.J. JOSEPH & A.R. LAHIRI (India): Exclusively female associated dormitories in the circadian roosting behaviour of the dragonfly *Potamarcha congener* (Rambur) (Odonata: Anisoptera); by K.J. Joseph
- P.L. MILLER (United Kingdom): The functions of the subgenital plates of female libellulid dragonflies

- J. MUTHUKRISHNAN (India): Satiation time and predatory behaviour of the damselfly nymph *Lestes elata*

Participants returned to the Hotel Pandian for dinner and conversation. Beginning the next morning, all scientific sessions were held in that hotel, with lunches served on a balcony overlooking gardens which were swarming with dragonflies (especially the ubiquitous *Pantala flavescens*). Two sessions Tuesday morning, chaired by P.L. Miller and B. Kiauta, included these paper presentations:

- N. MICHELS (Belgium): Reproductive strategies in *Symptetrus danae* (fam: Libellulidae)
- J. OTT (German Federal Republic): Marking experiments with dragonflies (Anisoptera)
- G. REHFELDT (German Federal Republic): Analyses of male-female interactions in *Platycypha caligata* (Zygoptera: Chlorocyphidae)
- A.K. KULSHRESTHA (India): The organs of copulation and oviposition of *Ceragrion coromandelianum* (Fabr.) (Coenagrionidae: Odonata)
- B. SURIBABU & B.K. SRIVASTAVA (India): The reproductive behaviour of *Pseudagrion rubriceps* Selys (Zygoptera: Coenagrionidae); by B. Suribabu
- A.K.Z. AHMED (India): Some biological parameters of Odonata larvae of fishponds
- C. UTZERI & G. GIANANDREA (Italy): Aspects of territoriality in *Crocothemis erythraea* (Brulle') (Libellulidae); by C. Utzeri
- M.J. WESTFALL (U.S.A.): The study of the genus *Dythemis*, with descriptions of two new genera (Odonata: Libellulidae)

Tuesday afternoon sessions, chaired by D.B. Tembhare and S. Mathavan, included the following papers:

- M.W. KHAN & D.B. TEMBHARE (India): Studies on the midgut in relation to absorption and digestion in the nymph of the dragonfly *Pantala flavescens* (Fabr.) (Anisoptera: Libellulidae); by M.W. Khan
- S. MATHAVAN, S. MAHALINGAM & D.R.D. PREMKUMAR (India): Metabolism of endosulfan residues in *Brachythemis contaminata* nymphs; by S. Mahalingam
- A. PALAVESAM (India): Kinetic properties of phosphatase of dragonfly nymph *Mesogomphus lineatus*
- M.T. SIVA-JOTHY (Japan): Recent advances in our understanding of dragonfly sperm competition
- S.C. SAXENA & R.K. KAUSHIK (India): Safety evaluation of chemicals for insect control against the nymphs of Odonates; by S.C. Saxena
- A. VELPANDI & S. MATHAVAN (India): Antibacterial activity and selective synthesis of some haemolymph proteins in the dragonfly nymph *Brachythemis contaminata*; by A. Velpandi
- D.B. TEMBHARE & R.J. ANDREW (India): Development and structure of the post-ovarian genital complex of the dragonfly, *Tramea virginia* (Rambur) (Anisoptera: Libellulidae); by R.J. Andrew
- G. RUPPELL (German Federal Republic): Flight and reproductive behaviour of Odonata from Texas and Panama

On Wednesday, 20 January 1988, J.G. Pilon chaired the S.I.O. Business Meeting at the Hotel Pandian from 10:00-12:00 hrs. Minutes of that meeting are published in this issue of *SELYSIA*. After lunch, symposium participants boarded a bus for a Mid-symposium Tour to Alagar Temple and Alagar Hills Forest Preserve in the hills west of Madurai. The streams in the forest reserve were quite small, and efforts to collect Odonata proved futile; but the opportunity to walk in the forest and visit several Hindu temples and shrines was a most welcome diversion. It was a somewhat weary and thirsty group that returned to the Hotel Pandian for Philip Corbet's informal seminar, followed by the Symposium Banquet on Wednesday evening.

