

ODONATOLOGICAL ABSTRACTS

1972

- (6782) VARSHNEY, R.K. & M. GUHA, 1972. A note on the wing markings of dragonfly *Rhyothemis variegata variegata* (L.) (Odonata: Libellulidae). *J. Patna Univ.* 27(2/4): 1-4. — (First Author: Zool. Surv. India, M-Block, New Alipur, Calcutta-700053, India). Variation in female wing markings from the Patna area, India, is described and figured.

1973

- (6783) STURANI, C., 1973. A fossil eel (*Anguilla* sp.) from the Messinia of Alba (Tertiary Piedmontese basin): palaeoenvironmental and palaeogeographic implications. In: C.W. Drooger, [Ed.], *Messinian events in the Mediterranean*, pp. 243-255, Kon. ned. Akad. Wetensch., Amsterdam. — (Ist. Geol., Univ. Torino, Palazzo Carignano, I-10123 Torino).

The fossil assemblage and sedimentary features of the Messinian section NW of Alba, Piedmont, Italy, are described and their palaeoenvironmental significance is discussed. From the fine-grained, mostly pelitic sediments, associated with the selenite crystal conglomerates and mud-flow, deposited in a hyperhaline lagoon, about 20 adult libellulid specimens, 1 adult ♀ lestad, and thousands of libellulid exuviae and larvae of various instars, referable to a sp. of an undescribed *Sympetrinae* or *Brachydiplactinae* genus and most likely conspecific with the adults, were recovered. This rich, but almost monotypical odon. assemblage resembles the extant fauna of a Sicilian, almost completely dried out

(therefore hyperhaline) brackish water marsh, where the author discovered a huge larval population of *Sympetrum*. On the other hand, the Messinian fauna contrasts strikingly with that (8 spp.) from the freshwater deposits of Oeningen (O. Heer, 1849, *Insektenfauna der Tertiärgebilde von Oeningen und Radoboj in Croatien*, Engelmann, Leipzig), as well as with the extant odon. fauna (38 spp.) of the Mississippi Delta (M. Wright, 1943, *Ecol. Monogr.* 13: 481-497). The Messinian libellulid larvae, occurring all over Italy, from Piedmont to Sicily, are known since the last century. They have been assigned to *Libellula doris* Heer, from the Late Miocene lacustrine deposits of Oeningen (Bavaria). A thorough comparison with Heer's original figs and description shows this identification to be incorrect.

1979

- (6784) HECKMAN, C.W., 1979. *Rice field ecology in northeastern Thailand: the effect of wet and dry seasons on a cultivated aquatic ecosystem*. VI+228 pp., Junk, The Hague-Boston-London. (Monogr. biol. 34) — ISBN 90-6193-086-3. — (Author: Inst. Hydrobiol., Univ. Hamburg, Zeiseweg 9, D-2000 Hamburg-50, FRG).
- The study of a monsoonal rice field ecosystem in Udorn, Thani, NE Thailand, was conducted over the course of a year. 20 odon. spp. were recorded; their ecology and phenology are dealt with in some detail (pp. 58-59, 137-140).

1980

- (6785) SCHIPPER, C., 1980. In search of perch. *Freshwater Catch* 1980 (Winter): 10. — (Author's address not stated).

In the Auckland area, New Zealand, the food of the young perch, *Perca fluviatilis*, is rather similar in all localities, consisting mainly of midge and zygopteran larvae, and water fleas. Perch over 20 cm feed mostly on fish.

1981

- (6786) HANSEN, G., 1981. *Trollsländor*. — [*Dragonflies*]. IV+64 pp., 100 mostly col. figs, hardcover (17x25 cm). LT's-förlag, Stockholm. ISBN 91-36-01734-5. (Swedish). — Available from the S.I.O. Central Office, Bithoven. This is the Swedish edition of the attractive Danish book, listed in *OA* 3023. The text is not entirely identic, the vernacular names are of course Swedish, and some Swedish folk names are also given.

- (6787) VARSHNEY, R.K. & M. PRASAD, 1981. Asymmetrical wing-venation in *Orthetrum triangulare* (Selys) (Odonata: Libellulidae). *Sci. & Cult.* 47 (Aug.): 292-294. — (Zool. Surv. India, M-Block, New Alipur, Calcutta 700053, India). Asymmetrical venation in the fore wings of a ♂ from Assam is described and figured.

1984

- (6788) LUTTGES, M.W., C. SOMPS, M. KLISS & M. ROBINSON, 1984. Unsteady separated flows: generation and use by insects. In: Francis & Luttges, [Eds], *Workshop on Unsteady Flow*, pp. 127-136. US Air Force Acad. & Univ. Colorado, Boulder. — (Dept Aerospace Eng. Sci., Univ. Colorado, Boulder, CO 80309-0429, USA).

The paper summarizes flight mechanisms in dragonflies that appear to exploit unsteady flows to achieve rather remarkable aerodynamics. The flight was studied both in unrestrained, normal specimens and in tethered, laboratory-tested individuals. The experiments indicated that unsteady flows may be

used to support quite sophisticated insect flight manoeuvres. The evidence indicates that dragonflies use mechanisms quite different from those used by the chalcid wasps.

- (6789) PECKARSKY, B.L., 1984. Predator-prey interactions among aquatic insects. In: V.H. Resh & D.M. Rosenberg, [Eds], *The ecology of aquatic insects*, pp. 196-259. Praeger, New York. — (Author's address not stated). Review paper, with due consideration of the Odon. The latter are listed (with primary bibl. references) also in the tabs titled "Facets of aquatic insect predator hunting behavior" (genus-wise), "Feeding preferences of aquatic insect predators, based on gut analyses with or without comparison to prey availability" (species-wise), and "Experimental studies of population- and community-level effects of aquatic insect and non-insect predators" (species-wise).

1986

- (6790) WATANABE, I., A. AZUMA & T. WATANABE, 1986. Wake vortices of flying dragonflies. *Proc. 4th Int. Symp. Flow Visualization, Paris*, 6 pp. (sep.). — (Second Author: 37-3 Miyako-cho, Saiwai-ku, Kawasaki, 210, - A).

Anax parthenope julius, flying either freely in a field and a tunnel or restrained on a sting in a three-dimensional smoke tunnel, were filmed with a high-speed-movie camera and a still camera with the assistance of stroboscopes. The obtained pictures of the dragonfly itself and the waker vortices visualized by the smoke lines were very clear to analyze the beating motion and the resulting wake behaviour. Then the wing motion was utilized to calculate theoretically the aerodynamic loading or the circulation of the wing, the spanwise and timewise variations of which were left in the wake as trailing vortices and shed vortices. The flow or wake behaviour induced by these vortices were compared with the observed wake data. A reasonable agreement was obtained.

- (6791) WOOTTON, R.J., 1986. The origin of insect

flight: where are we now? *Antenna* 10(2): 82-86. — (Dept Biol. Sci., Univ. Exeter, Hatherly Lab., Prince of Wales Rd, Exeter, EX4, 4PS, UK).

A review of the subject, with bibliography and references to the Odon.

1987

- (6792) BAHTI, T., 1987. *Southwestern Indian ceremonies*. 64 pp. KC Publications, Las Vegas. ISBN 0-916122-02-16 (paper), 0-916122-27-1 (cloth). — (Publishers: P.O.Box 14883, Las Vegas, NV 89114, USA).
It contains a statement (p. 3) that the similarity between the Franciscan (catholic) double-barred Cross of Caravaca and the dragonfly designs used on Pueblo pottery resulted in the ready acceptance among Southwestern (American Indian) tribes of this religious symbol for non-religious reasons. Figs of the Indian dragonfly representation and of the Franciscan double-barred Cross are included.
- (6793) DÉVAI, G. & M. MISKOLCZI, 1987. Javaslat egy új környezetminősítő értékelési eljárásra a szitakötők hálótérképek szerinti előfordulási adatai alapján. — Proposal for a new method of environmental quality evaluation on the basis of grid maps of distribution data of dragonflies. *Acta biol. debrecina* 20: 33-54. (Hung., with Engl. s.). — (Ecol. Inst., Kossuth Univ., P.O. Box 14, HU-4010 Debrecen).
In the Engl. abstract no workable description of the proposed method is given, but it is argued that the latter is fairly suitable for the evaluation of the "value" of biotopes or of any other topographic units.
- (6794) DÉVAI, G., M. MISKOLCZI & S. TÓTH, 1987. Javaslat a faunisztikai adatközlés és számítógépes adatfeldolgozás egységesítésére. I. Adatközlés. — Proposal for the standardisation of faunistic data publication and data processing. I. Data publication. *Folia Mus. hist.-nat. bakonyi*. 6: 29-42. (Hung., with Engl. & Germ.s's). — (First Author: Ecol. Inst., Kossuth Univ., P.O. Box 14, HU-4010 Debrecen). Odon. examples are used.
- (6795) PREMKUMAR, D.R.D. & S. MATHAVAN, 1987. Efficacy of a synthetic pyrethroid, Decamethrin, to selected target and non-target organisms. *Proc. Symp. Alternatives to Synthetic Insecticides, Madurai*, pp. 171-175. — (Second Author: Sch. Biol. Sci., Madurai Kamaraj Univ., Madurai-625021, India).
Toxicity of Decamethrin [FMC-45498 or NRDC-161]; (-) - (cyano)-3-phenoxybenzyl - (+) - Cis-3 - (2, 2 dibromovinyl) 2-2-dimethylcyclopropane-1-carboxylate] was evaluated against target and non-target aquatic organisms. Decamethrin is highly toxic to larvae of *Culex quinquefasciatus*, *Anisops bouveri* and to those of *Brachythemis contaminata*. Since the odon. larvae are predators of fish fry it can be used to eradicate these from fish ponds.
- (6796) RAMOS, A.C., 1987. *Contribucion al conocimiento de los insectos acuáticos de Postrero Redondo: una localidad de la Sierra Madre oriental en el municipio de Santiago, Nuevo León, México*. XII+113 pp., Tesis opción Título de Biologo, Univ. Autón. Nuevo León, Monterrey. — (Author's current address unknown).
On pp. 44-51, it contains a list of 20 odon. spp. that had not been previously reported from the region (incl. an undescribed *Erpetogomphus* sp.), and presents collection data and field notes for some of them.
- (6797) REDSHAW, E.J., 1987. New and scarce species of Odonata: 1985-86. *Trans. Lincolnsh. Naturalists' Un.* 21(4): 194-198. — (7 Fennell Rd, Pinchbeck, Spelding, Lincs., PW11 3RP, UK).
Orthetrum cancellatum is added to the Lincolnshire, UK, list, new records are given for 4 other spp., and the known county distribution of 23 spp. is mapped.
- (6798) SAHARON, D. & M.W. LUTTGES, 1987. Three-dimensional flow produced by a pitching-plunging model dragonfly wing. *Pap. Am. Inst. Aeronaut. Astronaut.* 87(0121): 1-17. — (Dept Aerospace Eng. Sci., Univ. Colorado, Boulder, CO 80309-0429, USA).
3-dimensional unsteady separated flow genera-

ted by a dragonfly forewing model was visualized during various wing motions. Simplified kinematics were tested first. To get a better understanding of dragonfly-produced unsteady flows as well as those produced by simulated dragonfly kinematics were broken down into simple elements. Sinusoidal pitching (small and large amplitudes), then large-amplitude sinusoidal plunging and finally combined motions were tested. The results revealed the similarity between visualized unsteady separated-flow fields elicited by the dragonfly and those produced by simplified kinematics using models of the forewing. In addition, the results showed the similarity of three-dimensional separated flows generated by oscillating airfoils and wings as compared to those produced by the model dragonfly wings. The observed flow fields generated by the models were evaluated in terms of the large lift peaks dragonfly are known to produce.

- (6799) UBUKATA, H., 1987. Morphology of the larva of *Mnais costalis* Selys collected from Hattarubetu, Sapporo. *Sylvicola* 5: 48-52. (Jap., with Engl. title). — (Dept. Sci. Educ., Kushiro Coll., Hokkaido Univ. Educ., Shiro-ama 1, Kushiro, 085, JA).
The ultimate instar is described and figured.

