ODONATOLOGICAL ABSTRACTS

1971

(4890) GHIRARDELLI, E., G. OREL & M. SPECCHI, 1971. La fauna delle aque dolci. *Enciclopedia monografica del Friuli-Venezia Giulia, Udine* 2: 646-651. — (First Author: Ist. Zool. & Anat. Comp., Univ. Trieste, Via Alfonso Valerio 32, I-34100 Trieste).
On p. 651, a passing reference is made to the Odon. of Friuli-Venezia Giulia, northern Italy. Several genera and Libellula depressa are mentioned. (For a regional treatment and bibliography cf. *OA* 4870).

1972

(4891) MINELLI, A., 1972. Osservazioni sulla fauna a invertebrati delle Prealpi Venete. *Natura & Montagna* 2: 47-57. — (Ist. Biol. Anim., Univ. Padova, Via Loredan 10, I-35100 Padova).
Calopteryx splendens is stated to be rare in the Prealpi Venete, northern Italy (p. 48).

1974

(4892) GERSON, U., 1974. The associations of algae with arthropods. *Rev. Algol.* (N.S.) 11(1/2): 18-41. — (Fac. Agric., Hebrew Univ., Rehovat, Israel).
Exhaustive review of the subject, with references to the Odon. Some important works, however, are missing. Among these is e.g. the paper on the symbiosis between Aeshna cyanea larvae and Oedogonium undulatum by P. Kammerer (1908, *Arch. Entwicklungsmech.* 25: 52--81), which is probably the first publication in this field. — The bibliography was published in the second part; cf. *OA* 4896.

1976

(4893) [CREWDSON, R.C.R. & C.I. RUTHERFORD], 1976. Field Meetings [of the Lancashire and Cheshire Entomological Society], Session 1970-1971. *A. Rep. Proc. Lancash. Chesh. ent. Soc.* 94/96: 27-29. — (Authors' present addresses unknown).
Various odon. spp. are listed from the Whixall Moss (Flints./Salop border) and from Nant-y--Ffrith nr Brymbo (Flints./Denbighshire border), UK.

(4894) [CREWDSON, R.C.R. & C.I. RUTHERFORD], 1976. Field Meetings [of the Lancashire and Cheshire Entomological Society], Session 1971-1972. *A. Rep. Proc. Lancash. Chesh. ent. Soc.* 94/96: 41-43. — (Authors' present addresses unknown).
Coenagrion puella and Pyrrhosoma nymphula are listed from the Whixall Moss, Flints./Salop border, UK.

(4895) [CREWDSON, R.C.R. & C.I. RUTHERFORD], 1976. Field Meetings [of the Lancashire and Cheshire Entomological Society], Session 1972-1973. *A. Rep. Proc. Lancash. Chesh. ent. Soc.* 94/96: 53-55. — (Author's present addresses unknown).
Pyrrhosoma nymphula is recorded from the Whixall Moss, Flints./Salop border, UK.

(4896) GERSON, U., 1976. The associations of algae with arthropods. II. *Rev. Algol.* (N.S.) 11(3/4): 213-247. — (Fac. Agric., Hebrew Univ., Rehovat, Israel).
Continuation and conclusion of the paper listed in *OA* 4892.

(4897) RUTHERFORD, C.I., 1976. Exhibition Meeting, October 14th, 1970 [of the Lancashire and Cheshire Entomological Society]. *A. Rep. Proc. Lancash. Chesh. ent. soc.* 94/96: 19-20. — (Author's present address unknown).
Various odon. spp. are listed from 6 localities in Lancashire, Cheshire, and Caernarvonshire, UK.

1977

(4898) LE DUCHAT D'AUBIGNY, J. & C. DEBROISE, 1977. *Document préliminaire et de travail à l'inventaire des faunes, catalogues et listes faunistiques de la France métropolitaine. Entomologie.* Soc. Inventaire Faune & Flore, Paris, VI+128 pp.
A very incomplete bibliography on the odon. fauna of France appears on pp. 106-108. — (Cf. also *OA* 3498).

1979

(4899) MARTENS, K., 1979. Aanvullingen op de Libellentabel (1974). — [Additions to the Dragonfly Identification Key (1974)]. *Phegea* 7(2): 54-55. (Dutch). — (Lab. Dierkunde, Univ. Gent, Ledeganckstr. 35, B-9000 Gent).
Supplementary and corrective notes on the work listed in *OA* 1041.

