

ODONATOLOGICAL ABSTRACTS

1977

- (10910) HUHTALA, K., J. ITAMIES & H. MIKKOLA, 1977. Beitrag zur Brutbiologie und Ernährung des Raubwürgers (*Lanius excubitor*) im Österbotten, Finnland. *Beitr. Vogelk.* 23(3): 129-146. – (Author's current addresses unknown). Contains quantitative data on odon. consumption by the Great Grey Shrike in SE Finland.

1987

- (10911) RODRIGUES CAPÍTULO, A. & J. MUZÓN, 1987. Dinamica poblacional de estadio larvales de Odonata en ambientes lenticos de la Selva Marginal de Punta Lara (prov. de Buenos Aires). *Resum. I Congr. argent. Ent.*, Tucuman, p. 55. [Abstract only]. – (Inst. Limnol. "Dr R.A. Ringuelet", C.C. 712, AR-1900 La Plata). This is an indicative abstract. *Erythemis attala* and *Tauriphila risi* were the most abundant spp. in the larval population at "Boca Cerrada", studied during June 1984-June 1985.

1989

- (10912) VIŠNER, M.J., 1989. *Slovenske narodne vezanine, izbrala in za tisk pripravila Marjana Korber*. – [Slovene folk-embroidery patterns, selected and edited by Marjana Korber]. Ognjišče, Koper. (Slovene). – (Editor: M. Korber, Palmejeva 28/II, SI-1000 Ljubljana). Pattern No. 118 (sheet 28) shows a dragonfly composition. The item has been included in the Embroidery Exhibitions at Logatec (28-29 Nov. 1992), Stožice (1-2 Oct. 1994) and Nove Fužine (9 Oct. 1994), all Slovenia.

1990

- (10913) ALLEN J., 1990. *The designer's guide to samurai patterns*. Thames & Hudson, London. ii+132 pp. ISBN none. The samurai called the dragonfly "katsumushi" (= "win bug"). It was a metaphor for warrior life. On pp. 10, 25-26, the book contains several dragonfly designs. One of these is engineered to decorate a samurai quiver. The insect is set out on a series of segmented hexagons, representing a bamboo net. The quiver itself was crafted of thin, lacquered bamboo strips and was appreciated for its elegance.

1992

- (10914) FISEL, E., U FISEL, K. KÖNIG, W. RIESS, B.-U. RUDOLPH, C. SIMLACHER, G. SCHLAPP & W. WERRES, 1992. Libellen. In: E. Fisel et al., *Arten- und Biotopschutzprogramm Bayern: Stadt Erlangen*, pp. 154-160, Bayer. Staatsminist. Landesentwicklung u. Umweltfragen, München. – (Publishers: Rosenkavalierplatz 2, D(W)-8000 München-81). An annotated and commented checklist of 38 spp. recorded at 90 localities within the city area of Erlangen, Bavaria, Germany.

1993

- (10915) ANDREW, R.J. & D.B. TEMBHARE, 1993. Structure and development of the internal male reproductive organs in the dragonfly *Tramea virginia* (Rambur). *Funct. develop. Morphol.* 3(2): 121-127. – (First Author: Opp. St John's High School, Mohan Nagar, Nagpur-440001, India). The internal ♂ reproductive organs consist of a

pair of testes, a pair of vasa deferentia, a median sperm sac and a short ejaculatory duct. The development of the genital tract occurs during the ultimate larval instar. Each testicular lobe contains the gametes in a uniform stage of spermatogenesis. The process of spermatogenesis is vigorous in the ultimate instar, therefore the freshly emerged imago contains active spermatozoa in its testicular lobules. There are no spermatophores in the adult genital tract.

- (10916) DUNHAM, M.L., 1993. *Fighting and territorial behavior in the dragonfly *Pachydiplax longipennis**. PhD thesis, Brown Univ., Providence/RI. 98 pp. ISBN none. Order No. DA9406932, UMI Diss. Serv., 300 North Zeeb Rd, Ann Arbor, MI 48106-1346, USA. – Price (softcover): US \$ 57.50 net.

[Verbatim from *Diss. Abstr. Int.* 54(10)[1994]: 5003-5004]: I examined the effects of phenotype on behavior in adults. I examined 2 categories of phenotypic characters: fixed (hindwing and wing area) and variable (mass, flight muscle ratio, water weight, gut content, and fat content). Behavior was observed in a large field enclosure built over an artificial pond. This allowed me to manipulate δ and η densities. – I present data on mass gain in individual *P. longipennis* during the general period. δ δ gained more mass than η η . Mortality did not differ between δ δ and η η , nor between light and heavy individuals. – The sexes did not differ in foraging rate. Phenotypic characters were related only weakly to foraging rate, but weight was positively related to how often δ δ foraged, while fat content related negatively. Foraging rate was also related to time of day. Foraging rate in the cage was considerably lower than reported for this sp. in the wild. – I ask how fighting ability and residency asymmetries determine contest outcome by comparing contest winners to losers, and residents to intruders. Winning δ δ were heavier and had denser wings than losers. Resident δ δ had denser wings than intruders in 1 yr, but did not differ from intruders in the second yr. Physical characteristics affect contest outcome, but previous experience or a complex interaction of factors also seem to have an effect. – I manipulated feeding history, δ activity, and territory value for *P. longipennis* to test between hypotheses (1) energy balance or (2) mating success determines how long a δ stays territorial on

a given day. Energy balance but not η presence affected territory tenure in male *P. longipennis*. However, most of the variance in tenure was not explained by the manipulated factors. δ δ did differ in their ability to defend territories, however, which may be attributable to physical characteristics. Environmental conditions did not affect tenure in this study, and past experience cannot explain why the territory owner eventually loses his territory. Dynamic factors such as variable physical attributes or consistent differences between δ δ in time of arrival may also come into play. Cf. OA 8542, 9261.

- (10917) PARKER, D.W., 1993. *Emergence phenologies and patterns of aquatic insects inhabiting a prairie pond*. PhD thesis, Univ. Saskatchewan, Saskatoon. 194 pp. ISBN 0-315-82986-8. Order No. DANN82986, UMI Diss. Serv., 300 North Zeeb Rd, Ann Arbor, MI 48106-1346, USA. – Price (softcover): US \$ 57.50 net.

[Verbatim from *Diss. Abstr. Int.* 54(9)[1994]: 4497]: Emergence traps were used to investigate aquatic insect emergence patterns and densities in a prairie pond in Saskatchewan. Hill's numbers, percent dissimilarity and Morisita's Index were used to measure the diversity of each insect order and changes that occurred between 1987 and 1988. Adult emergence from submerged vegetation and emergent vegetation was compared. – 115 spp., belonging to 6 orders were identified: 3 Ephem., 16 Odon., 1 Neur., 17 Trich., 8 Hymen. and 70 Dipt. 1 sp. was new to science. Another was a new record for the genus in Canada. 12 spp. are new records for Saskatchewan. – The emergence periods of the abundant spp. ranged from 2 weeks and unimodal to 3 months and multimodal. – Diversity and abundance of the insect community declined between 1987 and 1988. These decreases were attributed to the pond changing from a permanent, nonaestival pond in 1986, to a permanent, aestival pond in 1987, and to a temporary pond in 1988. These changes in physical conditions of the pond reduced the numbers of adults collected for most spp. in 1988 because the immatures were not adapted to being frozen in ice. Diversity and abundance were further reduced in 1988 by the pond drying up in mid July restricting the spp. emerging to those that emerged in spring and early summer. – Significant differences in the number of adults collected from the

submerged vegetation and emergent vegetation were recorded for a number of spp. These differences were due to immature microhabitats, eclosion requirements and water depth at the trap stations. – The insect community of 1987 and particularly, *Chaoborus americanus*, *Callibaetis pallidus*, and the *Zygoptera* spp., were used to predict the physical conditions of the pond a year prior to the study. Knowledge of life histories and habitat requirements of the spp. were used to predict the insect community in 1989 based on the physical conditions of the pond in 1988. The importance of considering life history information when choosing indicator spp. for environmental impact assessments is discussed.

- (10918) RUNCK, C., 1993. *Influence of invertebrate predation on behavior and energy flow in a freshwater animal community*. PhD thesis, North. Arizona Univ., Flagstaff. 130 pp. ISBN none. Order No. DA9411455, UMI Diss. Serv., 300 North Zeeb Rd, Ann Arbor, MI 48106-1346, USA. – Price (softcover): US \$ 57.50 net. [Verbatim from *Diss. Abstr. Int.* 54(11)[1994]: 5490-5491]: This study examined the influence of invertebrate predation on behavior and energy transfer of a freshwater invertebrate prey community. The effect of a visual insect predator, *Telebasis salva* (Odon.), and a non-visual predaceous leech, *Erpobdella montezuma*, on the behavior of a crustacean prey population, *Hyaella montezuma* (Amphipoda), was examined in the fishless environment of Montezuma Well, Arizona. – *H. montezuma* migrated horizontally between the pelagic and littoral zones daily in Montezuma Well. The density of *Hyaella* increased by an order of magnitude in the littoral zone after sunset with a concomitant decrease of density in the pelagic zone. *Hyaella* migrated horizontally from the littoral zone into the pelagic zone before sunrise. The majority (>90%) of individuals that migrated were juvenile (<3 mm) amphipods. – Feeding trials showed juvenile *Hyaella* were under greater predation pressure from *Telebasis* larvae and *Erpobdella* than were adult (≥ 3 mm) amphipods. Laboratory and field predation experiments were conducted to test the effects of light, biomass of vegetation, and density of prey on predation rates by *Telebasis* larvae and *Erpobdella* for juvenile *Hyaella*. Light had the greatest effect on predation by *Telebasis* in both laboratory and field experiments, i.e., predation rates were significantly lower in dark than light treatments. Laboratory feeding trials with *Erpobdella* showed that vegetation had the greatest influence on reducing predation rate on *Hyaella*. – Secondary production was estimated by the size-frequency method for *T. salva* and *Belostoma bakeri* (Heter.) to estimate energy flow in Montezuma Well. A model of trophic structure and energy flow in Montezuma Well is presented. Production by *Telebasis* (7.9 g dry weight [dw] m⁻² yr⁻¹) and *Belostoma* (2.8 g dw m⁻¹ yr⁻¹) was higher than estimates for other odon. and aquatic heteropterans. – The daily horizontal migration of *H. montezuma* reduced mortality through utilization of two habitats that differed in temporal predation risk. The use of a temporal refuge by *Hyaella* affected energy transfer in Montezuma Well and indicated the importance of visual and non-visual invertebrate predators on behavior of freshwater animal communities.
- (10919) SWINKELS-VERPRAET, M. & J. HEFFER, 1993. *Inventarisatierapport van de libellen bij een aantal Oisterwijkse vennen en laaglandbeken, 1993*. – [Report on the 1993 dragonfly surveys in some moors and lowland streams near Oisterwijk]. Heffer, Riel, iv+45 pp. (Dutch). – (Second Author: Kaar 4, NL-5133 AZ Riel). 27 spp. are reported with detailed information on their local occurrence. The odon. assemblage of the area is analysed and the development of the fauna in 1992 and 1993 is compared. – Noord Brabant prov., the Netherlands.
- (10920) THOMPSON, D.J. & J. VAN TOL, 1993. Damsel flies and dragonflies from four forest types in Brunei. *Brunei Mus. J.* 8: 57-72. (With Malay s.). – (First Author: Pop. Biol. Res. Gr., Dept Envir. & Evol. Biol., Univ. Liverpool, G.O. Box 147, Liverpool, L69 3BX, UK). 69 spp. are listed from the alluvial forests, heath, mixed dipterocarp and peat swamps in the Sungai Ingai Conservation Area and in several disturbed habitats elsewhere. Attention is drawn to spp. that appear to be characteristic of different forest types. Brief descriptions of the behaviour of some of the more obvious spp. are presented. The collection is compared with an odon. inventory in S Borneo. The biogeographical basis for the high degree of endemism in the collection is discussed.

(10921) WRIGHT, J.W., 1993. *Effects of fish predation on macroinvertebrate community structure*. PhD thesis, George Mason Univ., Fairfax/VA. 68 pp. ISBN none. Order No. DA9400633, UMI Diss. Serv., 300 North Zeeb Rd, Ann Arbor, MI 48106-1346, USA. – Price (softcover): US \$ 57.50 net. [Verbatim from *Diss. Abstr. Int.* 54(8)[1994]: 3961]: Predation is a major factor affecting the structure of biological communities. Field enclosure/exclosure experiments were used to determine the effect of predation by pumpkinseed sunfish on the community structure of macro-invertebrates associated with submersed aquatic vegetation in the tidal freshwater Potomac River. The results from 3 consecutive 6-week experimental cycles showed strong predation effects on chironomids and odonates, but no significant effects on trichopterans and amphipods. Season was significant for chironomids, trichopterans and amphipods, but not for odon. The interaction effect of season and predation treatment was significant for chironomids. – Both seasonal progression and predation significantly affected the size structure of odon. Odon. sizes decreased over time in all predation treatments and decreased with increasing pumpkinseed densities within all seasons. By preying selectively on larger odon. and on odon. over other macroinvertebrates, pumpkinseeds altered the combined direct and indirect effect of predation on chironomids. The different responses among taxa to variations in predation treatment and temporal variation are discussed with respect to the tidal freshwater habitat.

1994

- (10922) ANDREW, R.J. & D.B. TEMBHARE, 1994. Functional morphology and development of the primary external genitalia of the male dragonfly *Tramea virginia* (Rambur) (Libellulidae: Odonata). *Ann. Ent.* 12(1): 57-62. – (Second Author: Dept Zool., Nagpur Univ., Univ. Campus, Amravati Rd, Nagpur-440010, India). In ♂, the 9th abd. sternum bears at the centre a median ♂ gonopore, a pair of lateral coxites, and the anterior and posterior genital plates. The penis is absent. Development of the gonopore, the coxites and of the ejaculatory duct occurs during the ultimate larval stage, but the cuticular deposition continues also after the adult emergence. The anal app. consist of a single median infra-, a pair of lateral supra app., and a pair of infra anal laminae. SEM of these structures reveals unique chaetotaxy, bearing taxonomic significance.
- (10923) FITZSTEPHENS, D.M., 1994. *Color as a reliable signal of fighting ability in male damselflies, *Calopteryx maculata**. PhD thesis, Michigan St. Univ., East Lansing. 63 pp. ISBN none. Order No. DA9512049, UMI Diss. Serv., 300 North Zeeb Rd, Ann Arbor, MI 48106-1346, USA. – Price (softcover) US \$ 57.50 net. [Verbatim from *Diss. Abstr. Int.* 55(12)[1995]: 5173]: Color may act as an important signal in agonistic encounters by providing reliable information on the resource holding potential of opponents. Males *C. maculata* engage in costly agonistic contests which result in the turnover of territory ownership. Male *C. maculata* exhibit structural interference colors that vary with age and territorial status making color a prime candidate to convey information as a signal. This study examines the mechanisms and significance of color production and color change in a natural population of *C. maculata*. – Physical and chemical cuticle tests are suggestive of constructive interference colors produced by lamellae in the epicuticle. Transmission electron micrographs provide direct evidence of a multilayer interference reflector. The lamellae of blue males are thinner ($6.2 \text{ nm} \pm 1.0 \text{ SD}$) than the lamellae of green males ($6.4 \text{ nm} \pm 1.0 \text{ SD}$). Wavelength of peak reflectance calculated from lamellar spacing yields values which correspond to the colors observed in the field. – Male *C. maculata* maintained in the laboratory on a high food diet have significantly higher percent body fat ($7.3\% \pm 2.2 \text{ SD}$) and exhibit a significantly smaller color change than similar age/size color males maintained on a low food diet ($4.1\% \pm 2.7 \text{ SD}$). High food males also retain their initial color almost twice as long as low food males. – In the field, territorial male *C. maculata* were younger, reflect shorter wavelength coloration, and were more successful at mating than non-territorial males. As male *C. maculata* age, their color changes from short to long wavelength. Fat analysis indicates that short wavelength males have significantly higher fat levels ($6.7\% \pm 2.0 \text{ SD}$) than do long wavelength males ($4.4\% \pm 1.6 \text{ SD}$). The field and laboratory evidence indicates that fat content is more important than age for determining male color. – Wavelength is reliably related to the measures of body condition (energy

reserves) which affect the outcome of male *C. maculata* interactions. Path analysis indicates that the wavelength of male color is the best predictor of male territorial status. Therefore, color conveys reliable information about male fighting ability as measured by fat content.

