

ODONATOLOGICAL ABSTRACTS

1975

- (7578) BYERS, J.R., 1975. Tyndall blue and surface white of tent caterpillars, *Malacosoma* spp. *J. Insect Physiol.* 21: 401-415. — (Author's current address unknown).

Tyndall scattering occurs when a beam of white light encounters very small transparent particles whose properties differ from those of the surrounding medium. If the particles have dimensions about equal to or somewhat less than the wavelength of blue light (i.e. about 400 nm), they will reflect, or scatter, more of the short-wave than of the long-wave components of white light. In Odon. blue colours are usually due to Tyndall-active particles within the subcuticular epidermis. If the particles are underlain by a layer of dark pigment the reflected light is blue, but if the pigment is yellow, the reflected light appears green. The situation in the genera *Diphlebia*, *Austrolestes*, *Enallagma*, *Erythemis* and *Libellula* is stated.

1982

- (7579) HILL, D.S., 1982. *Hong Kong insects*, vol. 2. Urban Council Hong Kong, viii+144 pp. — (Author: Dept Zool., Hui Oi Chow Sci. Bldg, Univ. Hong Kong, Hong Kong).
On pp. 3-7 it contains col. phot. (of mostly pinned specimens) of 15 odon. spp., incl. some larvae. — For Vol. 1 cf. OA 7585.

1985

- (7580) ANDJUS L.I., 1985. *Biogeografske odlike faune Odonata i distribucija vrsta u nekim biocenoza SR Srbije*. — *Biogeographical feat-*

ures of the Odonata fauna and distribution of species in some biocenoses in SR Serbia. M.A. thesis Univ. Beograd. 109 pp. (Serbian, with Engl. s.). — (Nat. Hist. Mus. Serbia, Njegoševa 51, P.O. Box 401, YU-11000 Beograd, Serbia).

The history of the research on the odon. fauna of Serbia is traced from 1896 to the present, all hitherto published records for the 56 spp. known to occur in Serbia are enumerated, and new records are produced for 43 spp. The biogeographic composition of the odon. fauna of the state is analysed, the habitat distribution of some spp. is outlined, and some evidence is produced on the human impact on various odon. communities. — This is an important reference work on the odon. fauna of Serbia.

1986

- (7581) CORTÉS, M.V., K. DE TJARDA & M.A.S. GRACA, 1986. Estudio de un río de montaña de una zona granítica del norte de Portugal. *Limnética* 2: 197-204. (With Engl. s.). — (Univ. Tras-os-Montes, Av. Almeida Luceria 1, PT-5000 Vila Real).
From the Olo R., Alvao Natural Park, Portugal, 7 odon. spp. are identified.
- (7582) ZEISSIN, W., 1986. Die Libellenfauna der Warnaw — ein Beitrag zu ihrer qualitativen und quantitativen Erfassung. *NatSchutzArb. Mecklenb.* 29(1): 27-32. — (Lübecker Str. 30, D-O 2754 Schwerin, FRG).
Records of 21 spp., with brief general comments on the Warnaw fauna, Mecklenburg, FRG.

1988

- (7583) AVERY, M.I., J.R. KREBS & A.I. HOUSTON, 1988. Economics of courtship-feeding in the European bee-eater (*Merops apiaster*). *Behav. Ecol. Sociobiol.* 23: 61-67. — (Dept Zool., Univ. Oxford, South Parks Rd, Oxford, OX1 3PS, UK).
Aeshna isosceles, Anax parthenope, Brachytron pratense, Orthetrum cancellatum and Sympetrum striolatum are listed among the prey examples, in Camargue, France.
- (7584) BALLETTI, A., A. JORIO & A. MAINARDI, 1988. *Bestiario ed erbario popolare: il medio Ticino*. Gruppo dialettale galliatese, Galliate. 658 pp., col. figs 1-312 excl. ISBN none. Price: Lit 120.000.- net.
Comprehensive descriptive dictionary of plant and animal expressions used in the Italian dialect of central Ticino, Piedmont. Dragonflies are dealt with on pp. 232-233, 239-242, 612-615, col. figs 133-138 (in which almost all taxonomic names are erroneous).
- (7585) HILL, D.S. & W.W.K. CHEUNG, 1988. *Hong Kong insects*. Urban Council, Hong Kong, 128 pp. — (First Author: Dept Zool., Hui Oi Chow Sci-Bldg, Univ. Hong Kong, Hong Kong).
On pp. 23-25, col. phot. of pinned specimens of 5 odon. spp. — For Vol. 2 cf. *OA* 7579.
- (7586) MULWIJK, J., P. CORNELISSEN & D. GILLISSEN, 1988. De waterkwaliteit van de stadswateren in de wijken Randenbroek, Liendert en Rustenburg te Amersfoort. — [Water quality of the city waters in the districts of Randenbroek, Liendert and Rustenburg, Amersfoort]. *Natuur Landsch. Milieu Amersfoort* 6: 1-99. (Dutch). — (Available from: V. van Laar, Centrum Natuur & Milieu, Schothorsterlaan 21, NL-3822 NA Amersfoort).
Coenagrion sp. and Ischnura elegans are listed from several localities, Amersfoort, The Netherlands.
- (7587) PECILE, I., 1988. Note sul popolamento odonotologico del Lago di Ragogna (Italia

nord-orientale). *Gortania* 10[1989]: 193-204. (With Engl. s.). — (Mus. Friulano Stor. Nat., Via Grazzano 1, I-33100 Udine).

Commented list on 35 spp. from the Ragogna Lake, Friuli, NE Italy. Of particular interest is the evidence on the co-occurrence of *Somatochlora metallica* and *S. meridionalis* at the lake and in the Carnian village of Cavazzo Carnico.

- (7588) WHICKER, A.D., 1988. *Seasonal dynamics of benthic macroinvertebrates of Pond B, Savannah River Plant, Aiken, South Carolina*. iv+38 pp., Savannah River Ecol. Lab., Aiken. [SRO-NERP-16]. — (Savannah River Ecol. Lab., Savannah River Site, Bldg 737-A, Aiken, SC 29801, USA).
The Savannah River Plant is a nuclear materials production facility. The site has a number of reservoirs, which are used to store and cool water discharged from nuclear reactors before the water enters streams, swamps and/or river systems. These reservoirs can be impacted by elevated water temperatures, radionuclides and chemicals. In the case of one such reservoir, locally known as Pond B, the input of radionuclide contamination and thermally elevated effluents ceased in 1964 and since that time the reservoir has been allowed to recover. At present it is inhabited by 11 odon. genera. The taxonomic composition and seasonal dynamics of the benthic macroinvertebrate community of the reservoir are described. — Cf. also *OA* 7705.

1989

- (7589) BONKWALD, M. & R. BONKWALD, 1989. DBV-Gruppe Eimsbüttel, Bachpatenschaft Tarpenbek: Jahresbericht 1987/88. *Mitt. dt. Bund Vogelschutz, Hamburg* (Sonderh.) 15: 29-39. — (For odon. apply to: B. Ratjen, Feldhoopstücken 51, D-2000 Hamburg-54, FRG).
The odon. fauna of the Tarpenbek (distr. Eimsbüttel nr Hamburg, FRG) is dealt with by B. Ratjen (pp. 32-34). Annotations on 7 spp. are given.
- (7590) BORISOV, S.N., 1989. Osobennosti biotopicheskogo raspredeleniya lichenok strekoz

- (Insecta, Odonata) na yugo-zapade Tadjikistana. — [Peculiarities in the biotope requirements of the dragonfly larvae (Insecta, Odonata) in southwestern Tadjikistan]. *Dokl. Akad. Nauk. tadjik. SSR* 32(3): 206-208. (Russ., with Tadjik s.). — (Inst. Zool. & Parasitol., Tadjik Acad. Sci., USSR-734000 Dushanbe, Tadjikistan).
Classification of the SE Tadjikistan odon. spp. according to their larval habitat requirements.
- (7591) BORISOV, S.N., 1989. Rasprostranenie i ekologiya *Orthetrum sabina* Drury (Odonata, Libellulidae) na yugo-zapada Tadjikistana. — [Distribution and ecology of *Orthetrum sabina* Drury (Odonata, Libellulidae) in southwestern Tadjikistan]. *Izv. Akad. Nauk. tadjik. SSR* (Biol.) 1989 (2) [115]: 18-22. (Russ., with Tadjik s.). — (Inst. Zool. & Parasitol., Tadjik Acad. Sci., USSR-734000 Dushanbe, Tadjikistan).
The sp. is abundant at elevations 600-700 m, but scarce at 1350-1400 m. The bivoltine development mostly takes place in stagnant or slowly running waters. The adults are on the wing between early Apr. and mid Nov., but the abundance in the autumnal generation is significantly higher than in the spring. During the warm season, teneral are active also in the morning and in the evening.
- (7592) BORISOV, S.N. & A.T. VOSKANYAN, 1989. Predvaritel'nye svedeniya o strekozah-fotoksenah na yugo-zapade Tadjikistana. — [Preliminary observations on photoxene dragonflies in southwestern Tadjikistan]. *Sbor. Trud. nauchno-prakt. Konf. molodyh Uchen. Specialist. tadjik. SSR* (Biol.), Dushanbe, pp.148-151. (Russ.). — (Inst. Zool. & Parasitol., Tadjik Acad. Sci., USSR-734000 Dushanbe, Tadjikistan).
For the full paper cf. *OA* 7272.
- (7593) BREUER, M., 1989. Die Libellengruppe. *In: 125 Jahre Naturwissenschaftlicher Verein zu Bremen*, p. 15, Übersee-Museums, Bremen. (Author: Lehrgeb. Zool.-Ent., FB Biol., Univ. Hannover, Herrenhäuser Str. 2, D-3000 Hannover-21, FRG).
- A brief statement on the set-up of the Dragonfly Group of the Nat. Hist. Soc. Bremen, and on the history of the odon. fauna research in the Bremen area, FRG. The first published list (1836) contains 28 spp.
- (7594) DBV-KREISGRUPPE HARBURG, 1989. Antrag auf Ausweisung eines geschützten Landschaftsbestandteils "Lehmkuhlen Brackel". *Mitt. dt. Bund Vogelschutz, Hamburg* (Sonderh.) 15: 17-28. — (c/o D. Westphal, Haselhorsthoof 2, D-2050 Winsen, FRG).
The locality is situated within the village of Brackel, distr. Hanstedt nr Hamburg, FRG. A list is given of 17 odon. spp. The fauna is considered significantly rich, and the conservation of the habitats concerned is advocated.
- (7595) DOLNÝ, A. & J. AŠMERA, 1989. Příspěvek k ekologickému hodnocení vázek. — Contribution to the ecological evaluation of dragonflies (Odonata). *Stud. oecol.* 2: 9-15. (Czech, with Engl. & Germ. s's). — (Kated. biol., Paedag. Fak., Dvořákova 7, CZ-70103 Ostrava).
Ecological classification of Czechoslovak odon. communities.
- (7596) ESCOBAR NIEVES, A., 1989. Estudio de las comunidades macrobénticas en el río Manzanares y sus principales afluentes y su relación con la calidad del agua. *Actual. biol.* 18(65): 45-60. (With Engl. s.). — (Fac. Educ., Univ. Tecnológica de Magdalena, Santa Marta, Colombia).
Lists 8 odon. taxa, mostly identified to the genus only, from 5 localities in the Manzanares R. system, Colombia.
- (7597) GASCON, C., 1989. Predator-prey size interaction in tropical ponds. *Revta brasil. Zool.* 6(4): 701-706. — (Dept Biol., Florida St. Univ., Tallahassee, FL 32306-2043, USA).
Fish and not further identified *Aeshna* larvae were used as predators, and 2 size classes of *Osteocephalus taurinus* tadpoles as prey in an experiment, set up to examine dependence of mortality on predator and prey size. The results indicate that the predation effect

- depends on the size structure of the prey population, and that Aeshna larvae are more predacious than fish.
- (7598) GERSTMEIER, R., 1989. [Buchbesprechung]. Bellman, H. Libellen, beobachten — bestimmen. *Spixiana* 12(3): 192. — (Münchner Ent. Ges., Münchenhausenstr. 21, D-8000 München-60, FRG).
A somewhat routine-like librarian's brief review of the volume listed in OA 6111.
- (7599) HARITONOV, A. Yu. & S.N. BORISOV, 1989. Strekozy (Insecta, Odonata) zapovednika "Ramit". — [Dragonfly fauna (Insecta, Odonata) of the "Ramit" nature reserve]. *Dokl. Akad. Nauk tadzhik. SSR* 32(4): 280-282. (Russ., with Tadzhik s.). — (First Author: Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).
Commented list of 30 spp., Tadzhikistan, USSR.
- (7600) MUILWIJK, J., P. CORNELISSEN & D. GILLISSEN, 1989. De waterkwaliteit van de stadswateren in de wijken Hoogland en Schothorst te Amersfoort. — [Water quality of the city waters in the districts of Hoogland and Schothorst, Amersfoort]. *Natuur Landsch. Milieu Amersfoort* 7: 1-92. (Dutch). — (Available from: V. van Laar, Centrum Natuur & Milieu, Schothorsterlaan 21, NL-3822 NA Amersfoort).
Enallagma cyathigerum, Erythromma najas and Ischnura elegans are listed from several localities, Amersfoort, The Netherlands.
- (7601) OSWOOD, M.W., 1989. Community structure of benthic invertebrates in interior Alaskan (USA) streams and rivers. *Hydrobiologia* 172: 97-110. — (Inst. Arctic Biol., Univ. Alaska, Fairbanks, AK 99775, USA).
The taxonomic composition of benthic invertebrates in interior Alaskan streams and rivers is summarized from published and unpublished data, but a spp. checklist is not given, and only a passing reference is made to the Odon.
- (7602) PLOTNIKOVA, S.I., 1989. Chuvstvitel'nyy neyropil' podglotochnogo gangliya nasekomogo. — The sensory neuropil in insect suboesophageal ganglion. *Zh. evol. Biohim. Fiziol.* 25(1): 95-103. (Russ., with Engl. s.). — (Inst. evol. Physiol. & Biochem., USSR Acad. Sci., Leningrad, USSR).
In experiments on larval and adult Aeshna grandis and A. viridis as well as on Locusta migratoria, methylene blue staining revealed in the ventral part of the suboesophageal ganglion the main sensory neuropile and lateral sensory nuclei in each of the three neuromeres. Terminal sensory fibers end in the lateral nuclei, terminal, descending and ascending ones, in the main nuclei. In larval and imaginal dragonflies, i.e. insects with incomplete transformation, the structure of the sensory neuropile is essentially the same. A more complex distribution of the sensory nuclei is observed in the herbivorous locust with a powerful digestive apparatus innervated by numerous nerves.
- (7603) PLOTNIKOVA, S.I., 1989. Dorsal'nye konnektivnye aksony podglotchnogo gangliya nasekomyh. — Dorsal connective axons in the suboesophageal ganglion of insects. *Zh. evol. Biohim. Fiziol.* 25(4): 525-531. (Russ., with Engl. s.). — (Inst. evol. Physiol. & Biochem., USSR Acad. Sci., Leningrad, USSR).
Methylene blue staining of total preparations of the central nervous system of Locusta migratoria and larvae and adult Aeshna grandis revealed similarity and differences in the distribution of the descending axons of the dorsal connective region in the suboesophageal ganglion and some of the descending neurones of the supraoesophageal ganglion. Larval and imaginal Aeshna are essentially similar with respect to the distribution of fibers. The dragonfly differs from the locust by a more diffuse distribution of axonal collaterals which presumably reflects the lower extent of development of centers of the masticatory apparatus in the carnivorous insect as compared to that in the herbivorous one. Thoracic ganglia of the larval dragonfly exhibit more distinct localization of centers accounting for the unique flight of this relict form.
- (7604) PLOTNIKOVA, S.I., 1989. Ventral'nye inter-

neyrony podglotochnogo gangliya lichinki strekozy *Aeschna grandis* L. — Ventral interneurons of the suboesophageal ganglion in the larval dragonfly *Aeschna grandis*. *Zh. evol. Biohim. Fiziol.* 25(3): 409-411. (Russ., with Engl. s.) — (Inst. evol. Physiol. & Biochem. USSR Acad. Sci., Leningrad, USSR).