Corbet's Seminar focused on efforts to set priorities and encourage collaboration among Indian odonatologists. Preliminary plans were made for collaboration in studying the life-history, seasonal distribution, and migratory behaviour of *Pantala flavescens* throughout the Indian sub-continent.

Following the Symposium Banquet at the Hotel Pandian, Dan Johnson presented an invitation (with slide show) to the Xth International Symposium to be held at East Tennessee State University, Johnson City, Tennessee, U.S.A., from 6-12 August 1989. The highlight of festivities following the Banquet was a "50th Birthday Party" for Baastian Kiauta, Executive Editor of *ODONATOLOGICA*, and President-Elect of S.I.O. While participants held lighted candles, each language-group in turn sang traditional birthday greetings -- a poignant reminder of the cultural diversity that is now included in Baastian's "dragonfly family".

Scientific sessions resumed on Thursday morning, with chairmen B.K. Tyagi and P.S. Corbet introducing the following papers:

- O.P. MITTAL & S.M. HANDA (India): On the chromosome number and morphology in damselflies -- a review; by S.M. Handa
- V. McMILLAN (U.S.A.): Variable mate-guarding behaviour by male *Plathemis lydia*
- V.K. SRIVASTAVA (India): Morphology and the functional aspects of the components of the 8th complex in female *Ischnura rufostigma* Selys (Zygoptera: Coenagrionidae)
- K.V. LAKSHMINARAYANA & A. KUMAR (India): On two new Jurassic fossil Odonata from Solnhofen limestone deposits; by A. Kumar
- S. PALANICHAMY, P. BASKARAN, M. VASANTHI & A.S. MOHAMED (India): Studies of midgut protease in the dragonfly nymph *Brachythemis contaminata* exposed to pesticides; by S. Palanichamy
- D.M. JOHNSON (U.S.A.): A ten year study of the odonate assemblage of Bays Mountain Lake
- A.R. LAHIRI (India): Some observations on the status of rare Indian odonate species
- M. MAHATO (Nepal): A general survey of odonate larvae in Kali Gandaki and Narayani rivers of Central Nepal
- T.R. MITRA (India): Status of Odonata recorded from the Indian parts of the Gangetic alluvium
- J.G. PILON & L. PILON (Canada): The odonate fauna of the Northern regions of Quebec-Labrador: a review and perspective; by J.G. Pilon

- M. SIVA-JOTHY (Japan): Brief comments on the distinction between spermatodesms and spermatophores

Two posters were exhibited following lunch on Thursday:

- J.G. PILON (Canada): Larval morphology of *Libellula juhu* Uhler (Anisoptera: Libellulidae)
- J.G. PILON (Canada): Intrastage variation during post-embryonic development of *Libellula julia* Uhler (Anisoptera: Libellulidae)

Closing ceremonies were held at 15:00 hrs on Thursday, 21 January 1988. Dr. Kiauta expressed thanks for an exceptionally well-organized symposium to Dr. Mathavan, his associates and students. The IXth International Symposium of Odonatology was declared closed; and the S.I.O. flag was passed from Mathavan to D.M. Johnson who will host the Xth International Symposium at East Tennessee State University, Johnson City, Tennessee during 6-12 August 1989.

Many of the participants toured the ancient Meenakshi Temple in Madurai on Thursday evening, and shopped for Indian silk nearby. We then returned to the Hotel Pandian where very persuasive shopkeepers made sure that we bought plenty of souvenirs! Those participating in the Post-Symposium Tour departed for Thekkady-Periar Game Sanctuary on Friday morning. The rest took wing to the far corners of the planet, with many new friends and pleasant memories of India and her people.

CONDOLENCES

Members of the dragonfly family extend condolences to two of our members whose wives have passed away recently. Jean Belle lost Maria on 23 May 1987. She had attended several of the S.I.O. symposia, including the one in Gainesville. George Beatty's wife Alice died on 22 November 1987. She taught biology and entomology at Pennsylvania State University from 1956 until her retirement in 1980. In retirement, Alice had remained active as associate curator of the Frost Entomological Museum at Penn State.