- (10924) LUGO SOTO, M.E. & A. FERNANDEZ-BADILLO, 1994. Cambios en composición y diversidad de la entomofauna del Río Güey, Parque Nacional Henri Pittier, estado Aragua, Venezuela. *Boln Ent. venez.* (N.S.) 9(1): 25-32. (With Engl. s.). – (Mus. Inst. Zool. Agric., Fac. Agron., Univ. Central Venez., Aptdo 4579, Maracay 2101-A, Venezuela).

A preliminary abstract is listed in OA 7982. – As far as the odon. are concerned, *Hetaerina occisa*, *Argia* spp., *Allopodagrion venale*, *Archilestes grandis* and *Progomphus phyllochromus* were confined to unpolluted waters, *Gynacantha* sp. had a preference for contaminated habitats, while *Dythemis sterilis* and *Brechmorhoga* appear ubiquitous.

- (10925) MARTIN ALBALADEJO, C., 1994. Bibliografía entomológica de autores españoles (1758-1990). *Docum. Fauna iber.* 1: 1-823. – (Mus. Nac. Cien. Nat., Madrid).

Contains 9891 titles, incl. e.g. the complete bibliography of L. Navas (1899-1945; Nos 6516-7200).

- (10926) NUYTS, E., 1994. *Modelling in behavioural ecology: the optimal copulation duration in insects and the fighting strategy in the black-headed gull*. PhD thesis, Limburgs Univ. Cent., Diepenbeek. 209 pp. ISBN none. Order No. DA9520545, UMI Diss. Serv., 300 North Zeeb Rd, Ann Arbor, MI 48106-1346, USA. – Price (softcover): US \$ 57.50.

[Verbatim from *Diss Abstr. Int.* 56(3)[1995]: 1210]: A modelling approach is used to analyze several behavioural problems. 2 game theoretical models are presented that predict the optimal copulation duration in insects as a function of seven variables. The models take the possibility of sperm mixing within the female genital tracts into account. The qualitative predictions of these models are supported by the data available, especially by odon. An attempt is made to test the model quantitatively for *Sympetrum danae*. Therefore, it was necessary to model also the sperm competition mechanisms of this sp. In a separate chap-

ter, it is shown that linear regression is not a reliable tool to test models concerning sperm competition mechanisms. – Another model, based upon stochastic dynamic programming, explains correlations between the copulation duration and other variables in the yellow dungfly *Scatophaga stercoraria*. – Criteria are calculated to test if a species uses an Asymmetric War of Attrition to settle fights. The test can be performed even if only roles of both opponents and the actual fight duration are known. – Finally, it is shown that owners often loose from newcomers, and that adults loose from immatures in the black-headed gull (*Larus ridibundus*). It is suggested that newcomers and immatures are more motivated during the interaction. – Cf. also OA 9156, 10235.

- (10927) ROBLE, S.M., 1994. A preliminary checklist of the damselflies of Virginia, with notes on distribution and seasonality (Odonata: Zygoptera). *Banisteria* 4: 3-23. – (Div. Nat. Heritage, Virginia Dept Cons. & Recreation, 1500 E Main St., Suite 312, Richmond, VA 23219, USA).

A thoroughly annotated checklist of 54 spp.

- (10928) ROBLE, S.M. & P.H. STEVENSON, 1994. Rediscovery of the dragonfly *Nannothemis bella* Uhler in Virginia (Odonata: Libellulidae). *Banisteria* 3: 27-28. – (First Author: Div. Nat. Heritage, Virginia Dept Cons. & Recreation, 1500 E Main St., Suite 312, Richmond, VA 23219 USA).

The sp. has not been recorded in Virginia since 1890. Here, specimens are reported from 2 localities in Caroline Co.; June-July 1993.

- (10929) SCHWEIGER-CHWALA, E., 1994. *Die Odonatenfauna der Oberen Lobau in Wien. Repräsentative Artenspektrum und Zönosen ausgewählter Gewässerabschnitte*. Diss. Doktor Phil., Univ. Wien. iv+177 pp. (With Engl. s.). – (Kreuzbrunn 6/7, A-3001 Mauerbach).

The representative spectrum of odon. spp. (RSO; E. Schmidt, 1985, *Odonatologica* 14: 127-133) has been determined at 6 backwater localities and at 4 astatic ponds in the Obere Lobau, a former Danube flood plain, SE of Vienna, Austria. 36 spp. were recorded, incl. *Hemianax ephippiger* (Apr./May 1989). Statistical methods and the evidence on habitat preference were used for assemblage classification of the autochthonous (30) spp., which are typical for particular habitat structures.

The *Lestes-Sympetrum-Aeshna mixta* and the *Erythromma-Anax imperator* coenoses of U. Jacob (1969, *Faun. Abh. Mus. Tierk. Dresden* 2: 197-239) were well developed at shallow waters (incl. the astatic habitats) and at larger water bodies with abundant floating vegetation, respectively. The *Libellula depressa-Orthetrum* coenosis of vegetationless spots showed only a vague development. The RSO indicates an advanced stage of terrestri-fication. In comparison with the earlier Vienna flood plains records and with those of the similar habitats along the Danube in Lower and Upper Austria, the Obere Lobau fauna is considered relatively rich, though it shows certain deficiencies with respect to running water and bog spp.

(10930) TAYLOR, P.D., 1994. *Responses of a forest damselfly to differences in landscape structure arising from habitat fragmentation*. PhD thesis, Carleton Univ., Ottawa. 114 pp. ISBN 0-315-89778-3. Order No. DANN89778, UMI Diss. Serv., 300 North Zeeb Rd, Ann Arbor, MI 48106-1346, USA. – Price (softcover): US \$ 57.50 net. [Verbatim from *Diss. Abstr. Int.* 55(8)[1995]: 3113-3114]: I examine responses of *Calopteryx maculata* to differences in landscape structure arising from habitat fragmentation. I compare populations across 2 kinds of landscapes: forest, where resources for oviposition/mating and foraging are adjacent; and pasture, where resources are separated in space. – I examine the dispersion of individuals in the 2 landscape types and show that in pasture landscapes, *C. maculata* are distributed farther from the edges of the streams than they are in forest landscapes. I then show experimentally that pasture habitat is not a barrier to flight for *C. maculata*; individuals from either forest or pasture landscapes are equally able to fly through forest and pasture habitats when experimentally displaced from the edge of the stream where mating/oviposition occurs. – I then examine 3 responses of *C. maculata* to the differences in landscape structure. I show that the incidence and level of parasitism by a midgut gregarine is significantly lower in pasture landscapes than it is in forest landscapes. That *C. maculata* are distributed over a greater area in pasture landscapes may account for this difference. I then show that the wings of *C. maculata* in pasture landscapes are longer and wider than those in forest landscapes. Changes in wing morphology may reflect differ-

ent micro-scale selection forces acting upon *C. maculata* in pasture that may be related to the additional flights made for foraging. Finally, differences in foraging results are examined and found to differ inconsistently across sites. Foraging rates vary widely even in a single site, and so these data are difficult to interpret. – Differences in landscape structure arising from habitat fragmentation influence the natural history of *C. maculata* in several widely different ways. Most importantly, the sp. is able to persist in a moderately fragmented landscape because it exhibits behavioral, physiological and morphological flexibility. These results have consequences for the study of habitat fragmentation in general. – Cf. OA 10732.

(10931) TOMBO TO BUNKA – [DRAGONFLIES AND CULTURE]. [Newsletter of the Nakamura Dragonfly Kingdom], Nakamura, 1994. Nos 51 (cf. OA 10516), 52 (12 pp., Apr. 20), 53 (10 pp., June 25), 54 (10 pp., Aug. 25), 55 (10 pp., Oct. 25), 56 (10 pp., Dec. 20). (Jap.). – (Distribution outside Japan: Dr W. Piper, Unnastr. 6, D-20253 Hamburg).

[Main signed articles:] No. 52: *Nomura, K.*: Strange weather and dragonflies in downtown Tokyo, 1993 (pp. 3-6, with a checklist of 24 spp.); – *Yoshida, M.*: The way of transporting living dragonflies, 2: larvae (pp. 7-8); – *Hatto, Y.*: All of my 60 years for toriko, 12/3 (p. 9); – *Sugimura, M.*: The first Shikoku *Stylurus nagoyanus* was recorded in Tokushima pref. (pp. 11-12). – No. 53: *Hatto, Y.*: All of my 60 years for toriko: looking back at the 1993 SIO International Symposium in Japan, and forward to the 1995 Symposium in Germany (pp. 6-8; some text in Engl.). – No. 54: *Takahashi, Y.*: *Mnais pruinosa costalis*, the dragonfly of my dreams (p. 2); – *Nishioka, T.*: Buri memories from the childhood (p. 5). – No. 55: *Sugimura, M.*: The visit of Dr Janira Costa (pp. 2-6). – No. 56: *Yoshida, M.*: Dragonflies on Kikai-jima (p. 3; checklist of 17 spp.); – *Rhyothemis severini* on Amami-ohshima (p. 4); – *Takahashi, Y.*: *Sympetrum infuscatum* and its local name (p. 4); – *Matsuda, I.*: "Tombo-turi" (catching dragonflies by threads) meeting held in Osaka prefecture, 1994 (pp. 5-7; Engl. title).

1995

(10932) BURTON, J.F., 1995. The flora and fauna

of Elmstead Wood and Sundridge Park, Bromley, south-east London, in the 1940s, with some earlier and later records. *Lond. Naturalist* 74: 83-112. – (In der Etwiesse 2, D-69181 Leimen-St. Ilgen).

Libellula depressa is the only odon. sp. recorded (in 1947).

- (10933) HEEFFER, J., 1995. *Libellen inventarisatie Goirle, 1994*. – [*Dragonfly survey at Goirle, 1994*]. Heeffe, Riel. iv+16 pp. (Dutch). – (Kaar 4, NL-5133 AZ Riel).
In 2 streams and in 2 moors in the Goirle area, Noord Brabant prov., the Netherlands, 16 spp. were evidenced in 1994. The occurrence of *Calopteryx virgo* is of particular local interest. – Cf. also OA 10982.
- (10934) MACHADO, A.B.M., 1995. *Erythrodiplax leticia* sp. n. de libélula do nordeste brasileiro (Odonata, Libellulidae). *Revta bras. Zool.* 12(4): 977-982, 2 col. figs incl. (With Engl. s.). (Depto Zool., Inst. Cienc. Biol., Univ. Fed. Minas Gerais, Caixa Postal 486, BR-31270-901 Belo Horizonte, MG).
The new sp. is described and illustrated from a series of ♂♂ (holotype ♂: Bahia, Iraquara, alt. 700 m, 20-IV-1995; deposited in author's collection). The new sp. is a member of the unimaculata-group of Borror.
- (10935) NOVELO-GUTIERREZ, R & A. RAMIREZ, 1995. The larva of *Neocordulia batesi* longipollex Calvert, 1909 (Odonata: Corduliidae). *Jl N. Y. ent. Soc.* 103(2): 180-184. – (First Author: Inst. Ecol., A.C., Aptdo postal 63, MX-91000 Xalapa, Veracruz).
Ultimate instar is described and illustrated from Costa Rica. Differences in frontal projection, proportion of anténnomeres, number of premental and palpal setae and the presence/absence of abdominal spines permit the separation from *N. biancoi*, the only other congener, the larva of which is known.
- (10936) RAJENDRAN, R., R. REUBEN, S. PURUSHOTHAMAN & R. VEERAPATRAN, 1995. Prospects and problems of intermittent irrigation for control of vector breeding in rice fields in southern India. *Ann. trop. Med. Parasitol.* 89(5): 541-549. – (Cent. Res. Med. Ent., P.O. Box 11, 4 Sarojini st., Chinna Chokkikulam, Madurai-6625002, India).
The impact of water management on the abundance and interactions of mosquito aquatic stages and some important predator groups (incl. odon.) was studied in a 22 ha rice plot in Tamil Nadu. When there was insufficient water for the conventional irrigation, this reduced predator populations, triggering a slight increase in the mosquito abundance.
- (10937) SCHNEIDER-JACOBY, M. [translated & adapted by B. Štumberger], 1995. [*Entwicklungskonzept Drau-Mur-Flussökosystem*] – *Razvojni koncept rečnega ekosistema Drava-Mura*. Društvo za opazovanje in proučevanje ptic Slovenije, Ljubljana. vi+52 pp. (Slovene). – (Publishers: Langusova 10, SI-1000 Ljubljana).
The Drau-Mur ecosystem represents a unique riverine landscape in the border area of Austria, Slovenia, Hungary and Croatia. This report was published originally in the *Euronatur Hintergrund* series, presenting a development draft for the region. In the area, 50 odon. spp. were evidenced. A checklist of these is presented along with the Slovene vernacular names as proposed by I. Geister (cf. OA 10686).
- (10938) SHARMA, R.K., R. MATHUR & S. SHARMA, 1995. Status and distribution of fauna in National Chambal Sanctuary, Madhya Pradesh. *Indian Forester* 121(10): 912-916. (With Hindi s.). – (First Author: Natn. Chambal Sanct., Deori, Morena, MP, India).
[Not available for abstracting.] It includes information on Odon.
- (10939) STEINER, C., 1995. *Einfluss von Prädatoren auf die Larven von Enallagma cyathigerum (Charpentier, 1840) und Platycnemis pennipes (Pallas, 1771)*. DiplArb., Zool. Inst., Techn. Univ. Braunschweig. iv+82 pp. – (Falkenstr. 25, D-70597 Stuttgart).
The study is based on field enclosure experiments and on laboratory work. The impact of predation by larval *Anax imperator* and *Orthetrum cancellatum* on larvae of the 2 zygopteran spp. is similarly high, but the losses caused by fish predation are significantly lower in *P. pennipes* than in *E. cyathigerum*. This is ascribed to the behaviour and substrate choice of the former sp.