1988

- (6800) AMBRUS, A., 1988. Sztatökötö-faunisztikai vizsgálatok Tatabánya környékén. — [Studies on the dragonfly fauna of Tatabánya]. *Limes* 1: 17-28. (Hung). — (Jurisich u. 16, HU-9495 Kópháza).
Annotated list of the odon. fauna (44 spp.) of some sand pits in the Tatabánya city area, NW Hungary.
- (6801) AREFYEV, V.A. & A.L. DEYYATKIN, 1988. Ispol'zovanie metoda kolhicinovyh vann dlya analiza kariotipov nasekomyh. — The use of colchicine bath method to analyse karyotypes of insects. *Zool. Zh.* 67(9): 1393-1398, pls 1-2 excl. (Russ., with Engl. s.). — (All-Union Inst. Sea Fishery & Oceanogr., Fac. Biol., Moscow St. Univ., Moscow, USSR).
The karyotype of *Ischnura elegans* is described and figured (2n ♂ = 27, no m) and a review is given of the hitherto known chromosome numbers in 13 spp. of the genus.
- (6802) BROCKHAUS, T., 1988. Libellenbeobachtungen in der Westslowakei (Západne Slovensko). *Ent. Nachr. Ber.* 32(6): 269-270. — (Markt 20/21, DDR-9001 Karl-Marx-Stadt, GDR).
9 spp. are listed from the "Schütt-Insel" (= Žitný ostrov), Danubian lowlands, Slovakia, Czechoslovakia. — (*Abstract's Note*: A comprehensive review of the odon. fauna of this locality was published by M. Trpiš, 1957, *Biologia, Bratislava* 12: 433-449. *Sympetrum pedemontanum* is not listed there).
- (6803) BROWN, A.F. & D. PASCOE, 1988. Studies on the acute toxicity of pollutants to freshwater macroinvertebrates. 5. The acute toxicity of cadmium to twelve species of predatory macroinvertebrates. *Arch. Hydrobiol.* 114(2): 311-319. — (Dept. Appl. Biol., UWIST, P.O. Box 13, Cardiff, CF1 3XF, Wales, UK).
Larval *Calopteryx splendens* and *Enallagma cyathigerum* were among the organisms on which acute toxicity tests were conducted. The medium lethal time (LT50) and slope function (S) are given for each sp. at each cadmium concentration. The odon. were among the most tolerant spp.
- (6804) BURGER, F. & H. DONATH, 1988. Künstlich geschaffene und artenreiche Gewässer in der Bergbaufolgelandschaft. *Naturschutz Arb. Berlin Brandenburg* 24(2): 44-48, figs 7-8 excl. — (Second Author: Hauptstr. 36/37, DDR-7960 Luckau, GDR).
Notes on the Odon. of 2 localities nr Cassel, GDR, incl. a few locally interesting spp. (e.g. *Ophiogomphus serpentinus*).
- (6805) CASELLATO, S. & ZANFEI, 1988. Primo quadro limnologico generale del Lago di Lavarone (Trento, Italia). *Studi trentini Sci. nat. (Biol.)* 64: 135-156. (With Engl. s.). — (First Author: Dipto Biol., Univ. Padova, Via Trieste 75, I-35100 Padova).
Platycnemis pennipes is the only odon. sp. recorded from the Lago di Lavarone, on the

Rovigo-Vicenza-Trento highway. The topographic position and altitude of the lake are not stated.

- (6806) CORDERO RIVERA, A., 1988. Ciclomorfosis y fenología en *Ischnura graellsii* Rambur, 1842 (Odonata: Coenagrionidae). *Actas 3 Congr. iber. Ent., Granada*, pp. 419-429. (With Engl. s.). — (Area Ecol., Fac. Biol., Univ. Santiago de Compostela, ES-15071 Santiago de Compostela).
Morphological distinctions between the spring and summer generations of *I. graellsii* are analysed. The general size of individuals and that of the light patches are smaller in spring than in summer. The change takes place gradually during the season, but the seasonal dimorphism is clear.
- (6807) DE MARMELS, J., 1988. Odonata or dragonflies from Cerro de la Neblina and the adjacent lowland between the Rio Baria, the Casiquiare and the Rio Negro (Venezuela). I. Adults. *Bull. Acad. Cien. fisic. matemat. natur., Caracas* 25: 11-78, 89-91 (col. pls). (With Sp. s.). — (Depto & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
The paper covers adult material gathered during Feb.-July, Nov.-Dec., 1984, in the Cerro de la Neblina National Park, situated in the mountain range of southern Venezuela. 1625 specimens are referable to 14 fam., 66 gen. and 152 spp., of which 8 gen. and 23 spp. are here reported from Venezuela for the first time. In addition, 23 new spp. and 2 new ssp. are described and figured, viz. *Mnesarete astrape* sp. n., *Heteragrion bariai* sp. n., *H. breweri* sp. n., *H. chlorotaeniatum* sp. n., *Perisolestes flinti* sp. n., *Epileoneura ocuene* sp. n., *E. solitaria* sp. n., *E. uncinata* sp. n., *Neoneura luzmarina* sp. n., *Psaironeura machadoi* sp. n., *Palaemnema tepuica* sp. n., *Acanthagrion imeriense* sp. n., *Metaleptobasis incisula* sp. n., *Telebasis selaopyge* sp. n., *Castoraeschna tepuica* sp. n., *Coryphaeschna amazonica* sp. n., *Dorocordulia vagans* sp. n., *Brechmorhoga neblinae* sp. n., *Dythemis kiautai* sp. n., *D. multipunctata reducta* ssp. n., *Fylgia amazonica lychnitina* ssp. n., *Micrathyrina venezuelae* sp. n., *Oligoclada hypophane* sp. n., *O. leucotaenia* sp. n., and *Orthemis anthracina* sp. n. All holotypes are deposited in IZA.-13 spp. (10%) are endemic to the "Cerro de la Neblina" (or are known solely from 1 or more of the other tepuis as well, and are called here "pantepuyan"). The fauna shares little with the Andean fauna: only *Cannaphyla vibex* and *Micrathyrina venezuelae* sp. n. are common to both areas.
- (6808) DE MARMELS, J., 1988. Odonata or dragonflies from Cerro de la Neblina and the adjacent lowland between the Rio Baria, the Casiquiare and the Rio Negro (Venezuela). II. Additions to the adults. *Bull. Acad. Cien. fisic. matemat. natur., Caracas* 25: 81-87. (With Sp. s.). — (Depto & Inst. Zool. Agric., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
Supplement to the paper listed in OA 6807. 13 spp. are listed, incl. the descriptions of *Dimeragrion mesembrinum* sp. n., *Aeolagrion neblinae* sp. n., and *Aeshna* (*Hesperaeschna*) *nubigena* sp. n.
- (6809) DONATH, H., 1988. Erster Nachweis der Frühen Heidelibelle, *Tarnetrum fonscolombii* (Selys 1840) in der Niederlausitz. *Novius* 7: 105-106. — (Hauptstr. 36/37, DDR-7960 Luckau, GDR).
Gives a review of the hitherto known records of *Sympetrum fonscolombii* in the GDR, and the circumstantial evidence of its occurrence in the Lower Lusatia (Paserin, distr. Luckau, 21-IX-1987).
- (6810) DONATH, H., 1988. [Wir erkunden Lebensräume in der heimatlichen Natur]: 2. Gewässer. In: H. Leyn, [Ed.], *Wanderführer durch den Kreis Luckau*, Bd. 3, pp. 16-28, Rat d. Kreises Luckau, Luckau. — (Hauptstr. 36/37, DDR-7960 Luckau, GDR).
Various odon. spp., characteristic of different types of habitats in the district of Luckau, GDR, are listed and the composition of the odon. faunas of these is described in some detail.
- (6811) DONS, R. & B. VAN DER WETERING,

1988. Libelleninventarisatie 1986. — [Dragonfly inventarisatie 1986]. *Deeppress* 2(1): 11-18. (Dutch). — (Second Author: Lichtboei 259, NL-9732 KD Groningen).
With reference to the work listed in OA 4406, the results of the 1986 survey in the Oost Veluwe, the Netherlands, are recorded.
- (6812) GOFFART, P., 1988. Les libellules: témoins privilégiés de la dégradation des milieux aquatiques. *Réserves natur.* 11(3/4): 106-108. — (Unité Ecol. & Biogéogr., UCL, 4-5 place Croix du Sud, B-1348 Louvain-la-Neuve).
Considerations on the needs and modes of dragonfly conservation in Belgium and in Europe, arguing for habitat conservation rather than individual species protection.
- (6813) GREEN, J. & H. KRAMADIBRATA, 1988. A note on Lake Goang, an unusual acid lake in Flores, Indonesia. *Freshw. Biol.* 20: 195-198. — (First Author: Cent. Res. Aquatic Biol., Queen Mary Coll., Mile End Rd, London, E1 4NS, UK).
The lake has a pH of 2.5 and high concentrations of sulphate, chloride, iron and aluminum. During Jan. an oily slick appears and is deposited as asphalt around the shore. The planktonic and benthic fauna are described. The latter includes a not further identified Zygoptera larva.
- (6814) JANSEN, K.C., 1988. *Die libellen van Drenthe: een inventarisatie 1975-1988*. — [*The dragonflies of Drenthe: the 1975-1988 survey*], 102 pp. Staatsbosbeheer, Utrecht. (Dutch). — (Ruinerbrink 274, NL-7812 RP Emmen).
A very thorough monographic treatment of the odon. fauna (42 spp.) of the Drenthe Prov., the Netherlands, with detailed considerations on habitat ecology, phenology and conservation status.
- (6815) JARZEMBOWSKI, E.A., 1988. A new aeshnid dragonfly from the Lower Cretaceous of South-East England. *Palaeontology* 31(3): 763-769. — (Booth Mus. Nat. Hist., Dyke Rd, Brighton, BN1 5AA, UK).
The comparatively advanced Valdaeshna surreyensis gen. & sp.n. (Aeshnidae: Gomphaeschnidae) is described from the late Hauterivian of the Weald. The single male specimen shows body "colour" markings as well as full venational details of the fore and hindwings and is the most complete early aeshnid found to date. Fossil preservation, association, and palaeoenvironment are briefly discussed.
- (6816) JAYAKUMAR, E., 1988. *Ecophysiological and toxicological studies on a chosen aquatic insect Laccoitrephes griseus (Hemiptera)*. PhD thesis, Madurai Kamaraj Univ., Madurai. XVIII+195 pp., pls & Appendix excl. — (c/o Dr S. Mathavan, Sch. Biol. Sci., Madurai Kamaraj Univ., Madurai-625021, India).
The role of temperature in egg development, incubation duration, hatching, etc. was studied in considerable detail. Attention is also paid to the water and energy balance during the various life history stages; it is discussed in terms of the situation in other comparable aquatic organisms, incl. the tropical and temperate zone Odon.
- (6817) MARDEN, J.H., 1988. Bodybuilding dragonflies: costs and benefits of maximizing flight muscle. *Am. Zool.* 28(4): 126 A [abstract only]. — (Dept Zool., Univ. Vermont, Burlington, VT 05405, USA).
[Verbatim]: The relationship between flight muscle ratio (FMR; flight muscle mass/body mass) and aerial competitive ability was studied in *Plathemis lydia*. These dragonflies double their body mass during adult maturation. This is due primarily to growth of flight muscle in males, and growth of ovaries in females. Males attain one of the highest FMR's of any animal; up to 60% of their mass is flight muscle. During observations of relative mating success among groups of 2-5 marked males, there was a significant decline in mating success with decreasing FMR rank. This result suggests that a high FMR enhances ability to compete in aerial contests, which enables greater short-term mating success. Mature males with the highest FMR's had the least gut contents and

fat reserves; thus there is a tradeoff between flight ability and nutritional state that may affect long-term mating success.