Methylene blue staining of the central nervous system of the larval dragonflies revealed two pairs of symmetrical neurones in the ventral zone of the main neuropile. One pair accounts for the transmission of total sensory impulsion into the supraoesophageal ganglion, whereas the second one accounts for the feedback connections with the abdominal cord. The neurones receive impulses not only from the nuclei of the sensory neuropile, but also from axons of the associative-sensory neurones entering the ganglion in the form of two symmetrical bundles and being distributed in the sensory neuropile of all the three neuromeres and partially in the main neuropile.

(7605) [PROCEEDINGS OF THE SECOND ALL-UNION SYMPOSIUM OF ODONATOLOGY], 1989, Dushanbe.

For bibliographic reference and contents table cf. *OA* 7609. The Symposium issued also a 9-point "Resolution", in which the USSR odonatological programme is outlined. This has not been published in the Proceedings, but copies (in Russian) are available from the SIO Central Office, Bilthoven. — (*Abstracter's Note*: Proceedings of The First All-Union Symposium were not published. A brief Engl. report appeared in *SELYSIA* [cf. *OA* 5863], based on the paper listed in *OA* 5680).

(7606) RICHARDSON, A.M.M. & R. SWAIN, 1989. The freshwater invertebrate fauna of the Lake Meston area. *Proc. R. Soc. Tasm.* 123: 275-286. — (Dept. Zool., Univ. Tasmania, G.P.O. Box 252 C, Hobart, Tasmania, AU). Collections of littoral invertebrates were made from 21 freshwater bodies (alt. 847-1340 m), Tasmania, Australia. 6 odon. spp. are recorded from 6 localities.

(7607) SCHMIDT, E., 1989. Ökologische Analyse

der Odonatenfauna eines Schmuckbeckens im Botanischen Garten Bonn — ein Beispiel für eine spezielle urbane Faktorenkombination. *Verh. IX SIEEC, Gotha*, pp. 162-163. — (Biol. Didaktik, FB 9, Univ. GH Essen, Postfach 103764, D-W 4300 Essen-1, FRG).

Preliminary abstract of the paper listed in *OA* 7684.

(7608) SEKI, T., S. FUJISHITA & S. OBANA, 1989. Composition and distribution of the retinal and 3-hydroxyretinal in the compound eye of the dragonfly. *Exp. Biol.* 48: 65-75. — (First Author: Dept Health Sci., Osaka Kyoiku Univ., 1-6-7 Nagare-machi, Hirano-ku, Osaka, 547, JA).

Retinoids in the compound eyes of larval and adult odon. in 11 families of the 3 suborders were extracted by the oxime method, and analysed by high performance liquid chromatography. Almost all of the spp. examined contained both retinal and 3-hydroxyretinal in the compound eye. The ratio of 11-*cis* 3-hydroxyretinal to 11-*cis* retinal (3-OH ratio) was calculated as an index of the retinoid composition. The 3-OH ratios of the whole eye of larvae in all the suborders and of adult Zygoptera were very high, 2.2 at the minimum, but in Anisozygoptera and Anisoptera most of the ratios were distributed between 1 and 2.7. In Gomphidae, exceptionally low 3-OH ratios, less than 1 were observed in several spp. The regional distributions of the retinals in the adult compound eyes were also examined. In the zygopt. compound eye, both retinals were distributed evenly all over the eye, while in the compound eye of the other 2 suborders, the 3-OH ratios in the dorsal area of the eye were extremely low. In several spp. of Gomphidae and Libellulidae the ratios in the dorsal areas were zero. From the correspondence of these results and the compartment of compound eye, it appeared that the large ommatidia in the dorsal area contained only retinal. This was confirmed when the large facet region in the dorsal part of the compound eye of an Anax was excised and examined and only retinal was detected. However, the ventral area of the true dragonflies' compound eye which did not include the large ommatidia con-

tained both retinals, and the 3-OH ratio was more than 10.

- (7609) *TEZISY DOKLADOV VSESOYUZ, NAUCHNO-PRAKT. KONF. "PROBLEMY EKOLOGII GORNYH REGIONOV" (SEKC. ODONATOL.)* — [= *PROCEEDINGS OF THE SECOND ALL-UNION SYMPOSIUM OF ODONATOLOGY*], Dushanbe, Oct. 9-13, 1989. 1989 [published 1990]. Edited by I.A. Abdusalyamov, P.V. Kochkarev, V.I. Kryukov & S.N. Borisov. 80 pp. Acad. Sci. Tadjik SSR, Dushanbe. (Russ.). — Issued in 200 copies; available from Kand. Biol. Nauk S.N. Borisov, Inst. Zool. & Parasitol., Tadjik Acad. Sci., USSR-734000 Dushanbe, Tadjikistan.
- Vragina, T.M. & I.N. Haritonova*: Status of dragonfly inventarisation in the Kazakh SSR (pp. 3-6); — *Kosterin, O.E.*: On the odonate fauna of the Upper Altay (pp. 6-10); — *Pavlyuk-R.S.*: Current status of the knowledge on the odonate fauna of Ukraine (pp. 10-17); — *Priytkina, L.N.*: Mesozoic dragonfly succession in Eurasia (pp. 17-25); — *Titar, V.M. & S.S. Kul'chitskiy*: Population monitoring to the human impact, exemplified in two dragonfly species (pp. 25-30); — *Borisov, S.N.*: Altitudinal distribution of dragonflies in the Pamir-Alay (pp. 30-38); — *Mokrushov, P.A.*: On the habitat isolating mechanisms in the dragonfly genus *Lestes* (pp. 39-45); — *Ryazanova, G.I. & G.A. Mazokhin-Porshnyakov*: Behavioural component in the intraspecific relationships in larval Zygoptera (pp. 45-53); — *Haritonov, A.Yu.*: An attempt at the assessment of the impact of trophic relationships on dragonfly distribution (pp. 53-57); — *Suhacheva, G.A.*: Daily feeding patterns in dragonflies (pp. 58-63); — *Shalapenok, E.S.*: Patterns of odonate larvae distribution in various types of habitats (pp. 63-68); — *Nikolaeva, N.V. & A.V. Gilev*: Dragonflies of the blood-sucking midges breeding habitats in Central Ural (pp. 68-75); — *Kukashv, D.Sh.*: The Kazakhstan dragonflies — secondary hosts of helminths. (pp. 75-79). Cf. also OA 7605.
- (7610) ZIMBALEVSKAYA, L.N., 1989. Protection of aquatic invertebrates in the Ukraine. *Hydrobiol. J., Wash.* 24(5): 7-11. — (Inst. Hydrobiol., Ukrain. Acad. Sci., Kiev, Ukraine, USSR).
- The Ukrainian freshwater invertebrate fauna falls into 2 faunal complexes: freshwater boreal and brackish Pontocaspian. Reference is made to *Lestes barbarus* of the lake-floodplain (boreal) complex, where it is considered a Mediterranean relict.
- 1990**
- (7611) (Anonymous), 1990. Bedrohte Tierwelt: die Libellen. *Freie Stunden, Stuttgart* 38(11): 9. General, in a widespread German family monthly.
- (7612) AL-SAFADI, M.M., 1990. Dragonflies (Odonata) of the Yemen Arab Republic. *Fauna Saudi Arabia* 11: 18-30. (With Arab. s.). — (Biol. Dept, Fac. Sci., Sana'a Univ., P.O. Box 1247, Sana'a, Yemen Arab. Rep.).
- The occurrence and distribution of Odon. in 12 wadis of the Yemen Arab Rep. were studied in different seasons during 1988. 23 spp. were recorded, 8 of which are new to the YAR, bringing the total number of spp. known from the state up to 29. Detailed collection data are stated and checklists are given of the odon. faunae of YAR, PDRY (20 spp.) and Saudi Arabia (32 spp.). The identifications were checked by BMNH, and an earlier version of the manuscript was commented upon by Dr W. Schneider.
- (7613) *ANNUAL REPORT OF THE INTERNATIONAL ODONATA RESEARCH INSTITUTE*. No. 3 (1989), 1990. Soc. Int. Odonatol. (S.I.O.), Gainesville, FL, USA. vi+16 pp. — (Standing Orders to the S.I.O. Central Office, P.O. Box 256, NL-3720 AG Bilthoven; — price Hfl. 15,- net).
- Dunkle, S. & M.J. Westfall*: Annual report I.O.R.I., 1989 (pp. 1-10; Introduction, Present facilities, Future facilities, Field research, Lodging, Visitors, Archives, Service to I.O.R.I., Donations to the I.O.R.I. collection, Financial donations, Financial report, 1989 additions to the Odonata species in the I.O.R.I. collection); — *Westfall, M.J.*: 1989
- (7610) ZIMBALEVSKAYA, L.N., 1989. Protection of aquatic invertebrates in the Ukraine. *Hy-*

additions to the Odonata primary type specimens in the Florida State Collection of Arthropods (p. 12); — Odonata collected by Westfall in Australia (pp. 13-16).

- (7614) *ARGIA*. The news journal of the Dragonfly Society of America. Vol. 2, Nos 1/4 (Dec. 15, 1990). — (c/o Dr C. Cook, 469 Crailhope Rd, Center, KY 42214, USA).
Vogt, T.: The Dragonfly Society of America's Second Annual Collectors Meeting to be held in Wisconsin June 21-23, 1991 (pp. 1-2); — *Bick, G.H.*: Unpublished records in Florida State Collection of Arthropods (FSCA) (pp. 3-4); — *Cook, C.*: Kentucky commission reports 20 percent of state's streams polluted, Administration follows policy to permit additional discharge (pp. 4-6); — *Daigle, J.J.*: Los caballeros y los caballitos (pp. 6-7; Engl.); — *Dunkle, S.W.*: Peru revisited (pp. 7-10); — *Garrison, R.W.*: Computerized New World Odonata list, version 2.0 (pp. 11-12); — *Harp, G.L.*: Dragonfly Society of America's 1990 meeting (p. 13); — *Tennessee, K.J.*: New species of Cordulegaster discovered in Arkansas (p. 14; no descr. & name); — *Cook, C.*: Across the Editor's desk (pp. 17-19); — Field and cabinet techniques (pp. 20-23); — *Donnelly, T.W.*: A suggested forum for discussing the validity of some American odonate species (p. 23); — *Dunkle, S.W./Cook, C./Donnelly, T.W./Kiauta, B./anonymous*: DSA business reports (pp. 25-34); — *Membership list* (pp. 35-38). — The issue also contains various reprinted items, notes on various Society affairs, and exchange and other notices.
- (7615) *ARGIA* (Season Summary Supplement) 1 [1989] [No issue number and publication date; published Dec. 15, 1990]. Published by the Dragonfly Society of America. — (c/o Dr C. Cook, 469 Crailhope Rd, Center, KY 42214, USA).
 Annotated checklists of the 1989 records from Brazil (*S.W. Dunkle, R.W. Garrison & J. Pasko*; pp. 1-4); — Peru (*S.W. Dunkle*; pp. 5-6); — Singapore (*D.R. Paulson*; pp. 6-8); — United States (*C. Cook, R.D. Cuyler, T.W. Donnelly, D.R. Paulson & K.J. Tennessee*; pp. 8-15); — Venezuela (*T.W. Donnelly*; p. 15).
- (7616) AŠMERA, J. & A. DOLNÝ, 1990. K výskytu vážek rodu *Leucorrhinia* Brittinger, 1850 v ČSFR. — On the occurrence of the genus *Leucorrhinia* Brittinger, 1850 in the Czech Republic. *Acta Fac. paedag. ostraviensis* (E) 122(20): 117-122. (Czech, with Engl. s.). — (Kated biol., Paedag. Fak., Dvořákova 7, CZ-70103 Ostrava).
L. albifrons, in association with *L. pectoralis* and *L. rubicunda*, is reported from a wood pond nr Trnávka, Moravia, Czechoslovakia. The habitat is described, and the known Czechoslovak records of 5 *Leucorrhinia* spp. are reviewed.
- (7617) BELLE, J. & J. VAN TOL, 1990. *Anomalagrion hastatum* (Say), an American damselfly indigenous to the Azores (Odonata, Coenagrionidae). *Tijdschr. Ent.* 133(2): 143-147. — (First Author: Onder de Beumkes 35, NL-6883 HC Velp).
 This New World sp. was taken for the first time in the Azores in 1938, but it was mistaken for *Ischnura senegalensis*. So far only females were found, therefore it is hypothesized that the sp. may reproduce parthenogenetically in the Azores.
- (7618) BLOIS-HEULIN, C., 1990. Influence of prey densities on prey selection in *Anax imperator* larvae (Odonata: Aeshnidae). *Aquat. Ins.* 12(4): 209-217. — (Lab. Ethol. & Psychophysiol., Univ. Tours, Parc de Grandmont, F-37200 Tours).
 Various relative and absolute densities of 2 prey spp., chironomid larvae and adult *Corixa*, were presented to individual larvae of *A. imperator*. Although these larvae preferred chironomid larvae, the quantity of each prey sp. eaten depended mainly on the density of that prey sp. No indication of switching was found. However, only when their relative density was low at the beginning of an experiment, were items of that prey sp. eaten in proportion to their relative density.
- (7619) BOON, A.E., 1990. Verspreiding en

voorkomen van dagvlinders en libellen in en om Amersfoort. — [Distribution and occurrence of butterflies and dragonflies in the city of Amersfoort and its surroundings]. *Natuur Landsch. Milieu Amersfoort* 12: 1-44. (Dutch). — (Author: Otwardplaats 10, NL-3871 MD Hoevelaken; — Copies available from: Centrum voor Natuur- en Milieu-educatie, Schothorsterlaan 21, NL-3822 NA Amersfoort).