- (10940) STEVENSON, D.J., S.M. ROBLE & C.S. HOBSON, 1995. New records of the damselfly *Ischnura prognata* in Virginia. *Banisteria* 6: 26-27. – (Second Author: Div. Nat. Heritage, Virginia Dept Conserv. & Recreation, 1500 E Main St., Suite 312, Richmond, VA 23219, USA). 6 new city and county records are documented. The sp. is scarce throughout its range (SE New York to Florida), but beating vegetation with sweep nets appears an effective means of flushing the adults, which are then easily captured.
- (10941) *TOMBO TO BUNKA – [DRAGONFLIES AND CULTURE]*. [Newsletter of the Nakamura Dragonfly Kingdom], Nakamura, 1995. Nos 57 (12 pp., 20 Feb.), 58 (8 pp., Apr. 20), 59 (10 pp., June 25), 60 (8 pp., Aug. 31), 61 (8 pp., Oct. 25). (Jap.). – (Distribution outside Japan: Dr W. Piper, Unnastr. 6, D-20253 Hamburg). [Main signed articles:] No. 57: *Kangawa, S.*: Fukumi Shimura and dragonflies on dyed textile (p. 8). – No. 58: *Takahashi, Y.*: The effect of burnt Akatombo, *Sympetrum frequens*, as medicine? (p. 6). – No. 59: *Sugimura, M.*: Report on the Dragonfly Kingdom Festival: the 10th anniversary of the Kingdom (pp. 2-5; cf. also OA 10322); – *Yoshihisa, S.*: Dragonfly school, 1 (p. 7); – *Okamura, J.*: The talk of Dr Janira Costa, 1: her profile and dragonfly information on Brazil (pp. 7-8). – No. 60: *Okamura, J.*: The talk of Dr Janira Costa, 2 (p. 5); – *Yoshihisa, S.*: Dragonfly school, 2: transformation of *Orthetrum albistylum speciosum* (p. 6). – No. 61: *Yoshida, K.*: *Stylurus nagoyanus* () in Tokushima pref. (p. 2); – *Hatto, Y.*: all of my 60 years for toriko: report of the SIO International Symposium in Essen, Germany (pp. 3-5); – *Yoshihisa, S.*: Dragonfly school, 3 (p. 6).
- (10942) WILDERMUTH, H., 1995. Kleingewässer in Mooren und ihre Bedeutung für Pflanzen und Tiere. *Hb. Moorschutz Schweiz* 1(3.3.2): 1-14. – (Haltbergstr. 43, CH-8630 Rütli). Concise considerations on the typology and on biotic communities of the Swiss moors, with numerous references to the odon., but without explicit locality data.
- (10943) WILDERMUTH, H., 1995. Pflege von Kleingewässern in Mooren. *Hb. Moorschutz Schweiz* 2(2.1.6): 1-10. – (Haltbergstr. 43, CH-8630 Rütli). Detailed considerations on practical management of small water bodies in the Swiss moors, with numerous references to the odon., but without explicit information on the particular localities.
- (10944) ZIMMERMANN, W., 1995. Die Libellen an sechs thüringischen Standgewässern im Vergleich der Jahre 1969 und 1993. *Artenschutzreport* 5: 24-27. (With Engl. s.). – (Von-Hoff-Str. 31, D-99867 Gotha). The 1989/1993 status of odon. assemblages at 6 stagnant water habitats in Thuringia, Germany, is compared with the situation in 1968/1969. The significant reduction of species diversity is ascribed to the biotic and abiotic habitat degradation that has taken place during the intervening period.

1996

- (10945) ÅBRO, A., 1996. Gregarine infection of adult *Calopteryx virgo* L. (Odonata: Zygoptera). *J. nat. Hist.* 30: 855-859. – (Inst. Anat., Univ. Bergen, Årstadveien 19, N-5009 Bergen). The individuals from W Norway were found to be infected by the eugregarine *Hoplorhynchus oligacanthus*. ♀♀ were most heavily infected, in contrast to other gregarine-infected zygopt. spp., where no difference between the sexes has been recorded. In *C. virgo*, the disparity is attributed to the dissimilar behaviour and place of activity in ♂♂ and ♀♀. The virgo-infection is considered in the light of the infected coexisting zygopt. populations.
- (10946) *ABSTRACTS OF PAPERS AND POSTERS PRESENTED AT THE 2nd ODONATOLOGICAL SYMPOSIUM OF THE ALPS-ADRIATIC REGIONAL COMMUNITY*, Deutsch-Wagram nr Vienna, Austria, 14-18 July 1996. [Not published; available is solely the Programme, listing the following presentations]: P a p e r s: *Dell'Anna, L., C. Utzeri, E. De Mattheis & M. Cobolli*: Biological differentiation and reproductive isolation of syntopic central Italian populations of *Chalcolestes viridis* (Vander L.) and *C. parvidens* (Artobol.) (Lestidae); – *Wildermuth, H.*: Nischenüberlappung, Nischentrennung und Habitatwahl von *Somatochlora arctica* und *S. alpestris* in der Schweiz; – *Burbach, K. & M. Winterholler*: Der Einfluss von *Hemianax ephippiger* in Mittel-

- europa 1995; – *Lehmann, G.*: Gomphiden im Bergland: zum Vorkommen von Gomphus vulgatissimus und Onychogomphus forcipatus im Bezirk Kufstein, N-Tirol; – *Winterholler, M.*: Libellenatlas Bayern: Konzept, Datenbank und Stand der Bearbeitung; – *Bedjanič, M.*: The "dry season" aspect of the odonate fauna of Sri Lanka; – *Müller, R. & M. Hämäläinen*: Philippinen, odonatologische Feldforschung im Tropenwald; – *Hanel, L.*: The rare species of dragonflies in Czech Republic; – *Raab, R. & E. Chwala*: Rote Liste der Libellen Niederösterreichs, 1. Fassung, 1995; – *Müller, R.*: Die Odonaten von Micronesien (Pazifik); – *Posters: Müller, R. & M. Hämäläinen*: Überblick über die Libellen der Philippinen; – *Sharma, S. & T. Ofenböck*: *Epiophlebia laidlawi* in Nepal; – *Slides: Arensberger, G. & P. Peitzner*: Libellendias ausgewählter europäischer Arten, 1 & 2; – *Field Trips*: [Pre-Symposium]: Neusiedler See-Seewinkel (12 & 13 July); – [Post-Symposium]: Donau-Auen nr Greifenstein (17 July); – Donau-March-Auen (18 July). – **Note**: The 3rd Odonatol. Symp. of the Alps-Adriatic Regional Community is to take place at the island of Cres, Croatia, in summer 1998. Organizing Secretary: Dr M. Frankovič, Barutanski breg 30, CRO-1000 Zagreb.
- (10947) *ACTA HYDROENTOMOLOGICA LATVICA*, Riga, Vol. 3 (1996). – (c/o Dr Z. Spuris, Miera iela 19-6, LV-2169 Salaspils). *Gorb, S., V. Tkach & V. Gorobchischyn*: The Odonata of the Daursky Nature Reserve (southern Transbaicalia, Russia) (pp. 3-9); – *Kosterin, O.*: Dragonflies (Odonata) of the city of Omsk (pp. 10-21); – *Spuris, Z.*: Some records of Odonata from the Komi autonomous Republic (Russia) (pp. 22-26); – Some records of Odonata from the neighbourhood of Tallinn (Estonia) (pp. 27-29); – Catalogue of the insects of Latvia. 12. Dragonflies (Odonata), supplement (pp. 30-36) (Latvian, with Engl. s.); – *Book reviews* (pp. 37-41, all by Z. Spuris).
- (10948) ADOMSSSENT, M., 1996. I. Nachtrag zur lauenburgischen Libellenfauna. *Bombus* 3(17/20): 75-77. – (Inst. Umweltwiss., Univ. Lüneburg, Rotenbleicher Weg 42, D-21335 Lüneburg). With reference to the paper listed in OA 10357, supplementary annotations are given on 14 spp.
- (10949) ADOMSSSENT, M., 1996. Zweiter Fund des Südlichen Blaupfeils, *Orthetrum brunneum* (Fonscolombe, 1837) in Nordost-Niedersachsen (Odonata: Libellulidae). *Beitr. Naturk. Niedersachs.* 49(2): 104-109. (With Engl. s.). – (Inst. Umweltwiss., Univ. Lüneburg, Rotenbleicher Weg 42, D-21335 Lüneburg). Subsequent to the record as reported in OA 9327, the sp. is here reported from the Schwindebeck area, Lüneburg distr. This is its northernmost record in Lower Saxony, Germany.
- (10950) *ADVANCES IN ODONATOLOGY (SUPPL.)*, Vol. 1: R. Jödicke, [Ed.], *Studies on Iberian dragonflies* (194 pp.), 1 Oct. 1996. Published by Ursus Scient. Publishers, Bilthoven (P.O. Box 256, NL-3720 AG Bilthoven). Orders from Germany to: Dr R. Jödicke, Grossenging 14, D-49699 Lindern. – Price: DEM 86.- net. For the contents cf. OA 10991. – The series of monographs and special topics volumes will be continued. Information is available from, and (standing) orders are accepted by the Publishers in Bilthoven.
- (10951) ALEXANDER, S.A., K.A. HOBSON, C.L. GRATTO-TREVOR & A.W. DIAMOND, 1996. Conventional and isotopic determinations of shorebird diets at an inland stopover: the importance of invertebrates and *Potamogeton pectinatus* tubers. *Can. J. Zool.* 74(6): 1057-1068. (With Fr. s.). – (First Author: Alexander Ecol. Services, 14 Oak St., Whitehorse, YT, Y1A 4B1, CA). Gut-content and stable-isotope techniques were used to determine diets of 4 shorebird spp., staging at a prairie wetland complex in Saskatchewan, Canada. The odon. are suborder-wise considered.
- (10952) ANAX, WIEN. *Mitteilungsblatt der Österreichischen Arbeitsgemeinschaft Libellen (ÖAL)*, Vol. 1, No. 2 (10 July 1996). – c/o R. Raab, Anton-Brucknergasse 2/2, A-2232 Deutsch-Wagram). *Hostettler, K.*: Die Libellenfauna des Naturschutzgebietes Rheindelta (Vorarlberg) (pp. 39-59); – *Laister, G.*: Zur Untersuchung vom Wasserchemismus bei Libellengewässern (pp. 60-66); – *Ehmann, H.*: Neuere Beobachtungen zur Salzburger Odonatenfauna (pp. 67-70); – *Laister, G.*: Bemerkungen zu interessanten Libellenarten Oberösterreichs (pp. 71-74); – *Ehmann, H.*: *Epi-theca bimaculata* (Charpentier, 1825), Erstnach-

weis für das Burgenland (Anisoptera: Corduliidae) (pp. 75-76); – *Laister, G., G. Lehmann & R. Raab*: Beobachtungen des reversiblen, temperaturabhängigen Farbwechsels bei *Enallagma cyathigerum* (Charpentier, 1840) und *Coenagrion puella* (Linnaeus, 1758) (Zygoptera: Coenagrionidae) (pp. 77-78); – *Raab, R.*: Aktivitäten der OAL (pp. 79-80); – Neuerscheinungen/Publikationshinweise (p. 81); – *Bek, H. & R. Raab*: Geschäftsbericht 1994 und 1995 der Österreichischen Arbeitsgemeinschaft Libellen – ÖAL für den Zeitraum von 16.10.1993 bis 1.12.1995 (p. 82).

- (10953) *ARGIA. The news journal of the Dragonfly Society of the Americas*, Vol. 8, No. 2 (Aug. 10, 1996). – (c/o Dr & Mrs T.W. Donnelly, 2091 Partridge Lane, Binghamton, NY 13903, USA). [Signed articles]: *Donnelly, N.*: Dragonflies and dragonfly people in the news (p. 2); – *Sones, J.*: News from Cape Cod (pp. 2-3); – *Barber, B.*: Adirondacks (p. 3); – *Nikula, B.*: Massachusetts to New Brunswick and back (p. 3); – *Wagner, D.*: Connecticut River (pp. 3-4); – *Glotzhofer, B. & D. Riggs*: *Cordulegaster erronea* finds in Ohio (pp. 4-5); – *Donnelly, N.*: Ohio - where the Neurocordulia are (p. 5); – *Burke, P.*: New records from near Lakefield, Ontario (p. 5); – *Johnson, D.*: NABS meeting (San Marcos TX) to future dragonfly symposium (p. 6); – *Book notices* (pp. 6-7); – *Beckemeyer, R.*: Some insect books containing Odonata information (p. 7); – *Krotzer, S.*: A Mississippi math lesson (pp. 8-9); – *Brunelle, P.-M.*: quality not quantity in Canada, or, where oh where did the ophios go? (pp. 9-13) – *Donnelly, N.*: Adirondack gathering (pp. 13-14); – *Tennessee, K.*: Escapade in Ecuador, pt 2 (pp. 14-16); – *Donnelly, N.*: Farangpo 96 - Thailand revisited and Vietnam added to our list (pp. 17-19); – *Heppner, J.B.*: Odonata in Chile, December 1995 (pp. 20-21); – *Bick, G.*: Looking back (pp. 22-26); – *Sprandel, G.*: Dragonfly occurrence on a North Florida Pond, with notes on monitoring techniques (pp. 26-29); – *Falls, B.*: Odonata from Long Point, Ontario (p. 29); – *Beckemeyer, R.J.*: First record of *Brechmorhoga mendax* from Kansas (pp. 29-30); – *Argia tezpi*: a new collection record from the Peloncillo Mountains, Cochise county, Arizona (pp. 30-31); – *Spada, D.*: Swallows and dragonflies (p. 31); – *Paulson, D.*: Sexism and Odonata conservation (pp. 31-34); – *DeMarmels, J.*: Comments on Venezuelan Odonata needing special conservation attention (p. 34); –

Venezuelan folk names for Odonata (p. 34); – *Donnelly, N.*: Yet another word for "dragonfly" in Vietnamese (pp. 34-35); – *Daigle J.J.*: 1996 DSA financial report (p. 35); – *Mauffray, B.*: Announcing the new International Odonata Research Institute web sites: "The Odonata Information network" (p. 35); – [DSA]: Statement of Committee on collecting policy (pp. 36-37). – *Inlay*: Common names of North American dragonflies and damselflies, adopted by the Dragonfly Society of the Americas (4 pp.).

- (10954) *BECHLY, G.H.P.*, 1996. Morphologische Untersuchungen am Flügelgeäder der rezenten Libellen und deren Stammgruppenvertreter (Insecta; Pterygota; Odonata) unter besonderer Berücksichtigung der phylogenetischen Systematik und des Grundplanes der Odonata. *Petalura* (Spec. Vol.) 2: 1-403. (With Engl. Appendix on pp. 340-402). – (Breslauer Str. 30, D-71034 Böblingen).