X INTERNATIONAL SYMPOSIUM OF ODONATOLOGY

Dan M. Johnson

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Preliminary planning has begun to hold the Tenth International Symposium of Odonatology at East Tennessee State University, Johnson City, Tennessee (U.S.A.) during 6-12 August 1989. I will serve as Organizing Secretary, and the following colleagues have agreed to be members of the Organizing Committee: Philip Crowley (University of Kentucky), Sid Dunkle (University of Florida), Ola Fincke (University of Missouri), Mike May (Rutgers University), Arwin Provonsa (Purdue University), and Ken Tennessen (Tennessee Valley Authority). In January 1988 we submitted a proposal to the National Science Foundation, requesting travel funds to facilitate participation by young investigators and those from developing countries. Registration materials will be mailed to all S.I.O. members (and others on the *SELYSIA* mailing list) in September 1988. Preliminary plans include: a full schedule of scientific papers and posters; an exhibit and sale of "dragonfly art"; a mid-symposium collecting trip to Bays Mountain Park, followed by barbeque and bluegrass music; a banquet; and a post-symposium tour led by Ken Tennessen. Please mark your calendars and begin planning to attend. Any ideas or suggestions should be sent to me, or to any member of the organizing committee.

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[see *SELYSIA* Vol 11, No 1]
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**MINUTES OF THE BUSINESS MEETING
OF THE
SOCIETAS INTERNATIONALIS ODONATOLOGICA (S.I.O.)
in the Pandian Hotel, Madurai, India
20 January 1988
Chairman: Jean-Guy Pilon
Present: 26 S.I.O. members**

The Chairman opened the meeting at 10:25 hours.

1. The appointment of S.M. Handa, D.M. Johnson and A. Kumar as Minutes Recorders was approved.
2. The Minutes of the S.I.O. business meeting held at Paris, France on 21 August 1985 (*SELYSIA* 16 (1)) were approved.
3. The agenda for the meeting was approved.

4. Report of the Secretary

Gordon Pritchard, S.I.O. Council Secretary, noted the importance of the fact that the IX International Symposium of Odonatology was being held in India, the first such meeting held outside of Europe and North America.

5. Report of the Executive Editor

Baastian Kiauta summarized S.I.O. publication activity for the two-year period that ended in August 1987. During that time a total of 1473 pages were published comprising 234 papers and 889 abstracts. These included 1000 pages in 77 technical papers in *ODONATOLOGICA*; 155 pages in 11 papers in *ADVANCES IN ODONATOLOGY* 3; and 68 pages in 45 notes in *NOTULAE*; one I.U.C.N. Report (N. Moore, editor); the three publications produced for the Paris symposium; and 4 issues of most regional newsletters. A total of 174 authors from 26 countries published papers in S.I.O. journals during this period. Kiauta noted that most of the papers are in English, and that authors from Europe and North America predominate.

One need not be a member of S.I.O. to publish papers in the journals. Editorial Board policy is that all papers submitted to *ODONATOLOGICA* or *ADVANCES IN ODONATOLOGY* will be reviewed by 1-3 referees; those for *NOTULAE* are usually not reviewed. Regulations concerning page charges and reprint fees are published in the journals; exemptions to such charges must be requested in advance from the Treasurer. Invited papers are always free.

ADVANCES IN ODONATOLOGY used to be edited by the Organizing Secretary of the associated International Symposium. That has proved to be difficult and inconvenient; therefore, Jean LeGrand (France) has been appointed Editor for *ADVANCES* with the same Editorial Board as for *ODONATOLOGICA*. *ADVANCES* is being produced in Belgium where the printing costs are much less than in The Netherlands.

Kiauta noted that S.I.O. members receive *ODONATOLOGICA*, *NOTULAE*, and the newsletter *SELYSIA* free of charge. Other publications, including *ADVANCES IN ODONATOLOGY* and *RAPID COMMUNICATIONS* must be purchased; members in good standing with the Treasurer may place standing orders for these publications and be billed upon receipt.

The publication of Odonatological Abstracts in *ODONATOLOGICA* is dependent on the cooperation of the members in sending any reprints or abstracts to the Editor for inclusion.

6. Report of the Treasurer

Janny van Brink distributed copies of the Society's financial statement covering 1985-1987 which showed a net balance at the end of 1987 of Hfl. 72831. The amount collected from membership fees has increased somewhat over previous periods because of a "more severe method of collection". Other major sources of income are library subscription fees and the sale of reprints.