Commented review of the fauna (20 odon. spp.), Amersfoort, Utrecht prov., The Netherlands. (Cf. also *OA* 3383).

- (7620) BORISOV, S.N. [in contents table spelled as BORISEV], 1990. Sutochnaya ritmika aktivnosti *Crocothemis servilia* (Odonata, Libellulidae) v aridnoy zone Tadzjikistana. — Daily activity rhythms in *Crocothemis servilia* (Odonata, Libellulidae) in arid zone of Tadjikistan. *Vest. Zool.* 1990(1): 42-48. (Russ., with Engl. title in Contents tab.). — (Inst. Zool. & Parasitol., Tadjik Acad. Sci., USSR 734000 Dushanbe, Tadjikistan).

Hygrothermal conditions, solar radiation energy and natural light play the most important role in the regulation of diurnal rhythms of various types of specific activity of *C. servilia* imago in the arid zone. The influence of these factors on the rhythms of various types of activity varies, which may be due to the varying behavior and physiological state of the insects in individual ontogenetic periods, thus due to their various habitat requirements. The following types of activity were identified: predominantly daytime, morning-evening and nocturnal-morning. Spontaneous nocturnal flight to mercury lamp light was also noted.

- (7621) BOUDOT, J.-P., G. JACQUEMIN & H.J. DUMONT, 1990. Revision of the subspecies of *Onychogomphus forcipatus* (Linnaeus, 1758) in Europe and Asia Minor, and the true distribution of *Onychogomphus forcipatus unguiculatus* (Vander Linden, 1823) (Odonata, Gomphidae). *Bull. Annl. Soc. r. belge Ent.* 126: 95-111. (With Fr. s.) — (First Author: Cent. Pédol. biol., 17 rue Notre-Dame des Pauvres, B.P. 5, F-54501 Vandoeuvre-les-

-Nancy).

Based on the examination of long series from Europe, northern Africa and Asia Minor, the sp. is revised and 3 infraspecific taxa are confirmed, viz. *f. forcipatus* (L.) (syn.: *f. meridionalis* auct. and *f. sculus* [Vander L.]), *f. unguiculatus* (Vander L.), and *f. albotibialis* Schmidt (syn.: *f. cypricus* and probably *f. lucidostriatus* Schmidt). The males are keyed, but the females are poorly differentiated at the subspecific level. The geographic ranges of the infraspecific taxa are outlined.

- (7622) BROCKHAUS, T., 1990. Zur Libellenfauna bewirtschafteter Teichgebiete in der Umgebung von Karl-Marx-Stadt (DDR). *Arch. NatSchutz LandschForsch. Berlin* 30(3): 195-200. — (Leipziger Str. 147, D-O 9000 Chemnitz, FRG).

Contains a list of 25 spp. from various fishponds in the area of Chemnitz (formerly "Karl-Marx-Stadt"), FRG, with annotations on abundance and autochthony.

- (7623) BUCHWALD, R. & B. SCHMIDT, 1990. Der Kleine Blaupfeil (*Orthetrum coerulescens*, Odonata) in Südbaden. — Spezielle Untersuchungen zu ökologischen Ansprüchen, Populationsdynamik und Gefährdung. *Mitt. Landesver. Naturk. NatSchutz, Freiburg* (N.F. 15(1): 109-144. (With Engl. s.). — (Biol. Inst. II, Univ. Freiburg, Schänzlestr. 1, D-7800 Freiburg i. Br., FRG).

69 water bodies inhabited by *O. coerulescens* were investigated in the Upper Rhine Valley and in the adjacent valleys of the Black Forest, FRG. It occurs in hanging mires and marshes and in grassland brooks, situated close to springs, or connected to the groundwater. The habitats are narrow, shallow waters, of low or medium velocity. Its coincidence with the stands of *Sparganium erectum* is emphasized and discussed. The optimal vegetation height is 20-70 cm, at densities of 25-60% degree of coverage. In some waters with thermic stress, large populations characterized by a very long flight period and a late maximum of abundance were found. In habitats with regular reproduction, *O. coerulescens* is associated with a large number of spp., incl. *Coen-*

agrion mercuriale, *Pyrrhosoma nymphula* and *Calopteryx splendens*. Various protective measures are suggested, these refer particularly to the maintenance of aquatic habitats and to the exploitation of the adjacent land areas.

- (7624) CHAM, S., [Ed.], 1990. *Bedfordshire dragonflies. A provisional atlas of the dragonflies of Bedfordshire, incorporating information for recorders*. Bedford Mus., Bedford. 31 pp. — ISBN 0-906020-01-8. — (Available from: Ms R. Brind, Bedford. Mus., Castle Lane, Bedford, MK40 3XD, UK).

Commented distribution maps, most with flight charts, for 24 spp., 18 of which are known to breed in Bedfordshire, UK.

- (7625) CLASTRIER, J. & J. LEGRAND, 1990. *Forcipomyia (Pterobosca) incubans (Macfie) et F. (Trichohelea) macheti n. sp., parasites des ailes de libellules en Guyane française (Diptera, Ceratopogonidae; Odonata)*. *Revue fr. Ent.* (NS) 12(4): 167-170. (With Engl. s.). — (Lab. Ent., Mus Natn. Hist. Nat., 45 rue Buffon, F-75005 Paris).

The 2 midges, parasitic on odon. wings of various taxa are studied. The latter sp., from various libellulid spp., is described and figured.

- (7626) COMPTE SART, A., 1990. Origen y distribución de los odonatos ibéricos. *Resum. 4 Congr. ibér. Ent.*, Sant Feliu de Guixols, p. 6. — (Secc. Ent., Mus. Nac. Cienc. Nat., José Gutiérrez Abascal 2, ES-28006 Madrid). [A brief abstract only].

- (7627) CONRAD, K.F. & G. PRITCHARD, 1990. Pre-oviposition mate-guarding and mating behaviour of *Argia vidua* (Odonata: Coenagrionidae). *Ecol. Ent.* 15(4): 363-370. — (First Author: Dept Biol., Queen's Univ., Kingston, Ont., K7L 3N6, CA).

At Halcyon Hot Springs, B.C., Canada, *A. vidua* was noticed to mate in 2 ways. In the morning (before 12.30 h solar time), males basked at sunspots in the forest and darted out at passing females, attempting to take them in tandem (the first method of encounter). — If a male was successful, the pair engaged in a 31.3 ± 4.8 min copulation followed by an hour

of tandem flight before beginning oviposition. — As the day progressed, unmated males moved slowly toward the water and arrived at the water at about the same time as the earliest ovipositing pairs (1131 ± 27.5 min solar time). — Males retained their grasp on their mates during oviposition (contact-guarding) but since some tandems separated during oviposition, non-tandem males at the water could capture recently released, gravid females (the second method of encounter). — The new pairs performed a brief copulation (10.2 ± 3.38 min) and began ovipositing immediately thereafter. — Some females that avoided recapture attempted to oviposit unguarded. — It is believed that the long duration of morning copulations and period of tandem constitute a male strategy, here called "pre-oviposition guarding", to guard females until it is warm enough at the oviposition site for the females to begin ovipositing. — Separation of tandems during oviposition may be initiated by either member of the pair and it is suggested that one benefit to a female of leaving a guarding mate is increased efficiency of oviposition when the intensity of male harassment is low. — The mating system of *A. vidua* thus comprises a series of complementary male and female mating behaviours.

- (7628) DE BOER, L.E.M., 1990. Tribute to Professors Janny van Brink and Bostian Kiauta. *Genetica* 83(1) Special Issue in Honour of J.M. van Brink and B. Kiauta, pp. v-vi. — (Natn. Foundation Res. in Zool. Gardens, Artis Zoo, P.O. Box 20164, NL-1000 HD Amsterdam).

Biographic note and appreciation of work, on behalf of the Advisory & Referee Board of the journal. It also contains passing references to the Odon. — Cf. also OA 7652.

- (7629) DE VISSCHER, M.N., 1990. Une journée de la vie des libellules. *Insectes* 79(4): 13-16. — (9 Les Ferrages, F-34570 Vailhauques).

General article on dragonfly biology.

- (7630) DUNKLE, S.W., 1990. *Damselflies of Florida, Bermuda and the Bahamas*. x+148 pp. 101 col. figs incl. (15x23 cm). ISBN 0-

- 945417-86-1 (hardcover), 0-945417-85-3 (paperback). Scientific Publishers, Gainesville, FL. — Available from the SIO Central Office, Biltoven, at Hfl. 48.- (paperback only). — (Author: Int. Odonata Res. Int., P.O. Box 1269, Gainesville, FL 32602-1269, USA). The set-up of the book is identic to the Anisoptera work listed in *OA* 6746. All the 46 regional Zygoptera spp. are described and illustrated, incl. line drawings, facilitating identification of the more "difficult" taxa. With great skill the author minimizes the use of technical language, yet the text is scientifically accurate throughout. Although it is unlikely that the reader would use this work independently of the Anisoptera volume, the general chapters on classification, morphology, life history, photography, collecting techniques and applications in education, make the book a completely rounded off work. The "Quick Guide" to Florida spp., checklists for each of the 3 geographic entities covered, and a comprehensive (selected) bibliography enhance the value of the book.
- (7631) FERRERAS ROMERO, M. & A.M. GARCIA ROJAS, 1990. Estructuración y dinámica de la odonatocenosis de la cuenca del río Yeguas (Sierra Morena). *Resum. 4 Congr. ibér. Ent.*, Sant Feliu de Guixols, pp. 37-38. — (Depto Zool., Univ. Córdoba, Avda San Alberto Magno, s/n, ES-14004 Córdoba). Informative abstract only. — The odon. fauna (23 spp.) of the Yeguas R., southern Spain, is briefly characterized, but the spp. list is not included.
- (7632) FRASERIA. Newsletter of the SIO Regional Office in Southern Asia, No. 18/19 (Dec. 1, 1990). — (c/o Dr B.K. Tyagi, SIO ROSA, Plot 155, Street 7, Milkman Colony, Jodhpur-342003, India). The sole major technical paper was contributed by V.K. Srivastava: Functional morphology of the female accessory reproductive gland of *Ceriagrion coromandelianum* (Fabr.) and its correlation with oviposition (pp. 78-80). The same author (Dept Zool., C.M.P. Coll., 31 Tula Ram Bagh, Allahabad-211006, India) is also requesting dry adult ♂ Zygoptera specimens (in perfect condition) of any non-Indian spp. which are needed for his morphology research. — The rest of the issue is mostly made up by brief reports on the recent symposia (incl. by G. Varadaraj, on the Third Indian Symp. Odonatol., Erode, Jan. 29-31, 1990; p. 80) and announcements of the forthcoming meetings (incl. by B.K. Tyagi, on the Fourth South Asian Symp. Odonatol., Allahabad, Sept/Oct., 1992, Organizer: Dr V.K. Srivastava; p. 77).
- (7633) FRICKHINGER, K.A., 1990. Die Frühjahrs-Libellen am Gartenteich. *TI-International (=Aquarium Digest international)* 98: 25-27. — (c/o Tetra-Verlag, D-4520 Melle-1, FRG). Sequel to the paper listed in *OA* 6868.
- (7634) FURTH, D.G. & K. SUZUKI, 1990. Comparative morphology of the tibial flexor and extensor tendons in insects. *Syst. Ent.* 15(4): 433-441. — (First Author: Div. Ent., Peabody Mus. Nat. Hist., New Haven, CT 06511, USA). The relative size, orientation, and degrees of sclerotization of the tibial flexor and extensor tendons are compared in 19 insect orders, incl. Odon. (Aeshnidae).
- (7635) GÄDE, G., 1990. The putative ancestral peptide of the adipokinetic/red-pigment-concentrating hormone family isolated and sequenced from a dragonfly. *Biol. Chem. Hoppe-Seyler* 371(6): 475-483. (With Germ. s.). — (Zool. Dept, Univ. Cape Town, Private Bag, Rondebosch-7700, RSA). A neuropeptide with adipokinetic activity in *Locusta migratoria* and hypertrehalosaemic activity in *Periplaneta americana* was purified by reversed-phase high performance liquid chromatography from the corpus cardiacum of the dragonfly, *Libellula auripennis*. After brief enzymatic digestion by 5-oxopropyl-peptidase the primary structure of the peptide was determined by pulsed-liquid phase sequencing employing Edman degradation. As the peptide was not cleaved by carboxypeptidase the C-terminus was blocked, too. The peptide was assigned as a blocked uncharged octapeptide; Glu-Val-Asn-Phe-Thr-Pro-Ser-TrpNH₂. The

synthetic peptide was chromatographically indistinguishable from the natural compound and, upon injection in low quantities into dragonflies, elicited mainly haemolymph lipids. Therefore it is called dragonfly adipokinetic hormone (*Lia*-AKH). It is a new member of the large AKH/RPCH family of peptides. Because of its structural features and its origin from a very primitive insect order it is assumed to represent the putative ancestral peptide of this family. Synthesis was shown to occur in the corpus cardiacum by *in vitro* incorporation of tritium-labelled Trp into *Lia*-AKH.