- (6818) MICHALSKI, J., 1988. A catalogue and guide to the dragonflies of Trinidad (order Odonata). *Occ. Paps Zool. Dept Univ. W. Indies* 6: X+146 pp. — (90 Western Ave., Morristown, NJ 07960, USA). — Copies available through SIO Central Office, Bilt-hoven.
- This is the first treatment of the odon. fauna of Trinidad after that by D.C. Geijskes in 1932. It was made in collaboration with Prof. M.J. Westfall, Dr S.W. Dunkle and Dr M.L. May. The book consists of 2 parts, a catalogue, and a "guide" (i.e. morphological descriptions, ecological notes and discussions on each sp., with good keys to the adults). 109 figs on 6 pls will facilitate the identification. Particularly useful is also the classification of ssp. by the type of habitats, given in the Appendix. 15 spp. are new to the fauna of Trinidad, the status of which is now at 119 (incl. 12 spp. that will be dealt with separately and are not listed in the present monograph).
- (6819) MLODY, B., 1988. Libellen (Odonata). In: U. Schmid, [Ed.], *Vogelinsel Scharhorn*, pp. 267-269, Niederelbe Verlag Huster, Otterndorf. ISBN 3-924239-13-4. — (Author: Südbahn-hofstr. 20, D-3430 Witzenhausen, FRG).
- An analysis is given of the odon. fauna (14 spp.) of this nature reserve in the Elbe-Weser area, FRG.
- (6820) OCHARAN, F.J., 1988. Composicion de la odonatofauna iberica. *Revta Biol. Univ. Oviedo* 6: 83-93. (With Engl. s.). — (Dep'to Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
- Based on the work of D. St. Quentin (1960, *Zool. Jb. Syst.* 87: 301-316), the Iberian odon. fauna (70 spp.) is biogeographically analysed. It is characterised by a high proportion of ibero-mahgrebian elements (as defined in this paper) and of ethiopian Anisoptera.
- (6821) ROLDAN PÉREZ, G., 1988. *Guía para el estudio de los macroinvertebrados acuáticos del Departamento de Antioquia*. XII+217 pp., Univ. Antioquia, Medellín. ISBN 958-9129-04-8. — (Author: Centro de Investigaciones, Fac. Cien. Exactas & Natur., Univ. Antioquia, Apto Aereo 567771, Medellín, Colombia).
- The Odon. are dealt with on pp. 39-77, larvae only. A family key is given, and the larval morphological features of 24 Colombian genera are stated in a table. Very good figs are presented of the ultimate instars of over 30 spp., but in most cases these are identified to the genus only, and in a few taxa the identification is erroneous.
- (6822) RUDOLPH, R., 1988. *Enallagma civile* (Coenagrionidae) — Fortpflanzungsverhalten. *Publ. wiss. Filmen* (Biol.) 20(2): 1-9. With Engl. & Fr. s's). — (Biol. Didaktik, Univ. Münster, Fliednerstr. 21, D-4400 Münster, FRG).
- Explanatory text for film No. E-2999 (Inst. Wiss. Film, Göttingen; colour, no voice, 16 mm, 5.5 min). All phases of pairing, submerged oviposition by isolated females, and a female as she is lifted from the water by a male after submerging her egg deposits are shown, and, in text, the relative behaviour is described in detail.
- (6823) SAHARON, D. & M.W. LUTTGES, 1988. Visualization of unsteady separated flow produced by mechanically driven dragonfly wing kinematics model. *Pap. Am. Inst. Aeronaut. Astronaut.* 88(0569): 1-23. — (Dept Aerospace Eng. Sci., Univ. Colorado, Boulder, CO 80309-0429, USA).
- Visualizations of 3-dimensional unsteady separated flow produced by mechanically modeled dragonfly wing kinematics were obtained using wing motions that closely resemble those of live dragonflies. Tandem wing effects were gauged by individual effects of fore and aft wing tested alone. The effects of altered wing motions were studied by small changes in wing beat frequency. Full tandem wing models were used for these tests. Vortex structures produced by the mechanical model wings were quite similar to those elicited by the tethered dragonflies in wind tunnel tests. The characteristic 8 major vortex structures produced by the tandem wings during each wing beat cycle could

be traced to similar structures produced about each wing tested individually. Wing-vortex interactions were evaluated in terms of initiation, development and utilization. Changing parameter combinations altered the observed interactions between flow and wings largely due to differences in flow structure interference. Much of the interference was detrimental to maximized flow-wing interactions. And, constructive interference was limited to a narrow range of parameter combinations where the resulting flow fields were typically characterized by downwash pattern of streaklines. The delineated multi-oscillating wing beat cycle may be a comprehensive model of lift enhancement mechanisms used by many insects. The mechanism would enable many insects to use unsteady separated flows.

- (6824) SCHIESS, H., 1988. Wildtiere in der Kulturlandschaft Grindelwalds. *Schlussber. schweiz. MAB-Programm* 35: XX+156 pp. (With extensive Fr. s.). — (Neuhof, Schalken, CH-8492 Wila). — Available also from the SIO, BIlthoven.

The results of a systematic, long-term inquiry into animal relationships with the natural and man-influenced environment and the responses of the animal world to the changes in land use, as exemplified by the situation in the alpine district of Grindelwald, canton Bern, Switzerland, are described, analysed and monographically discussed. As far as insects are concerned, Odon., Orthoptera and Lepidoptera are considered "indicator organisms" and are dealt with here. The odon. fauna of Grindelwald consists of 19 spp., the distribution of 16 of which is mapped (Itramen, Wärgistal, Buessalp, Holzmatte, Bach, Grindel, Schneidegg). — Basically, this is an excellent monograph on the ecology of the European alpine environment characterised by the diversity of the increasing human impact.

- (6825) SCHNEIDER, W., 1988. Dragonflies (Odonata) of the Wahiba Sands and adjacent areas, eastern Oman. *J. Oman Stud.* (Spec. Rep.) 3: 377-388. (With Arab. s.). — (Dept Fisheries, F.A.O., Via delle Terme di Caracalla, I-00100 Roma).

17 spp. are recorded for NE Oman, 4 of which are new to the Sultanate, bringing the list to 25 spp. *Elatoneura khalidi* sp. n. (♂ holotype: Wadi Bani Khalid, N of Muqal, 13/14-IV-1987, deposited in NHMB; 2 ♂ paratypes, same data, deposited in BMNH and SMF resp.) is described and figured. It is the first protonetid recorded from the Arabian Peninsula and closes the distributional gap of the genus between the Indian subcontinent and Africa. The hitherto unknown ♀ of *Urothemis tomasi* Longf. is described. *U. signata* aethiopica Nielsen is synonymised with *U. thomasi*. It is emphasised that none of the taxa living in desert environments are true remic spp.; their success is attributed to preadaptations acquired mainly in lacustrine environments of the tropics. According to its odon. fauna, Oman (Dhofar and northern provinces) essentially belongs to the Afrotropical region, with an unexpectedly weak Oriental penetration into the NE.

- (6826) SIMS, R.W., P. FREEMAN & D.L. HAWKSWORTH, [Eds], 1988. *Key works to the fauna and flora of the British Isles and north-western Europe*. [The Systematics Association Special Volume No. 33]. Clarendon Press, Oxford. XII+312 pp. ISBN 0-19-857706-0.

The primary purpose of this standard work, of which the present is the 5th revised edition, is to provide references to publications that can be used to identify living organisms of the area covered. The Abstracter does not feel qualified to comment upon most parts of the book, but the odon. section (pp.101-102) is miserable. In addition to *Aguesse's* 1968 book, only the works listed in *OA 2062 (Hammond)*, 5041 (*d'Aguiar et al.*, but the third author is missing!), and 5062 (*Sahlén*) are given. The best work for this area still remains *Er. Schmidt's* 1929 monograph in the *Tierw. Mitteleur.*, while not even *Fraser's* 1956 (revised) work in the *Hbd. Ident. Br. Insects* (covering also the larvae) is mentioned. The bibliography, thus, does not contain a single title on larvae. — In view of the popularity of this work, new editions can be certainly expected. It would be useful if in the preparation of these, the res-

- pective specialists, also outside the BMNH, would be thoroughly consulted.
- (6827) SUI, J. & H. SUN, 1988. Redescription of the male of *Stylurus endicotti* (Needham). *Entomotaxonomia* 10(1/2): 147-149. (Chin., with Engl. s.). — (Inst. Zool., Acad. Sinica, Haitien, Peking, P.R. China).
Gomphus endicotti Needham was described and figured in the book listed in OA 5487, based on a ♂ and a ♀. Recently, the specimens were re-examined by Prof. Dr H.-f. Chao, who confirmed the identification and expressed the opinion *endicotti* should be transferred to *Stylurus*, with which it agrees in the shape of the posterior hamulus, the shape of the penis tip, the enlarged dorsal plate of abd. segm. VII-IX and in the shape of the genital plate of the ♀. The ♂, first described in OA 5487 and re-described here, is the allotype (deposited in Inst. Zool., Acad. Sinica, Peking), while the ♀ is only the second known ♀ specimen of this sp.
- (6828) SUZUKI, K., 1988. [Book review]. [Dragonfly mating systems, by K. Higashi, H. Ubukata & Y. Tsubaki]. *Kontyu* 56(2): 330. (Jap.). — (Dept Biol., Coll. Liberal Arts & Educ., Toyama Univ., 3190 Gofuku, Toyama, 930, JA). Extensive review of the work listed in OA 6129.
- (6829) *TEMAS DE CONSERVACION "EL YACARE"*, 1988. Published by Soc. Zool. Uruguay & Soc. Conserv. Medio Ambiente. Montevideo. 82 pp. Editor, Publisher's address and ISBN number not stated. — (For copies apply to: Lic. M. Suárez, Depto Ent., Fac. Hum. & Cien., Univ. de la Republica, Trstán Narvaja 1674, Montevideo, Uruguay).
 The booklet contains articles pertaining to nature conservation, as published originally (all anonymous) in the Montevideo daily, *El País*, between Jan. 17, 1984 and Oct. 2, 1985. A paper titled "Los odonatos como indicadores de la naturaleza de un medio" appears on pp. 57-58. It was originally published in the said daily on July 4, 1984.
- (6830) UBUKAŦA, H., 1988. A theme for outdoor learning in science education in order to recognize nature more deeply: A method of observing insect behaviour, with special reference to dragonflies. *Seibutsu Kyôzai* 23: 13-36. (Jap., with Engl. title). — (Dept Sci. Educ., Kushiro Coll., Hokkaido Univ. Educ., Shiroyama 1, Kushiro, 085, JA).
 This is the 3rd part in a series of educative papers on the Odon. The previous titles are listed in OA 2824, 3054.
- (6831) UTZERI, C. & L. DELL'ANNA, 1988. The onset of territoriality in *Libellula depressa* L. (Libellulidae). *Monit. zool. ital.* (N.S.) 22: 552-553. (Abstract only). — (Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).
 [Verbatim]: (i) Territories can be partially or completely overlapping. Reciprocal aggression in the same area reveals a differing ability of males to drive off contenders, which leads to a linear hierachical system (α -, β -, γ -males). (ii) Average flight duration is correlated with rank: $\alpha = 48\%$; $\beta = 37\%$; $\gamma = 26\%$. There is also a positive and significant correlation ($P < 0.01$) between the total duration of flight and the number of matings. Thus, the males are expected to score a number of matings according to their rank. (iii) After copulation, males win a higher number of contests (88%) than they do before their first copulation of the day (44%) ($P < 0.005$). Males that mate 2-5 times in 1 day do not win more often before their first mating, compared to males which mate only once. This shows that strong aggression is not a prerequisite for successful mating. (iv) After copulation, male flight averages 60% of the total time, which is significantly more than before copulation (36%). Before the first mating, males which mate 2.5 times average 43% flight time and those which mate once, 23%. — The following traits of *C. erythraea* territorial behaviour are concluded from the above: a male's mating success depends on its ability to keep flying, initially independently from his aggressiveness. The more a male copulates, the longer he fights with other males successfully; thus copulation either makes a male rise in rank or reinforces his high rank, thereby giving him the ability to guard his females for a longer time and to increase his chances to copulate again. This maximizes the

male's effort to gain mates in the period of the day when he spends the longest time flying.

- (6832) UTZERI, G. & G. GIANANDREA, 1988. Aspects of territoriality in *Crocthemis erythraea* (Brullé) (Libellulidae). *Monit. zool. ital.* (N.S.) 22: 553-554. (Abstract only). — (Depto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).

[Verbatim]: It is commonly maintained that after maturation the libellulid male chooses part of the water surface which contains adequate sites for oviposition, and defends that "territory" from other males. Nevertheless, the clues used by the male to make his choice are unknown, but an innate response to the optimal habitat is sometimes suggested. Data are presented here to show how the male of *L. depressa* becomes territorial upon maturation. — When the male first comes to water he does not show localization, and he wanders over the pond changing his perch sites frequently. Localization immediately follows post-copulatory guarding of his first oviposition female, after which the male starts defending that particular place where his female has laid eggs. Evidence for this process is based on: (i) a significant decrease in the range of the male's flights, (ii) a significant decrease in the reciprocal distances of the male's perches and (iii) a significant decrease in the distance between the perches utilized by the male and the place where eggs were laid, after the first mating ($P < 0.005$, $P < 0.001$ and $P < 0.001$ respectively). — Males could not be displaced from their territories (94% competitive interactions won by the territory holder, 6% leading to temporary displacement of the owner), except when the intruders had guarded females with which they had mated in those places, while the territory holder was absent. — It is concluded that upon maturation, the male at first adopts a searching strategy for females, then he turns to a sit-and wait strategy (i.e. territoriality) after defending the first females he has mated with in a particular part of the pond.

- (6833) WHITTEN, A.J., M. MUSTAFA & G.S. HENDERSON, 1988. *The ecology of Sula-*

wesi. XXII+780 pp., Gadjah Mada Univ. Press, Yogyakarta. ISBN 979-420-048-4. — (Publishers: P.O. Box 14, Bulaksumur, Yogyakarta, Indonesia).