This is a completely revised 2nd edn of the work listed in OA 10148. The most significant improvement is the addition of a 60-page Engl. Appendix. – The work presents a new phylogenetic classification of all fossil and extant odonatoid taxa above the generic level, listing all the recognised "monophyla" along with the respective autapomorphies, etc. There are proposed 65 new taxa above the family-group level, 20 new fam., 13 new sfam., 7 new tribes, and 5 new subtribes. New status is defined for 60 taxa, 81 taxa are redefined, 4 are restituted and 3 new synonymies are figured out. In addition, 2 new gen. are erected in the Triadophlebiomorpha, viz. *Promitophlebia* gen. n. (type sp. *Triadophlebia modica*; Mitophlebiidae) and *Proneritophlebia* gen. n. (type sp. *Triadophlebia magna*; Triadophlebiidae). – (The Author's Odonoptera phylogenetic system is available on Internet, at <http://members.aol.com/odonatadat/phylogeny/bechly.htm>.)

- (10955) *BIEDERMANN, J.*, 1996. Libellen. In: P. Schurti & W. Ospelt, [Eds], *LieLex: ein Nachschlagewerk zu Liechtenstein*, pp. 66-68, LGT Bank in Liechtenstein, Vaduz. ISBN none. – (Blachastr. 78, FL-9494 Planken). General; listing 8 spp. as endangered in Liechtenstein.

- (10956) *BOGDANOVIĆ, T.* 1996. *Vretenca* (Odo-

nata) *Miljačke bare kod sela Nard*. – *Dragonflies (Odonata) of the Miljačka pond near the village of Nard*. M.Sc. thesis, Pedagog. Fac., Univ. Osijek, Osijek. ii+50 pp. (Croatian, with Engl. s.). – (c/o Dr M. Franković, Barutanski breg 30, CRO-1000 Zagreb).

The odon. community (9 spp.) of a Drava R. oxbow in Slavonia, Croatia, is described. Valuable are field notes on behaviour, presented for each sp. – (*Abstracter's Note*: Slavonia is a province in Croatia; it is not to be confused with the republic of Slovenia in southern Central Europe.)

- (10957) BOURGOIN, T., 1996. Phylogénie des hexapodes. La recherche des synapomorphies ne fait pas toujours le cladisme! *Bull. Soc. zool. Fr.* 121(1): 5-20. (With Engl. s.). – (Lab. Ent., Mus. Natn. Hist. Nat., 45 rue Buffon, F-75005 Paris).

A synthesis of the different propositions on the Hexapoda phylogeny is presented. The incongruent results of the 3 approaches, viz. the neonthological morphology, palaeontological morphology and the molecular aspects, are briefly analysed, particularly so for the Entognatha, Palaeoptera, Polyneoptera and the Hemiptera. The conflicts are not really related to the morphological and molecular variables processed, but rather to the choice of synapomorphies by different authors. In cladistics, the synapomorphy carries a precise meaning. It is indicated by the primary homology, validated through the test of persimomious congruence of the shared derived homologous characters.

- (10958) BURTON, J.F., 1996. Movements of the dragonfly *Libellula quadrimaculata* Linnaeus, 1758 in North-west Europe in 1963 (Odonata, Libellulidae). *Atalanta* 27(1/2): 175-187. – (In der Etzwiese 2, D-69181 St. Ilgen b. Heidelberg). During a period of anticyclonic weather at the end of May and in early June 1963, large movements of this sp. were observed at several places on the North Sea and English Channel coasts of France, England and the Netherlands, and also on the coast of SW Wales and on Lundy Island at the entrance to the Bristol Channel, SW England. These are described here in detail. A mass emergence in late May in the wetland area of the Muritz See in NE Germany was also reported. Although this might have been the origin of some of the quadrimaculata seen moving in the Netherlands,

it is thought more likely that all or, at least, most of these migrations originated in the Landes and Gironde area of SW France, in spite of the fact that it has not proved possible to obtain evidence of mass emergences of movements in that region in May 1963.

- (10959) CALLI, E.R. & A.L. CARVALHO, 1996. Aspectos de morfologia e biologia de *Triacanthagyna septima* (Selys, 1857) (Odonata, Aeshnidae). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, pp. 49-50. – [Abstract only]. – (Depto Zool., Inst. Biol., UFRJ, Caixa Postal 68044, BR-21944-970 Rio de Janeiro, RJ).

The venation is described in some detail, and notes are provided on (crepuscular) behaviour and on the larval habitat.

- (10960) CARNEIRO, S.M.V. & J.M. COSTA, 1996. Descrição da ninfa de *Heteragrion consors* Hagen in Selys, 1862 (Odonata: Megapodagrionidae). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 46. – [Abstract only]. – (Depto Ent., Mus. Nac., UFRJ, Quinta da Boa Vista, São Cristóvão, BR-20940-040 Rio de Janeiro, RJ).

So far only the immature stage of *H. aurantiacum* was known. The distinctive characters of *H. consors* are stated, and some information on its habitat is provided.

- (10961) CARVALHO, A.L., 1996. Evidências de um grupo monofilético neotropical de Aeshnidae (Odonata, Anisoptera). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 50. – [Abstract only]. – (Depto Zool., Inst. Biol., UFRJ, Caixa Postal 68044, BR-21944-970 Rio de Janeiro, RJ). The apomorphies in the genera *Castoraeschna*, *Coryphaeschna* and *Remartinia* are described.

- (10962) CARVALHO, A.L., 1996. Filogenia das espécies de *Coryphaeschna* Williamson, 1903 (Odonata, Aeshnidae). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 50. – [Abstract only]. – (Depto Zool., Inst. Biol., UFRJ, Caixa Postal 68044, BR-21944-970 Rio de Janeiro, RJ).

The genus is composed of 5 spp. Based on the analysis of the apomorphies in the genera *Castoraeschna*, *Coryphaeschna* and *Remartinia*, *Coryphaeschna adnexa* is considered phylogenetically the most original.

- (10963) [CHINA INTERNATIONAL EXHIBITION AGENCY], 1996. *Kitajski papirnati zmaji. – Chinese kites*. Slovene Ethnographic Museum, Ljubljana. 36 pp. ISBN none. (Bilingual: Slovene/Engl.). – (Slovene Ethnogr. Mus., Prešernova 20, SI-1000 Ljubljana).
This attractive booklet (10.0 × 29.5 cm) was published on the occasion of the exhibit of Chinese kites in the Slovene Ethnographic Museum, Ljubljana (July 25 - Aug. 8, 1996), in the framework of which several lectures and a calligraphy workshop were also organised. The beautifully illustrated publication gives an outline of the history of Chinese kites, various technical details, a list of the types exhibited, and col. photographs of several of them, incl. a dragonfly model. An illustrated catalogue (showing various dragonfly models) is available from Beijing Folk Arts Co., 39 Zhonglangxia BaitaSi, Xichengqui, PRC-100034 Beijing, where various dragonfly models can be also commercially ordered.
- (10964) CONNIFF, R., 1996. "Dragonflies are an odd combination of beautiful things". *Smithsonian* 27(4): 70-81, cov. phot. excl. – (Author's address not stated).
A general, rather "literary" masterpiece, very well readable, containing numerous references to and statements by various distinguished members of the Dragonfly Society of the Americas (V. Carpenter, N. Donnelly, D. Paulson, S. Valley, J. Waage). The article is based on author's experience, gained at a DSA fieldtrip in SE Arizona.
- (10965) COPELAND, R.S., W. OKEKA & P.S. CORBET, 1996. Treeholes as larval habitat of the dragonfly *Hadrothemis camarensis* (Odonata: Libellulidae) in Kakamega Forest, Kenya. *Aquatic Insects* 18(3): 129-147. – (Third Author: Crean Mill, Crean, St Buryan, Cornwall, TR 19 6HA, UK).
Larvae of *H. camarensis* were found in water-containing treeholes, but not elsewhere, in Kakamega Forest, in a site where no ground pools were detected. Treeholes were sampled by siphoning water with wide-bore, flexible plastic tubing. Larvae were found during four consecutive years of sampling in 46% of treeholes (N=54), and in 26% of treeholes samples (N=205). Larvae were more likely to be found in treeholes during wetter months. Distribution of larvae among treeholes was clumped. Larvae occurred more often in treeholes: of larger surface area and gape size, attributes that correlated positively with median water volume; of larger volume, within the range 0.15-42 l; and higher above the forest floor, up to 22.45 m. Larvae of Chironomidae and Culicidae predominated numerically among prey of odonate larvae, smaller larvae preying more on the former and larger larvae more on the latter. No cannibalism among odon. larvae was detected.
- (10966) COSTA, J.M. & C.V. DE ASSIS, 1996. Três novos Heteragrion Selys, 1886 do Brasil (Odonata: Megapodagrionidae). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 51. – [Abstract only]. – (Depto Ent., Mus. Nac., UFRJ, Quinta da Boa Vista, São Cristóvão, BR-20940-040 Rio de Janeiro, RJ). The 3 new spp. are briefly characterised, but they are not described and named.
- (10967) COSTA, J.M., J.R. PUJOL-LUZ, C.V. DE ASSIS, S.M.V. CARNEIRO & T.C. SANTOS, 1996. Estudo preliminar da odonofauna da Ilha da Marambaia, RJ (Insecta: Odonata). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 50. – [Abstract only]. – (Depto Ent., Mus. Nac., UFRJ, Quinta da Boa Vista, São Cristóvão, BR-20940-040 Rio de Janeiro, RJ).
The 1993 inventory yielded 1 undescribed sp., and the undescribed larvae of *Argia sordida* Heteragrion consors, *Brechmorhoga travassoi*, *Macrothemis tessellata*, and *Orthemis cultriformis*.
- (10968) DELL'ANNA, L., 1996. *Approccio multidisciplinare allo studio dell'isolamento riproduttivo tra Chalcolestes viridis e Chalcolestes parvidens* (Insecta: Odonata). Tesi dottorato, Dipto Biol. Anim., Univ. "La Sapienza", Roma. 57 pp. – (Author: Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32. I-00185 Roma).
Populations of *C. viridis* and *C. parvidens* (the latter often considered an allopatric ssp. of the former) coexist in syntopy in some ponds nr Rome, central Italy, where they generate both pure and hybrid offspring. The specific status of the 2 taxa was recognised on the basis of electrophoretic assays. In syntopic conditions, the 2 spp. show different activity times, with peaks at 12.00 h (parvidens) and 14.00 h (viridis). This is probably helping them to keep isolated. The inquiry

- into genotypic structure by means of electrophoresis of multilocus enzymes in large samples from syntopic (Castel Porziano, central Italy) and allotopic populations (viridis: Licenza, central Italy; Galicia, Spain; – parvidens: Peloponnese, Greece) has given an average genetic distance between the 2 taxa at a specific level ($D_{\text{NEI}} = 0.586 - 7$ diagnostic loci out of 16 checked). F-1 hybrids, heterozygous in all the diagnostic loci, represent 4.7% of the overall sample, the same as the percent of heterospecific tandems (4.6%; ♀♀ were identified by electrophoresis). The ♂♂ of the 2 taxa do not only differ in the shape of the cerci, but also in that of the inferior anal appendages and of the profallus. F-1 hybrids have cerci of intermediate shape, while in introgressive hybrids, the cerci resemble those of either parents. Last instar larvae differ in the shape of the proximal article of the labial palp, which shows a larger denticle in viridis than in parvidens. Total body length of syntopic viridis is significantly larger than that of syntopic parvidens. Not so total body length of allotopic viridis populations from central Italy, while parvidens from Greece averages significantly larger than viridis from Spain. In the examined syntopic populations, tandem ♂♂ were larger than unpaired ♂♂, although the difference was significant only in parvidens. – Emergence (1995) was recorded through exuviae counts, between 2 June - 28 July (peak on 23 June) in parvidens, and between 28 June - 28 July (peak on 21 July) in viridis. – The prereproductive period lasted roughly 8 weeks in parvidens and 5 in viridis. Throughout the prereproductive and reproductive periods, parvidens was much more abundant than viridis. – Based on this evidence, the syntopic populations appear biologically well differentiated, although some genetic compatibility does occur. At times when both spp. are active at the pond, the probability of meeting ♀♀ is greater for parvidens ♂♂, since these are more abundant than viridis ♂♂. However, the likelihood of mixed copulations is greatly reduced by different activity times and by different shapes of ♂ anal appendages. In syntopic populations, the size difference between the 2 spp. might also enhance reproductive isolation.
- (10969) DUMONT, H.J. & H. HEIDARI, 1996. On a collection of spring Odonata from Iran, with the description of *Coenagrion australocaspicum* n. sp. *Bull. Anns Soc. r. belge Ent.* 132: 63-78. – (First Author: Inst. anim. Ecol., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).
In apr. 1995, 30 spp. were collected from 6 localities, of which 7 spp. are recorded from Iran for the first time. *C. australocaspicum* sp. n. is described and illustrated (holotype ♂, allotype ♀, 9 ♂ paratypes: Siah-Kushim, Caspian lowland, 20-IV-1995; deposited at KBINW, Brussels, No. 28266). Its status within the puella-group is discussed.
- (10970) EK-AMNUAY, P., 1996. *Dragonflies and damselflies from Thailand*. Ton-or-Grammy Publishing, Bangkok. 168 pp. ISBN 974-518-488-8. – Price: Bath 250.-. (Thai, with Engl. title & taxonomic nomenclature). – (Author: Elf Atochem Agri, Bangkok Office, 15th Floor, Charn Issara Tower, 942/115-116 Rama IV Rd, Bangrak, Bangkok-10500, Thailand).
An attractive book (hardcover, 15 × 21 cm), directed at the general naturalist, presenting general information on Thai dragonflies, with emphasis on libellulids, partly based on Author's M.Sc. work of 1982, as listed in OA 4062 (his name transliterated there as "Eak-Amnuay"). The book is generously illustrated with 119 (mostly col.) species portraits. Unfortunately, the voluminous recent literature, incl. the indispensable series as listed in OA 8907, has not been considered, therefore the appended checklist of Thai spp. (268) is out-of-date and contains some errors.
- (10971) ENGMANN, S.G., 1996. Zur Limnofauna der Fliessgewässer im Norden des rheinischen Braunkohlenreviers. *Decheniana* 149: 185-204. (With Engl. s.). – (Haus Randerathstr. 9a, D-41352 Korschenbroich).
During 1988-1993, 22 streams were investigated in the Rhineland Brown Coal distr., W Germany. 8 odon. spp. are listed.
- (10972) ERJAVECIA. [Newsletter of the Slovene Odonatological Society]. Ljubljana, No. 2 (26 June 1996). (Slovene). – Edited by M. Bedjanič (Fram 117a, SI-2313 Fram); – available from Miss A. Pirnat (Vošnjakova 4a, SI-1000 Ljubljana).
Bedjanič, M. & A. Šalamun: Report on the 1996 Annual Meeting of Slovene Odonatological Society (pp. 2-3); – *Bedjanič, M.*: Slovene Odonatological Society on Internet (pp. 3-4); – *Dragonflies in folklore* (p. 5); – *Pirnat, A.*: Dragonflies