- (7636) GORB, S.N., 1990. Vneshnyaya morfologiya sistemy fiksatsii golovy u strekoz nadsemeystva Calopterygoidea (Odonata, Zygoptera). — The external morphology of the head fixation system in Calopterygoidea (Odonata, Zygoptera). *Zool. Zh.* 69(11): 37-45. (Russ., with Engl. s.). — (Dept Insect Physiol., Schmalhausen Inst. Zool. Ukrain. Acad. Sci., Ul. Lenina 15, USSR-252001 Kiev, Ukraine). The head fixation system is described in 5 spp. of Chlorocyphidae, Euphaeidae and Calopterygidae. — (Cf. also 6936, 6986, 7505, 7637).
- (7637) GORB, S.N., 1990. Vnutrennyaya morfologiya sistemy arreitera u strekozy Erythromma najas. — Internal morphology of the arrester system in a dragonfly *Erythromma najas*. *Vest. Zool.* 1990 (6): 59-62, figs 1-10 on p. 3 of the issue cover. (Russ., with Engl. title in Contents Table). — (Dept Insect Physiol., Schmalhausen Inst. Zool., Ukrain. Acad. Sci., Ul. Lenina 15, USSR-252001 Kiev, Ukraine). Based on the general review presented in the paper listed in *OA* 7505, a detailed account is given of microsculptural structures in the head fixing system of *E. najas*, and the situation is briefly compared with that in some other odon. taxa.
- (7638) *GRACILE* Newsletter of Odonatology. Published by the Kansai Research Group of Odonatology, Osaka, No. 44 (Dec. 1, 1990). (Jap., with Engl. titles). — (Distribution outside Japan: K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA). *Aoki, T. & T. Takeuchi*: How to treat the data on Odonata by personal computers (pp. 1-4); — *Tsuda, S., S. Nishu & T. Takeuchi*: Mesh code of "Dragonflies of Kinki District", 1984, part 2. Anisozygoptera and Anisoptera (1) (pp. 5-11); — *Ito, Y.*: A case of unusual oviposition of *Rhipidolestes hiraoui* (pp. 12-13); — *Nagase, K.*: Dragonflies predated by birds (pp. 13-14); — *Shimura, S.*: Report of the field survey on the odonate fauna of Yodo River (6) (pp. 14-15); — *Nagase, K.*: Report on the survey trip on the odonate fauna of North Hyogo (1) in early summer (pp. 16-17); — *Kimura, T.*: Report of the survey trip for Kyoto University Forest in Ashu, Kyoto Prefecture (pp. 18-20); — *Kondoh, S.*: An additional report to the odonate fauna of Yamada Pond and its outskirts in Hirakata City, Osaka Prefecture (pp. 20-21); — *Itoh, H.*: *Tramea virginia* caught at Takatsuki City, Osaka Prefecture (pp. 21-22); — *Matsuda, I. & S. Tsuda*: Rediscovery of *Ictinogomphus pertinax* at Habikino City, Osaka Prefecture (p. 22); — *Inoue, K.*: Two books on dragonflies issued by the municipal authorities of Nishinomiya City, Hyogo Prefecture (p. 23).
- (7639) GYDEMO, R., L. WESTIN & A. NISLING, 1990. Predation on larvae of the Noble Crayfish, *Astacus astacus* L. *Aquaculture* 86: 155-161. — Dept Syst. Ecol., Univ. Stockholm, S-106 91 Stockholm). The predation by larval *Aeshna grandis* and adult ♀ crayfish on the second-stage young of *A. astacus* was studied in aquarium experiments. Combinations of crayfish young with and without adult female crayfish, with and without shelter were made in 4x4 set-ups with dragonfly larvae and 4x2 without. Dragonfly larvae and adult female crayfish rapidly reduced the number of surviving crayfish larvae. When neither adult crayfish females nor dragonfly larvae were present and crayfish juveniles also had access to shelter, the survival rate was high.
- (7640) HARITONOV, A.Yu. & S.N. BORISOV, 1990. Evraziatskie vidy strekoz roda Ophiogomphus (Odonata, Gomphidae). — [The Euroasiatic species of the genus *Ophiogomphus* (Odonata, Gomphidae)]. *In*: G.S.

Zolotarenko, [Ed.], *Novye i maloizvestnye vidy fauny Sibiri*, Vol. 21, pp. 43-51, Nauka, Novosibirsk. (Russ.). — (Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).

The adult and larva of *O. reductus* Calv., *O. obscurus* Bart. and *O. serpentinus* (Charp.) are described and figured. The immature stage of the former 2 spp. has not been known so far.

- (7641) HARITONOV, A.Yu. & I.N. HARITONOVA, 1990. *Strekozy roda Coenagrion Kirby fauny Sibiri*. — [Siberian representatives of the dragonfly genus *Coenagrion* Kirby]. In: G.S. Zolotarenko, [Ed.], *Novye i maloizvestnye vidy fauny Sibiri*, Vol. 22, pp. 49-53, Nauka, Novosibirsk. (Russ.). — (Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk). 11 spp. are recognized and keyed, incl. *C. armatum*, for which a new subgenus, *Chloragrion* subg. n., is erected, and *Cercion v-nigrum*, to which the subgeneric rank is assigned. Bartenev's (1956) *antiquum*, *tugor*, *convalescens* and *amurensis* are synonymized with *hylas* and *concinnum* (but it is not stated which sp. with which sp.; cf. OA 864!), *C. hylas meridionalis* Belyshev and *C. armatum* minor Belyshev are synonymized with the resp. nominate ssp., while the status of Bartenev's (1956) *brevicauda* and *striatum* is uncertain.

- (7642) HARITONOVA, I.N., 1990. *K faune strekoz (Insecta, Odonata) gor yuga Sibiri* — [On dragonfly fauna (Insecta, Odonata) of the mountain belt of southern Siberia]. In: G.S. Zolotarenko, [Ed.], *Chlenistonogie i gel'minty (Fauna Sibiri; ISBN 5-02-029540-X)*, pp. 43-47, Nauka, Novosibirsk. (Russ.). — (c/o Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk). Checklist of 67 spp., with statements on their occurrence in 10 regions of the area, and with comments on some of them. — The "traditional" Russian system and nomenclature are used.

- (7643) HART, B.T., P. BAILEY, R. EDWARDS, K. HORTLE, K. JAMES, A. McMAHON, C. MEREDITH & K. SWADLING, 1990.

Effects of salinity on river, stream and wetland ecosystems in Victoria, Australia. *Wat. Res.* 24(9): 1103-1117. — (First Author: Centre Stream Ecol., Chisholm Inst. Technol., Melbourne, AU).

Data on individual spp., to be published elsewhere, are used to determine the possible adverse effects of saline wastewater discharges on aquatic ecosystems, and a set of guidelines for assessing the possible biological effects in particular salt-affected rivers, streams or wetlands in Australia is developed. The paper contains only passing references to the odon.

- (7644) HAWKING, J.H. & J.A.L. WATSON, 1990. First Australian record of chironomid larvae epizoic on larval Odonata. *Aquat. Ins.* 12(4): 241-245. — (First Author: Murray-Darling Freshw. Res. Cent., P.O. Box 921, Albury, NSW 2640, AU). Epizoic larvae of *Rheotanytarsus* sp. were found on larvae of *Austroaeschna atrata* from 2 subalpine streams in NE Victoria.

- (7645) HENRIKSON, B.-I., 1990. Predation on amphibian eggs and tadpoles by common predators in acidified lakes. *Holarctic Ecol.* 13(3): 201-206. — (Dept Zool., Univ. Göteborg, Box 25059, S.40031 Göteborg). Eggs and 3 different stages of premetamorphic tadpoles of *Rana arvalis* and *Bufo bufo* were offered to the following potential predators in acidified lakes: newt *Triturus vulgaris*, water beetles *Rhantus exsoletus* and *Dytiscus lapponicus*, dragonfly larvae *Leucorrhinia dubia* and *Aeshna* spp., water boatman *Notonecta glauca* and water bugs, *Cymatia bondsdorffi*, *Glaenocorisca p. propinqua*, and *Corixa dentipes*. — The predation pressure on eggs of *R. arvalis* was low due to thick jelly. The eggs of *B. bufo* were not attractive to predators with chewing mouth parts due to unpalatability but predators with sucking mouth parts were not repulsed. Tadpoles of *R. arvalis* were eaten by all predators but tadpoles of *B. bufo* were unpalatable to most predators. The predators used in the experiments are the new top predators in acidified fishless lakes. They may contribute to the reduction of populations of *R. arvalis* in acidified areas.

- (7646) HERMANS, J.T., 1990. Libellen langs de zuidlimburgse beken. — [Dragonflies of the Zuid Limburg streams]. *Publies natuurrh. Genoot. Limburg* 38(1): 62-65, fig. 9 excl. (Dutch). — (Hertestraat 21, NL-6067 ER Linne).
Deals mainly with *Calopteryx splendens* and *C. virgo*, and contains a review of *C. splendens* records (1919-1982) in Zuid Limburg prov., The Netherlands.
- (7647) INDIAN ODONATOLOGY. Journal of the South Asian Regional Office of the International Odonatological Society (S.I.O.), Jodhpur, Vol. 3 (Dec. 1, 1990). — (Subscription orders from South Asian countries to: SIO ROSA, c/o Dr B.K. Tyagi, Plot 155, Street 7, Milkman Colony, Jodhpur-342003, India; — all others: SIO Central Office, P.O. Box 256, NL-3720 AG Bilthoven). — Price: all hitherto published vols, with standing order: Hfl. 120.- net.
Begum, A., M.A. Bishar & V. Biswas: The mating behaviour and development of *Rhodthemis rufa* (Rambur) (Anisoptera: Libellulidae) (pp. 1-9); — On the life history of *Neurothemis tulia tulia* (Drury) from Dhaka, Bangladesh (Anisoptera: Libellulidae) (pp. 11-20); — *Baskaran, P., S. Palanichami & D. Moni*: Impact of pesticides on some biochemical parameters in the nymphs of *Brachythemis contaminata* (Fabricius) (Anisoptera: Libellulidae) (pp. 21-25); — *Paul, S.F., M. Gladstone & A.M. Daniel*: Comparative studies on the morphological variation in the rectal gills of naiads of five Anisoptera (pp. 27-32); — *Suri Babu, S. & B.K. Srivastava*: Breeding biology of *Ceriagrion coromandelianum* (Fabricius) with special reference to seasonal regulation (Zygoptera: Coenagrionidae) (pp. 33-43); — *Daniel, T. & U. Kesavan*: Toxic effects of the tannery effluent on the nymphs of *Brachythemis contaminata* (Fabricius) in a South Indian township (Anisoptera: Libellulidae) (pp. 45-51); — *Ebenezer, V., A.M. Daniel & M.T. Mathai*: Interaction between the size of the mosquito larval prey and the predatory efficiency of the naiads of *Diplacodes trivialis* (Rambur) (Anisoptera: Libellulidae) (pp. 53-63); — *Biswas, B., M.A. Bashar & A. Begum*: On a collection of Odonata from Bagerhat district, Khulna, Bangladesh (pp. 65-66); — *Prasad, M.*: Field notes on the mating behaviour of *Crocothemis servilia servilia* (Drury) at a perennial pond in Calcutta, India (Anisoptera: Libellulidae) (pp. 67-68); — *Subramanian, M.A., R. Chandrasekaran & G. Varadaraj*: Observations on the toxicity of pesticides on the nymphs of *Macromia cingulata* (Rambur) (Anisoptera: Corduliidae) (pp. 69-71); — *Varadaraj, G., M.A. Subramanian & R. Subramanian*: Oxygen uptake in the naiads of *Macromia cingulata* (Rambur) after exposure to industrial effluents (Anisoptera: Corduliidae) (pp. 73-75).
- (7648) JÖDICKE, R., 1990. Ein früher Flugzeitenbeginn von *Anax imperator* im Rheinland (Insecta: Odonata). *Natur Niederrhein* (N.F.) 5(2): 56-57. — (Happelter 15, D-4054 Nettetal-1, FRG).
In the Lower Rhine region, FRG, a ♀ was seen ovipositing on May 31, 1990. Its abdomen was androchromatically blue, therefore its age was assumed to be about 4 weeks. Consequently, the emergence date of this individual was about 3 weeks ahead of the usual pattern in the area.
- (7649) KETELAAR, R., 1990. De Nederlandse libellenonderzoekers ook voor jou. *Amoeba, Amsterdam* 64(8): 145. (Dutch). — (Melis-Stoke Laan 14, NL-1911 SL Uitgeest).
Informative article on the Netherlands Association of Dragonfly Workers, directed at the youth.
- (7650) KHALIQ, A., 1990. *Taxonomic studies on Zygoptera (Odonata) of Pakistan*. PhD thesis, Univ. Agric., Faisalabad, xx+125 pp. — (Author: Univ. Coll. Agric., Rawalakot, Azad Kashmir, Pakistan).
34 spp. are monographically treated, with locality data, descriptions, keys and taxonomic comments. The work is mainly based on unpublished (adult) material, brought together by the author (1986-1988) from Lahore, Faisalabad, Multan, Yazman (Cholistan), Rangpur (Thal), Marala (Sialkot), Taunsa (Dera Ghazi Khan), Panjnad (Bahawalpur),