This monograph on the ecology of the island of Celebes (= "Sulawesi") was produced within the Environmental Management Development in Indonesia (EMDI) Project. It contains very few secondary references to Odon.

- (6834) WIPRÄCHTIGER, P., 1988. Die Libellenfauna im Naturlehrgebiet Ettiswil, Kanton Luzern (Odonata). *Ent. Ber. Luzern* 20: 125-129. — (Schützenweg, CH-6247 Schötz).

22 (?) spp. are listed from an old gravel pit area in central Switzerland. The paper is based entirely on sight records of adults and on anisopteran exuviae. The author was unable to discern in the field between *Ceriagrion tenellum* and *Pyrrhosoma nymphula*, in most cases also between *Erythromma najas* and *E. viridulum*. Consequently, the "sight recording" and the "capture-identify-release" methods, as widely practised in Switzerland (cf. *OA* 6755), have again proved inadequate and contraproductive.

- (6835) WISSINGER, S.A., 1988. Life history and size structure of larval dragonfly populations. *Jl N. Am. benthol. Soc.* 7(1): 13-28. — (Dept Biol. Sci., Purdue Univ., West Lafayette, IN 47907, USA).

Comparative data on emergence, adult activity, and larval development were used to interpret patterns of phenology, voltinism, and developmental synchrony in a 14-spp. assemblage of Anisoptera. Interspecific differences in these characteristics provided an opportunity to interrelate life history, population size structure, and the potential for intra- and interspecific interactions. — Larval populations of most spp. comprised an extraordinary size range of individuals at any one time. In many species this intraspecific size variability was primarily due to developmental asynchrony within generations (e.g., *Libellula lydia*, *Celithemis elisa*, *Perithemis tenera*). Oviposition in these species occurred throughout most of the summer so that the timing of instar development varied considerably among broods. By fall, the largest

- larvae in these populations were 5 to 10 times the size of smaller conspecifics. In other asynchronous breeders, an even wider size range of co-occurring conspecifics resulted from overlap between generations. In *Erythemis simplicicollis* and *Pachydiplax longipennis* this generation overlap was due to the presence of mixed uni- and bivoltine cohorts, whereas in *Tramea lacerata* and *Anax junius* it was due to phenologically separate but overlapping migratory and resident cohorts. In the semivoltine *Epitheca princeps*, size variability among conspecifics was due mainly to overlap between year classes. Most larvae were similar in size at the same point in time in those spp. that bred synchronously and were univoltine (*Epitheca cynosura*, *Leucorrhinia intacta*). — Size ratios of the smallest to largest co-occurring conspecifics in these populations were frequently larger than those commonly thought to facilitate interspecific coexistence. Thus, intraspecific resource partitioning should play an important role in population regulation, as should cannibalism. This intraspecific size variability should also create the potential for mixed competition-predation interactions between the same species. A phenological tradeoff between competition and predation should minimize the efficacy of seasonal segregation as a mechanism for minimizing the intensity of interspecific interaction in this assemblage.
- (6836) ZHOU, W., 1988. Four new records of Odonata from China. *Entomotaxonomia* 10(3/4): 274. — (Chin., with Engl. title). — (Dept Ent., Zhejiang Mus. Nat. Hist., Gu-shan, Hang Zhou, P.R. China).
Records of *Helyocypha biforata delimbata*, *H. perforata limbata*, *Bayadera indica* and *Dysphaea gloriosa*.
- (6837) ZHOU, W., 1988. [A study of Chinese *Anotogaster* Selys, 1854 and *Neallogaster* Cowley, 1934 (Odonata: Cordulegasteridae)]. *J. Hang-zhong Teachers' Coll.* 1988(2): 60-62. (Chin.). — (Dept Ent., Zhejiang Mus. Nat. Hist., Gu-shan, Hang Zhou, P.R. China).
Synonymic and descriptive notes on 5 spp., with description and figs of *Anotogaster sakaii* sp. n. (holotype ♂, allotype ♀: Zhejiang, Huang-yang Mt., alt. 1500 m, 10-VIII-1982). The new sp. is similar to *A. gigantica* Fraser, from which it differs by having a black labrum with 2 transversal oval green-yellow spots, 5-celled anal loop, segment 9 black, and by the shape of anal appendices.
- (6838) ZHOU, W., 1988. Three new records of Libellulidae from China. *Entomotaxonomia* 10(3/4): 190. (Chin., with Engl. title). — (Dept Ent., Zhejiang Mus. Nat. Hist., Gu-shan, Hang Zhou, P.R. China).
Records of *Tetrathemis platyptera*, *Brachydiplax farinosa* and *Zygonyx iris mildredae*.
- 1989**
- (6839) (Anonymous), 1989. Invasion in Turin. Libellen verbreiten Angst und Schrecken. *Badische neuste Nachrichten*, Karlsruhe No. 171, p. 7; issue of July 28.
A daily's note on an enormous dragonfly migration that took place in the North Italian city of Torino on the evening (20.50 h) of July 26, 1989, and caused panic among the population. The name/s of the species involved is/are not stated.
- (6840) (Anonymous), 1989. Vuoden 1988 tulokset 21 suomalaisen hyönteislajin levinneisyyskartoituksesta. — Resultat av kartering av 21 insektarters utbredning i Finland år 1988. — Results of the mapping in 1988 of the distribution of 21 insect species in Finland. *Notul. entomol.* 69: 17-32. (Finn. & Swed., with Engl. s.). — (Reprints available from: Div. Ent., Mus. Zool., Univ. Helsinki, P. Rautatietäkatu 13, SF-00100 Helsinki).
Continuation of the series listed in OA 6456.
- (6841) *ABSTRACTS OF PAPERS [read at] the Tenth International Symposium of Odonatology*, Johnson City, TN, 1989. Edited by D.M. Johnson. Issued by the Societas Internationalis Odonatologica (S.I.O.), Johnson City, TN, USA, IV+40 pp. — Price: Hfl. 45.- (incl. the "Program & Generalities" and the Field Trip Handbook; cf. OA 6866, 6889). — (c/o SIO Central Office, P.O. Box 256, NL-3720 AG

Bilthoven).

Ziauddin, A.A.K. & R.G. Michael: Colonization of artificial substrates by odonate larvae in fishponds (p. 1); — *Anhold, B.*: Larval survival as a function of oviposition timing: better never late? (p. 1); — *Arrington, M.A.*: Anti-predator strategies of two *Enallagma* species (p. 2); — *Baird, J.M. & M.L. May*: Behavioral ecology of foraging by the Blue Dasher, *Pachydiplax longipennis* (p. 2); — *Baker, R.L.*: Condition of larval damselflies: a field study of food limitation (p. 3); — *Bauerfeind, R. & H. Komnick*: Biochemical and morphological characterization of lipophorin of *Aeshna cyanea* larvae (p. 3); — *Carle, F.L.*: The prioritization of species conservation needs, with preliminary global ranking for North American Odonata (p. 4); — *Carpenter, V.A.*: The status of *Enallagma recurvatum* and *Enallagma laterale* in Massachusetts and Rhode Island (p. 4); — *Cashatt, E.D.*: Discovery of the Ohio Emerald (*Somatochlora hineana* Williams) in Illinois (p. 5); — *Chao, H.-f.*: Recent advances on the study of Chinese dragonflies of the family Gomphidae (p. 5); — *Cook, C.*: The status of a little known dragonfly, *Macromia wabashensis* Williamson (Anisoptera: Corduliidae) (p. 6); — *Cook, W.J. & B.P. Smith*: Interaction of parasitic larval mites (Acari: Hydrachnidia; Limnochares americana) with a dragonfly community (p. 6); — *Cordero-Rivera, A.*: The inheritance of female polymorphism in the damselfly *Ischnura graellsii* (Rambur) (Odonata: Coenagrionidae) (p. 7); — *Crowley, P.H., W.S.C. Gurney & R.M. Nisbet*: Modeling seasonal population dynamics of damselflies (p. 7); — *Donnelly, T.W.*: Studies of the Fijian Zygoptera of the *Nesobasis* group (p. 8); — *Esquivel, C.*: Odonata diversity and seasonality in a neotropical wet forest site (Costa Rica) (p. 9); — A new species of *Psaironeura* (Odonata: Protoneuridae) from Costa Rica (p. 9); — *Farber, V. & H. Komnick*: Peroxisomes and their putative role in the midgut epithelium of larval *Aeshna cyanea* (p. 10); — *Fincke, O.M.*: Cannibalism and the lack of territoriality in the larvae of a treehole-dwelling damselfly (p. 10); — Measuring lifetime reproductive success in the Odonata (p. 11); — *Flint, O.S.*: The Odonata collection of

the National Museum of Natural History, Washington, USA (p. 12); — *Forbes, M.R.L. & R.L. Baker*: Do ectoparasitic mites influence mating success of male *Enallagma ebrium*? (p. 12); — *Garrison, R.W.*: A new computer key MALEHET, using MEKA (Multiple Entry Key Algorithm): a new means for identifying Hetaerina damselflies (p. 13); — Species resolution among Hetaerina females: use of a new morphological character and its interspecific variation among sympatric groups (Odonata: Calopterygidae) (p. 13); — Using ordination methods with geographic information: species discrimination in a partially sympatric complex of neotropical *Tramea* dragonflies (Odonata: Libellulidae) (p. 14); — *Gonzalez-Soriano, E.*: The Odonata of the Los Tuxtlas Tropical Biological Station, Veracruz, Mexico (p. 14); — *Grunert, H.*: Oviposition behaviour, substrate selection and utilization of the damselfly *Erythromma najas* (Hansemann, 1823) (p. 15); — *Hadrys, H.*: Aggressive tandem splittings by males in *Anax junius* (p. 16); — *Hilton, D.F.J.*: The Odonata of Prince Edward Island (p. 16); — *House, N.*: The ecology of *Leucorrhinia hudsonica* (Libellulidae) in Newfoundland bog pools (p. 17); — *Inoue, K.*: Conservation of dragonflies in Japan (p. 18); — Larval taxonomy of the Japanese *Mnais* damselflies (p. 18); — *Johnson, D.M.*: Direct and indirect effects of predation by dragonfly larvae and small sunfish (p. 19); — *Klarberg, D.P.*: Dragonfly conservation efforts in Central Park, New York City (p. 20); — *Komnick, H.*: Utilization of dietary fatty acids of larval *Aeshna cyanea* (p. 20); — *Kukel, S. & H. Komnick*: Lipid storage in the Malpighian tubules of *Aeshna cyanea* larvae (p. 21); — *Mahato, M.*: *Dromogomphus spinosus* invasion of the Bays Mountain Lake dragonfly assemblage (p. 21); — *Marden, J.H.*: Body-building dragonflies: costs and benefits of maximizing flight muscle (p. 22); — *Martin, T.H. & D.M. Johnson*: Fish-mediated alternate life history strategies in *Tetroneuria cynosura* (Say) (p. 22); — *Mathavan, S.*: Effect of temperature on the bioenergetics of the dragonfly nymphs *Brachythemis contaminata* and *Orthetrum sabina* (p. 23); — *May, M.L.*: Thermal adaptations of dragonflies, revisited