(4900) MINELLI, A. & M.P. MANNUCCI, 1979. Studi sul popolamento animale dell'alto Trevignano. I. Faunistica e sinecologia di alcune cenosi riparie dei laghi di Revine. *Lavori Soc. venez. Sci. nat.* 4: 48-60. (With Engl. s.). — (Ist. Biol. Anim., Univ. Padova, Via Loredan 10, I-35100 Padova).
Platycnemis pennipes, Ischnura elegans and Coenagrion puella are recorded from the Revine Lakes, Upper Treviso, Venetian Prealps, Italy.

1980

(4901) OCHARAN, F.J., 1980. Sobre la presencia en Asturias de Calopteryx haemorrhoidalis occasi Capra, 1945 (Odonata: Zygoptera). *Bol. Cien. Naturaleza I.D.E.A.* 25: 129-133 (With Fr. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
C. h. occasi is recorded and figured from 2 Asturian localities, Spain.

(4902) OCHARAN, F.J., 1980. Catalogo de la coleccion de odonatos (Insecta) del Departamento de Zoologia de la Universidad de Oviedo. *Bol. Cien. Naturaleza I.D.E.A.* 26: 201-209 (With Engl. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
List of spp., with locality data; most are from Asturia, some are from some other Spanish provinces.

(4903) UTZERI, C., 1980. Studi ecologici e comportamentali su populazioni di Lestes barbarus (Fab.) di pozze temporanee (Zygoptera, Lestidae). *Atti XII Congr. naz. ital. Ent., Roma* 2: 163-164. — (Dipt. Biol. Anim., Univ. Roma, Viale dell'Università 32, I-00185).
Abstract of the paper published in *Odonatologica* 13 (1984): 573-584.

(4904) UTZERI, C. & R. RAFFI, 1980. Il comportamento riproduttivo di Coenagrion lindeni (Selys) in ambiente lacustre e di acqua stagnante (Odonata, Coenagriidae). *Atti XII Congr. naz. ital. Ent., Roma* 2: 165-166. — (Dipt. Biol. Anim., Univ. Roma, Viale dell'Università 32, I-00185 Roma).
Abstract of the paper published in *Odonatologica* 12(1983): 259-278.

1981

(4905) LEGRAND, J., 1981. Cordulegaster annelé. *In:* La vie animale de A à Z, pt 5, p. 363. Edito-Service, Genève. — (Lab. Ent., Mus. Natn. Hist. Nat., 45 rue de Buffon, F-75005 Paris).
A general (animal) encyclopaedia article on Cordulegaster boltoni, with a photograph.

(4906) LEGRAND, J., 1981. Sympétrum fascié. *In:* La vie animale de A à Z, pt 17, p. 1406. Edito-Service, Genève. — (Lab. Ent., Mus. Natn. Hist. Nat., 45 rue de Buffon, F-75005 Paris).
A general (animal) encyclopaedia article on Sympetrum striolatum, with a photograph.

(4907) MERRILL, R.J., 1981. *A comparison of the diets of dragonfly larvae (Odonata: Anisoptera) coexisting in an allochthonous detritus habitat.* M. Sc. thesis, East Tennessee St. Univ., Johnson City. VIII+54 pp. — (c/o Dr D.M. Johnson, Dept Biol. Sci., East Tennessee St. Univ., Johnson City, TN 37614, USA).
The purpose of this study was to compare the diets of coexisting dragonfly larvae in order to ascertain the importance of seasonal segregation of life histories with respect to reducing diet overlap among competing anisopteran genera. Special emphasis was also directed to inter-anisopteran predation as a component of the anisopteran community interactions. A total of 391 anisopteran larvae were collected in 1978 and 1979. They represent the 4 most abundant spp. coexisting in the allochthonous detritus habitat in Bays Mountain Lake. The diets of these genera were determined by fecal pellet analysis. Diet information was grouped by species-instar and season. Over 20 prey categories were recognized. All generic diets were found to be statistically different from each other when considered over all seasons. When seasonal effects were eliminated only Tetragoneuria and Sympetrum gave a statistically significant within-season diet difference pointing to the importance of seasonal factors in reducing diet overlap among the genera. Use of a niche overlap index that considers prey abundance gave lower overlap values for Sympetrum comparisons consistent with the within-season diet statistical results. Inter-anisopteran predation was found to be concentrated during the hatching period of Celithemis larvae and is likely to be an important component of the competitive interactions within the larval assemblage. (Author).