- Kallarkahar, Choua Saidenshah (Chakwal), Mangla (Jhelum), Rawalpindi, Attock, Murree, Abbottabad, Haripur, Peshawar, Swat, Dera Ismail Khan, Kohat, Sukkur, Hyderabad, Mirpurkhas (Tharparker), Karachi, Lasbela, Makran Coast, Khuzdar, Panjgur, Kharan, Zhob, Sibi and Quetta.
- (7651) KIAUTA, B. & M. KIAUTA, 1990. Some dragonflies collected around Ryder Lake, Chilliwick district, in 1990. *Boreus* 10(2): 7. — (SIO Central Office, P.O. Box 256, NL-3720, AG Bilthoven).
Summary of the paper listed in OA 7520, with the complete and annotated species list (British Columbia, Canada).
- (7652) KLUWER ACADEMIC PUBLISHERS, 1990. Publishers' preface. *Genetica* 83(1) Special Issue in Honour of J.M. van Brink and B. Kiauta p. vii. — (c/o Dr L.E.M. de Boer, Natn. Foundation Res. in Zool. Gardens, Artis Zoo, P.O. Box 20164, NL-1000 HD Amsterdam).
Biographic note and appreciation of work, by the Publishers of the journal, with passing reference to the Odon. — Cf. also OA 7628.
- (7653) KUNATH, G., 1990. [Enallagma cyathigerum ♂ — das Opfer einer Listspinne (Dolomedes fimbriatus)]. *Ent. Nachr. Ber.* 34(2): cover. — (Author's address not stated).
Cover photograph.
- (7654) LARSON, D.J., 1990. Odonate predation as a factor influencing dytiscid beetle distribution and community structure. *Quaest. entomol.* 26(2): 151-162. — (Dept Biol., Memorial Univ. Newfoundland, St John's, Nfld, A1B 3X9, CA).
Odon. larvae and predacious dytiscid beetles are abundant predators in many shallow lentic habitats. The distributions of members of these 2 groups differ somewhat with odon. dominating in more open and permanent sites while dytiscids are more abundant in habitats of less stability and denser vegetation. It is postulated that predation of odon. larvae on dytiscids, especially the larval stages, is at least a contributory factor to this partitioning. Evidence in support of this hypothesis is drawn from general considerations of the biology and behaviour of the 2 groups, literature records, collecting experiences and a study that measured odon. density and the prevalence of dytiscids as food items in their guts. In certain Newfoundland bog pools, the density of odon. larvae is adequate to eliminate vulnerable dytiscids in a matter of days. Mechanisms by which dytiscids can avoid odonate predation are discussed.
- (7655) LIBELLULA. Mitteilungsblatt der Gesellschaft deutschsprachiger Odonatologen (GdO), Vol. 9, Nos 1/2 (dated 1990, mailed Jan. 1991). — (c/o Mrs U. Krüger, Gelderner Str. 39, D-4050 Mönchengladbach-4, FRG).
König, A.: Ökologische Einnischungsstrategien der Arten der Gattung Sympetrum (Anisoptera: Libellulidae) (pp. 1-11); — *Breuer, M. & M. Rasper*: Nachweise der Pokal-Azurjungfer *Cercion lindeni* (Selys, 1840) in Niedersachsen (Odonata: Coenagrionidae) (pp. 13-19); — *Schneider-Jacoby, M.*: Erster Nachweis der Zierlichen Moosjungfer, *Leucorrhinia caudalis* Charpentier, 1840, für Jugoslawien (Odonata: Libellulidae) (pp. 21-31); — *von Hagen, H.*: Ergänzende Mitteilungen zur Odonatenfauna Mallorcas (pp. 33-42); — *Mauersberger, R.*: Libellenbeobachtungen aus dem bulgarischen Balkan-Gebirge (Stara Planina) (pp. 43-59); — *Rudolph, R.*: Nachruf auf Dr. Helmut Beyer (1905-1989) (pp. 61-62); — *Elend, A.*: Waagerechter Schlupf von *Ischnura elegans* (Vander Linden, 1823) (pp. 63-65); — *Buck, K.*: Libellen im Kreis Steinburg (pp. 67-70); — *Rodenkirchen, J. & E. Schmidt*: Die Schabrackenlibelle *Hemianax ephippiger* (Burmeister, 1839) in Bonn (Odonata: Aeshnidae) (pp. 71-74).
- (7656) LUTZ, H., 1990. Systematische und palökologische Untersuchungen an Insekten aus dem Mittel-Eozän der Grube Messel bei Darmstadt. *Cour. ForschInst. Senckenberg* 124: 1-165. (With Engl. s.). — (Author's address unknown).
Contains the descriptions of 3 odon. specimens (1 adult, 2 larvae); the spp. are unnamed and their family affiliation uncertain.

- (7657) MACHET, P., 1990. Un nouvel odonate de la Guyane française *Palaemnema brevignoni* n. sp. (Zygoptera, Platystictidae). *Revue fr. Ent. (NS)* 12(4): 191-194 (With Engl. s.). — (65 bd de la République, F-92210 Saint-Cloud).
P. brevignoni sp. n. is described and figured from a single ♂ (Cacao, Château d'eau, 31-XII-1989; deposited in MNHN). It can be easily separated from *P. edmondi* Calv. and *P. tepuica* De Marmels by the distinct pattern of pterothorax and the shape of caudal app. This is the first record of the genus from the southern region of the Guianas.
- (7658) MARTINIA. Bulletin de liaison des odonologues de France. Vol. 6, No. 4 (Dec. 1990). — (c/o J.-L. Dommanget, 7 rue Lamartine, F-78390 Bois d'Arcy).
Mulnet, D.: Note sur la présence de *Symptetrum pedemontanum* (Allioni, 1766) dans l'Aveyron (Odonata, Anisoptera: Libellulidae) (pp. 77-78); — *Arcos, M.*: Les odonates de Charante (pp. 79-84); — *Grand, D.*: Sur une migration d'*Hemianax ephippiger* (Burmeister, 1839) en région Lyonnaise (Rhône) (Odonata, Anisoptera: Aeshnidae) (pp. 85-91); — *Orieux, G. & J.-C. Laleure*: Gomphidae observés sur la Loire et l'Allier dans le département de la Nièvre (pp. 93-97); — *Dommanget, J.-L.*: Rubrique bibliographique (pp. 98-99); — *Machet, P.*: Nouvelles philatéliques (pp. 99-100).
- (7659) MAUERSBERGER, R. & W. ZESSIN, 1990. Zum Vorkommen und zur Ökologie von *Gomphus vulgatissimus* Linnaeus (Odonata, Gomphidae) in der ehemaligen DDR. *Ent. Nachr. Ber.* 34(5): 203-211. (With Engl. & Fr. s's). — (First Author: Am Birkenwerder 37, D-O 1144 Berlin, FRG).
The known records of *G. vulgatissimus* in the former GDR are reviewed, some habitats analyzed in detail, and autecology of the sp. outlined. The sp. is considered a good indicator for a high degree of continuous self-purification in brooks and rivers.
- (7660) MÉNARD, B., 1990. Captures d'odonates dans la Vallée de l'Outaouais, dans la Haute-Gatineau, et la région de Port-au-Saumon (Charlevoix-Est) en 1989. *Faberies* 15(4): 80-89. (With Engl. s.). — (58 rue Smith, Gatineau, Que., J8T 3A1, CA).
Continuation of the series listed in *OA* 6563 and 7020, Quebec, Canada, with a good line drawing of *Gomphus amnicola* exuviae, and field notes on *Nasiaeschna pentacantha*, *Lanthus parvulus*, *Gomphus amnicola*, *G. cornutus*, *G. furcifer*, *Ophiogomphus anomalus*, *Macromia illinoiensis*, *Williamsonia fletcheri* and *Libellula incesta*. The status of the regional fauna stands at 105 spp. now.
- (7661) MERMOD-FRICKER, F. & W. GEIGER, 1990. Bibliographie concernant la faune entomologique suisse, 1988. *Bull. romand Ent.* 8(2): 121-136. — (Centre suisse Cartographie Faune, Mus. Hist. Nat., 14 rue des Terreaux, CH-2000 Neuchâtel).
Contains 11 odonatol. titles.
- (7662) MOGI, M. & I. MIYAGI, 1990. Colonization of rice fields by mosquitoes (Diptera: Culicidae) and larvivorous predators in asynchronous rice cultivation areas in the Philippines. *J. med. Ent.* 27(4): 530-536. — (First Author: Div. Parasitol., Dept Microbiol., Saga Med. Sch., Nabeshima, Saga, 849, JA).
Odon. larvae were more abundant in fallow or mature ricefields. The abundance decreased at the onset of ploughing and then recovered slowly as rice plants grew. The abundance of surface predators showed a similar pattern, but less conspicuously.
- (7663) MUILWIJK, J., P. CORNELISSEN & D. GILLISSEN, 1990. De waterkwaliteit van de beken en de grachten te Amersfoort. — [Water quality of the brooks and canals in the city of Amersfoort]. *Natuur Landsch. Milieu Amersfoort* 10: 1-65. (Dutch). — (Available from: V. van Laar, Centrum Natuur & Milieu, Schothorsterlaan 21, NL-3822 NA Amersfoort).
Ischnura elegans is listed from the Langegracht, Amersfoort, The Netherlands.
- (7664) MÜLLER, H.J., 1990. Dr. rer. nat. habil. Hans Schiemenz zum 70. Geburtstag. *Ent. Nachr. Ber.* 34(1): 46-48. — (Author's

- address not stated).
Brief biography, portrait, evaluation of work, and entomological bibliography of the well known German odonatologist (born: Feb. 24, 1920, Dresden). His 1953 book, "Die Libellen unserer Heimat" (Urania, Jena), is a classic in German odonatol. literature.
- (7665) NIEMI, G.J., P. DeVORE, N. DE-TENBECK, D. TAYLOR, A. LIMA, J. PASTOR, J.D. YOUNT & R.J. NAIMAN, 1990. Overview of case studies on recovery of aquatic systems from disturbance. *Envir. Manag.* 14(5): 571-586. — (First Author: Nat. Resour. Res. Inst., Univ. Minnesota, 5013 Miller Trunk Hwy, Duluth, MN 55811, USA). An extensive review of literature identified more than 150 case studies in which some aspect of resilience in freshwater systems (79% lotic, the remainder lentic) was reported. Most of the stressor types were chemical, the most common of the others were logging, flooding, dredging and drought. Most recovery times were less than 3 yr, except in case of physical alteration, residual pollutants, or recolonisation suppressed by isolation. In the summary tab. of recovery times (yr) the odon. are listed orderwise. The work is almost entirely limited to the US.
- (7666) NOVELO GUTIÉRREZ, R., 1990. Los "dragones del aire". Las libélulas: un sorprendente grupo de insectos. *Infcción cient. tecnol.* 12(164): 40-47. — (Inst. Ecol., A.C., Apado postal 63, MX-91000 Xalapa, Ver., Mexico).
Directed at the general reader, odon. biology is outlined with emphasis on the Mexican fauna. Among the various good col. phot., that of ovipositing *Argia cuprea* is of particular interest.
- (7667) *ODONATOLOGICAL LIBRARY NEWS*. Published by the Kansai Research Group of Odonatology, Osaka. No. 7 (Dec. 2, 1990) (Jap., with Engl. title). — (Distribution outside Japan: K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA).
Lists 236 titles by Japanese, and 20 by other workers.
- (7668) OHLIGER, S., 1990. Die Glänzende Binsenjungfer (*Lestes dryas*), eine Charakterart periodisch austrocknender Flachsümpfe. *Mitt. Pollichia* 77: 371-383. (With Engl. s.).
Fresh characters distinguishing between *L. dryas* and *L. sponsa* in the field are stated, and the habitats in the Rheinland-Pfalz, FRG, are described.
- (7669) OLSVIK, H., 1990. Forsidedyret — en truet norsk dyreart. — [The animal on the cover page — a threatened Norwegian species]. *Insekt-Nytt* 15(3): 3-4, cover. (Norwegian). — (N-6598 Foldfjorden).
The knowledge on *Libellula depressa* in Norway is summarised and the distribution mapped. — (Cf. also OA 6969).
- (7670) OLSVIK, H., 1990. Øyestikkere i Norge, situasjonsrapport med rød liste. — [Dragonflies in Norway: a situation report with a red list]. *Insekt-Nytt* 15(3): 5-6. (Norwegian). — (N-6598 Foldfjorden).
The status of the 42 spp. known to occur in Norway (1988) is briefly discussed, and a red list is appended (1 sp. extinct, 8 endangered, 7 vulnerable, 9 rare, 17 common and not threatened).
- (7671) OLSVIK, H., 1990. Øyestikkere i Ostfold. — [Dragonflies in the Ostfold]. *Natur Ostfold* 9: 23-41. (Norwegian). — (N-6598 Foldfjorden).
The status of the 40 spp. known from the Ostfold region, SE Norway, is discussed and the known distribution of each sp. is mapped. A regional red list is also provided.
- (7672) OLSVIK, H., G. KVIFTE & D. DOLMEN, 1990. Utbredelse og vernestatus for øyestikkere på Sør- og Ostlandet, med hovedvekt på forsynings- og jordbruksområdene. — [Distribution and conservation status of dragonflies in southeastern Norway, with emphasis on acid precipitation and agricultural areas]. *Zool. Rapp. Vitenskapsmus. Univ. Trondheim* 1990(3): 1-104. [As book: ISBN 82-7126-455-9]. (Norwegian). — (Third Author: Zool. Dept, Vitenskapsmuseet, Univ. Trondheim, N-7004 Trondheim).

The first part deals with the 1930-1940 records in the Aust-Agder region, S coast of Norway. The preliminary investigations indicate a major decrease in some spp. (some of these perhaps became extinct?), caused by acid precipitation in the inland, and by strong eutrophication of the coastal habitats. The artificial calcification of the acid-water sites could probably have either a positive or a negative impact on the sp. status as well. — The second part deals with the recent investigations at 184 localities (particularly in the Oslo-Akershus and the Ostfold regions (SE Norway). In this area some spp. suffered a distinct decrease in populations, most probably so due to strong eutrophication. — The status of the 42 Norwegian spp. is stated (cf. OA 7670) and a comprehensive regional bibliography is provided.

- (7673) OTT, J., 1990. Die Libellenfauna des geplanten Naturschutzgebietes "Gelterswoog-Kolbenwoog" — mit einem Wiederfund von *Somatochlora arctica* Zetterstedt für Rheinland-Pfalz. *Fauna Flora Rheinland-Pfalz* 6(1): 227-246. (With Engl. s.). — (Hahnenbalz 31, D-6750 Kaiserslautern, FRG).

26 spp. are listed from this nature reserve nr Kaiserslautern, FRG. Some are discussed in considerable detail, and management measures are suggested for various regions within the reserve.

- (7674) PALMER, R.W. & J.H. O'KEEFFE, 1990. Downstream effects of a small impoundment on a turbid river. *Arch. Hydrobiol.* 119(4): 457-473. — (Inst. Freshw. Stud., Rhodes Univ., Grahamstown-6140, RSA).
The downstream ecological effects of Elandsdrift Dam, in the mid reaches of the Great Fish River, RSA, are determined. Without taxonomic names, a statement is made on the number of odon. specimens encountered in the samples taken above and below the Dam.