- of the Ljubljana Moore (pp. 6-7); – *Bedjanič, M.*: Odonatological bibliography for Slovenia, Supplement 2 (pp. 8-12; titles Nos 97-150). – *Membership directory* appears on pp. 4-5 (20 addresses).
- (10973) EWERS, M., 1996. *Zur Biologie und Ökologie der Sumpf-Heidelibelle Sympetrum depressiusculum (Selys, 1841) nach Untersuchungen an den Ahlhorner Fischteichen*. Dipl.Arb. Biol., Univ. Oldenburg. 105 pp. – Price: DEM 40.- net.; available from the Author. – (Im Orthbruch 6, D-26203 Wardenburg).
During March-Nov. 1994, the population of *S. depressiusculum* has been studied in the Ahlhorner fishponds nr Oldenburg, NW Germany. Adult behaviour and the development of the population during the season are described in much detail. This is an excellent work, supplementing the studies as listed in e.g. *OA* 10203, 10358, etc.
- (10974) GALLEGOS, D.M.N., L.A.P. CHAVES, A.J. RIBEIRO, L.H. MARTINS, & A. HIGA, 1996. Entomofauna aquática do Rio Tibagi, Sertãoópolis, 1. *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 51. – [Abstract only]. – (Depto Biol. anim. & veget., CCB, Univ. Estadual de Londrina, Brazil).
Monthly samples were taken during June 1992 - Aug. 1993. The odon. were most abundant in Apr. 1993. No spp. names are stated.
- (10975) GHOSH, A.K., 1996. Insect biodiversity in India. *Oriental Insects* 30: 1-10. – (Zool. Surv. India, Prani Vigyan Bhavan, M Block, New Alipur, Calcutta-700053, India).
The following figures are stated with reference to the odon.: total number of spp. known from India up to 1994: 494 (= 8.98% of the world fauna); – endemic genera: 6 (= 5%); – endemic spp.: 115 (= 21%); – Sundarban Mangroves: 25 spp.; – Andaman & Nicobar Isls: 38 spp./sspp.
- (10976) GOMPHUS. *Mededelingsblad van de belgische libellenonderzoekers*. – *Bulletin de liaison des odonatologues belges*, Vol. 12, No. 1/2 (May 1996). (Dutch & Fr.). – (c/o G. De Knijf, Hofstraat 58, B-9000 Gent).
Goffart, P. / Tailly, M.: [Editorial] (pp. 1-2): – *Goffart, P.*: Inventaire, cartographie et conservation des odonates de la commune de Libin (Ardenne, province de Luxembourg) (pp. 3-58): – *Huysecom, J.*: Le groupe Gomphus contribue à la restauration de l'étang de la Vieille Rochette (pp. 59-65); – *Anselin, A.*: [Organisation of the forthcoming Atlas] (pp. 65-66). – Various announcements, an erratum and the 1996 field trip programme appear on pp. 67-72.
- (10977) GONZÁLEZ MARTÍNEZ, S.C. & L.F. VALLADARES DIEZ, 1996. The community of Odonata and aquatic Heteroptera (Gerromorpha and Nepomorpha) in a rehabilitated wetland: the Laguna de la Nava (Palencia, Spain). *Arch. Hydrobiol.* 136(1): 89-104. – (Biol. Anim., Depto Cien. Forest., Univ. Valladolid, Avda de Madrid 57, ES-34004 Palencia).
An ecological and phenological study is presented of 9 odon. and 17 heteropt. spp., conducted July 1991 - June 1992, with reference to the degree of maturity reached by the wetland community, based on autecology monitoring values of the taxa involved.
- (10978) GONZÁLEZ SORIANO, E. & R. NOVELO GUTIÉRREZ, 1996. Odonata. In: J.E. Llorente Bousquets, A.N. García Aldrete & E. González Soriano, [Eds], Biodiversidad, taxonomía y biogeografía de artrópodos de México: hacia una síntesis de su conocimiento, pp. 147-167, Univ. Nac. Autón. México, Mexico. ISBN none. – (Publishers: Inst. Biol., Univ. Nac. Autón., Aptdo Postal 7'142, Ciudad Universitaria, MX-04510 México, D.F.).
This is an excellent, concise and authoritative presentation of the current knowledge on the Odon. of Mexico, prepared by 2 of the foremost Mexican workers. The main chapters are: "Introducción", "Desarrollo de la investigación taxonómica en México", "Odonata de México: panorama actual", "Distribución estatal", "Riqueza por estados", "Estados inmaduros", "Notas biogeográficas", "Especies endémicas y especies raras". The bibliography contains close to 160 titles. Of unusual importance is the taxon-wise list of works, applicable for identification of the regional taxa. For each of the 32 Mexican provinces, the hitherto known spp. are tabulated. At present, 330 spp. are known to occur in Mexico, for 181 of them the larval stage has been described. – This work is the best of its kind as yet published on any country of the New World.

- (10979) *GRACILE*. [Newsletter of Odonatology]. Published by the Kansai Research Group of Odonatology, Osaka, No. 55 (20 May 1996). (Jap., with Engl. titles). – (c/o K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA).
Oka, I.: How dragonflies have suffered from the Hyogo earthquake (pp. 1-16; cf. *OA* 11014); – *Aoki, T.*: Odonate fauna of Kobe city, Hyogo prefecture, 3 (Coenagrionidae) (pp. 17-24); – *Yagi, T.*: The relations between the individual number of *Sympetrum frequens* and the weather (pp. 25-30); – *Ito, Y.*: Refusal behavior of a female *Boyeria maclachlani* against a male's approach (p. 31); – *Inoue, K.*: *Lestes sponsa* roosting with closed wings (pp. 32-33); – *Sympetrum infuscatum* oviposited above water (pp. 33-34; with Engl. s.); – *Niinomi, M.*: Some observations on the behavior of *Polycanthagyna melanictera* (pp. 35-36); – *Watanabe, Y.*: Close-up equipment for high magnification (pp. 37-39); – *Inoue, K.*: Record of the 13th [International] Symposium [of Odonatology] and my short stay in Europe. Visits to overseas members of the KRGO (pp. 40-57; with Engl. s.).
- (10980) *HAGENIA. Mitteilungsblatt des Nationalen Büros der SIO in der Bundesrepublik Deutschland und der GdO*, No. 12 (1 Sept. 1996). Edited & Produced by W. Piper (Unnastr. 6, D-20253 Hamburg) & U. Krüner (Gelderner Str. 39, D-41189 Mönchengladbach).
 The notes and articles are organized under the following standard headings: "SIO", "GdO", "Termine", "Literatur", "Kooperation und Mitarbeit", "Verschiedenes" and "Faunistik". The issue contains various announcements, meeting reports, book reviews, lists of recent odonotol. M.Sc. diss. in Germany, notes on dragonflies in (German) poetry, belletristics and figurative arts, etc. Some of the signed articles: *Schorr, M.*: Rücktritt des Generalsekretärs der SIO (pp. 1-2); – *Lempert, J.*: Einflug von *Sympetrum fonscolombei* (p. 14); – *Anselm, M., U. Brose, S. Samu & M. Zörner*: Bemerkenswertes Vorkommen von der Gemeinen Keiljungfer (*Gomphus vulgatissimus* Linné, 1758) in Nordwestmecklenburg (pp. 21-23).
- (10981) HEEFFER, J., 1996. *Libellen op Huis ter Heide*. – [*Dragonflies on the "Huis ter Heide" estate*]. Heffer, Riel. 20 pp. (Dutch). – (Kaar 4, NL-5133 AZ Riel).
 The odon. fauna of the estate, situated at Loon-op-Zand, nr Tilburg, Noord Brabant prov., the Netherlands, has been studied systematically in 1990, 1991 and 1992. The results are thoroughly recorded in 3 annual reports. By 1992, 15 spp. were evidenced at 3 moors, their local status was assessed, the habitats described and various management measures suggested. Subsequently some of the latter were implemented, and some additional, man-made habitats set up. A new survey was conducted in 1995, when 22 spp. were encountered, incl. *Lestes barbarus*, *L. virens*, *Erythromma viridulum* and *Aeshna affinis*. The latter has not been previously recorded from the province.
- (10982) HEEFFER, J., 1996. *Libellen inventarisatie Goirle, 1995*. – [*Dragonfly survey at Goirle, 1995*]. Heffer, Goirle. 15 pp. (Dutch). – (Kaar 4, NL-5133 AZ Riel).
 This is the continuation of the work listed in *OA* 10933. In 1995, 4 spp. were added to the list, incl. *Calopteryx splendens*, which occurs spatially separated from *C. virgo*.
- (10983) HENNIG, R., 1996. Nachweis der Helmazurjungfer *Coenagrion mercuriale* (Charpentier) in Süd-Westbrandenburg (Odonata). *Ent. Nachr. Ber.* 40(1): 62-63. – (Hauptstr. 30b, D-14913 Merzdorf).
C. mercuriale is reported from an irrigation ditch nr Pechüle, Teltow-Fläming distr., E Germany. The habitat is described, and 11 other spp. from the locality are listed, incl. *Ischnura pumilio*, *Cordulegaster boltonii*, *Orthetrum brunneum* and *O. coerulescens*.
- (10984) HOLDER, M., 1996. *The dragonflies and damselflies of Algonquin Provincial Park*. Friends Algonquin Prov. Park, Whitney/ON. 40 pp., ISBN none. [Algonquin Park techn. Bull. 11]. – Price: Can \$ 2.96. – (Orders to: C.D. Jones, Park Naturalist, Algonquin Prov. Park, Box 219, Whitney, Ont., K0J 2M0, CA).
 The well known Ontario park (surface 7725 km²) includes thousands of lakes, rivers, beaver ponds and other wetland habitats, supporting an odon. fauna of at least close to 90 spp.; 85 of these are listed here, but according to a personal information from the Park Naturalist, C.D. Jones, to the Ed., by Aug. 1996, after the appearance of this work, 4 spp. could be added to the list. – The

introductory chapter gives a general introduction to dragonfly morphology, biology and behaviour, with reference to the favourable observation sites in the Park. The main part of the book are the species accounts, presenting for each of the 36 treated spp. a detailed description, and information on its Algonquin status, habitats and phenology. Accompanying the text are col. illustrations of each sp. (and of both sexes, where considered opportune). These will greatly facilitate a quick identification by the interested park visitor. A glossary of technical terms, a checklist of the hitherto recorded spp., and a list of those expected potentially to occur in Algonquin conclude the publication. – A careful reader will probably notice some minor errors in the scale of some illustrations. In a next edn, the term “nymph” should also better be replaced by the more correct “larva”. – This attractive and nicely produced booklet is the first commercially available field guide on dragonflies of a Canadian provincial park. It clearly reflects the rapidly growing interest in the Odon. among park naturalists. It is to hope, therefore, the Algonquin initiative will soon be followed up by some of the numerous other odonatologically interesting Canadian provincial parks, particularly so also in the West.

- (10985) HUBENOV, Z., 1996. Faunistichno raznoobrazie na B'lgariya: bezr'bnachni shivotni. – Faunistic diversity of Bulgaria: invertebrates. *Historia natur. bulg.* 6: 11-16. (Bulg., with Engl. s.). – (Inst. Zool., Bulg. Acad. Sci., Bul. Car Osvoboditel 1, BG-1000 Sofia).
Orderwise, the status of the known spp. in Bulgaria is stated. 64 odon. spp. were so far evidenced, but 75 spp. are expected. – For a monograph on the odon. fauna of Bulgaria cf. *OA* 10209.
- (10986) *IDF-REPORT. Newsletter of the International Dragonfly Fund*, Vol. 1, No. 1 (15 Sept. 1996). 20 pp. (Text in German). Edited by Dr M. Lindeboom, responsible for the Publishers: H. Lohmann (Basler Str. 11, D-79618 Rheinfelden). The “International Dragonfly Fund, IDF” was set up on 31 March 1996, with the objective of financial sponsoring the odonatol. activities and research. The first issue of the bulletin contains the Constitution & By Laws, Charter Meeting minutes, membership list (26), and a call for collaborators on 2

research projects, viz. “Zweckgebundenes Naturschutzprojekt ‘Weberalten’” and “Zweckgebundenes Forschungsprojekt ‘Paarungssysteme’”, to get in touch with H. Lohmann. Useful is the information on 13 Internet programs. – (Apparently, it is the objective of the leadership to apply at the 1997 SIO Plenary Business Meeting for an affiliation in the SIO. For the time being, and contrary to the statement on the cover of the issue, the IDF is not “an affiliate of the SIO.”)

- (10987) INOUE, K., 1996. *Japanese dragonflies*. CD-ROM, Tesmic Systems, Osaka. TSCD 50025. (Jap.). – Price: ¥ 8800.- net. – (Orders from outside Japan to: Dr W. Piper, Unnastr. 6, D-20253 Hamburg).
This is a splendid collection of 100 portraits, all taken in the field. Some spp. are represented by both sexes, and most photographs will enable a reliable identification of the specimens or own photographs. Among the spp. shown are also rareties, such as e.g. *Libellula angelina* (♂, ♀). Some photographs are to be considered as unique works of art, e.g. *Sympetrum frequens* in sunset, etc. The unusual, but very convenient feature of the work is that it is not copyrighted; the purchaser is free to use the photographs in any kind of publications or commercial reproductions, incl. calendars, posters, etc. – This is the first, entirely odonatological CD-ROM available in the market. A good number of European spp. is presented also in the work listed in *OA* 9731, though the latter is general, containing also a great variety of other animal and plant spp. – Members of SIO and of the SIO-affiliated societies enjoy a special discount, therefore their orders should solely be directed to the above address, either through the Eds of *Odonatologica*, The SIO National Offices, or through the national affiliated societies.
- (10988) JARZEMBOWSKI, E.A. & A. NEL, 1996. A new genus and species of hawker dragonfly (Aeshnidae) from the Lower Cretaceous of southern England. *Cretaceous Res.* 17(1): 97-101. – (First Author: Maidstone Mus. & Art Gallery, St Faith's St., Maidstone, Kent, ME14 1LH, UK). *Cretalloaeschna cliffordae* gen. n., sp. n. is described and illustrated. The new gen. is related to the gomphaeschnine *Gomphaeschna*, *Alloaeschna* and *Oligoaeschna*.