1982

(4908) MONNOT, A., 1982. Indice biologique de qualité générale des cours d'eau (I.B.G.). Examples d'application de la méthode. *Annls sci. Univ. Besançon* (Biol. anim.) 4(3): 23-32. (With Engl. s.). — (Lab. Hydrob., Fac. Sci. Besançon, Besançon, France).
The biological quality of 6 aquatic habitats in the Rhône basin, France covering different ecological types and different levels of damage, is determined by a new method, based on the invertebrate communities. The Odon. are considered family-wise. The method is described and compared with the results obtained by application of the Biotic Index and the I.O.B.G.

1983

(4909) HUGGINS, D.G., 1983. New Kansas records of Odonata. *Techn. Publs biol. Surv. Kansas* 13: 24-25. — (St. Biol. Surv. Kansas, 2291 Irving Hill Drive, Campus West, Lawrence, Kansas 66045, USA).
Anax longipes, Libellula flavida, and Leucorrhinia intacta are listed.

(4910) [NELSON, W.], 1983. Kenfig pool and dunes: 1983. Odonata: dragonflies. *Kenfig Wildlife* 1983: 24. — (67 Heol Las, North Connelly, Bridgend, CF33 4BA, Wales, UK).
Annotated list of 18 spp. from the Kenfig Nature Reserve, nr Bridgend, SW Wales, United Kingdom.

(4911) [*NEWSLETTER OF THE BRITISH DRAGONFLY SOCIETY*], [No. 3] (Dec. 28, 1983). — (c/o R. Merritt, 48 Somersby Ave., Walton, Chesterfield, Derbyshire, S42 7LY, UK).
This is a Secretary's (R. Merritt) circular letter to the membership, announcing the mutations in the Board. It bears neither the title nor any bibliographic data, though it counts formally as No. 3 of the Newsletter.

(4912) OCHARAN, F.J., 1983. Calopteryx haemorrhoidalis asturica, nueva subspecie de caballito del diablo del Norte de España (Odonata: Zygoptera). *Bol. Cien. Naturaleza I.D.E.A.* 31: 3-10, 2 pls (figs 2-5) excl. (With Engl. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
C.h. asturica ssp. n. is described, figured, and compared with the nominate form and occasi
The holotype (♂, Luanco, Asturia, Spain; 8--VII-1980) and a series of paratypes (from 17 localities) are deposited in the Dept Zool., Univ. Oviedo.

(4913) OCHARAN, F.J., 1983. Brachythemis leucosticta (Burm.) (Odonata; Libellulidae) en el Norte de España. *Bol. Cien. Naturaleza I.D.E.A.* 32: 3-9. (With Engl. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
A male from Miengo, Cantabria, Spain is brought on record. This is the northernmost locality known, and the specimen is compared with the morphological features of those from Cádiz (Spain) and Mehdiya (Morocco). The recent range expansion of B. leucosticta in Europe is briefly discussed.

(4914) OCHARAN LARONDO, F.J., 1983. Los insectos inferiores. *In:* S. Caâda, Ed. & Publ., Enciclopedia temática de Asturias, Vol. 3, pp. 203-212, Gijón. — (Author: Depto Zool., Fac. Cien., Univ. Oviedo, Oviedo, Spain).
A general account of the lower insect orders, with emphasis on the Odon. (pp. 205-212), directed at the general reader. 30 col. phot., of which 25 of Odon.

(4915) PECILE, I., 1983. Interessanti catture di Odonati nel Friuli-Venezia Giulia. *Gortania* 4: 163-176. (With Engl. s.). — (Mus. Friulano Stor. nat., Via Grazzano 1, I-33100 Udine).
Records of 7 spp. are discussed, incl. Somatochlora alpestris and S. arctica, which were not reported previously from Friuli-Venezia Giulia, Italy. Photographs of the male terminalia of the 4 Friulian Somatochlora spp. are provided.

(4916) THAKUR, R.K., 1983. First record of Diplacodes lefebvrei (Rambur) (Odonata: Libellulidae: Sympetrinae) from NW India. *J. Bombay nat. Hist. Soc.* 80(2): 434-435. — (Desert Regional Stn, Zool. Surv. India, Jodhpur, India).
A number of records from Rajasthan and Gujarat are listed, and the main measurements of the (adult) specimens are stated.