- (7675) PETER, M., 1990. Ein weiterer Fundort des Kleinen Granatauges (*Erithromma viridulum* Charp.) (Odonata). *Ent. Nachr. Ber.* 34(1): 41-42. — (Steinweg 14, D-5700 Mülhausen, FRG).

With reference to the note listed in OA 6252, *E. viridulum* is reported from Bollstedt, distr. Mülhausen/Thür., E. Germany, and the habitat is briefly described.

- (7676) PETRUSENKO, A.A., 1990. *Kachestvenno-kolichestvennoe raznoobrazie troficheskikh svyazey pozvonocnykh v nazemnykh ekosistemah.* — *Quality-quantitative vertebrate trophical coherentions in terrestrial ecosystems.* 60 pp. Schmalhausen Inst. zool., Ukrain. Acad. Sci., Kiev. (Russ., with Engl. s.). — (Schmalhausen Inst. Zool., Ukrain. Acad. Sci., Ul. Lenina 15, USSR-252001 Kiev, Ukraine).

On p. 31, the "Coenagrionidae" are mentioned in the diet of starling.

- (7677) REHFELDT, G.E., 1990. Anti-predator strategies in oviposition site selection of *Pyrphosoma nymphula* (Zygoptera: Odonata). *Oecologia* 85: 233-237. — (Zool. Inst., Techn. Univ., Pockelsstr. 10a, D-3300 Braunschweig, FRG).

In the absence of predators (green frogs) the number of tandems landing increased with the size of the oviposition site and with the number of pairs already present. Pairs approaching an oviposition site landed promptly and preferred locations near other ovipositing pairs. Pairs which had landed near others left the landing site and flew to another water plant after a shorter period than those landing alone. They stayed in groups for only 16.5% of the total duration of stay at the oviposition site. With predators present fewer tandems landed. There was no relationship between the landing site of solitary tandems and the locations of the perching frogs. Pairs landing in groups were disturbed by frogs after a shorter period than pairs landing alone. Damsel self aggregation did not affect the predation success of the frogs, but the predation risk to individual tandem pairs was reduced.

- (7678) REICH, M., 1990. Die Tierwelt Schwabens: Kenntnisstand, Bestandsentwicklung und Gefährdung ausgewählter Gruppen. *Irseer Schriften* 1: 13-23. — (Bayer. Landesamt Umweltschutz, Rosenkavalierplatz 3, D-8000

München-81, FRG).

The status of the odon. fauna of the "Government District" of Schwaben, Bavaria, FRG (67 spp.) has been assessed in the papers listed in OA 5045, 5555, and 6593 (Reich & Kuhn). Here, a brief characterisation of the fauna is presented and an annotated checklist is given.

- (7679) RICHARDS, S.J. & C.M. BULL, 1990. Non-visual detection of anuran tadpoles by odonate larvae. *J. Herpetol.* 24(3): 311-313. — (Dept Zool., James Cook Univ., Townsville, Qld 4811, AU).

The predatory response to anuran tadpoles of ultimate instar *Hemicordulia tau* larvae is examined, and it is evidenced that vision is not necessary for successful capture of tadpoles by the dragonfly.

- (7680) RICHARDS, S.J. & C.M. BULL, 1990. Size-limited predation on tadpoles of three Australian frogs. *Copeia* 1990(4): 1041-1046. — (Dept Zool., James Cook Univ., Townsville, Qld 4811, AU).

Larvae of the SE Australian anurans, *Pseudophryne bibroni*, *Ranidella signifera* and *Litoria ewingi*, were tested for their ability to escape predation from larvae of *Hemicordulia tau*. In each species larger tadpoles were less likely to be captured than small tadpoles, despite equal frequencies of strikes against all size classes. Larger tadpoles escaped more quickly from simulated strikes, probably reducing the opportunity for predators to grasp them successfully.

- (7681) RYAZANOVA, G.I. & G.A. MAZOKHIN-PORSHNYAKOV, 1990. Korrelyatsiya ob'ema gonad i ierarhicheskogo polozheniya osobi v territorial'noy konkurencii u lichinok strekoz (Odonata). — Correlation of the gonad size and hierarchic position of an individual at territorial competition in dragonfly larvae. *Zh. obshch. Biol.* 51(3): 363-369. (Russ., with Engl. s.). — (Dept Ent., Fac. Biol., Lomonosov St. Univ., Moscow, V-234, USSR).

A significant individual variability in ♂ gonad size in larval *Calopteryx splendens* is apparent

at emergence. The individuals with the largest gonads dominate territorially within a group of older larvae. This suggests that gonadotropic hormones play a role in the disputes of larval territories. Larval territorial competition is considered the initial stage in the development of adult territoriality.

- (7682) RYAZANOVA, G.I. & G.A. MAZOKHIN-PORSHNYAKOV, 1990. Znachenie zreniya lichinok strekoz *Calopteryx* v ih zashchitnom povedenii. — [The role of vision in defensive behaviour of *Calopteryx* larvae]. *Biol. Nauki* 1990(5) [317]: 52-59. (Russ., with Engl. s.) — (Dept. Ent., Fac. Biol., Lomonosiv St. Univ., Moscow, V-234, USSR).

The defensive behaviour is evoked by visual and tactile stimuli coming from the threatening object. The larvae see the object moving beyond the glass at a distance of up to 5 cm, and are able to estimate its speed and direction with reference to the current. The intensity of defensive reactions varies depending on the degree of coordination of visual and tactile stimuli.

- (7683) SCHAEFER, C.H. & T. MIURA, 1990. Chemical persistence and effects of S-31183, 2 — [1-methyl-2-(4-phenoxyphenoxy)ethoxy] pyridine on aquatic organisms in field tests. *J. econ. Ent.* 83(5): 1768-1776. — (Mosquito Control Res. Lab., Univ. California, Parlier, CA 93648, USA).

The mosquito larvicide, S-31183, was highly compatible with other organisms in mosquito-breeding habitats in California. Despite slight induction of morphogenetic aberrations in Odonata at adult emergence and minor suppression of reproductive capacity of daphnoid cladocerans and ostracods, S-31183 was safe to aquatic, nontarget organisms, including mosquito predators.

- (7684) SCHMIDT, E., 1990. Libellenbeobachtungen in der Stadt: Der Botanische Garten in Bonn. *Tier Mus.* 2(2): 42-52. (With Engl. s.). — (Biol. Didaktik, FB 9, Univ. GH Essen, Postfach 103764, D-W 4300 Essen-I, FRG).

Review of the odon. fauna of the Bot. Garden of Bonn, FRG, with emphasis on field obser-

vations on the ecology and behaviour of *Erythromma viridulum*.

- (7685) SCHMIDT, E., 1990. Die Odonatenfauna eines ehemaligen Bleisandabsetzbeckens (Buchholzweiher bei Mechernich, Nordeifel). *Mitt. Pollichia* 77: 383-393. (With Engl. & Fr. s's). — (Biol. Didaktik, FB 9, Univ. GH Essen, Postfach 103764, D-W 4300 Essen-1, FRG). Habitat ecology and fauna assessment (33 spp.) of a pond (35 km SW of Bonn, FRG), in an area dammed for sedimentation of flotation material from a lead mine that ceased the activities in 1957. The odon. fauna is considered rich, and no impact of lead contamination is noticeable.
- (7686) SIOJA. [Information Bulletin of the SIO National Office in Japan], Osaka, 1990, No. 1 (Dec. 2). (Jap.). — (c/o K. Inoue, 5-9 Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA). As in 1989, only one issue was published in 1990. It contains exclusively internal information on administrative matters.
- (7687) SKELLY, D.K. & E.E. WERNER, 1990. Behavioral and life-historical responses of larval American toads to an odonate predator. *Ecology* 71(6): 2313-2322. — (Dept Biol., Univ. Michigan, Ann Arbor, MI 48109, USA). A laboratory experiment, where toad larvae were raised at 4 food rations crossed with the non lethal presence (i.e. constrained *Anax junius* larvae) and absence of the predator, was performed. Tadpoles facultatively responded by metamorphosing at smaller sizes in the presence of the predator and at lower food rations. Tadpoles also responded behaviorally to the presence of predators by reducing activity and altering spatial distribution. These latter reactions appeared to contribute to reduced growth rates in the presence of the predator at a given food level. It was attempted to separate the effect of the predator on size at metamorphosis into components due to the effect on growth and to more direct effects of the predator, by comparing size at metamorphosis for individuals growing at the same rate in the presence and absence of the predator (i.e., at different food levels). The data suggest that the metamorphic response may be mediated primarily through the behavioral effects on growth, which then affect size at metamorphosis. These results are consistent with theories of amphibian metamorphosis that predict that size at metamorphosis should depend on the relation between growth opportunities and risk of mortality in the larval and adult habitats. The importance of non-lethal effects of predators on prey performance, species interactions and the evolution of prey defenses are discussed.
- (7688) STERNBERG, K., 1990. *Autökologie von sechs Libellenarten der Moore und Hochmoore des Schwarzwaldes und Ursachen ihrer Moorbindung*. viii+431 pp. Inaug.-Diss. Univ. Freiburg i. Br. — (Author: Schillerstr. 15, D-7513 Stutensee-4, FRG). A monumental monograph on autecology of *Aeshna caerulea*, *A. juncea*, *A. subarctica elisabethae*, *Somatochlora alpestris*, *S. arctica*, and *Leucorrhinia dubia*.
- (7689) SUKOP, I., 1990. Influence of the water works at Nové Mlýny on macrozoobenthos of the Dyje river in the vicinity of Biosphere Reserve Pálava (southern Moravia). *Ekológia* 9(1): 73-86. (With Czech & Russ. s's). — (Dept Fish. & Prot. Biosphere, Univ. Agric. Brno, CZ-69144 Lednice-na-Moravě). Contains a list of 7 odon. spp. from the Dyje R., Moravia, Czechoslovakia.
- (7690) SUZUKI, K.-J. & K. SAITOH, 1990. A revised chromosome study of Japanese odonates. (II). Chromosomes of 13 species belonging to two families. *Sci. Rep. Hirosaki Univ.* 37(2): 111-123. (Jap., with extensive Engl. s., fig. captions & tab.). — (Dept Biol., Hirosaki Univ., Bunkyo-cho 3, Hirosaki, Aomori, 036, JA). 5 Gomphidae and 8 Libellulidae spp., mostly from Aomori, Hokkaido, were examined. All of these were studied previously, but the information on some of them was fragmentary or uncertain. The karyotypic morphology of *Trigomphus melampus* and *Sympetrum e. eroticum* is outlined in considerable detail, and excellent micrographs are provided of all spp.

- studied. — For pt 1 cf. *OA* 7564.
- (7691) TAGUCHI, M., [Ed.], 1990. [*Studies on the Anakawa-Yato dragonfly populations: summaries of the results of a 10 year research by the Biology Research Group of the Hashimoto High School*]. iii+76 pp., Hashimoto High School, Hashimoto, Sagamihara. (Jap.). — (Editor: Hashimoto High Sch., 8-8-1, Hashimoto, Sagamihara, Kanagawa Pref., 229, JA).
Abridged, but detailed record of a decade of odonatol. research by the Group, initiated and supervised by M. Taguchi. Some of the results were published also in *Odonatologica* 16(1987): 273-280, and 17(1988): 249-262.
- (7692) TEMPELMAN, D., 1990. Waarnemingen aan enkele insekten in de Camargue (F.) — [Observations on some insects in the Camargue (France)]. *Stridula* 14(2): 84-87. (Dutch). — (Delistraat 14-1, NL-1094 CV Amsterdam).
Contains a list of 11 odon. spp., from 5 localities, early May, 1986.
- (7693) TERZANI, F., 1990. Ricerche odonatologiche in Toscana. III. Attuali conoscenze sulla *Somatochlora meridionalis* Nielsen, 1935 in Toscana. *Atti Mus. civ. Stor. nat. Grosseto* 13: 19-21. (With Engl. s.). — (Sez. Zool., Mus. Stor. Nat., Univ. Firenze, Via Romana 17, I-50125, Firenze).
All known specimens of *S. meridionalis* from Toscana, Italy, are listed, their localities mapped, and the larva is described and figured. — For the previous parts of this series cf. *OA* 7210, 7216.
- (7694) TOMBO, *ACTA ODONATOLOGICA*. Published by the Society of Odonatology, Tokyo, Vol. 33, Nos 1/4 (Dec. 25, 1990). — (c/o Dr S. Asahina, Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA).
Eda, S.: A male of *Sieboldius albardae* making his territory alighting on four legs (p., frontispiece phot.); — *Asahina, S.*: A list of the Odonata recorded from Thailand. Part XXI. Supplement (pp. 2-20; incl. descr. *Coelliccia kimura* sp. n., *Vestalis yunosukei* sp. n.); — *Karube, H.*: Description of a new subspecies of *Asiagomphus xanthenatus* (Williamson) from West Malaysia (pp. 21-24; *A. x. malayanus* ssp. n.); — *Karube, H. & T. Kohama*: Dragonflies of Kitadaitojima (N. Borodino Island) (pp. 24-26); — *Matsuki, K. & T. Yamamoto*: Additional notes on the larva of *Planaeschna ishigakiana ishigakiana* Asahina (Aeshnidae; Odonata) (pp. 27-32); — *Sato, Y.*: *Pantala flavescens* taken in Tokyo, in April (p. 32); — *Kitagawa, K.*: Description of two new *Risicnemis* species from the Philippines (Platycnemididae) (pp. 33-36; *R. asahinai* sp. n., *R. elegans* sp. n.); — *Ishizawa, N.*: A gynandromorphic specimen of *Sympetrum frequens* Selys (pp. 37-39); — *Katsuta, T. & R. Katsuta*: Capture of *Sympetrum fonscolombi* and "the hybrid *Anax*" in Arakawa-ku, Tokyo (p. 40); — *Inoue, K.*: The Odonata from Uji District, Kyoto Prefecture, II. Recent situations 30 years after Part I (pp. 41-44); — *Inoue, K. & M. Aiura*: Distribution records of the dragonflies of Tsushima Island, Nagasaki Prefecture, Part 3 (pp. 44-46); — *Inoue, K.*: Information on S.I.O. — next symposium to be held in Italy (p. 46); — *Watanabe, K.*: Oviposition records of some dragonfly species (pp. 47-49); — *Sonehara, I.*: Probable establishment of *Aeschna mixta soneharai* at a small garden-pond (p. 50); — *Arai, Y.*: Nine years observation on the dragonfly fauna at a swampy field in Chichibu (pp. 51-53); — *Eda, S.*: Recently collected dragonflies from Kamikochi in the Japan Alps (pp. 54-56); — *Hayashi, K.*: *Tramea virginia* with aberrant wing markings caught in Niigata Prefecture (pp. 57-58); — *Miyakawa, K.*: Record of *Sympetrum frequens* Selys in Tokyo in summer, 1990 (pp. 59-60); — Discovery of *Sympetrum darwinianum* Selys from Shikine-isl. of Izu Islands (p. 60); — *Asahina, S.*: A record of mass migration of *Sympetrum frequens* in Tokyo area during the season of 1990 (pp. 61-62); — The late Mr Teichi Okumura's contribution to Japanese odonatology (pp. 63-67); — *Fukui, M. & T. Kato*: Findings of *Mortonagrion hirosei* Asahina from Shizuoka Prefecture (p. 68); — *Wakana, I. & Y. Wakana*: Additional records of anisopteran dragonflies from Yamanashi Prefecture (pp. 69-70); — *Eda, S.*:

Annual meeting of the Tokyo Society of Odonatology, 1990 (pp. 70-71; with a group phot. of 29 participants).