- (10989) JARZEMBOWSKI, E.A. & A. NEL, 1996. New fossil dragonflies from the Lower Cretaceous of SE England and the phylogeny of the superfamily Libelluloidea (Insecta: Odonata). *Cretaceous Res.* 17(1): 67-85. – (First Author: Maidstone Mus. & Art Gallery, St Faith's St., Maidstone, Kent, ME14 1LH, UK).
2 new spp., *Cretaneophya strevensi* gen. n., sp. n. and *Valdicordulia wellsonum* gen. nov, sp. n. (Libelluloidea: Corduliidae), are described from the Weald Clay of the English Weald (Hauterivian/Barremian). A new phylogenetic analysis of the 'difficult' superfamily Libelluloidea is attempted, but the consensus tree suggests an unresolved trichotomy of included families and subfamilies.
- (10990) JÖDICKE, R., 1996. Die Libellen der niederrheinischen Altwässer (Insecta: Odonata). *Niederrhein. Jb.* [1995]: 51-57. – (Grossenging 14, D-49699 Lindern).
During 1972-1993, 32 spp. were evidenced at 5 oxbow localities in the Lower Rhine region, Germany. Their local occurrence is species-wise annotated and the general aspect of the fauna is discussed in detail.
- (10991) JÖDICKE, R., [Ed.], 1996. *Studies on Iberian dragonflies*. Ursus, Bilthoven. 194 pp. – ISBN 90-73527-03-1. [Advances in Odonatology (Suppl.) 1]. Price NLG 106.- net. – (Publishers: Ursus, P.O. Box 256, NL-3720 AG Bilthoven).
The book is a collection of research and faunistic papers. **C o n t e n t s:** *Martens, A.*: *Sympetrum sinaiticum tarraconense* Jödicke (cover phot.); – *Jödicke, R.*: Preface (p. 7); – *Anselin, A. & I. Hoste*: Dragonfly records from the Sierra de la Demanda and the Sierra de Urbión (Spain), with notes on habitat and altitudinal range (pp. 9-12); – *Cordero, A.*: A preliminary checklist of the Odonata of Galicia, NW Spain (pp. 13-25); – *Grand, D.*: Nouvelle observation d'*Hemianax ephippiger* (Burmeister) en Catalogne (Anisoptera: Aeshnidae) (pp. 27-28); – *von Hagen, H.*: Neue Beobachtungen zur Odonatenfauna Mallorcas (pp. 29-33); – *Biometrische Untersuchungen an Exuvien von Anax imperator* Leach und *A. parthenope* Selys vom Südosten Mallorcas (Anisoptera: Aeshnidae) (pp. 35-42); – *Enten als Libellenjäger* (pp. 43-45); – *Notiz zu den Exuvien von Selysiothemis nigra* und *Diplacodes lefebvrei* (Anisoptera: Libellulidae) (pp. 47-51); – *Hartung, M.*: Odonata from the Iberian peninsula with a description of *Calopteryx haemorrhoidalis almo-gravensis* ssp. n. from Portugal (pp. 53-59); – *Jahn, P.*: Dwarf forms of dragonflies in Portuguese coastal waters (Zygoptera: Calopterygidae; Anisoptera: Libellulidae) (pp. 61-63); – *Libellen im Einzugsgebiet des Guadiana in Südostportugal* (pp. 65-76); – *Jödicke, R.*: Die Odonatenfauna der Provinz Tarragona (Catalunya, Spanien) (pp. 77-111); – *Jones, S.P.*: Notes and observations on dragonflies in southern Portugal (pp. 113-116); – *Klingenberg, K. & A. Martens*: Record of an intermediate form between *Orthetrum coerulescens* (Fabricius) and *O. anceps* (Schneider) in southern Spain (Anisoptera: Libellulidae) (pp. 117-121); – *Malkmus, R.*: Libellen im Gebiet des unteren Rio Guadiana, Portugal (pp. 123-126); – *Martens, A., A. Martens & A. Martens*: Dragonfly records from coastal Andalusia in October (pp. 127-128); – *Röhn, C.*: Frühjahrsbeobachtungen von Libellen im zentralen und südlichen Teil der Iberischen Halbinsel (pp. 129-137); – *Wasscher, M.*: Dragonflies around Olot in the province of Girona, NE Spain (pp. 129-137); – *Jödicke, R.*, [Ed.], Faunistic data of dragonflies from Portugal (pp. 149-153); – Faunistic data of dragonflies from Spain (pp. 155-189); – *Index of taxa* (pp. 191-193).
- (10992) JURZITZA, G., 1996. Libellen beobachten. *Kosmos* 1996 (July): 66. – (Rheinmuthstr. 27, D-76187 Karlsruhe).
Book review of the volume listed in OA 8987, but the publication date is stated erroneously as 1995.
- (10993) KARJALAINEN, S., 1996. Rantojen lentotaiturit. – Dragonflies, nature's stunt pilots. *Suomen Luonto* 55(7): 26-33, cover pp. 1-2 (extra photographs), 58 (Engl. s.). (Finn., with Engl. s.). – Copies of the issue available from the publishers, at FIM 33.- net. – (Author: Tyrkykuja 3 B 15, FIN-02320 Espoo; – Publishers: Kotkankatu 9, FIN-00510 Helsinki).
A general article in the Finnish leading popular nature magazine. It contains 19 col. phot. of 12 spp., incl. an ovipositing *Aeshna crenata*.
- (10994) KEASTER, A.J., J.A. GRUNDLER, W.S. CRAIG & M.A. JACKSON, 1996. Noctuid moths and other insects captured in wing-style traps baited with Black Cutworm (Lepidoptera: Noctuidae) pheromone on offshore oil platforms in the

- Gulf of Mexico, 1988-1991. *J. Kans. ent. Soc.* 69(1): 17-25. – (Dept Ent., Univ. Missouri, Columbia, MO 65211, USA).
- In Sept. 1988, *Anax junius* and *Tramea lacerata* were captured in 3 traps, placed off the coast of Texas.
- (10995) KETTRUP, M., 1996. Effizienzkontrolle im Gewässerauenprogramm. *LOBF-Mitt.* [= *Mitt. Landesanst. Ökol. Bodenordn. Forstplan.*] 1996 (2): 44-49. – (Landesanstalt Ökol., Leibnizstr. 10, D-45659 Recklinghausen).
The grass mowing in the Ems oxbows has ceased in 1990. By 1995, the new management resulted in clearly favourable development of the odon. fauna. The current situation is analysed and discussed.
- (10996) KOLSHORN, P., 1996. Am kleinen De Witt-See. *Natur-Spiegel, Krefeld* 19(2): 14. – (Author's address not stated).
5 odon. spp. are listed from this pond nr Sassenfeld in Nettetal, Lower Rhineland, Germany.
- (10997) KOLSHORN, P., 1996. Winterlibelle entdeckt. *Natur-Spiegel, Krefeld* 19(2): 24. – (Author's address not stated).
Sympetma fusca is recorded from the "SchERPenseelschen Mooren" nr Oberkrüchten, Lower Rhineland, Germany; April 1996.
- (10998) KOTARAC, M., 1996. *Namakalni sistem v Podravju. Presoja vplivov na okolje. Akumulacija Požeg: kačji pastirji (Odonata).* – [Assessment of the impact on dragonflies (*Odonata*) by the man-made lake of Požeg in the irrigation system of the Drava basin, NE Slovenia]. Vodnogospodarski biro, Maribor. 8 pp. (Slovene). – (Antoličičeva 1, SI-2204 Miklaž-na-Dravskem polju).
Mainly by sampling the immature stages, 18 spp. were evidenced. The species composition and their population strengths are compared with those in Lake Komarnik (cf. OA 10152). The unfavourable situation in Požeg is due to the currently applied pisciculture methods. If these are to remain unmodified, while the lake is to be used for irrigation purposes, several odon. spp. are inevitably to disappear (e.g. *Erythromma najas*, *Epitheca bimaculata*), and the populations of most of the others are to be further diminished. The appropriate management measures are suggested.
- (10999) KOTARAC, M., 1996. Kačji pastirji (*Odonata*). In: K. Poboljšaj, D. Šare & M. Kotarac, Inventarizacija favne dvoživk (*Amphibia*), ptičev (*Aves*) in kačjih pastirjev (*Odonata*), ter ureditveni pogoji pri izvedbi zasipanja gramoznice B v Bizoviku, pp. 13-16, cumulative references pp. 22-23, Prir. Muz. Slov., Ljubljana. (Slovene). – (Author: Antoličičeva 1, SI-2204 Miklaž-na-Dravskem polju).
From a gravel pit at Bizovik nr Ljubljana, Slovenia, 13 spp. are evidenced (Apr.-May 1996) and the assemblage is assessed from the conservation point of view.
- (11000) KOTARAC, M., 1996. *Študija za oceno vpliva na dvoživke (Amphibia) in akvatično favno železniške proge Puconci-Hodoš-državna meja z Madžarsko. Kačji pastirji (Odonata).* – [Assessment of the impact of the railway Puconci-Hodoš-Hungarian state border on the amphibian and aquatic fauna. Dragonflies (*Odonata*)]. Prir. Muz. Slov., Ljubljana. 5 pp. (Slovene). – (Author: Antoličičeva 1, SI-2204 Miklaž-na-Dravskem polju).
12 spp. are listed from 4 streams in Prekmurje, NE Slovenia. According to the Slovene Red List, *Ophiogomphus cecilia* is endangered and 3 spp. are vulnerable. Various habitat conservation measures are suggested.
- (11001) KUMAR, Arvind, 1996. Seasonal variations in the caloric contents of certain predatory insects in a village fish pond of Santhal Parganas (Bihar). *J. environ. Biol.* 17(1): 59-62. – (Environ. Biol. Lab., P.G. Dept Zool., S.K. Univ., Dumka-814101, India).
Ischnura sp., *Rhodischnura* sp., *Mesogomphus lineatus*, *Potamarcha* sp. and *Zyxomma* sp. larvae were examined. Their maximum caloric value (5.487-0.003 k cal/g dry wt) was found in January. In Coleoptera and Hemiptera the maximum values were in July and June, resp. The possible reasons for this variation are discussed.
- (11002) LAISTER, G., 1996. Libellenkartierung Linz fertiggestellt! *Öko-L* 18(2): 26-27. – (Naturk. Stn Linz, Roseggerstr. 22, A-4020 Linz).
A brief report on the results of the 1990-1994 odon. mapping of the city of Linz (Austria) area. 53 spp. were evidenced.
- (11003) *La LETTRE DES SOCIÉTAIRES Société*

française d'Odonatologie, No. 8 (30 June 1996).
– (c/o J.-L. Dommangeat, 7 rue Lamartine, F-78390 Bois-d'Arcy).

The issue mainly contains the minutes of the Plenary Business Meeting of 20 Apr. 1996, incl. the modifications of the Constitution. In the Editorial, J.-L. Dommangeat is outlining some of the issues the SFO is to face in the forthcoming fiscal year.

- (11004) LINDEBOOM, M., 1996. *Fortpflanzungsbiologie der Gebänderten Prachtlibelle Calopteryx splendens (Calopterygidae, Odonata)*. Dr.-Diss., FB Biol., Univ. Freiburg, Freiburg/Br., vi+172 pp. ISBN none. Price: DEM 30.- net. – (Orders to the Author: Wolfstr. 6, D-72119 Ammerbuch).
A thorough study of *C. splendens* reproductive biology. The main sections of the work are titled: "Paarung und Eiablage" (pp. 5-113); – "Populationsökologie" (pp. 114-138); – and "Prä- und postkopuläre Isolationsmechanismen" (pp. 139-153). Of considerable interest are also a distribution map of the infraspecific taxa in Europe and in the Mediterranean region (incl. an undescribed taxon from S Turkey), the same of hybrid areas, and a checklist of the hitherto known *Calopteryx* taxa of the world. "C.s. femivarians subspec.nov.", listed on p. 24, is a nomen nudum.
- (11005) LOHMANN, H., 1996. Das phylogenetische System der Anisoptera (Odonata). *Ent. Z., Essen* 106(6): 209-252, (7): 253-266. (With Engl. s.). – (Basler Str. 11, D-79618 Rheinfelden). In accordance with the principles and methodology of phylogenetic systematics (cladistics), a new system of the Anisoptera is proposed. – [Author's abstract:] The Odonata are subdivided into the suborders Zygoptera and Epiprocta n. subordo. The Epiprocta are subdivided into Epiophlebioptera n. infraordo and Anisoptera n. infraordo. The current suborder "Anisozygoptera" is recognized as a paraphylum and eliminated. The system of Anisoptera is successively established on the individual hierarchy levels. In this connection, taxa being inserted between order group and family group are not provided with categories. The following sister groups are erected, being subordinated one another: – (1) Palanisoptera - Neanisoptera. The Palanisoptera are newly arranged into Gomphaeschnata n. tax. (with the sole genus Gomphaeschna) and Aeshnata n. tax. An impor-

tant autapomorphy of Neanisoptera is the bulbus vesicalis in the 4th segment of the vesica spermalis ("ejaculation chamber" of Pfau, 1991). – (2) Subordinated to Neanisoptera are the sister groups Austropetaliata - Entoflexata. The Austropetaliata n. tax. consist of Archipetaliidae n. fam. and Austropetaliidae. The Austropetaliidae are subdivided into Austropetaliinae and Hypo-petaliinae n. subfam. The † Cymatophlebiidae are considered as member of the stem group of Austropetaliidae. An important autapomorphy of Entoflexata n. tax. is the entoflexy of the hind tibiae. – (3) Subordinated to Entoflexata are the sister groups Petalurata - Exophyticata. The Peta-lurata n. tax. consist of Petaluridae. Important autapomorphies of Exophyticata n. tax. are the peglike tarsal and/or tibial setae (tumidotrichae), the protibial keels (calli) and the exophytical oviposition in connection with a reduced or partially reduced ovipositor. – (4) Subordinated to Exophyticata are the sister groups Gomphata - Cavolabiata. The Gomphata n. tax. consist of Gomphidae. The genus Progomphus may be the sister group of all other Gomphata. The larval helmet mask is an important autapomorphy of Cavolabiata n. tax. – (5) Subordinated to Cavolabiata are the sister groups Cordulegastrata - Ocreata. The Cordulegastrata n. tax. consist of Cordulegastridae. An important autapomorphy of Ocreata n. tax. is the tibial keels (ocreae) on all legs. – (6) Subordinated to Ocreata are the sister groups Neopetaliata - Brevistigmata. The Neopetaliata n. tax. exist only of Neopetalia punctata. Most important autapomorphies of Brevistigmata n. tax. are a shortened pterostigma and the modified peglike tibial setae (β -tumidotrichae). The † Hemeroscopidae are considered as member of the stem group of Brevistigmata. – (7) Subordinated to Brevistigmata are the sister groups Chlorogomphata - Palpolabiata. The Chlorogomphata n. tax. consist of Chlorogomphidae. Most important autapomorphies of Palpolabiata n. tax. are the labium (with greatly broadened palps and reduced ligula) and the spermal vesicle of the "synthemistid" type (buccula spermalis turned outside in). The † Araripe-gomphidae n. fam. are considered as member of the stem group of Palpolabiata. – (8) Subordinated to Palpolabiata are the sister groups Synthemistata - Firmonervata. The Synthemistata n. tax. consist of Synthemistidae. An important autapomorphy of Firmonervata n. tax. is the bracelike antenodals of the hind wings. – (9) Sub-

ordinated to Palpolabiata are the sister groups Gomphomacromiida - Valvulida. The Gomphomacromiida n. tax. exists of the genera Gomphomacromia and Archaeophya. An important autapomorphy of the Valvulida n. tax. is a reduced ovipositor (valvula vulvae) and the larval labial palpi with medial edge containing small lobes. – (10) Subordinated to Valvulida are the sister groups Pseudocorduliida - Trichopalpida. The Pseudocorduliida n. tax. consist of Pseudocorduliidae n. fam. with the sole genus Pseudocordulia. An important autapomorphy of Trichopalpida n. tax. is the inside lobate edges of the larval labial palps provided with bristle tufts. The Trichopalpida are composed of the still unresolved partial taxa of former "Gomphomacromiidae", "Macromiidae", "Corduliidae", Macrodiplacidae and Libellulidae. – (*Abstracter's Note*: Some of the subjects treated in this paper were dealt with also by 2 other Authors. The 3 publications have appeared close one after another, therefore some synonymy problems are inevitable. The present paper was issued in 2 parts, published on 13 June and 18 July, resp. [Journal copies, mailed by the Publisher, were available to the Abstracter on 17 June and 30 July, resp.]. The paper of G. BECHLY, listed in OA 10954, is dated on 15 May. CARLE's paper was published in *Odonatologica* 25/3, on 1 Sept. Unfortunately, in the present paper, the Principle of Coordination, as defined by Art. 36 of the Code, has apparently not been considered, therefore the statements on the authorship of a number of family-group taxa are erroneous.)