(4917) YADAV, U.R., G.P. SHARMA GHIMIRE & R. AMATYA, 1983 [1984]. Biological investigation of Taudah Lake, Kathmandu. *J. nat. Hist. Mus., Kathmandu* 7(1/4): 1-14. (With Nepali s.). — (First Author: Zool. Instruction Committee, Tribhuvan Univ., Kirtipur Multiple Campus, Kirtipur, Kathmandu, Nepal).
An account is given of chemistry, macrophyte vegetation and on some macroinvertebrate groups of the Taudaha Lake nr Kathmandu. [For an adequate chemical water analysis cf. H.J. Dumont, 1976, *Khumbu Himal* 5: 255--262]. Using the guides and keys for the freshwater fauna of the British Isles, the following Odon. were "identified": "Cordulina sp." [sic!], "Sympetrum sp.", "Coenagrion sp.", and "Erythromma sp.". [These names may stand for the locally exceedingly common Orthetrum sabina, Crocothemis servilia, Cercion malayanum and Ceriagrion coromandelianum]. — (*Corrective Note OA* 4707: The correct pagination of that paper is 82-91, rather than 69-77, as erroneously stated).

1984

(4918) ALBERTI, G., 1984. Gli invertebrati dello stagno. *In:* C. d'Ambrosi et al., Guida naturalistica alla conca di Percedol (Carso triestino). *Atti Mus. civ. Stor. nat. Trieste* 36(2): 223-240. — (Mus. civ. Stor. nat., Piazza Hortis 4, I-34123 Trieste).
Various common odon. spp. are listed from the Percedol pond, Trieste Karst, northern Italy.

(4919) ARNOLD, A., 1984. Zur Libellenfauna des Iskar-Gebietes (VR Bulgarien) (Odonata). *Ent. Nachr. Ber.* 28(2): 71-72. (With Engl. & Russ. title). — (Wildenfelser Str. 34, DDR--9513 Langenbach/Erzgeb., GDR).
14 spp. are listed from Karlukovo and Gara Lakatnik, resp. 75 km NE and 35 km NW of Sofia, Bulgaria.

(4920) ASAHINA, S., 1984. A list of the Odonata from Thailand. Part III. Platystictidae. *Kontyu* 52(4): 585-595. — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
Protosticta curiosa Fraser is redescribed and figured. New are the following: P. khaosoidaoensis sp. n. (♂ holotype: Khao Soi Dao Nua Nature Reserve, Chantaburi Prov., 9-VI--1981), P. robusta sp. n. (♂ holotype: Doi Suthep, 27-V-1978), Drepanosticta doisuthepensis sp. n. (♂ holotype: Doi Suthep, 8-VI-1965) and D. khaochongensis sp. n. (♂ holotype: Khao Chong Forest nr Trang). The ♀ allotypes

of all taxa are also described.

(4921) ASAHINA, S., 1984. A list of the Odonata from Thailand. Part IV. Platycnemididae 1 (genus Copera). *Chô Chô* 7(12): 5-13. (With Jap. s.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
4 spp. are described and figured, incl. C. chantaburii sp. n. (♂ holotype, ♀ allotype: Chantaburi, Chantaburi Prov., 23-IX-1980).

(4922) ASAHINA, S., 1984. Assamese and Burmese Coeliccia species in the collection of Dr Erich Schmidt (Odonata: Platycnemididae). *Trans. Shikoku Ent. Soc.* 16(4): 1-9. — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
7 taxa are dealt with, of which 5 could be identified. Described and figured are C. didyma (Sel.) (races A, B, C), C. rotundata sp. n. (♂ holotype: Kongai, Manipur, 7-VII-1960) and C. schmidti sp. n. (♂ holotype: Chabong Khunou, Manipur, 24-VII-1960) The ♀♀ of the new spp. are unknown.

(4923) ASAHINA, S., 1984. Gynacantha arnaudi sp. nov., an enigmatic Gynacantha from Assam (Odonata, Aeshnidae). *Chô Chô* 7(11): 2-8. (Jap., with Engl. s.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
G. arnaudi sp. n. (♂ holotype, ♀ allotype: W. Digbol, Assam; deposited in the Calif. Acad. Sci. collections, San Francisco) is described, figured, and its affinities are discussed. It is referable to the japonica-group, which contains also G. ryukyuensis and G. incisura.