- (p. 23); — *Michiels, N.K.*: Dispersal of mature adults of *Sympetrum danae* Sulzer (Libellulidae) (24); — *Miller, P.*: The occurrence of courtship in some libellulids (p. 25); — *Moore, N.W.*: Recent developments in the conservation of Odonata of Great Britain (p. 25); — *Moorman, M.L., J.V. Robinson & D.D. Hagemer*: Experiments with gill injury and autotomization in larval *Enallagma civile* (p. 26); — *Morin, P.J.*: Interspecific interactions and the ecology of larval odonates (p. 27); — *Novelo-Gutierrez, R.*: Advances into the knowledge of the juvenile stages of the genus *Argia* (Zygoptera: Coenagrionidae) in Mexico (p. 27); — *Oppenheimer, S.D.*: Functions of courtship in *Calopteryx maculata* (p. 28); — *Pfau, H.K.*: Contributions of functional morphology to the phylogenetic systematics of Odonata (p. 29); — *Rehfeldt, G.*: Oviposition site selection in *Pyrrhosoma nymphula* (p. 29); — *Robertson, H.M.*: The andromorph females of North American *Ischnura* (p. 30); — *Robinson, J.V., L.R. Shaffer, D.D. Hagemer & N.J. Smatresk*: The role of gill autotomy in intraspecific interactions among *Ischnura posita* (p. 30); — *Rüppell, G.*: Asymmetric flight manoeuvres of odonates (p. 31); — *Samways, M.J.*: Odonata taxon turnover across a 3000 m altitudinal gradient in southern Africa (p. 31); — *Shaffer, L.R. & J.V. Robinson*: Ontogenetic patterns of agonistic intraspecific behavior in *Ischnura posita* larvae (p. 32); — *Sherk, T.*: The relationship between the arrangement of ommatidia in the compound eyes of adult dragonflies and visual behavior (p. 33); — *Siva-Jothy, M.T.*: Spermatozoan structure and function (p. 33); — *Srivastava, V.K.*: Studies on the sperm material in the primary genitalia of male *Ischnura rufostigma* Selys (Zygoptera: Coenagrionidae) (p. 34); — *Susanke, G.R. & G.L. Harp*: Selected biological aspects of *Gomphurus ozarkensis* Westfall (Odonata: Gomphidae) (p. 34); — *Tembhare, D.B. & R.J. Andrew*: Hormonal regulation of intermediary metabolism during metamorphosis of the last-instar larva of *Tramea virginia* (Rambur) (Anisoptera: Libellulidae) (p. 35); — *Tennessee, K.J.*: T.V.A. and the Tennessee River Multipurpose System (p. 35); — *Epithea, Tetragoneuria, and Epicordulia* revisited: a generic study (p. 36); — *Thompson, D.J.*: The effects of weather on lifetime egg production in *Coenagrion puella* (p. 36); — *Utzeri, C.*: Does marking affect longevity in dragonflies? (p. 37); — *Van Tol, J.*: Distribution patterns of Odonata endemic to Sulawesi (p. 38); — *Waage, J. & J. Marden*: The energetics of damselfly territorial disputes (p. 38); — *Wasscher, M.T.*: The importance of mesotrophic waters for some rare odonate species in the Netherlands (p. 39); — *Westfall, M.J.*: The true *Micrathyria eximia* Kirby and related new species (p. 39); — *Whitt, L.S.*: Effect of predaceous dragonfly larvae on hatchling Fathead Minnows (p. 40); — *Wootton, R.*: The functional morphology of the wings of Odonata (p. 40); — *Zloty, J. & G. Pritchard*: Electrophoretic analysis of coenagrionid populations (p. 40). — For the reference to the other Symposium publications cf. OA 6866, 6889.
- (6842) AIDA, M., 1989. Notes on *Stylurus nagoyanus* Asahina from the Noubi Plains, central Japan. *Gekkan Mushi* 221: 9-13. (Jap. with Engl. title). — (Sakae 1-7-15, Ichinomiya-shi, Aichi 491, JA).
[Abstract not available].
- (6843) ARAI, Y., 1989. Description of the larval stage of *Planaeschna milnei* (Selys). *Gekkan Mushi* 220: 24-25. (Jap., with Engl. title). — (Sueno 1233-2, Yorii-machi, Ohsato-gun, Saitama, 369-12, JA).
Detailed description and figs of various instars.
- (6844) ARAI, Y., 1989. [The first and last seasonal records of *Pantala flavescens* in Chichibu-shi, Saitama]. *Gekkan Mushi* 217: 38. (Jap.). — (1233-2, Oaza Suezoo, Yorii-machi, Osato-gun, Saitama Pref., 369-12, JA).
Records from Chichibu (alt. 218 m), Japan, with statements on air temperature on/nr the day of the last record. The extremes are July 7 (1986) and Nov. 12 (1986; temp. 2.0° C).
- (6845) ASAHINA, S., 1989. The Odonata of Korean peninsula, a summarized review. Part I. Introductory notes and the suborder Zygoptera

Gekkan Mushi 220: 8-15. (Jap., with Engl. title). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA).

Treatment of 27 spp., referable to the Coenagrionidae, Platynemididae, Lestidae and Calopterygidae.

- (6846) ASAHINA, S., 1989. [Odonatological works published in 1988. (International publications)]. *Gekkan Mushi* 216: 15-17. (Jap.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA).

The paper deals exclusively with the main achievements in the field of odon. conservation. It is mainly based on the works published in the *Rep. Odon. Specialist Group Int. Un. Conserv. Nat.* (OA 3662, 3682, 3987, 4290, 4391, 5306) and on those listed in OA 4224, 5736, 6181, 6598 and 6685.

- (6847) ASKEW, R.R., G.G. CLELAND, D.A.L. DAVIES & T.W. HARMAN, 1989. A report on a collection of Odonata from North Sulawesi, Indonesia. *Tijdschr. Ent.* 132: 115-121. — (First Author: Dept Environ. Biol., Univ. Manchester, Manchester, M13 9PL, UK; — Third Author: 23 Cedar Court, Hills Rd, Cambridge, CB2 2QJ, UK).

46 spp. are listed from northern Celebes, among which 8 (in Ceriagrion, Nososticta, Selysionera, Diplacina, Neurothemis and Tramea) are indicated referable to undescribed taxa.

- (6848) Associated Press, 1989. Symposium investigates the dragonfly. *Johnson City Press* 70(2): 14 (issue of Aug. 10).

Local daily's interview with Professor P.S. Corbet on the occasion of the Tenth Int. Symp. Odonatol.

- (6849) BEUTLER, H., 1989. Terrestrische Überwinterung der Larven von *Platetrum depressum* (Linnaeus, 1758) (Odonata, Libellulidae). *Ent. Nachr. Ber.* 33(1): 37-40. (With Engl. & Russ. s's). — (Frankfurter Str. 23, Postfach 63-13, DDR-1230 Beeskow, GDR).

Evidence is provided on larval hibernation of *P. depressum* in the dried up floor of a sandpit nr Beeskow, GDR. The field observations are

recorded in detail, and the phenomenon is discussed in terms of adaptive strategies of this sp., inhabiting small astatic pools. — (For terrestrial hibernation of *Lyriothemis pachygastra* in dried up rice fields, cf. OA 4091).

- (6850) BRAUCKMANN, C. & W. ZESSIN, 1989. Neue Meganeuridae aus dem Namurium van Hagen-Vorhalle (BRD) und die Phylogenie der Meganisoptera (Insecta, Odonata). *Dr. ent. Z.* (N.F.) 36(1/3): 177-215, pls 3-8 excl. (With Engl. s.). — (First Author: Fuhlrott-Mus., Auer Schulstr. 20, D-5600 Wuppertal-1, FRG).

Namurotypus sippeli gen. n., sp. n. is described and figured. The hitherto known members of the "Eugeropteridae", "Erasipteridae", Paralogidae, Meganeuridae and Triadotypidae are reviewed. The phylogenetic conclusions are summarised in a hypothetical dendogram. Most probably the Paralogidae+Meganeuridae+Triadotypidae (= Meganisoptera sens. nov.) represent a monophyletic unit, whereas the "Eugeropteridae" and "Erasipteridae" are paraphyletic. It is speculated that the Meganisoptera and the extant Odon. originated from the "Erasipteridae". New genera erected are: *Solutotherates* gen. n. (for *Palaeotherates analis* Charp.; incertae fam.), *Erasipteroides* gen. n. (for *Erasipterella valentini* Brauckmann) and *Whalleyala* gen. n. (for *Erasipteron bolsoveri* Whalley), both in the "Erasipteridae".

- (6851) BUCHWALD, R., 1989. Die Bedeutung der Vegetation für die Habitatbindung einiger Libellenarten der Quellmoore und Fließgewässer. *Phytocoenologia* 17(3): 307-448. (With Engl. s.). — (Biol. Inst. II-Geobotanik, Univ. Freiburg, Schänzlerstr. 1, D-7800 Freiburg/Br., FRG).

A very thorough monographic treatise on the role of habitat structure, water chemistry and vegetation in habitat selection of *Coenagrion mercuriale*, *C. ornatum*, *Ceriagrion tenellum*, *Orthertrum brunneum* and *O. coerulescens*, mainly in SW Germany.

- (6852) CELLI, G., 1989. Kamasutra, sesso da libellule. *Espresso* 35(28): 200. — (Author's address not stated).

A note on the dragonfly copulatory position, in a renowned Italian weekly.

- (6853) CONRAD, K.F. & G. PRITCHARD, 1989. Female dimorphism and physiological colour change in the damselfly *Argia vivida* Hagen (Odonata: Coenagrionidae). *Can. J. Zool.* 67: 298-304. (With Fr. s.). — (First Author: Biol. Dept., Queen's Univ., Kingston, Ont. K7L 3N6, CA).

Female *A. vivida* appear as 2 distinct colour morphs in each of 2 populations studied in British Columbia, Canada. Males and both female morphs also experience a temperature-related physiological colour change. Individuals are "dark phase" at ambient shade temperatures below approximately 20° C and change to "bright phase" at temperatures above 20-24° C, particularly when basking. Individuals of either colour phase will attempt to mate. Bright phase males reflect not only visible light but also ultraviolet light. Observations of marked individuals and experiments in which males were offered live females (singly or as a pair containing each morph) pinned to long grass stems indicated that males do not show a preference for either female colour morph. The 2 female morphs do not differ in size, nor do males that mate with each morph. A male removal experiment revealed no change in the relative number of females of each morph that mated each day, suggesting that the morphs do not differ in their ability to attract males or to avoid excessive mating. Several social, ecological, and genetic explanations for sustaining the female dimorphism in the populations are discussed.

- (6854) CONTACTBLAD NEDERLANDSE LIBELLENONDERZOEKERS — [Newsletter of the Netherlands Dragonfly Workers, No. 17 (June, 1989). (Dutch). — (c/o Miss K. Verspui, Westerkade 27 bis, NL-3511 HC Utrecht).

In addition to the traditional sections, the issue contains one larger paper, viz. *Wasscher, M.*: Occurrence of dragonfly species in the hydrobiological districts of the Netherlands (p. 9-14).

- (6855) CORDERO, A., 1989. Estructura de tres comunidades de Calopteryx (Odonata: Calopterygidae) con diferente composición específica. *Limnética* 5: 83-91. (With Engl. s.). — (Area Ecol., Fac. Biol., Santiago de Compostela, ES-15071 Santiago de Compostela.

3 communities were studied (1985-1987) in Galicia (NW Spain) by mark-recapture techniques. A total of 1275 adult-C. haemorrhoidalis, virgo and xanthostoma were marked. The proportion of recaptures was 34% (1985) and 48% (1986) in haemorrhoidalis, 54% (1986) in virgo and 38% (1987) in xanthostoma. In the study area the 3 spp. are dominant in different environments: haemorrhoidalis in coastal streams, xanthostoma in slow and sunny waters and virgo in rapid waters far from the coast. The study was focused on mobility of adults along the stream and the estimation of population parameters. The results indicate a mean displacement among recaptures of 15-20 m for all spp., and a significantly higher tendency to fly upstream in immature than in mature males of haemorrhoidalis. During the maturation period (9 days), haemorrhoidalis remains in the stream while virgo and xanthostoma disperse. Mature males concentrate in the water, with a density of 0.4-0.6 males/m of stream in the middle of July, when the maximum population numbers occur. The maximum longevity observed was 43 days for haemorrhoidalis and 36 days for virgo, with a daily survival rate of about 0.9, and a mean life span of 10-16 days. Approximately equal numbers of males and females were marked, but the sex ratio became male biased because females fly away from the stream, and return only for mating and oviposition.

- (6856) D'ANTONIO, C., 1989. Contributo alla conoscenza degli odonati. XXII. Gli odonati della collezione A. Costa. *Boll. Soc. ent. ital.* 121(1): 5-9. (With Engl. s.). — (Dipto Zool., Univ. Napoli, Via Mezzocannone 8, I-80134 Napoli).