- (11006) MACKENZIE DODDS, R., 1996. *The National Dragonfly Museum at Ashton Mill, Europe's first dragonfly museum. A guide*. Natn. Dragonfly Mus., Ashton Wold. 16 pp. ISBN none. – (Natn. Dragonfly Mus. at Ashton Mill, c/o Ashton Wold, Ashton nr Oundle, Northants, PE8 5LZ, UK).
The attractive little booklet gives a good impression as to what the visitor can expect to see visiting this institution, which experienced a spectacular development during the past few years. The identification chart and the identification photographs will facilitate the identification of the spp. encountered in the Museum area habitats.
- (11007) MARDEN, J.H., M.G. KRAMER & J. FRISCH, 1996. Age-related variation in body temperature, thermoregulation and activity in a ther-

mally polymorphic dragonfly. *J. exp. Biol.* 199(3): 529-535. – (Dept Biol., Penn. St. Univ., University Park, PA 16802, USA).

Thoracic temperatures (T_{th}) of *Libellula pulchella* during activity in the field were compared between age classes and with laboratory measures of optimal thoracic temperature for flight performance ($T_{th,opt}$; a trait that varies during adult maturation in this species). Newly emerged adults (teneral) had mean T_{th} values during flight (34.5°C; range 29-40°C) that did not differ from their mean $T_{th,opt}$ (34.6°C; range 28.5-43.8°C). Mature adults had higher and more precisely regulated thoracic temperatures (mean T_{th} 41.7°C; range 37.5-45.2°C), which were somewhat lower than their mean $T_{th,opt}$ (43.6°C; range 38.7-49.9°C). Among matures, behaviors requiring the highest levels of flight exertion (aerial copulation; mate guarding; escalated territorial contests) caused an elevation of T_{th} above that of concurrently sampled individuals engaged in routine flight (mean T_{th} difference 1.3°C, which raised mean T_{th} to a level that was not significantly different from $T_{th,opt}$ (42.5 versus 43.5°C). Compared with tenerals, matures spent more time flying, made longer-duration flights and showed a more restricted pattern of daily activity. Sympatric *Anax junius* that regulate T_{th} endothermally had a uniform pattern of activity across the entire day, i.e. occupied a broader ecological niche than that of *L. pulchella*. These results support the hypotheses that optimal body temperature evolves to match the elevated body temperatures that occur during exercise and that the ecological benefits of an expanded niche are a secondary benefit rather than a primary selective force during the evolution of homeothermy and high body temperatures.

- (11008) MARTINIA. *Bulletin des odonatologues de France*, Vol. 12, No. 2 (June 1996), Suppl. 1 (June 1996). – (c/o J.-L. Dommange, 7 rue Lamartine, F-78390 Bois-d'Arcy).
[No. 2:] *Prévost, O. & P. Durepaire*: Les odonates du Pinail (département de la Vienne) (pp. 31-46); – *Brugière, D.*: Hemianax ephippiger (Burmeister, 1839) dans le val de Loire bourguignon (Saône-et-Loire) (Odonata, Anisoptera, Aeshnidae) (p. 47); – *Dommange, J.-L.*: Rubrique bibliographique (pp. 48-52); – *Heidemann, H. & J.-L. Dommange*: Analyses d'ouvrages (pp. 53-56). –

- [Suppl. 1]: On 36 pp., it contains the directory of the SFO membership, the Constitution and By Laws of the Society, the SFO Code of ethics, the list of Charter members, etc., and a graph showing the organisational structure of the SFO.
- (11009) MATSUKI, K. & M. SHIBUYA, 1996. Data on dragonflies that have inadvertently flown into man-made structures. *Nature & Insects* 31(6): 44-46. (Jap., with Engl. title). – (First Author: 1575-14, 3-chome, Hasama-cho, Funabashi-shi, Chiba, 274, JA).
A commented list of 13 spp., referable to 6 families; – Japan.
- (11010) McPEEK, M.A., A.K. SCHROT & J.M. BROWN, 1996. Adaptation to predators in a new community: swimming performance and predator avoidance in damselflies. *Ecology* 77(2): 617-629. – (First Author: Dept Biol. Sci., Dartmouth Coll., Hanover, NH 03755, USA).
Previous studies have suggested that Enallagma damselflies invaded aquatic habitats with large dragonflies as the top predators at least twice, and large changes in morphological structures (e.g. caudal lamellae and abdomen), which should increase swimming speed, are associated with these invasions. This is significant because these spp. swim away from attacking predators, whereas spp. in the ancestral habitat (with fish as the top predators) do not swim from attacking predators. Swimming speed was quantified over a large ontogenetic size range for larvae of 7 Enallagma spp.: 2 in dragonfly lakes and 5 in fish lakes. Results of analysis of covariance and a modification of Felsenstein's method of evolutionary contrasts indicate that a large evolutionary increase in the slope of the ontogenetic relationship between swimming speed and log (body length) is associated with invasions into dragonfly lakes, and this shift results in larvae of dragonfly-lake spp. being faster swimmers, especially in larger size classes, than larvae of fish-lake spp. Experimental results are also presented, demonstrating that damselflies with larger lamellae are faster swimmers and have higher survival when exposed to dragonfly predation. This study indicates that the change in selective environment associated with habitat shifts into dragonfly lakes promoted adaptations for increased swimming speed in Enallagma lineages. The potential ramifications of this adaptation for community structure are discussed.
- (11011) NATURE AND INSECTS, Vol. 31, No. 8: *Sympetrum dragonflies* (July 1996). ISSN 0023-3218. (Jap., with Engl. titles).
The entire issue of this popular Japanese monthly is devoted to this subject. – **C o n t e n t s**: Inoue, K.: *Sympetrum baccha mutatinum* Ris (cover phot.); – Ueda, T.: Some aspects of diversified reproductive behaviour in *Sympetrum* dragonflies (pp. 2-8); – Inoue, K.: Genus *Sympetrum* of the world (pp. 9-12); – Watanabe, Y.: Embryonic development and early instar larvae of *Sympetrum* (pp. 13-17); – Ishizawa, N.: Thermoregulation in dragonflies of *Sympetrum* (pp. 18-22; Engl. translation is available from the Eds of Odonatologica); – Arai, Y.: Adaptation of red-dragonflies in Japanese paddy fields (pp. 23-26); – Matsura, T.: *Sympetrum* using swimming pools as a habitat (pp. 27-30); – Naraoka, H.: The some *Sympetrum* dragonflies arrive at Japan across seas [sic!] (pp. 31-35).
- (11012) NEL, A. & E.A. JARZEMBOWSKI, 1996. Description and revision of some dragonflies ('Anisozygoptera') from the Lower Cretaceous of England (Odonata: Stenophlebiidae, Camptero-phlebiidae?, Epiophlebiidae, Euthemistidae). *Cretaceous Res.* 17(1): 87-96. – (First Author: 8, av. Gassion, F-13600 La Ciotat).
3 new spp. of 'Anisozygoptera' are described from the non-marine Lower Cretaceous of southern England: *Stenophlebia corami* sp. n., *Proeuthemis pritykinae* gen. n., sp. n. and *Mesoepiophlebia bexleyi* sp. n., providing the first Cretaceous record of the family Stenophlebiidae, and extending the range of the relict extant family Epiophlebiidae. In addition, a camptero-phlebiid? is described but not named, providing fossil evidence of the superfamily Isophlebioidea in NW Europe.
- (11013) O'DONNELL, S., 1996. Dragonflies (*Gynacantha nervosa* Rambur) avoid wasps (*Polybia aequatorialis* Zavattari and *Mischocyttarus* sp.) as prey. *J. Insect Behav.* 9(1): 159-162. – (Dept Ent., Univ. California, Davis, CA-95616, USA).
Several odon. spp. have been reported approaching and apparently rejecting potential prey items, but the importance of visual clues in dragonfly

prey selection remains largely unexamined. Here, incidental observations are described and briefly discussed.

- (11014) OKA, I., 1996. How dragonflies have suffered from the Hyogo earthquake. *Gracile* 55: 1-16. (Jap., with Engl. title). – (c/o K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, JA). During the years preceding the Kobe earthquake of 17 Jan. 1995, 59 spp. were evidenced in the irrigation ponds on the hills nr Kobe, Japan, which are situated some 6 km from the earthquake epicentre. In 1995, only 39 spp. were recorded and the populations of most of these were greatly reduced. The impoverishment of the fauna is ascribed to the incidental natural drought preceding the earthquake (31%), to the effects of the earthquake itself (23%, due to the cracks, causing the water to flow away), and to the repairing civil works (46%, due to the destruction of natural environment by bulldozers, etc.).
- (11015) OTT, J., 1996. Zeigt die Ausbreitung der Feuerlibelle in Deutschland eine Klimaveränderung? Mediterrane Libellen als Indikatoren für Änderung in Biozönosen. Errata. *NatSchutz LandschPfl.* 28(5): 132. – (Am Moosberg 10, D-67705 Stelzenberg).
A corrective note on the paper listed in OA 10760. It contains a map, showing the occurrence of *Crocothemis erythraea* in Saarland and in the Rhineland-Palatinate (Germany) in 1976, 1984 and at present.
- (11016) PEARSON, G.A., 1996. Insect tattoos on humans: a "dermagraphic" study. *Am. Ent.* 42(2): 99-105. – (Dept Ent., North Carolina St. Univ., Box 7626, Raleigh, NC 27695, USA).
This is a commented review of a collection of traditional and modern insect tattoos. Dragonflies are represented by the traditional Mentawi islander tattoo (New Guinea), and by several elaborate modern representations, all from the US. Interesting are also personal statements of the respective tattoo bearers.
- (11017) PETALURA. *Journal of the Specialist Group for Systematic and Phylogenetic Odonatology, S.I.O.* (Spec. Vol.) 2 (May 15, 1996). – (c/o. G. Bechly, Breslauer Str. 30, D-71034 Böblingen). *Bechly, G.H.P.*: Morphologische Untersuchungen am Flügelgeäder der rezenten Libellen und deren Stammgruppenvertreter (Insecta; Pterygota; Odonata) unter besonderer Berücksichtigung der phylogenetischen Systematik und des Grundplanes der Odonata (pp. 1-404; with Engl. Appendix). For abstract cf OA 10954.
- (11018) POLHEMUS, D.A. & A. ASQUITH, 1996. *Hawaiian damselflies. A field identification guide.* Bishop Mus. Press, Honolulu. x+122 pp. ISBN 0-930897-91-9. [Hawaii Biol. Surv. Hndb.; Bishop Mus. Special Publ'n 90]. – (Publishers: 1525 Bernice St., Honolulu, Hawaii 96817-0916, USA). The generously illustrated and beautifully produced book is the result of 5 yr of field work. It is a compact and efficient manual that will allow ready identification of the 26 spp. & ssp. hitherto evidenced in Hawaii (23 of these pertaining to Megalagrion). – The introductory chapters deal with the biology, behaviour, evolution, distribution, ecology, habitats, Hawaiian folk names, conservation, collecting equipment and permits, etc. For each sp. a detailed description is supplemented with the information on distribution, breeding ecology and on the adult habitats, and a distribution map and col. photographs of both sexes are included. One of the assets of the book are "quick keys" for the faunae of 6 islands, based on the habitats and colours of the spp. A conventional key for Megalagrion taxa is also provided. It is illustrated with the terminalia of all spp. For a number of spp., the figs of larval gills are also included. – The book contains a very appreciable volume of original, hitherto unknown information, particularly so with reference to ecology and behaviour of various Megalagrion spp. It will be important to all those interested generally in Hawaiian aquatic systems, their biota and their conservation, and it is indispensable to the students of odon. biology.
- (11019) PRITCHARD, G., L.D. HARDER & R.A. MUTCH, 1996. Development of aquatic insect eggs in relation to temperature and strategies for dealing with different thermal environments. *Biol. J. Linn. Soc.* 58(2): 221-244. – (Dept Biol. Sci., Univ. Calgary, 2500 Univ. Drive NW, Calgary, AB, T2N 1N4, Ca).
Average reaction norms relating number of day-degrees required to complete egg development to temperature are described for 95 spp. (115

populations) of Plecoptera, Odon., Ephemeroptera and Diptera. The slope of the average reaction norm is used as an index of adaptation, with positive slopes indicating cold-adapted spp., negative slopes indicating warm-adapted spp., and slopes around zero indicating generalist spp.; 57% of the between-taxon variation in slope is associated with differences between orders, 14% among families, 7% among genera, 14% among spp., and 8% among populations. Significant differences between congeneric spp. are found in only 4 of 92 possible comparisons. Only Plecoptera show much cold-adaptation, with 40% of the spp. having significantly positive slope. However, 26% of the sp. (mainly in the Systellognatha) have significantly negative slope, suggesting adaptation to warmer waters than those in which the order is believed to have originated. The other orders probably originated in warm water and have generally maintained this adaptation. All Odon., 71% of the Diptera and 81% of the Ephemeroptera have significantly negative slopes. Diapause is a common alternative to metabolic adaptation to deal with unfavourable thermal environments. It occurs widely in eggs of Plecoptera and in the mayfly *Rhithrogena layolaea*, cold-adapted spp. that may use diapause to survive periods of high temperature.