The S.I.O. Antiquarian Department, which is registered as an international bookseller, has proved to be an important source of income which helps to cover the increased expenses of the S.I.O. Central Office since it is no longer supported by the University of Utrecht. Donations and legacies of odonatological literature are appreciated.

Dan Johnson provided clarification of the costs associated with production of the S.I.O. newsletter, *SELYSIA*. Costs of production and mailing within the United States are paid by East Tennessee State University; postage for mailing to other members is reimbursed by S.I.O. from funds kept at the U.S. National Office.

Wolfgang Schneider moved acceptance of the Treasurer's report and the motion was approved unanimously following a vote of thanks to the Treasurer from Philip Corbet.

7. Report of the National Offices

Baastian Kiauta, Coordinator of National Offices, presented an overview of the activities of 5 Affiliated Societies (German, Dutch, British, Swiss and Japanese) and 8 National Offices of S.I.O. (Japan, United Kingdom, Germany, Italy, India, United States, Thailand, and Canada). A motion expressing thanks to the National Representatives was made by Janny van Brink, seconded by Philip Corbet, and approved unanimously. Brief reports from 5 National Offices followed:

United Kingdom (Philip Corbet for Peter Mill). There are 30 S.I.O. members among 350 members of the British Dragonfly Society. They have published the *JOURNAL OF THE BRITISH DRAGONFLY SOCIETY* since 1985, had 70 members attend the last annual meeting, and have become involved in conservation activities. Fund- raising activities related to conservation projects have made it necessary to terminate the formal affiliation of the B.D.S. with S.I.O.; so there is hope that a formal National Office will soon be formed.

Italy (Carlo Utzeri). There are 30 S.I.O. members in Italy. The National Office maintains a library with 3600 titles, supplies S.I.O. publications to the members, and produces a semiannual newsletter, *LINDENIA* which is mailed to 25 people. Twenty people attended a meeting to initiate mapping of odonate distributions in Italy, held in Rome in October 1986. Peter Miller (U.K.) was a visiting professor at the University of Rome in summer 1987. And plans are being made to host the XI International Symposium of Odonatology in Italy in 1991.

India (B.K. Tyagi). There are 24 S.I.O. members among 90 odonatologists in India, Bangladesh, and Nepal. The Second Indian Symposium of Odonatology, held in Dehra Dun in October 1986, was attended by 35-40 people. The National Office maintains a library of journals and reprints, publishes a newsletter, *FRASERIA*, and has initiated a new refereed journal, *INDIAN ODONATOLOGY*. The IX International Symposium of Odonatology was organized in Madurai to bring noted scholars to India so that young Indian odonatologists could meet them.

United States (Minter Westfall). The U.S. National Office is located at the University of Florida, Gainesville. The newsletter, *SELYSIA* is now edited by Dan Johnson at East Tennessee State University. Field expeditions have been organized in Pennsylvania (1986), Tennessee (1987), and one is being planned for Arkansas in 1988. In 1987 there were 55 S.I.O. members in the United States, a net loss of 11 since 1986. There is concern that continued

weakness of the U.S. dollar has made S.I.O. membership fees too expensive for many potential members. In an effort to recruit new members, the S.I.O. Council and Treasurer have agreed to try setting the fee in dollars so that it will not fluctuate so much from year to year.

Canada (Gordon Pritchard for Sid Cannings). The S.I.O. National Office has been relocated to Victoria, British Columbia where it is "alive and well" and publishing *WALKERIA*.

8. Report of the I.U.C.N. Survival Service Commission

Philip Corbet reported for Norman Moore that a meeting of the Odonata Specialist Group was held on 17 January at the Pandian Hotel in Madurai, India. Several conservation projects were discussed at that meeting. Dr. Spuris will represent the U.S.S.R. and Mike Parr will be asked to represent Africa. There is concern that I.U.C.N. published its Red Data Book on Invertebrates, which included many errors with regard to the Odonata, without consulting the Odonata Specialist Group. Efforts will be made to obtain assurances that such actions will not be repeated.

9. Report of the European Invertebrate Survey Representative

Baastian Kiauta reported that H. Wolda (Leiden) has found communication with the European Invertebrate Survey to be impossible. It is suggested that S.I.O. dissociate itself from any formal association with the Survey. Informal association will still be possible as necessary through Eberhardt Schmidt.