A list is given of the 48 odon. spp. in the Costa coll., Dept Zool., Univ. Napoli. Most of the material is from southern Italy, with very general locality data and no capture dates. Calopte-

- ryx virgo padana is for the first time recorded from Campania. Some specimens are from France, Germany, Hungary and Wallis (Switzerland), without any locality data.
- (6857) D'ANTONIO, C., 1989. Segnalazioni faunistiche italiane: (127) *Coenagrion scitulum*, — (128) *Aeshna mixta*, — (129) *Aeshna affinis*, — (130) *Cordulegaster bidentatus*, — (131) *Libellula fulva*. *Boll. Soc. ent. ital.* 121(1): 72-73. — (Dipto Zool., Univ. Napoli, Via Mezzocannone 8, I-80134 Napoli).
New records are listed and briefly discussed.
- (6858) DE KNIJF, G., 1989. De libellen van Harchies. — [The Harchies dragonflies]. *Euglena* 1989 (2): 14-15. — (Dutch). — (Dennenlaan 13, B-9559 Herzele).
List of 18 spp.; *Crocothemis erythraea* is of particular interest for this locality in Walonia, Belgium.
- (6859) DE MARMELS, J., 1989. Resultado de la Expedición de FUDECI (Caracas) a la Sierra de Tapirapeco y zonas adyacentes (T.F. Amazonas) Odonata (libelulas). *Programa & Resum. Congr. venez. Ent., Maracaibo*, p. 48. — (Depto & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
During Feb. 14 - March 6, 1989, 80 spp. were collected, among which 5 spp. are undescribed and 4 spp. are new to the fauna of Venezuela. The taxa are not listed.
- (6860) DISTER, E., P. OBRDLIK, Eck. SCHNEIDER, Er. SCHNEIDER & E. WENGER, 1989. Zur Ökologie und Gefährdung der Loire-Auen. *Natur & Landschaft* 64(3): 95-99. — (WWF-Auen-Inst., Josefstr. 1, D-7550 Rastatt, FRG).
Includes data on the relative abundance of Zygoptera and Anisoptera (no spp. names) in various types of the Loire and Allier backwaters, in the Bec d'Allier area, France.
- (6861) DONATH, H., 1989. Wissenwertes für Insektenfreunde: Libellen. *Urania* 1989(1): 60-63. — (Hauptstr. 36/37, DDR-7960 Lückau, GDR).
General information on dragonflies, with emphasis on their conservation, directed at the general reader.
- (6862) DUDGEON, D., 1989. Phoretic Diptera (Nematocera) on *Zygonyx iris* (Odonata: Anisoptera) from a Hong Kong river incidence, composition and attachment sites. *Arch. Hydrobiol.* 115(3): 433-439. — (Dept Zool., Hui Oi Chow Sci. Bldg. Univ. Hong Kong, Hong Kong).
7 genera of Chironomidae and 1 genus each of Simuliidae and Ceratopogonidae were phoretic on *Z. i. insignis* in the Lam Tsuen R., Hong Kong. On average, there were 3.5 individuals per host, and 97% of final instar odon. larvae bore such commensals. The main attachment sites of the most numerous dipterans were the host legs (*Rheotanytarsus*), thoracic nota (*Eukiefferiella*) and under the wing sheaths (*Cricotopus*). The availability of epizotic algae and detrital food on the *Zygonyx* larvae may have enhanced the chance of dipteran survival arising from the provision of a secure attachment site (with constant orientation towards the current) on the odon. host.
- (6863) DUDGEON, D., 1989. Resource partitioning among Odonata (Insecta: Anisoptera and Zygoptera) larvae in a Hong Kong forest stream. *J. Zool., Lond.* 217: 381-402. — (Dept Zool., Hui Oi Sci. Bldg, Univ. Hong Kong, Hong Kong).
Larvae of 4 odon. spp. were common in Tai Po Kau Forest Stream: *Euphaea decorata*, *Zygonyx iris*, *Heliogomphus scorpion* and *Onychogomphus sinicus*. All co-occurred within a single riffle reach and had similar life cycles. Consequently, available dimensions for niche partitioning were likely to have been microhabitat and diet. — Across-stream gradients in population density, and the results of multivariate regression analyses of abundance against microhabitat parameters, were similar for all species except *Z. iris*. This species avoided microsites near the stream banks, and had no significant best-fit regression model predicting abundance. Nevertheless, microhabitat overlaps among all four species were high ($O_{xy} > 0.81$). The scale of this investigation (sampling units = 1000 cm²) may have obscured parti-

- oning of space within microsites, because burrowing *O. sinicus* were unlikely to have occupied the same sediment patches as epibenthic *H. scorpio* or *Z. iris*. — Dietary overlaps between *Z. iris* and the other species were low. *H. scorpio* and *O. sinicus* had the most similar diets of any species-pair, but among these two species intraspecific overlaps between large and small individuals were generally less than interspecific comparisons between equivalent-sized larvae. Ontogenetic dietary shifts and asynchronous larval development in both of these gomphids may have contributed to intraspecific partitioning of food. — *E. decorata* had the broadest niche axes along food and microhabitat dimensions, whereas *Z. iris* was relatively specialized. *H. scorpio* and *O. sinicus* made similar use of resources. In the absence of evidence that resources were limiting or depletable, competition could not be invoked as an explanation for niche partitioning. Instead, determination of morphology by phylogeny, and resultant influences on microhabitat selection and foraging behaviour, probably determined patterns of resource use resulting in closely related species showing the greatest niche overlap.
- (6864) DUNN, R., 1989. Annual dragonfly report — 1988. *Quart. J. Derbyshire ent. Soc.* 1989 (Spring): 7-9. — (4 Peakland View, Darley Dale, Matlock, Derbyshire, DE4 2GF, UK). Annotated list of 20 spp. — For the earlier reports cf. *OA* 4670, 5044, 5387, 5921, 6375, for a booklet on the Derbyshire dragonflies cf. *OA* 4935.
- (6865) EISLÖFFELS, F., 1989. Verbreitung und Vorkommen der Libellen (Insecta: Odonata) im Regierungsbezirk Koblenz. *Fauna Flora Rheinland-Pfalz* 5(2): 305-561. (With Engl. s.). — (Ellerbachstr. 3, D-6551 Rüdeshcim, FRG). This is a very thorough monograph on the odon. fauna (43 spp.) of the district of Koblenz, Rhineland-Palatinate, FRG (surface 9000 km²), based on evidence gathered during 1977-1987. 1223 localities are listed along with the fauna affiliated to each of them: Each sp. is mapped and discussed in terms of local distribution, abundance, ecology and the degree of threat.
- (6866) *FIELD TRIP HANDBOOK of the Tenth International Symposium of Odonatology*, Johnson City, TN. Compiled by K.J. Tennessen. Issued by the Societas Internationalis Odonatologica (S.I.O.). 1+11 pp. + 20 pp. inlay. — (c/o SIO Central Office, P.O. Box 256, NL-3720 AG Bilthoven).
Tennessen, K.J. & T.W. Donnelly: Geography of the southern Appalachian Mountains (pp. 1-2, map incl.); — *Johnson, D.M.*: Mid-Symposium Collecting Trip (pp. 3-4, map incl.); — *Tennessen, K.J.*: Post-Symposium Tour (pp. 5-7, map incl.); — Checklist Odonata of the southern Appalachians possibly seen in August (p. 11). — Inlay (supplied to the participants only): *Johnson, D.M. & C.C. Coney*: The Odonata of Bays Mountain Park, Sullivan-County, Tennessee (4 pp.); — *Johnson, D.M. & P.H. Crowley*: A ten year study of the odonate assemblage of Bays Mountain Lake, Tennessee (16 pp.).
- (6867) *FRASERIA*. Newsletter of the S.I.O. Regional Office in Southern Asia, No. 16 (June 1, 1989). — (c/o Dr B.K. Tyagi, G-122, Shastri Nagar, Jodhpur-342003, India).
Tyagi, B.K.: Status of SIO membership in South Asian countries — a request (pp. 67-68); — *Tyagi, B.K. & A. Tyagi*: The story of Calicnemia species from the Dehradun Valley (pp. 68-69); — *Thomas, M. & M. Gladstone*: Biological notes on *Diplacodes trivialis* (p. 69); — *Kumar, A. & B. Kumar Negi*: The emergence and sex ratio of *Bradinopyga geminata* (Rambur) and *Crocothemis servilia* (Drury) at Dehra Dun, India (Anisoptera: Libellulidae) (pp. 70-71); — *Tyagi, B.K.*: Indian Odonatology, second volume (December 1, 1989) in press (p. 70); — Editorial Notes (p. 70).
- (6868) FRICKHINGER, K.A., 1989. Libellen am Gartenteich. *Aquarium Digest int.* 93: 25-28. — (c/o Tetra-Verlag, D-4520 Melle-1, FRG). An incidental "editorial" on dragonflies, frequenting garden ponds in Germany, published in a bimonthly for aquaristics.
- (6869) *GOMPHUS*. Mededelingsblad van de belgische libellenonderzoekers — Bulletin de liaison des odonatologues belges, Vol. 5, No. 2 (June,

- 1989). (Dutch & Fr.). — (c/o A. Anselin & P. Goffart, Inst. Roy. Sci. Nat. Belg., 29 rue Vautier, B-1040 Bruxelles).
- With the present issue the editorship was taken over by Miss A. Anselin and Dr P. Goffart, the typographical appearance improved, and all the papers appear in 2 language versions (1 of which sometimes abridged). — Contents (French titles only): *Anselin, A. & P. Goffart*: Editorial (p. 2-3); — *Compte-rendu des observations réalisées durant les saisons 1987 et 1988* (pp. 4-9); *Goffart, P.*: *Compte-rendu de l'excursion en Campine limbourgeoise le 2 juillet 1988* (pp. 10-11); — *Goffart, P., A. Anselin & R.-M. Lafontaine*: *La surveillance de l'environnement wallon* (pp. 13-32); — *Anselin, A.*: *Publications odonatologiques récentes* (pp. 33-34; review of the paper listed in *OA 6490*); — [Anonymous]: *Programme des visites guidées* (pp. 35-36).
- (6870) HÄMÄLÄINEN, M., 1989. *Neurobasis anumariae* spec. nov., a new damselfly from the Philippines (Odonata: Calopterygidae). *Opusc. zool. flumin.* 42: 1-5. — (Tullilaboratorio, Tekniikantie 13, SF-02150 Espoo, Finland). *N. anumariae* sp. n. (holotype ♂: Mindanao: Bukidnon prov., MT Imbayao alt. 700 m; 31-VII-1988; to be deposited at Senckenberg, Frankfurt/Main) is described, figured and compared with *N. luzoniensis* Sel. from Luzon.
- (6871) HÄMÄLÄINEN, M., 1989. Revision of the Philippine genus *Cyrano* Needham & Gyger (Odonata, Chlorocyphidae). *Annls ent. fenn.* 55: 121-127. — (Tullilaboratorio, Tekniikantie 13, SF-02150 Espoo, Finland).
A review is presented of the 2 taxa placed in the genus *Cyrano*, *Rhinocypha unicolor* Hagen in Selys, 1869 and *Libellago asiatica* Selys, 1879. *L. asiatica* is shown to be a composite sp., the male being conspecific with *C. unicolor*, but not the female. A male specimen is selected as lectotype in order to stabilize the already established view of the synonymy of these 2 spp. *C. angustior* sp. n. (holotype ♂: Mindanao, Misamis Or., Minalwang, 1-IV-1961; deposited in RMNH, Leiden) is described and figured on new material of both sexes and it is compared with *C. unicolor*. A key to the 2 known *Cyrano* spp. is included.
- (6872) HÄYRINEN, L., 1989. Aiti Venäjän mennyt loisto. — [The bygone glory of the Mother Russia]. *Suomen Kuvalehti* 1989(12): 52-57. (Finnish). — (Publishers: P.O. Box 150, SF-00101 Helsinki).
Weekly's article on the same exhibit as in *OA 6735*. The reproduction of the dragonfly pin is here much better.
- (6873) HEBESTREET, K., 1989. Dragonfly experts coming. *Johnson City Press*, issue of July 16, p. 29.
Interview with Dr *D.M. Johnson*, Organizer of the Tenth Int. Symp. Odonatol.
- (6874) HEBESTREET, K., 1989. Dragonfly lovers spend day stalking prey. *Johnson City Press* 70(4): 11 (issue of Aug. 12).
Local daily's report on the Mid-Symposium collecting trip held in the framework of the Tenth Int. Symp. Odonatol. to Bays Mountain Lake, Tennessee, containing interview statements by *P.S. Corbet*, *C. Cook*, *D. Johnson*, *M. Wasscher*, *R. Rudolph* and *K. Inoue*.
- (6875) HENNIG, R., 1989. Zwei neue Nachweise von *Orthetrum brunneum* (Fonscolombe) aus dem Fläming (Odonata, Libellulidae). *Ent. Nachr. Ber.* 33(1): 46-47. — (Leninstr. 3, DDR-1701 Altes Lager, GDR).
With reference to the paper listed in *OA 992*, records of *O. brunneum* from Niemegek (distr. Belzig) and Klausdorf (distr. Jüterborg), both GDR, are stated. The odon. fauna of the former locality (a gravel pit) is also enumerated.
- (6876) JANSEN, K.C., 1989. *Libellen in het Bargerveenreservaat*. — [*Dragonflies of the Bargerveen Nature Reserve*]. 46 pp., Staatsbosbeheer, Assen. (Dutch). — (Ruinerbrink 274, NL-7812 RP Emmen).
A detailed analysis of the odon. fauna (24 spp.) of this Nature Reserve, Drenthe Prov., the Netherlands, with management suggestions relative to the conservation of one of the last peat bog areas in that country.
- (6877) JURZITZA, G., 1989. *Phenes raptor centralis*