- (11020) PROESS, R., 1996. Überblick über die Libellenfauna der stehenden Gewässer Luxemburgs. *Bull. Soc. Nat. Luxemb.* 97: 163-180. (With Engl. s.). – (1 rue du Moulin, L-7423 Dondelingen).
37 spp. are reported from 16 stagnant water localities in Luxembourg. The habitats are described, and 20 spp. are dealt with in detail.
- (11021) PUJOL-LUZ, J.R., A.L. ARAUJO & M.P. GOMES, 1996. Morfologia do quarto segmento (distal) do pénis de *Diastatops Rambur*, 1842 (Odonata, Libellulidae, Palpopleurinae). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 54. [Abstract only]. – (Depto Biol. Animal, Inst. Biol., UFRRJ, Seropédica, BR-23851-907 Itagui, RJ). The results of the EM examination are briefly stated.
- (11022) ROBLE, S.M. & C.S. HOBSON, 1996. The Odonata of Fort A.P. Hill and vicinity, Caroline county, Virginia. *Banisteria* 7: 11-40. – (Div. Nat. Heritage, Virginia Dept Conserv. & Recreation, 1500 E Main St., Suite 312, Richmond, VA 23219, USA).
77 spp. were documented during 1992-1995. The excellent paper is providing also the extreme dates for adults and a comprehensive analysis of the regional fauna, the overall trend of which is decidedly biased toward austral rather than boreal spp.
- (11023) ROSENBERG, J., K. KREUL & M. SCHLURMANN, 1996. Untersuchungen zur Libellenfauna (Insecta, Odonata) an ausgewählten Standorten in der Grossstadt Köln. *Decheniana* (Beih.) 35: 25-41. (With Engl. s.). – (First Author: Sommerhaus 45, D-50129 Glessen).
The odon. fauna of the larger Cologne area has been surveyed during 1990-1994. At 62 localities, 35 spp. were evidenced. – Cf. also *OA* 8586, 9322.
- (11024) SAHLÉN, G., 1996. *Sveriges trollsländor (Odonata). En bestämningsbok för trollsländor i Sverige och övriga Norden.* – [Swedish dragonflies. An identification handbook for the dragonflies of Sweden and the rest of the North]. Fältbiologerna, Stockholm. 162 pp. ISBN 91-85094-43-9. (Swedish). – Price: SEK 150.- approx. – (Publishers: Box 6047, S-10331 Stockholm).
A completely revised and updated 2nd edn of the standard work as listed in *OA* 5062. New are also most figs, and all distribution maps.
- (11025) SANTOS, T.C., S.M.V. CARNEIRO & J.M. COSTA, 1996. Índice de diversidade da odonofauna de duas unidades fisiográficas da Ilha da Marabaia (Baía de Sepetiba, Rio de Janeiro). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 34. [Abstract only]. – (Depto Ent., Mus. Nac., UFRJ, Quinta da Boa Vista, São Cristóvão, BR-20940-040 Rio de Janeiro, RJ).
The Shannon-Wiener index was identified for 2 populations. The names and the numbers of spp. are not stated.
- (11026) SANTOS, T.C. & J.M. COSTA, 1996: Descrição da ninfa de *Brechmorhoga travassosi* Santos, 1946 (Odonata: Libellulidae). *Resum. 20 Congr. bras. Zool.*, Porto Alegre, RS, p. 45. [Abstract only]. – (Depto Ent., Mus. Nac., UFRJ, Quinta da Boa Vista, São Cristóvão, BR-20940-040 Rio de Janeiro, RJ).

The characters, differentiating *B. travassosi* from the 4 previously known congeners are stated. The material originates from Ilha da Marambaia, RJ, Brazil.

- (11027) SCHMIDT, E., 1996. Fischteiche – ein ökologisches Übel? Das Beispiel Libellen an den Angelteichen Rheinbach-Eichen. *Tier & Mus.* 5(1): 1-10. – (Biol. Didaktik, FB-9, Univ. Essen, Postfach 103764, D-45117 Essen).
20 spp. are recorded from a pond system, 25 km SW of Bonn, Germany. The angling has a favourable effect on a few spp. (e.g. *Platycnemis pennipes*), but it diminishes the populations of most of the other spp. The possibilities of habitat restoration and management are discussed.
- (11028) SHARMA, S. & T. OFENBOCK, 1996. New discoveries of *Epiophlebia laidlawi* Tillyard, 1921 in the Nepal Himalaya (Odonata, Anisozygoptera: Epiophlebiidae). *Opusc. zool. flumin.* 150: 1-11. – (First Author: Dept Biol., Kathmandu Univ., Dhulikhel, Kabre Distr., P.O. Box 6250, Kathmandu, Nepal; – Second Author: Abt. Hydrobiol., Univ. Bodenkultur, Max-Emanuel-Str. 17, A-1180 Wien).
A total of 178 sites was sampled, covering all the major Nepal river systems. 5 larvae are reported from 4 sites in the Saptakosi R. system (Sindhupalchowk and Solukhumbu distr.), from altitudes in the range of 1300-2650 m (Nov. 1993, Feb.-Apr. 1994).
- (11029) SMITH, M.J.C., P.J. WILKIN & M.H. WILLIAMS, 1996. The advantages of an unsteady panel method in modelling the aerodynamic forces on rigid flapping wings. *J. exp. Biol.* 199(5): 1073-1083. – (First Author: Sch. Aeronautics & Astronautics, Grissom Hall, Purdue Univ., West Lafayette, IN 47907, USA).
The paper deals with the sphyngid aerodynamics, but it also includes some comparative notes on the odon.
- (11030) SUHLING, F., 1996. Interspecific competition and habitat selection by the riverine dragonfly *Onychogomphus uncutus*. *Freshw. Biol.* 35: 209-217. – (Zool. Inst., Techn. Univ., Spielmannstr. 7, D-38106 Braunschweig).
Substratum selection by the burrowing larvae of this sp. was examined in an artificial laboratory stream at different larval densities and in the presence of 1 of 3 other odon. spp. The larvae of *O. uncutus*, as well as those of the other spp., clearly preferred gravelly sand substratum rather than gravel or stone. At low larval density (71.4 m²) in the stream, 83% of the *O. uncutus* were found in gravelly sand. An increase of larval abundance in the stream to 202.4 specimens m² resulted in greater density in all substrata, but this increase was proportionally lowest in gravelly sand. The presence of a second sp. had various effects on the microdistribution of *O. uncutus*. In the presence of *Gomphus similimus* or *Cordulegaster boltonii* immaculifrons the distribution of *O. uncutus* changed significantly; their density increased in the normally less preferred substrata. This effect is interpreted as asymmetric interspecific interference. The presence of *O. forcipatus unguiculatus* had no effects.
- (11031) SYMPETRUM, GRENOBLE. *Revue d'odonatologie*, No. 9 1996). – (c/o C. Deliry, G.R.P.L.S., La Paluette, 2338 rte de Bellef, F-38490 Aoste).
Deliry, C.: Editorial (p. 3); – *Charles, S.*: Contribution à l'inventaire des odonates du Haut-Jura (37) et du Pays de Gex (01) (pp. 5-18); – *Pont, B.*: Nouvelles données de *Calopteryx haemorrhoidalis* en Isère (pp. 19-20); – *Bal, B.*: Inventaire des odonates de Haute-Savoie, un début de saison prometteur (pp. 21-23); – *Agrion de Mercure* en Haute-Savoie, le retour (pp. 25-26); – *Oxygastra curtisi* au Roc de Chère: fin provisoire de l'énigme (pp. 27-29); – Haute Savoie: une fructueuse deuxième quinzaine d'août (pp. 31-32); – *Deliry, C. & K. Funkiewicz*: Une visite supplémentaire dans les Hautes-Alpes le 6 septembre 1992 (pp. 33-35); – *Grand, D.*: Confirmation de la présence de *Trithemis annulata* (Palisot de Beauvois, 1807) dans les Pyrénées orientales (pp. 37-39); – Sur quelques libellules des Antilles françaises (pp. 41-46); – *Greff, N.*: Brèves nouvelles du deuxième colloque odonatologique de France (pp. 47-48); – Directive habitats et odonates (pp. 49-54); – *Greff, N. & S. Robert*: Première étude du GRPLS en collaboration avec Parc National des Ecrins (p. 55); – *Présentation d'ouvrages odonatologiques* (pp. 57-58); – *Publications du GRPLS depuis le Sympetrum no 8* (pp. 59-60).
- (11032) TAKAMURA, K., 1996. Life cycle of the damselfly *Calopteryx atrata* in relation to pesti-

cide contamination. *Ecotoxicology* 5(1): 1-8. – (Natn. Inst. Environ. Stud., 16-2 Onogawa, Tsukuba, Ibaraki, 305, JA).

The adults emerged from the Onogawa R. around May and stayed as immature adults in forests away from the stream. From late June to mid-Aug., mature adults were engaged in reproduction at the stream. On the other hand, pesticide contamination occurred from Apr. to Aug., with its peak in May and June, following transplantation of young rice plants. Mature larvae experienced pesticide contamination, but may have tolerated it. Hatched larvae had high susceptibility to two of the commonly used insecticides, fenitrothion (mortality occurred at $> 4.0 \mu\text{g l}^{-1}$ in 24 h and at $> 2.0 \mu\text{g l}^{-1}$ in 48 h) and fenthion ($> 2.0 \mu\text{g l}^{-1}$ in 24 h and $> 1.0 \mu\text{g l}^{-1}$ in 48 h). Hatching was estimated to occur mainly in Aug., when pesticide contamination was not as high as the susceptibility level. However, the level of pesticide contamination in Aug. is variable due to its origin from aerial spraying, so hatched larvae may experience a hazardous amount of pesticides depending on the year or place. The population of *C. atrata* does not escape the risk of pesticide contamination completely and may be affected by it.

- (11033) TARMANN, G.M., 1996. Sammeln in Tirol – Appell an Fairness und Vernunft. *Ent. Z., Essen* 106(7): 293-294. – (Abt. Naturwissenschaften, Tiroler Landesmus., Feldstr. 11a, A-6020 Innsbruck).

The Austrian province of Tirol has a balanced nature conservation legislation, to which numerous references are continuously being made in the relative world literature. Save for the protected areas, the collecting of insect specimens is free. The legislation is based on the well known principle that a general collecting prohibition is inflicting considerably more damage to the conservation than the rarely occurring incidental habitat and population damage caused by the collectors. Without reliable faunistic evidence and monitoring, an effective habitat and species protection/conservation are impossible. In addition, legal criminalisation of collecting is causing a serious loss of interest in the taxonomy and systematics, which, in its turn, cannot remain without grave consequences for nature conservation. Generally, the collectors are careful in the habitats, and they do not exaggerate in voucher specimen collect-

ing. An appeal is made here to persist in this attitude.

- (11034) TOBIAS, A., 1996. Einfluss von Feinsand-überschichtungen auf grabende Libellenlarven (Gomphidae). *TagBer. dt. Ges. Limnol.* 1995: 435-439. – (Abt. Ökol., Zool. Inst., Techn. Univ. Braunschweig, Spielmannstr. 7, D-38092 Braunschweig).

It has been evidenced experimentally that a thin layer of fine sediment, deposited by water current over the place of the buried *Gomphus vulgatis-simus* larvae, does not hinder the latter to quickly re-establish contact with the surface. This is effected by pushing the anal pyramid through the fresh sediment, and the process depends on the temperature. If the layer is some cm thick, the larvae are unable to overcome it and get killed by sand particles entering the rectal respiratory chamber (branchial basket).

- (11035) WASSERMANN, G. & A. SCHMIDT-KLOIBER, 1996. Ephemeroptera and Odonata of an artificial Danube backwater irrigation system. *Arch. Hydrobiol.* (Suppl.) 113: 493-496. – (First Author: Abt. Donau, Otto-Koenig Inst., A-2000 Stockerau).

At Giessgang (Greifenstein), a 42 km long artificial irrigation system on the northern Danube, NW of Vienna, Lower Austria, 33 odon. spp. were identified, incl. *Lestes dryas*, *Leucorrhinia pectoralis* and *Libellula fulva*. These are referable to 4 odon. associations of U. Jacob (1969, *Faun. Abh. Mus. Tierk. Dresden* 2: 197-239). A checklist is not given.

- (11036) WESTFALL, M.J. & M.L. MAY, 1996. *Damselflies of North America*. Scient. Publishers, Gainesville-Washington-Hamburg-Lima-Taipei-Tokyo. x+650 pp., 231 textfigs + 8 col. pls incl. ISBN 0-945417-93-4. – Price: US \$ 69.50 net. – Orders to: International Odonata Research Institute, DPI, P.O. Box 147100, Gainesville, FL 32614-7100, USA.

This is the long awaited and, as it appears, superbly executed manual on the Zygoptera of North America. (For the Anisoptera vol. cf. *OA* 1266). It is the first publication since 1929 to provide reliable means for identification of adults and larvae of the regional fauna. A total of 161 spp. is dealt with, and the geographic coverage

includes all of the continental US and Canada, incl. the Greater Antilles (Cuba, Hispaniola, Jamaica, Puerto Rico) and the northernmost states of Mexico (Tamaulipas, Nuevo Leon, Coahuila, Chihuahua, Senora, Baja California Norte & Sur). The core of the book is a series of painstakingly researched identification keys to adults of both sexes of all spp. and to last instar larvae, as far as the latter are known, which are extensively illustrated with drawings and both light and scanning electron photographs, incl. figs of wing venation and larval habitus plus details of larval labial and gill morphology for all genera, caudal appendages of adult ♂♂ and mesostigmal plates of ♀♀ for most spp. The extensive redescrptions of the adults of all spp. include all details of morphology and coloration that are important for identification, and also contain notes on ecology and behaviour of the taxa concerned. Geographic range is usually indicated at the level of states and provinces. The general introductory chapters provide a full discussion on the zygopteran morphology and contain information on biogeography and conservation status of North American damselflies. - Judging from the history of the Anisoptera volume, published in 1953, reprinted in 1975, and out-of-print again, the present work is to remain the absolutely indispensable handbook on North America for many years to come.

- (11037) WOLF, K.W., 1996. The structure of condensed chromosomes in mitosis and meiosis of insects. *Int. J. Insect Morphol. Embryol.* 25(1/2): 37-62. - (Inst. Anat., Medizin. Univ. Lübeck, Ratzeburger Allee 160, D-23538 Lübeck).
In the first section, the potential of cytological

approaches in the field of chromosome biology is described. Emphasis is on immunolabeling, and transmission and scanning electron microscopy. In particular, the latter technology revealed a series of unusual components in association with the chromosomes, such as membranes and non-chromatin material, which is presumably responsible for the formation of achiasmatic bivalents. Virus-like particles were found scattered throughout the chromatin in a Lepidoptera species. This association is possibly responsible for the transmission of the particles into the next generation. Then, the cytology and the molecular make-up of the key components of insect chromosomes are described. These are the centromeres, telomeres, and nucleoli. The general structure of the centromeres in terms of centromere-specific repetitive DNA and proteins is similar in insects and mammals. This applies also to telomeres of most insect orders, but the chromosome ends of Diptera species differ from those in mammals. Fine structure observations raise also the possibility that insect nucleoli have a specific architecture. Chromosomal proteins - and emphasis is on histone acetylation - are addressed in an individual section. Evidence is accumulating that Histone H4 acetylation plays a role in dosage compensation and is a cytogenetic marker of constitutive heterochromatin in insects. In the final section, the characteristics of holokinetic chromosomes are listed. A series of insect orders, where direct or indirect evidence points to chromosomes with relatively large centromeres, is presented. These are Lepidoptera, Trichoptera, Hemiptera, Homoptera, Odon., and Dermaptera.