10. Report of the International Odonata Research Institute

Minter Westfall reported that the I.O.R.I. has received several contributions of specimens for its collection; members were urged to send more. Sid Dunkle, George and Juanda Bick are assisting with the processing of such material which currently amounts to 750 specimens of 250 species filling 16 cases. The Institute has hosted 4 visiting scientists during the last year. Plans for an additional 3400 square feet of space for Odonata, partially funded by the State of Florida and the National Science Foundation, are contingent on raising \$1 million from private sources.

11. Report of the Auditors

Jean-Guy Pilon read the report of Auditors Mol and Schmidt, which found the Treasurer's records in good order. Following a motion by Philip Corbet, seconded by B.K. Tyagi, the report was accepted.

12. Discharge of the Council

Chairman Pilon discharged the S.I.O. Council with thanks for their service to the Society.

13. Election of the New Council

Secretary Pritchard announced that nominations published in *SELYSIA* had been approved by the membership. The new council includes President Francoies Schaller (France), Past-President Robert Gambles (U.K.), President-Elect Baastian Kiauta (Netherlands), and elected members Tony Watson (Australia), Eberhardt Schmidt (German Federal Republic), Rob Cannings (Canada), and Peter Miller (U.K.). Others will be appointed soon.

14. Report on S.I.O. Council Meeting

Secretary of the Council, Gordon Pritchard, reviewed certain projects and operational details that are being considered by the S.I.O. Council. He noted that S.I.O. is discontinuing its formal association with the European Invertebrate Survey, and that it will "keep an eye on" the I.U.C.N. The May Committee, appointed at the Paris Symposium, has recommended consolidating the two current secretarial positions into one; that report will be published in *SELYSIA* with a resolution to amend the bylaws to be approved by the membership. Council is considering recommendations to establish both a Grants Commission and a Lieftinck Award. It is also exploring the possibility of producing a booklet, in cooperation with the Indian National Office, that would document the economic importance of dragonflies. And efforts are being made to establish new National Offices in China and U.S.S.R.

15. Publication Program (1988-89)

Baastian Kiauta reported that the Society's publication program will continue at approximately the current level. Annual Reports of the I.O.R.I. will be added, and perhaps some new national or regional newsletters.

16. Financial Estimates (1988-98)

Janny van Brink did not present detailed financial estimates, but said that membership fees are expected to remain at their present levels.

17. Report of the Symposium Organizing Committee

18. Report of the Permanent Committee for Symposia

Baastian Kiauta thanked B.K. Tyagi, S. Mathavan and their Organizing Committee for the excellent arrangements made for the IX Symposium. He also announced that the X Symposium (August 1989) will be organized by Dan Johnson in Tennessee (U.S.A.) and that the XI Symposium (1991) will be organized by Carlo Utzeri in Italy. There are tentative plans to hold the XII Symposium (1993) in Bangkok, Thailand. Invitations to meet in South Africa, Iran, and China have not been accepted because not all members would be able to get Visas to enter those countries.

19. Election of Auditors

Jean-Guy Pilon announced that the present Auditors, Mol and Schmidt, have agreed to serve for another term. Their nomination was approved.

20. Other Business

Philip Corbet reported that the S.I.O. Council is exploring the idea of establishing an Advisory Board for Grants and Awards which would review proposals and establish guidelines for a Lieftinck Award and for small grants to support research and conservation projects.

Mahendra Mahato suggested that the name of the Indian National Office be changed to one that reflects the broader region (Bangladesh, India, Nepal, and Pakistan) which is served by that office. B.K. Tyagi, National Representative for that Office, agreed to consider the suggestion and consult with other members concerning an appropriate name for the office.

A. Kumar (India) suggested that the S.I.O. consider providing short-term travel grants to members so that they could consult and collaborate with other odonatologists. The suggestion will be considered by the S.I.O. Council and perhaps by the Advisory Board for Grants and Awards when it is established.

With a vote of thanks to Chairman Pilon and the minutes recorders, the meeting was adjourned at exactly 12:00 hours.

Dan M. Johnson, Minutes Recorder Johnson City, Tennessee, U.S.A.