- n. subsp. aus Chile (Odonata: Petaluridae). *Ent. Z., Frankfurt/Main* 99(12): 161-168. (With Engl. & Span. s's). — (Reinmutstr. 27, D-7500 Karlsruhe-21, FRG).
The new ssp. (holotypé ♂: Santiago Pudahuel in author's coll.; allotype ♀ and paratypes from various localities) is described and figured. It covers the northern populations of this sp.
- (6878) KANO, K., 1989. [Egg-laying behaviour in *Sympetrum r. risi*]. *Gekkan Mushi* 218: 40-41. (Jap.). — (5-19-17-601 Koishikawa, Bunkyo-ku, Tokyo, 112, JA).
There are 4 modes of oviposition in this sp., viz. (1) in tandem, in flight, (2) single in flight, (3) hovering, alone, (4) alone on substrate. The types (3) and (4) are here briefly recorded and documented with photos.
- (6879) KANO, K., 1989. [Notes on mating behaviour in *Aeshna nigroflava*]. *Nature & Insects* 24(5): 43-44. (Jap.). — (5-19-17-601 Koishikawa, Bunkyo-ku, Tokyo, 112, JA).
Detailed field notes from Hokkaido.
- (6880) *LIBELLULA*. Mitteilungsblatt der Gesellschaft deutschsprachiger Odonatologen (GdO), Vol. 7, Nos 3/4 (June, 1989). — (c/o Prof. Dr R. Rudolph, Biol. Didaktik, Univ. Münster, Fliegerstr. 21, D-4400 Münster, FRG).
Ott. J.: Markierungsexperimente an der Zweigestreiften Quelljungfer *Cordulegaster boltoni* Donovan, 1807 — ein Beitrag zum Artenschutz (Anisoptera: Cordulegasteridae) (pp. 77-88); — *Heidemann, H.*: Die Gomphus-Arten Deutschlands und Frankreichs: Bestimmungsschlüssel der Larven und Felddiagnose der Imagines (Anisoptera: Gomphidae); — *Brockhaus, T.*: Erste Ergebnisse von Odonaten-Bestandsaufnahmen in Regenmooren des Erzgebirges, Bezirk Karl-Marx-Stadt, DDR (pp. 103-109); — *Unruh, M.*: Vergleichende Betrachtungen zur Libellenfauna ausgewählter Abgrabungsgebiete des Zeitzer Gebietes, Bez. Halle, DDR (pp. 111-128); — *Hübner, T.*: Zur Besiedlung neugeschaffener, kleiner Artenschutzgewässer durch Libellen (pp. 129-145); — *Lehmann, G.*: Ergänzende Merkmale zur Geschlechterunterscheidung bei Exuvien der Gattung *Libellula* (Anisoptera: Libellulidae) (pp. 147-148); — *Peters, B.*: Kurzer Beitrag zu den Gefahren der submersen Eiablage von *Platycnemis pennipes* Pallas, 1771 an einem Altwasser bei Thonstetten, Landkreis Freising/Bayern (Zygoptera: Platycnemididae) (pp. 149-150). — (*Abstracter's Note*: This is the sole specialised odonatol. periodical in Germany, therefore it is regrettable that Art. 51/c of the International Code of Zoological Nomenclature is systematically neglected. In the present issue, for example, no parentheses are used in the titles, where applicable, while e.g. in the table on p. 121 all authors of species names appear in parentheses whether justified or not).
- (6881) *LINDENIA*. Notiziario dell'Ufficio Nazionale Italiano della Società Odonatologica Internazionale, Roma, N. 12 (July 1, 1989). — (c/o Prof. Dr C. Utzeri, Dipt. Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).
[All notes are anonymous]. — Quote sociali e servizi della S.I.O. (p. 51); — X Simposio Internazionale di Odonatologia: un preludio all'XI Simposio (pp. 51-52); — Nuovo programma di bibliografia per PC IBM o IBM-compatibili (p. 52); — Distribuzione regionale odonati italiani: aggiornamento (pp. 52-53); — Lauree di Giampiero Sorce e Luigi Dell'Anna (p. 53); — Inserzioni (pp. 53-54); — Notizie bibliografiche (p. 54).
- (6882) MACHET, P., 1989. Un nouvel odonate de Guyane Française *Hetaerina gallardi* n. sp. (Zygoptera, Calopterygidae). *Revue fr. Ent. (N.S.)* 11(2): 95-98. (With Engl. s.). — (65 bd de la République, F-92210 Saint-Cloud).
The new sp. (holotype ♂, allotype ♀, in copula: Cacao, Château d'eau, 17-VII-1988; deposited in MNHN) is described and figured. It can be separated from the other S. Amer. spp. by the presence of pterostigmata, the red apical spot on all wings, and by the shape of the caudal appendages
- (6883) *MARTINIA*. Bulletin de liaison des Odonatologues de France, No. 12 (June, 1989). — (c/o J.-L. Dommangeat, 7 rue Lamartine, Bois

- d'Arcy).
Coppa, G.: Les odonates du département de la Marne (51) (pp. 29-35); — *Let, J.-M.*: Présence d'*Epithea bimaculata* (Charpentier, 1825) dans le département du Loir-et-Cher (41) (Odonata, Anisoptera: Corduliidae) (p. 36); — *Balança, G. & M.-N. Visscher*: Maquillage de libellules (pp. 37-38); — *Pratz, J.-L.*: Note sur les critères de détermination du genre *Somatochlora* (Odonata, Anisoptera: Corduliidae) (pp. 39-40); — *Duval, B.*: Observations d'odonates dans les Pyrénées-Orientales (66), l'Alude (11) et l'Ariège (09) (pp. 41-42); — *De Visscher, M.-N.*: Errare libellulum est (p. 43); — *Kerautret, L.*: Compléments à la liste des odonates de Haute-Savoie (74) (p. 44); — *Carrière, J.*: *Macromia splendens* (Pictet, 1843) et *Oxygastra curtisii* (Dale, 1834) en Languedoc: quelques notes d'observation et réflexions sur le devenir de leurs habitats (Odonata, Anisoptera: Corduliidae) (pp. 45-48); — *Dommanget, J.-L.*: Rubrique bibliographique (pp. 49-51); — *Heidemann, H.*: Analyse d'ouvrage (K. Sternberg's volume listed in *OA* 6054; p. 52). — On p. 38, appears a preliminary announcement of the First Symposium of French odonatologists (Frasnens Doubs; Aug. 4-5, 1990).
- (6884) *MATSUKI, K.*, 1989. Description of the larva of *Macromia genialis shanensis* Fraser from Thailand (Corduliidae, Odonata). *Gekkan Mushi* 219: 28-29. (Jap., with Engl. title & fig. captions). — (Fujiaki 2-6-2-305, Narashino-shi, Chiba, 275, JA).
 Exuviae of *M.g. shanensis* from Huey Kao Falls, Chiang Mai, Thailand is described, figured and compared with that of *M. ishida*.
- (6885) *MAUERSBERGER, R.*, 1989. Odonatenfauna des Bezirkes Rostock (DDR) — Verzeichnis der bisherigen Funde. *Ent. Nachr. Ber.* 33(1): 15-24. (With Engl. & Russ. s's). — (Sekt. Biowissenschaften, Karl-Marx-Univ., Talstr. 33, DDR-7010 Leipzig, GDR).
 This is the Zygoptera part (21 spp.) of a comprehensive review of the odon. fauna of the Baltic district of Rostock, GDR. The general introduction is followed by a catalogue of records.
- (6886) *McLAUGHLIN, M.*, 1989. *Dragonflies*. IV+28 pp., numerous col. phot. Walker, New York. ISBN 0-8027-6847-4. Hardcover. 21x26 cm. Price: US\$ 15.- net. Published simultaneously in Canada: Thomas Allen, Markham, Ont.). — (Available from the SIO, Biltoven). The book is directed at the young readers; the text and phot. revealing the life cycle of North American dragonflies. Generally very good field phot. were contributed by various authors, the majority by C.E. Williams (cf. e.g. *OA* 4684).
- (6887) [*MOORE, N.W.*], 1989. News from the [IUCN] Specialist Groups: Odonata. *Species* 12: 27. — (The Farm House, Swavesey, Cambridge, CB4 5RA, UK).
 [Almost verbatim]: The 5th meeting of the group, held at Madurai, South India, in January 1988, received reports from the different regions. — G.J. Sant & T.R. New (cf. *OA* 6620) have made a valuable study on the biology and conservation of *Hemiphysalis mirabilis*. The sp. survived a fire in 1987 which damaged its habitat in the Wilson Promontory, Victoria, Australia, but its position is precarious and new measures to protect it are recommended. — Efforts are being made to establish a nature reserve at Okegaya-Numa, Iwata, Japan to protect the only known permanent habitat of *Libellula angelina*. Fuji-film Green Fund has given valuable support to this enterprise. Meanwhile the Ikeda-dani Dragonfly Sanctuary at Nakamura goes from strength to strength. It was opened formally by the Emperor's grandson in 1988. — In Florida the best habitat for the very rare *Cordulegaster sayi* is threatened by housing development.
- (6888) *NARAOKA, H.*, 1989. Hatching rhythm and larval growth of *Epithea bimaculata sibirica* Selys. *Gekkan Mushi* 220: 22-23. (Jap., with Engl. title). — (Fukunoda, Itayanagi-machi, Kitatsugaru-gun, Aomori, 038-36, JA).
 [Abstract not available].
- (6889) *PROGRAM AND GENERALITIES of the Tenth International Symposium of Odonatology*, Johnson City, TN. Compiled by D.M. Johnson. Issued by the Societas Internationa-

- lis *Odonatologica* (S.I.O.) 1+19 pp. — (c/o SIO Central Office, P.O. Box 256, NL-3720 AG Bilthoven).
- Johnson, D.M.*: Welcome and Acknowledgements (p. 1); — Committee of Honour and S.I.O. Members of Honour (p. 2); — Aka-Tombo (p. 3); — Programme (pp. 4-14); Agenda of the SIO Plenary Business Meeting (p. 12); — Participant addresses (pp. 15-17); — Map of the East Tennessee State University Campus (p. 18). — For other publications of the Symposium cf. *OA* 6841, 6848, 6866, 6873, 6874, 6892, 6910.
- (6890) RETTIG, K., 1989. Grosse Königslibellen und weitere bemerkenswerte Feststellungen am Schwarzen Meer in Ostfriesland. *Beitr. Vogel- Insektenwelt Ostfrieslands* 36: 10. — (Danziger Str. 11, D-2970 Emden, FRG). Records of *Coenagrion lunulatum*, *Anax imperator* and *Leucorrhinia rubicunda*.
- (6891) RETTIG, K., 1989. Verbreitung und Flugzeiten der Libellen Ostfrieslands im Zeitraum 1968-1989. *Beitr. Vogel- Insektenwelt Ostfrieslands* 36: 14-21. — (Danziger Str. 11, D-2970 Emden, FRG).
Based on the evidence provided by 35 recorders, the distribution of 26 spp. in Ostfriesland, FRG is mapped.
- (6892) ROSEBERRY, H.K., 1989. *Fascination: scientific and artistic*. IV+10 pp. Carroll Reece Mus., East Tennessee State Univ., Johnson City, TN. — (Carroll Reece Mus., ETSU, Johnson City, TN 37614, USA).
Catalogue of the Dragonfly Exhibit, organized during the Tenth Int. Symp. Odonatol. — For the newspaper article cf. *OA* 6910.
- (6893) SAMWAYS, M.J., 1989. Farm dams as nature reserves for dragonflies (Odonata) at various altitudes in the Natal Drakensberg mountains, South Africa. *Biol. Conserv.* 48: 181-187. — (Dept Zool. & Ent., Univ. Natal, P.O. Box 375, Pietermaritzburg-3200, RSA).
Worldwide many odon. populations are under threat from urbanization and agricultural expansion. In southern Africa, however, farm dams, which are a necessary and characteristic feature of the agricultural landscape, attract dragonflies, each functioning as a small nature reserve. 4 Zygopt. out of 17 spp. and 7 Anisopt. out of 23 spp. recorded in the Natal Drakensberg mountains, were found only at farm dams. Altitude influences the attractiveness of man-made bodies of water versus natural habitats. At all altitudes, most, if not all, species occurred at least in dams. Only at the higher elevations (1500-1800 m above sea level) were all the species found in at least natural habitats. At the middle altitudes (900-1200 m), 78% were recorded only from dams. Dragonfly conservation and management does not necessitate dams at the higher altitudes, but at middle and lower levels (600-1500 m), weedy ponds should be incorporated into major nature reserves to encourage Odon. — (Cf. also *OA* 6619).
- (6894) SCHMIDT, E., 1989. Libellen als Bioindikatoren für den praktischen Naturschutz: Prinzipien der Geländearbeit und ökologischen Analyse und ihre theoretische Grundlagen im Konzept der ökologischen Nische. *Schr.R. Landschaftspfl. Naturschutz* 29: 281-289. — (Biol. Didaktik, Pädag. Fak., Univ. Bonn, Römerstr. 164, D-5300 Bonn-1, FRG).
In *Odonatologica* 14 (1985): 127-133, the author suggested a tentative working scheme for a rapid preparation of an evaluated odon. inventory of a given habitat. In the present paper, the theoretical background, based on the niche concept of the ecosystem theory, is presented.
- (6895) SCHNEIDER, W., 1989. Buchbesprechung. R.R. Askew, The dragonflies of Europe. *Ent. Z., Essen* 99(16): 239-240. (Germ.). — (Via Stesicoro 2, I-00125 Roma-Axa).
A comprehensive book review of the volume listed in *OA* 6357.
- (6896) STANIONYTE, A.P., 1989. *Sympetrum eroticum* Selys — new to the Lithuanian SSR Odonata species, found in 1988. [sic!]. In: V. Jonaitis, [Ed.], New and rare insect species of the Lithuanian SSR; records and descriptions of 1989, pp. 9-11. *Inst. Zool. & Parasitol., Acad. Sci., Vilnius*. (Russ., with Lithuanian &