(4924) ASAHINA, S., 1984. *Namie's colour-plates of Japanese Odonata (1901-1904): a facsimile edition.* 58 pp., 14 col. pls incl. Soc. Odonatol., Tokyo. (Jap., with Engl. s.). — (Author & Publishers: Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
A bibliophile-like edition of the dragonfly col. plates (45 Jap. spp.), published originally (1901-1904) by Motoyoshi Namie (Zool. Inst., Tokyo Imp. Univ.) in the *Zool. Mag.* of the Tokyo Zool. Soc. The illustrations are based on the duplicate specimens of an odon. collection prepared for the 1893 World Columbian Exposition in Chicago, USA. Taxonomic identifications, comments, and an essay on the history of this material are provided. The book also contains an appendix, "Distribution tables of Japanese Odonata" (pp. 47-57), contributed by S. Eda, using the Jap. names only.

(4925) BALLOU, J., 1984. Visual recognition of females by male Calopteryx maculata (Odonata: Calopterygidae). *Great Lakes Ent.* 17(4): 201-204. — (Dept Biol., Central Missouri St. Univ., Warrensburg, MO 64093, USA).
In order to determine the function of the white wing stigma in C. maculata, males and females were marked or left unaltered, pinned onto a stick and presented to free ranging males. Male responses to females with blackened stigmas were minimal, whereas most males responded to unaltered females, unaltered males, and altered males. It is suggested that presence of the white stigma, in combination with wing transparancy, is important for male discrimination between sexes. (Author).

(4926) BEUKEBOOM, L., 1984. De verspreiding van heidelibellen (Sympetrum) in Nederland. — [The distribution of Sympetrum in The Netherlands]. *Stridula* 8(2): 35-44. (Dutch). (Helperwestsingel 31-22, 9721 BB Groningen, NL).
The Netherlands distribution of Sympetrum danae, flaveolum, sanguineum, striolatum and vulgatum, as evidenced in the archives of the Netherlands Youth Federation of Nature Friends, is discussed and mapped (status Jan. 1, 1984).

(4927) BURMEISTER, E.-G., 1984. Zur Faunistik der Libellen, Wasserkäfer und wasserbewohnenden Weichtiere im Naturschutzgebiet "Osterseen (Oberbayern) (Insecta: Odonata, Coleoptera; limnische Mollusca). *Ber. ANL* 8: 167-185. (With Engl. s.). — (Zool. Staatssammlung, Maria-Ward-Str. 1b, D-8000 München-19, FRG).
Detailed discussion on the 39 odon. spp. recorded in the Ostersee Region, southern Bavaria, FRG. Reference specimens were collected in special cases, but generally the paper is based on undocumented field observations only.

(4928) CANNINGS, S., 1984. Burns Bog, a wild

island in the Delta farmlands. *Boreus* 4(1): 2-3. — (Spencer Ent. Mus., Dept Zool., Univ. British Columbia, 6270 University Blvd, Vancouver, B.C., V6T 2A9, CA).
The bog is situated 15 min drive S. of Vancouver, BC, Canada. Aeshna sitchensis and A. subarctica are brought on record. They were not previously known from the Lower Mainland.

(4929) CANNINGS, S., 1984. Somatochlora sahlbergi Trybom (Odonata: Corduliidae): hybridization in Beringia. *Proc. a. Meet. ent. Soc. Alberta* 31: 19 [abstract]. — (Dept Zool., Univ. British Columbia, Vancouver, B.C., V6T 1W5, CA).
There are indications that extensive hybridization is occurring between this sp. and S. hudsonica, where their ranges overlap in NW Canada.

(4930) CHERRY, D.S., R.K. GUTHRIE, E.M. DAVIS & R.S. HARVEY, 1984. Coal ash basin effects (particulates, metals, acid pH) upon aquatic biota: an eight-year evaluation. *Water Resour. Bull.* 20(4): 535-544. — (Univ. Cent. Environ. Stud., Virginia Polytechn. Inst. & St. Univ., Blacksburg, VA 24061, USA).
Coal ash effluent effects incl. particulates, acid pH excursions, elemental concentrations and bioconcentration in selected organisms have been studied as changes in water quality and densities of benthic macroinvertebrates and mosquitofish populations in a swamp drainage system over an 8-yr period. Heavy ash siltation, followed by acid pH excursions after the addition of fly ash to the original settling basin system, had the most profound effect on biota. Dipterans and some Odon. (Plathemis lydia, Libellula sp.) were resistant to heavy ash siltation, while mosquitofish, which showed no discernible responses to ash siltation, were absent at acid pH. — (Cf. also *OA* 2624, 2892).