- (7695) *TOMBO TO NAKAYOSHI* (book & notebook). — [Book (notebook) *TO BE FRIENDLY WITH DRAGONFLIES*]. 33 pp. (book), 16 pp. (notebook), Municipal Authority, Nishinomiya City. (Jap.). — (c/o M. Ogawa, Environ. Div., Nishinomiya City Office, 10-3, Rokutanji-cho, Nishinomiya, Hyogo Pref., 662, JA).

This 2-vol. set, certainly the first of its kind in odonatol. literature, is directed at primary school children, representing "classroom literature", apparently (?) with the objective to serve in the teaching of nature observation and conservation. The book gives a basic outline of dragonfly morphology and biology, and an album of col. field phot. of the spp. from the Nishinomiya city area. — The notebook is indicating various odonatol. topics and field observations to be filled in by the pupils, with the aid of information presented in the book. — The work certainly represents an original and excellent approach to the teaching of detailed animal observation and reliable insect identification at the level of children under the age of 10 yr.

- (7696) URABE, K., T. IKEMOTO & S. TAKEI, 1990. Studies on *Sympetrum frequens* (Odonata: Libellulidae) nymphs as natural enemies of the mosquito larvae, *Anopheles sinensis*, in rice fields. 4. Prey-predator relationship in the rice field areas. *Jap. J. sanit. Zool.* 41(3): 265-272. (Jap., with Engl. s.). — (First Author: Saitama Inst. Public Health, 639-1, Kamikubo, Urawa, 338, JA).

This is the continuation of the work listed in OA 4008, 5591 and 5685, carried out on 97 ha rice fields in the Omiya City area, Japan, within which 2 experimental plots (surface 210 a and 430 a, resp.), with different mosquito and dragonfly densities, were set up. The percentage of mosquito nymphs preyed upon by the dragonfly larvae was defined by means of gut contents precipitin tests with antiserum against *A. sinensis* larvae. The latter could be controlled effectively throughout the study

area by the dragonfly larvae through appropriate management of rice fields.

- (7697) UTZERI, C., 1990. Ricerche zoologiche della nave oceanografica "Minerva" (C.N.R.) sulle isole circumsarde. VII. Osservazioni su *Orthetrum trinacria* (Selys, 1841) all'Isola di San Pietro, Sardegna meridionale (Odonata: Libellulidae). *Annali Mus. civ. Stor. nat. "G. Doria"* 88: 331-335. (With Engl. s.). — (Dipto Biol. anim. & Uomo, Univ. Roma "La Sapienza" Viale dell'Università 32, I-00185 Roma).

A population of *O. trinacria* is recorded from a small lake on the islet of San Pietro, SW of Sardinia. The water-touching, perching, territorial and reproductive behaviours, incl. the in-tandem intra-male sperm translocation and a 7-12 s copulation duration are described.

- (7698) UTZERI, C. & E. FALCHETTI, 1990. Odonati delle isole ponziane. *Boll. Ass. romana Ent.* 44: 29-31. (With Engl. s.). — (Dipto Biol. anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).

Aeshna mixta, *Hemianax ephippiger*, *Sympetrum fonscolombei* and *S. striolatum* are recorded from the Pontine Isls, Lazio, Italy.

- (7699) VALLENDUUK, H., 1990. *Makrofauna-onderzoek aan enkele vennen in het natuurmonument Kampina*. — [*Macrofauna research in some fens in the Kampina nature reserve*]. Adviesburo Vallenduuk, Boxtel, 81 pp. (Dutch). — (Geelders 2A, NL-5283 VS Boxtel).

Contains a short list of odon. spp. from 6 fens in the area SW of Boxtel, Noord Brabant prov., The Netherlands.

- (7700) VAN DE WETERING, B., 1990. De libellen van het Elsenerveen. — [Dragonflies of the Elsenerveen]. *Deeppress* 4(3): 27-41. (Dutch). — Lichtbcei 259, NL-9732 KD Groningen).

Description and analysis of the odon. fauna (24 spp.) of Nature Reserve "Elsenerveen" nr. Markelo and Rijssen, Overijssel prov., The Netherlands.

- (7701) VAN DE WETERING, B., 1990. De libellen

- van de Oost-Veluwe. — [Dragonflies of the Oost-Veluwe]. *Deepress* 4(3): 57-82. (Dutch). — (Lichtboei 259, NL-9732 KD Groningen). With reference to the work listed in *OA* 4406, the present status of the fauna is analysed in great detail, particularly so habitat selection and abundance of each sp.
- (7702) VAN TOL, J., 1990. Zoological expeditions to the Krakatau Islands, 1984 and 1985: Odonata. *Tijdschr. Ent.* 133(2): 273-279. — (Natn. Mus. Nat. Hist., Postbus 9517, NL-2300 RA Leiden). *Agriocnemis pygmaea* and *Orthetrum testaceum* are recorded from the Krakatau Isls for the first time. Most of the other spp. listed are from Java and Sumatra.
- (7703) *WALKERIA*. Newsletter of the Canadian National Office of the International Odonatological Society, Vol. 5, No. 2 (Dec. 17, 1990). — (c/o Dr S. Cannings, Dept Zool., Univ. British Columbia, 6270 University Blvd, Vancouver, B.C., V6T 2A9, CA). *Pritchard, G.*: Work in Calgary joins Arctic and the tropics (p. 3); — *Guppy, C.S. & G.E. Hutchings*: Observations on *Somatochlora cingulata* (Selys) at Arthur Lake, British Columbia (p. 4); — *Cannings, S.*: Discovery of *Somatochlora cingulata* (Selys) in Bowron Lake Provincial Park, B.C. (p. 5); — *Kiauita, B.*: Symposium on Odonata at the XIX International Congress of Entomology, Beijing (p. 5). — Various, partly anonymous notes conclude the issue (p. 6).
- (7704) WAYLAND, M. & D.A. BOAG, 1990. Toxicity of carbofuran to selected macroinvertebrates in prairie ponds. *Bull. environ. Contam. Toxicol.* 45(1): 74-81. — (First Author: Can. Wildl. Serv., Ontario Region, 49 Camelot Dr., Nepean, Ont., K1A 0H3, CA). The carbamate insecticide, carbofuran, is one of the most widely used insecticides on the Canadian prairies. In the present study, carbofuran-induced mortality was assessed in selected groups of macroinvertebrates, incl. *Enallagma* larvae. The animals were confined in small cages in prairie ponds ("prairie potholes"), which were subsequently treated with carbofuran. Survival of *Enallagma* appeared to be lower in treated than in control ponds. However, overall survival did not differ significantly between treatment and control ponds, nor was it influenced significantly by the interaction between treatment and pond depth.
- (7705) WHICKER, F.W., J.E. PINDER, J.W. BOWLING, J.A. ALBERTS & J.L. BRISBIN, 1990. Distribution of long-lived radionuclides in an abandoned reactor cooling reservoir. *Ecol. Monogr.* 60(4): 471-496. — (Savannah River Ecol. Lab., Drawer E, Aiken, SC 29801, USA). The distribution of ^{137}Cs , ^{90}Sr , ^{238}Pu , 239 , ^{240}Pu , ^{241}Am , and ^{244}Cm was studied in the biotic and abiotic components of an abandoned reactor cooling impoundment, R. Plant, SC, USA. (For description of the community cf. *OA* 7588). The concentrations of ^{137}Cs in macroinvertebrates were generally less than the levels in macrophytes and surface sediments. Thus, no increases with trophic level were evident, but the ratios of ^{137}Cs , ^{90}Sr , ^{241}Am , and ^{244}Cm to 239 , ^{240}Pu for the benthic insects were 4, 51, 6 and 28 times higher, respectively, than the same ratios for sediments, indicating important accumulation mechanisms other than sediment associations. Possible accumulation mechanisms include adsorption from water and ingestion (e.g. in odon. larvae).
- (7706) WRABER, T., 1990. Akvareli rastlin v 18. zvezku Valvasorjeve grafične zbirke. — [Botanical water paintings in Vol. 18 of the Valvasor graphic arts collection]. In: A. Vovko, [Ed.], *Valvasorjev zbornik*, pp. 181-187, SAZU, Ljubljana. (Slovene, with Engl. s.). — (Na Jami 7, YU-61000 Ljubljana, Slovenia). Additional technical information on the illustrations, dealt with in the paper listed in *OA* 7316.

1991

- (7707) ARAI, Y., 1991. Do larvae of a dragonfly, *Styrogomphus suzukii*, migrate downstream? [sic!]. *Gekkan Mushi* 239: 23-26. (Jap., with

- Engl. title). — (1233-2, Oaza Suez, Yorii-machi, Osato-gun, Saitama Pref., 369-12, JA). [Abstract not available; — correct: *Stylogomphus*].
- (7708) ASSMANN, O. & H. LIPSKY, 1991. Er-richtung und Sicherung schutzwürdiger Teile von Natur und Landschaft mit gesamtstaatlich repräsentativer Bedeutung. Projekt: Regentalaue zwischen Cham und Pöding (Bayern, Oberpfalz). *NaturLandschaft* 66(1): 47-52. — (Büro f. Landschaftsökol., Untere Hauptstr. 45, D-8050 Freising, FRG). Includes an annotated list of 35 odon. spp. recorded from the Cham-Pöding backwaters, Bavaria, FRG.
- (7709) CLAUSEN, W., 1991. Die Kleinlibelle Vogel-Azurjungfer *Coenagrion ornatum* Sélys, 1850 im nördlichen Ostwestfalen (Odonata: Coenagrionidae). *Natur & Heimat, Münster* 51(1): 27-28. — (Oppenwehe 459, D-4995 Steinwede-3, FRG). *C. ornatum* is recorded from various localities in the Rahden area, NE Westfalia, Germany, and the habitats are briefly described.
- (7710) CORDERO, A., 1991. A polémica sociobiología. — [The sociobiology polemics]. *Correo Gallego*, issue of Feb. 2, p. 17. (Galician). — (Area Ecol., Fac. Biol., Univ. Santiago de Compostela, ES-15071 Santiago, Galicia). A local newspaper article, with emphasis on the Zygoptera, as an example of an animal group considered appropriate for sociobiological research, referring also to the paper listed in OA 7389.
- (7711) GRIBBIN, S.D. & D.J. THOMPSON, 1991. Emergence of the damselfly *Pyrrhosoma nymphula* (Sulzer) (Zygoptera: Coenagrionidae) from two adjacent ponds in northern England. *Hydrobiologia* 209: 123-131. — (Second Author: Dept Environ. & Evol. Biol., Univ. Liverpool, P.O. Box 147, Liverpool, L69 3BX, UK). Emergence was followed closely at 2 similar and adjacent ponds in Cheshire. Males emerged earlier than females at both ponds (significantly so at one). The sex ratio was significantly male biased at both ponds. Size of emerging adults declined through the emergence period at both ponds. Adults emerging from one pond did so significantly earlier and were significantly larger than those from the other pond. The density of larvae was approximately twice as high in the pond from which larvae emerged early; this pond was also slightly deeper and usually achieved higher maximum daily water temperatures. These findings are discussed in the light of the conventional view of seasonal regulation in a spring-emerging damselfly.
- (7712) *HAGENIA*. Mitteilungsblatt des Nationalen Büros der Internationalen odonatologischen Gesellschaft in der Bundesrepublik Deutschland (SIO) No. 1 (March 1, 1991). Edited by M. Schorr (Waldfrieden 25, D-5504 Zerf, FRG). — Free for SIO members resident in Austria, Germany, Liechtenstein, Luxembourg and Switzerland. All others at Hfl. 10.-annually; orders to the SIO Central Office, Bilthoven, The Netherlands). With the newsletters in Canada (*WALKERIA*, since 1985), India (now Southern Asia; *FRASERIA*, since 1981), Italy (*LINDENIA*, since 1984), Japan (*SIOJA*, since 1981), Thailand (*MALANGPO*, since 1985), the United Kingdom (*KIMMINSIA*, since 1990), and the United States (*SELYSIA*, as an SIO National Office newsletter since 1985), *HAGENIA*, is the 8th SIO regional newsletter. It is [to be] published semiannually (March 1, Sept. 1) by the SIO National Office in Germany, with the objective of monitoring to the odonatological achievements in all German-speaking countries and/or regions. — On its 16 pp., the first issue brings a comprehensive Editorial (*M. Schorr*; pp. 1-3), a detailed biography and odonotol. bibliography of H.A. Hagen (*M. Schorr*, pp. 3-9), and a variety of news items, publication reviews and scientific notes, all of which cannot be listed here. Among the items of more than regional interest are: a note on financial sponsoring of odonotol. research in China (*T.-q. Hou & U. Eitschenberger*; p. 9), an article on the status of *Coenagrion hylas* in central Europe (*M.*

Schorr; pp. 11-12), and a review of odonotol. aspects in 10 conservation projects throughout Germany (*M. Schorr*; 12-14). A progress report on a new Red List version for the Rhine-land-Palatinate was contributed by *F. Eislöffel* (p. 14). *B. Trockur* reports on new records of *Epithea bimaculata* in Saarland and Baden-Württemberg (p. 12), and on a local dragonfly exhibit in Nohfelden (p. 15). The issue is concluded by *R. Seidenbusch* (pp. 15-16), requesting the loan of a considerable number of Old World species (adults, exuviae, photographs), needed for a book he is working on for some years now.