- Engl. s's). — (Inst. Zool. & Parasitol., Lithuanian Acad. Sci., Akademijos 2, USSR-232600, Lithuania).
A teneral male of this sino-japanese sp. is said to have been taken on 25-V-1988 in the village of Tilzhe, Zarasai district, NE Lithuania, USSR. The specimen is deposited in the Inst. Biol., Acad. Sci., Novosibirsk.
- (6897) STOBBE, H., 1989. Libellen am Flusssystem des Tarn ("Massif Central": Südfrankreich). *Naturk. Rundbrief* 2: 10-14. — (Holthusenstr. 4a, D-2000 Hamburg-67, FRG).
21 spp. occurring in 5 different habitats of the Tarn R.system in southern France are listed, annotations on the ecology of some of them are provided, and a note is appended relative to the human impact on the regional odon. habitats.
- (6898) STOBBE, H., 1989. Libellenbeobachtungen an Gewässern der Crau (Südfrankreich). *Naturk. Rundbrief* 2: 1-5. — (Holthusenstr. 4a, D-2000 Hamburg-67, FRG).
Annotated lists of spp., collected (July 16-18, 1988) at 3 localities in the Crau area, southern France.
- (6899) STOBBE, H., 1989. Libellenbeobachtungen im Frühjahr auf Korsika. *Naturk. Rundbrief* 1: 3. — (Holthusenstr. 4a, D-2000 Hamburg-67, FRG).
Hemianax ephippiger (Piana on the Golf of Porto) and Libellula depressa (Maccie, E of Porto Vecchio) were recorded during May 2-12, 1989 on the island of Corsica, France.
- (6900) STOBBE, H., 1989. Odonaten am Gardon ("Massif Central": Südfrankreich). *Naturk. Rundbrief* 2: 6-9. — (Holthusenstr. 4a, D-2000 Hamburg-67, FRG).
17 spp. collected at various localities on the Gardon R., Massif Central, southern France, are listed and the fauna is briefly discussed.
- (6901) SUGIMURA, M., 1989. [*Dragonfly kingdom*]. 100 pp., numerous col. figs. ISBN not stated. WWF Japan, Tokyo & Sugimura, Nakamura. (Jap.). — (Author: 9-7 Uyama-satsuki-cho, Nakamura, Kochi Pref., 787, JA).
- Revised edition of the book listed in OA 5171.
- (6902) TSUDA, S., 1989. Odonate fauna of Osaka Prefecture. *Nature & Insects* 24(5): 17-20. (Jap., with Engl. title). — (7-17-9, Habikigao, Habikino, Osaka Pref., 583, JA).
A checklist (Jap. nomenclature) is given of the 99 spp. occurring in the prefectures of Mie (94 spp.), Shiga (87 spp.), Kyoto (95 spp.), Osaka (95 spp.), Hyogo (95 spp.), Nara (87 spp.) and Wakayama (88 spp.). The odon. fauna of Osaka is briefly characterised.
- (6903) *UNTERRICHT BIOLOGIE*, Vol. 13, No. 145 (June 1989): *Libellen*. Edited by G. Rüppell. — (Available at DM 13.50 from: Erhard Friedrich Verlag, Postfach 100150, D-3016 Seelze-6, FRG).
This is a dragonfly topics issue of the renowned German periodical devoted to the teaching of Biology. The issue Editor and most of the authors are well known German odonatologists, and the teaching level is indicated with each article. — Contents: *Rüppell, G. & R. Rudolph*: Teufelsnadeln und Wasserjungfern (pp. 2-11); — *Schridde, P. & L. Müller*: Libellen: fressen und gefressen werden (pp. 12-16); — *Rüppell, G.*: Flugkünstler Libellen (pp. 17-20); — *Rüppell, G., H. Grunnert, H. Hadrys, A. Martens, L. Müller & G. Rehfeldt*: Libellen — bizarr und ästhetisch (pp. 21-24, 29-32); — *Müller, L.*: Das Libellenspiel (pp. 25-28); — *Martens, A.*: Vom Wasser in die Luft (pp. 33-37); — *Grunnert, H. & E. Bartels*: Paarungsverhalten und Eiablage bei Libellen (pp. 38-43); — *Rehfeldt, G.*: Libellen als Bioindikatoren (pp. 44-45); — *Martens, A. & G. Rehfeldt*: Freilandarbeiten mit Libellen (pp. 46-47); — *Burgdorf, M.*: Anlage eines libellengerichteten Schulteiches (p. 48); — *Müller, L.*: Das Libellenspiel (p. 49); — *Rudolph, R.*: Die wichtigsten Libellen-Bücher (pp. 50-51).
- (6904) UTZERI, C., 1989. Segnalazioni faunistiche italiane: (132) Gomphus vulgatissimus. *Boll. Soc. ent. ital.* 121(1): 73. — (Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).
The first record for Campania with a comprehensive discussion on the gomphid occurrence

in that region.

- (6905) VAN MAANEN, B., 1989. Het kweken van libellenlarven. — [Breeding of dragonfly larvae]. *Kikkervis* 1989(1): 14-18. (Dutch). — (Van Halewijnplein 40, NL-2274 VC Voorburg).
Suggestions voor home breeding, directed at the youth.
- (6906) VERSCHUREN, D., 1989. Revision of the larvae of West-Palaeartic Cordulegaster Leach, 1815 (Odonata, Cordulegasteridae), with a key and a discussion on their affinity. *Bull. Annl. Soc. r. belge Ent.* 125: 5-35. — (Inst. Anim. Ecol., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).
Larval morphology of the 12 West-Palaeartic Cordulegaster taxa is studied, and several new discriminating characters are assessed. Full diagnoses are given for each taxon, 3 of which had not been described before: *C. boltoni immaculifrons*, *C. boltoni algiricus* and *C. bidentatus sicilius*. Possible phylogenetic relationships between the considered taxa, as revealed by larval morphology, are discussed. The following conclusions are reached: (1) The division of West-Palaeartic Cordulegaster in 2 species-groups is justified. The *C. boltoni*-group comprises *C. boltoni s. l.*, *C. princeps*, *C. pictus* and *C. heros*. The *C. bidentatus*-group comprises *C. bidentatus*, *C. myzmae* and *C. insignis*. — (2) Interspecific differences within the *C. boltoni*-group urge the definition of two subgroups. *C. boltoni s. l.* and *C. princeps* constitute the first subgroup, referred to as the subgroup of western taxa. *C. pictus* and *C. heros* constitute the subgroup of eastern taxa. — (3) The taxon *trinacrae* is either a separate sp. or a ssp. of *C. boltoni*, but not a ssp. of *C. pictus* as previously has been suggested. — A concise key to final instar larvae of West-Palaeartic Cordulegaster spp. and ssp. is provided.
- (6907) VICK, G.S., 1989. List of the dragonflies recorded from Nepal, with a summary of their altitudinal distribution (Odonata). *Opusc. zool. flumin.* 43: 1-21. — ("Crossfields", Little London, Basingstoke, Hants, RG26 5ET, UK).
A list of 172 spp. is given together with the known altitudinal distribution of each sp. It is based upon a large quantity of unpublished material in the author's collection and on all published records which it has been possible to trace. *Calicnemia mortoni* Laidlaw, *Prodasi-neura odoneli* (Fraser), *Ictinogomphus kishori* (Ram), *Macrogomphus montanus* Selys, *Anax parthenope* (Selys), *Gynacantha khasiaca* McLachlan, *Anotogaster gregoryi* Fraser, *Cra-tilla metallica* (Brauer) and *Zygonyx iris* Selys are new to the fauna of Nepal. A complete and annotated bibliography (113 titles) on the Odonata of Nepal is appended.
- (6908) WALKERIA. Newsletter of the Canadian National Office of the International Odonatological Society, Vol. 4, No. 1 (June 1, 1989). — (c/o Dr S. Cunnings, Dept Zool., Univ. British Columbia, 6270 University Blvd, Vancouver, B.C., V6T 2A9, CA).
Cunnings, R.: Wet week in Wells Gray Park (pp. 1-2; text identical to the paper listed in *OA* 6584); — *Pritchard, G.*: Travels with Gordon, or memories of Madurai (pp. 2-4; continued from *OA* 6530); — *Wilson, M.V.H.*: Obituary: Dennis C. Wighton, 1930-1988 (p. 4); — *Cunnings, S.*: Plea from the Editor (p. 4); — *Cunnings, R.A.*: Clubtail follow-up (p. 4; corrective note on P. Pratt's paper listed in *OA* 6530).
- (6909) WEISCHE, U., 1989. Faunistisch-ökologische Untersuchungen. *Allg. ForstZ.* 1989(18/20): 495-496. — (Author's address not stated).
A mainly indicative note. In the framework of a M. Sc. research, the fauna of 30 recent man-made ponds in the forest section (FA) Oderhaus, Harz, FRG was studied. 12 odon. spp. are listed.
- (6910) WHITLOCK, B., 1989. Dragonfly: fascinating insect the subject of exhibit. *Kingsport Times-News*, issue of Aug. 4, pp. 1D, 7D.
Local newspaper story on the dragonfly arts exhibit, organized in the framework of the Tenth Int. Symp. Odonatol., containing interview statements by Dr *D.M. Johnson* (Organizer of the Symposium) and Mrs *H.K. Roseberry* (Exhibition-Curator of the Carroll Reece Museum, ETSU). — For the Catalogue cf. *OA* 6892.

- (6911) WISSINGER, S.A., 1989. Comparative population ecology of the dragonflies *Libellula lydia* and *Libellula luctuosa* (Odonata: Libellulidae). *Can. J. Zool.* 67: 931-936. (With Fr. s.). — (Dept Biol. Sci., Purdue Univ., West Lafayette, IN 47907, USA).

Temporal and spatial patterns of habitat use, population size structure, and survivorship were compared over three generations of *L. lydia* and *L. luctuosa* in a small pond in Indiana. The 2 spp. were univoltine, had similar phenologies, and converged on the same within-pond habitats. There was little evidence for any spatial and (or) temporal habitat partitioning that might be expected between such morphologically and ecologically similar spp. Larval populations of each sp. were highly size structured because oviposition and hatching were extended over 3 months in summer. Intraspecific size differences were greater than those frequently reported to accommodate interspecific coexistence. Thus, intraspecific resource par-

titioning and cannibalism should have an important effect on population dynamics. Both similar and disparate interspecific size combinations frequently co-occurred in time and space so that competition and predation should simultaneously affect coexistence. Larval mortality was high in late summer and fall, negligible in winter, and high again in spring. Fewer than 10% of either sp. survived to emerge from the pond. Interodonate predation is a likely source of much of this larval mortality, given that other odon. are among the most abundant large predators in fishless ponds.

- (6912) ZHOU, W., 1989. New records of Chinese Corduliidae from Yunnan province. *Entomotaxonomia* 11(3): 180. (Chin.). — (Dept Ent., Zhejiang Mus. Nat. Hist., Gu-shan, Hang Zhou, P.R. China).
Records of *Macromia berlandi* Lieft., *M. flavo-colorata* Fraser and *Idionyx stevensi* Fraser.