- (7713) HARITONOV, A.Yu., 1991. *Boreal'naya odonatofauna i ekologicheskie faktory geograficheskogo rasprostraneniya strekoz.* — [*The holarctic odonate fauna and ecological parameters in dragonfly biogeography*]. Autorreferat dissertacii na soiskanie uchenoy stepeni doktora biologicheskikh nauk. ii+34 pp. Lomonosov State Univ., Moscow. (Russ.). — (Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).

In accordance with the USSR regulations, this is the "commercial" edition of the summary of the D. Sc. dissertation, the original text of which is not generally available (311 pp.+139 pp. appendages, 34 tabs, 37 figs, 740 bibl. references). The public summary gives brief summaries under the original chapter headings & subheadings, and author's bibliography relative to the subject (74 titles, published 1972-1990). — The D. Sc. award took place on April 22, 1991.

- (7714) HARITONOV, A. [Yu.], 1991. Im pochti pyat'so millionov let. — [They date back almost 500 million years]. *Nauka v Sibiri* 1991(7): 2. (Russ.). — (Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).

Outline of various aspects of odon. biogeography, directed at the general reader, published in a Siberian science weekly, on the occasion of the USSR Acad. Sci. award to Dr B.F. Belyshev and Dr A.Yu. Haritonov for their fundamental treatise, "Dragonfly biogeography and the principal steps in the genesis

of the fauna" (1990). The article also includes a recent portrait of Belyshev.

- (7715) HEEFFER, A., 1991. *De libellen van Huis ter Heide.* — [*Dragonflies of the "Huis ter Heide" estate*]. ii+20 pp. Privately published & distributed by the Author. (Dutch). — (Akkerwinde 11, NL-5052 RH Goirle).

Various observations on the odon. fauna (10 spp.) of 2 fens on an estate nr the city of Tilburg, Noord Brabant prov., The Netherlands.

- (7716) JÖDICKE, R., 1991. Herbstphänologie mitteleuropäischer Odonaten. 1. Beobachtungen in Oberbayern, Bundesrepublik Deutschland. *Opusc. zool. flumin.* 62: 1-11. (With Engl. s.). — (Happelter 15, D-4054 Nettetal-1, FRG).

In the autumn of 1989, the odon. fauna of the southern surroundings of the Starnberger Lake, Upper Bavaria, FRG, was investigated. In the second half of Oct., with unusually warm weather conditions, 16 spp. were recorded, representing the complete Central European seasonal spectrum. General condition of some individuals of *Sympetrum danae*, *S. sanguineum* and *S. striolatum* is discussed in terms of a potential bivoltine life history cycle. On cold days in Nov., *Sympecma paedisca* could not be sighted in the habitat it frequented under suitable weather conditions. It is suggested that the sp. creeps into the vegetation for hibernation.

- (7717) JOHANSSON, F., 1991. Foraging modes in an assemblage of odonate larvae — effects of prey and interference. *Hydrobiologia* 209: 79-87. — (Dept Anim. Ecol., Univ. Umeå, S-90187 Umeå).

The foraging behaviour in coexisting larvae of *Coenagrion hastulatum*, *Aeshna juncea*, *Cordulia aenea* and *Leucorrhinia dubia* was analysed under various conditions of prey type and abundance. *Coenagrion* and *Aeshna* used a sit-and-wait mode when the prey density was high and when the prey was evasive. When the prey abundance was low an active mode was used. In *Aeshna* an active mode was also used when prey was sedentary. *Cordulia* exhibited a sit-and-wait mode and *Leucorrhinia* an active

mode under all prey treatments performed. The results indicate that a niche differentiation in foraging behaviour may be one of several ways to reduce food competition between these coexisting species. However, a literature study on prey selectivity did not reveal any support for this suggestion. Interference from *Aeshna* altered the foraging behaviour of *Coenagrion* whereas that of *Leucorrhinia* remained unchanged. Further, *Aeshna* preyed heavily on *Leucorrhinia* and to a lesser extent on *Coenagrion* during interference trials. A field study did not show any negative correlation in abundance between *Aeshna* and *Leucorrhinia* or *Coenagrion* larvae. The results indicate interference competition may be more important than exploitation competition in the shaping of odonate larval communities.

- (7718) JOHNSON, D.M., 1991. Behavioral ecology of larval dragonflies and damselflies. *Trends Ecol. Evol.* 6(1): 8-13. — (Dept Biol. Sci., East Tennessee St. Univ., Johnson City, TN 37614, USA).

During the past decade, larval odon. have been the subjects for very productive ecological research. Descriptive field work, enclosure experiments and laboratory behavior studies have identified fish predation, intraguild predation (especially mutual predation among odon., including cannibalism) and interference competition as particularly strong interactions influencing larval odon. assemblages. Behavioral differences among species suggest evolutionary adaptations for co-existence with different predators, and for winning intraspecific aggressive encounter.

- (7719) KETELAAR, R., 1991. *Cercion lindenii*, *Calopteryx splendens* en *C. virgo* langs de Geul in Zuid-Limburg. — *Cercion lindenii*, *Calopteryx splendens* and *C. virgo* along "De Geul" in the most southern part of the Netherlands. *Amoeba, Amsterdam* 65(1): 6-8. (Dutch with Engl. s.). — (Melis Stokelaan 14, NL-1911 SL Uitgeest).

Records and observations from the Geul R., Zuid Limburg prov. For *C. lindenii*, this is one of the 5 currently known localities in The Netherlands.

- (7720) KHARITONOV, A.Yu. & S.N. BORISOV, 1991. *Lichinka Sympetrum decoloratum* (Odonata, Libellulidae). — The larva of *Sympetrum decoloratum* (Odonata, Libellulidae). *Vestn. Zool.* 1991(1): 76-77. (Russ., with Engl. s.). — (First Author: Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).

Based on material from SW Tadzhikistan, the larva is described, figured and compared with the related spp. Notes on the ecology are also provided.

- (7721) KRACHT, V., W. KRAHL & S. METZ, 1991. Errichtung und Sicherung schutzwürdiger Teile von Natur und Landschaft mit gesamtstaatlich repräsentativer Bedeutung. Projekt: Wurzacher Ried. *Natur Landschaft* 66(1): 9-14 (With Engl. s.). — (Bundesforschungsanstalt f. Naturschutz u. Landschaftsökol., Arbeitsgebiet Biotopschutz, Konstantinstr. 110, D-5300 Bonn-2, FRG).

Includes an annotated list of 17 odon. spp., recorded from the bog and fen complex of "Wurzacher Ried", distr. Ravensburg, Baden-Württemberg, FRG.

- (7722) LABHARDT, F., 1991. *Libellen, Jäger mit gläsernen Schwingen*. Kinderbuchverlag KBV, Luzern, 40 pp., frontispiece incl. (hardcover, 22.0 x 23.5 cm) — ISBN 3-276-00098-9. — Available from the SIO, Bithoven. — (Author: Bruderholzstr. 26, CH-4103 Bottmingen).

The book was announced in the paper listed in OA 7190. It is, no doubt, the best dragonfly book in the German literature directed at the youth, and the first original German language work in this field (those listed in OA 3283 and 7024 are translations). — Dragonfly life is outlined in 16 brief chapters and illustrated by 59 superb col. photographs. Taxonomic and German names are provided for all spp. shown, but locality data are not stated. The author's approach to various difficult subjects of dragonfly biology, exemplified on Central European fauna, is refreshing and, for the sake of the photographic material it contains, the book should not be missed in any serious odonatological library.

- (7723) *LINDENIA*. Notiziario dell'Ufficio Nazionale Italiano della Società Odonatologica Internazionale, Roma, No. 15 (Jan. 1, 1991). — (c/o Prof. Dr C. Utzeri, Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).
Contains the usual management and brief personal notes, the traditional Italian faunistic bibliography, and a longer article on various details re the XIth Int. Symp. Odonatol. (Trevi, Aug. 18-25, 1991; registrations with the Editor of the newsletter). A brief obituary for the Dean of Maltese entomology (& odonatology), A. Valletta (21-XII-1908/8-XII-1988), is the first to appear for this significant worker in odonatol. literature (for biography & bibliography cf. *OA* 7462).
- (7724) MOORE, N.W., 1991. Report of the 6th Meeting of the I.U.C.N. Odonata Specialist Group. *Rep. Odon. Specialist Group Int. Un. Conserv. Nat.* 7: 1-19. (The Farm House, Swavesey, Cambridge, CB4 5RA, UK). — Copies available from the SIO Central Office, Bilthoven.
Contains fairly detailed regional status accounts by the following workers: *M.J. Parr* (Africa, pp. 2-5), *J.A.L. Watson* (Australia, pp. 5-7), *A.B.M. Machado* (Brazil, pp. 7-8), *B.K. Tyagi* (India, pp. 8-9), *S. Asahina*, pp. 9-13), *H. Dumont* (Middle East, pp. 13-14), *D.R. Paulson* (Neotropical Region, pp. 14-17), *A. Pinratana* (Thailand, p. 17) and *G.H. Bick* (USA, pp. 17-18).
- (7725) PILON, J.-G., L. PILON & D. LAGACÉ, 1991. Les odonates de la zone tempérée du Québec: zygoptères. *Soc. int. odonatol. rapid Comm.* (Suppl.) 13: vi+37 pp. (With Engl. s.). — (Dép. Sci. Biol., Univ. Montréal, C.P. 6128, Montréal, Qué., H3C 3J7, CA).
A crossreferenced list is presented of regional records, referable to 35 spp., based on 67 publications, published during 1877-1989. The general topographic position of the relatively cold temperate region of Quebec, Canada, is given in a frontispiece map. — (Cf. also *OA* 7308).
- (7726) SATÔ, M., 1991. Some problems on the natural conservation of insects. — A topic on the dam at the Nagara-gawa River mouth [sic!]. *Gekkan Mushi* 240: 27-35. (Jap., with Engl. title). — (Biol. Lab., Nagoya Women's Univ., Tenpaku-ku, Nagoya, 468, JA).
Deals with various orders, incl. *Mortonagrion hirosei* and *Stylurus nagoyanus*.
- (7727) *SELYSIA*. Newsletter of the Societas Internationalis Odonatologica and of the U.S. National Office, Vol. 20, No. 1 (March 1, 1991). — (c/o Dr D.M. Johnson, Dept Biol. Sci., East Tennessee St. Univ., Box 23580 A, Johnson City, TN 37614-0002, USA).
[Johnson, D.M.]: Robert M. Gambles dies (p. 1); — *Belle, J.*: A visit to the Galapagos Islands (p. 2); — *Johnson, D.M.*: Suzanne Stryk exhibits paintings (p. 2); — *Corbet, P.S.*: Suppression of the yellow fever mosquito by augmentative release of dragonfly larvae (Odonata: Libellulidae) (p. 3); — *Kiauta, B.*: Anthony Valletta dies (1908-1988) (p. 4); — *Inoue, K.*: Shimanto Dragonfly Museum (p. 5); — *Silsby, J.*: Ashton Water Dragonfly Sanctuary (p. 5). — The issue also contains various announcements and requests from the membership, and 5 business notes; *Dunkle, S.W.*: I.O.R.I. Report available (p. 1); — *Vogt, T.*: The Dragonfly Society of American Second Annual Meeting (p. 3); — *Van Brink, J.M.*: Notes from the S.I.O. Treasurer (p. 6); — *Mill, P.*: Proposed amendments to the S.I.O. By-Laws (p. 6); — and *Johnson, D.M.*: Nominations for S.I.O. Council, 1991-1993 (p. 6)
- (7728) SPIRIT, M.G. & J.L. RYRIE, 1991. The freshwater invertebrates of the Dunbeath Estate, Caithness. *Glasgow Naturalist* 22(1): 47-58. — (Dunbeath Preserv. Trust, Old School, Dunbeath, Caithness, KW6 6EY, UK).
Contains a list of 6 odon. spp., Scotland, UK.
- (7729) TYAGI, B.K., 1991. A report on the indirect approach for conserving the dragonfly habitats in and around a metropolis in India. *Rep. Odon. Specialist Group Int. Un. Conserv. Nat.* 8: ii+4 pp. — (Plot 155, Street 7, Milkman Colony, Jodhpur-342003, India).

The strategy implemented in Bangalore, Karnataka, southern India, is described, and the odon. fauna recorded at various city tanks is stated (14 spp.).

- (7730) VIEIRA, R., F. MARTIN & M. ALDEGUNDE, 1991. 5-Hydroxytryptamine metabolism in the damselfly, *Ischnura graellsii*, in relation to sex and larval-adult period. *Neurochem. int.* 18(2): 199-205. — (Third Author: Dept Physiol., Fac. Biol., Univ. Santiago, ES-15706 Santiago de Compostela, Galicia). Changes in total serotonin (5-HT) and 5-hydroxyindoleacetic acid (5-HIAA) were investigated by HPLC-EC in *I. graellsii* over a larval-adult period including both sexes. Variations of tryptophan (Trp) and protein levels were also studied. Significant higher levels of 5-HT were found in head portion for both sexes over the period studied, with mean values (in ng/mg protein) of 12.19-27.46 (head) and 2.63-6.06 (body) for males, and mean values of 3.13-

-26.48 (head) and 1.84-4.03 (body) for females. 5-HIAA concentration was also significantly higher in head portion for both sexes; mean values (in ng/mg protein) of 4.45-24.19 (head) and 0.87-8.63 (body) were observed for males, and mean values of 0.76-16.87 (head) and 1.18-7.12 (body) for females. The levels of the 4 compounds studied were significantly affected by the factor Instar. It is noticeable that significant differences between sexes for head Trp, 5-HT and 5-HIAA were observed in the last larval instar (F0), males showing higher values of 5-HT and 5-HIAA, and females higher values of Trp. In all cases, 5-HIAA/5-HT ratio decreased down to F0 and increased in adult stage. A positive correlation between 5-HT and 5-HIAA in both males ($P < 0.0005$) and females ($P < 0.0001$) was also observed. Our data suggest that oxidative deamination of serotonin in *Ischnura* may have higher importance than in other insects.