(4931) COSTA, J.M., J. JURBERG & W. DE SOUZA, 1984. Contribuição ao conhecimento da morfologia de Oxyagrion terminale Selys, 1876 com um estudo sobre a genitalia externa (Odonata, Zygoptera, Coenagrionidae). *Mem. Inst. Oswaldo Cruz* 79(3): 273-292. (With Engl. s.). — (First Author: Depto Ent., Inst. Oswaldo Cruz. C.P. 926, BR-20000 Rio de Janeiro).
The external morphology of both sexes is described and figured in great detail (incl. SEM micrographs).

(4932) DE MARMELS, J., 1984. Oxyagrion fluviatile sp. n. from Venezuela, with notes on Oxyagrion cardinale Fraser (Odonata: Coenagrionidae). *Bol. Ent. Venezol.* (NS) 3(3): 21-28. (With Sp. s.). — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
O. fluviatile sp. n. is described and figured (♂ holotype: Guatopo, Miranda, Venezuela, 1-XI-1954, ♀ allotype, numerous paratypes of both sexes; all deposited in Inst. Zool. Agric., Maracay). It is probably closely related to O. cardinale. The affinities between Acanthagrion and Oxyagrion are discussed.

(4933) DONATH, H., 1984. Libellen als ökologische Untersuchungsobjekte. *Biol. Schule* 33(11): 428-431. — (Jahnstr. 6, DDR-7960 Luckau, GDR).
The importance of the Odon. as bioindicators is briefly outlined, and some suggestions for research in this area are indicated. The considerations are based on the local fauna of the German Democratic Republic.

(4934) DONATH, H., 1984. Situation und Schutz der Libellenfauna in der Deutschen Demokratischen Republiek. *Ent. Nachr. Ber.* 28(4): 151-158. (With Engl. & Russ. s's.). — (Jahnstr. 6, DDR-7960 Luckau, GDR).
Considerations on the status of the odon. fauna of the German Democratic Republic, with a classified list of the endangered taxa, conservancy suggestions, and an exhaustive regional bibliography.

(4935) DUNN, R., 1984. *Derbyshire dragonflies.* Derbyshire Naturalists' Trust, Derby. 28 pp. - Price: £ 1.20. — (Author: 4 Peakland View, Darley Dale, Matlock, Derbyshire, DE4 2GF, UK; — Orders to: N. Brown, Derbyshire Naturalists' Trust, Elvaston Castle Country Park, nr Derby, DE7 3EP, UK).

Detailed list of Derbyshire spp. and their behaviour, with sections on life history, identification, habitats, and conservation. Well illustrated, with full colour covers.

(4936) DUNN, R., 1984. Dragonfly society. *Bull. amat. ent. Soc.* 44(346): 24. (4 Peakland View, Darley Dale, Matlock, Derbyshire DE4 2GF, UK).
A note on the British Dragonfly Society, by its Secretary. (Formed in April 1983, President Prof. P.S. Corbet, at present almost 300 members, annual fees £ 3.00).

(4937) EDA, S., 1984. Distribution tables of Japanese Odonata. *In:* S. Asahina, Namie's colour-plates of Japanese Odonata (1901-1904): a facsimile edition, pp. 47-57, Soc. Odonatol., Tokyo. (Jap., with Engl. title). — (3-4-25 Sawamura, Matsumoto, Nagano Pref., 390. JA).
[Abstract not available]. Cf. *OA* 4924.

(4938) ERIKSEN, C.H., 1984. The physiological ecology of larval Lestes disjunctus Selys (Zygoptera: Odonata). *Freshw. invert. Biol.* 3(3): 105--117. — (Joint Sci. Dept, Claremont Coll., Claremont, CA 91711, USA).
This is the full paper the advance abstract of which is given in *OA* 3869.

(4939) FONTOURA, A.P., 1984. Les communautés de macro-invertébrés du bassin hydrographique du fleuve Lima comme indicateurs de la qualité biologique de l'eau. *Publ̨ções Inst. Zool. Augusto Nobre, Porto* 183: 1-20. — (Inst. Zool. "Dr Augusto Nobre", Fac. Sci., Univ. Porto, PT-4000 Porto).
The list of the macroinvertebrate taxa of the Lima R., Portugal contains 5 Zygoptera genera and 4 Anisoptera families. The species-group names are not stated. (Cf. also *OA* 4940)

(4940) FONTOURA, A.P. & A.M. GOMES MOURA, 1984. Effect of some industrial effluents in the biological quality of the water of the River Lima. *Publ̨ções Inst. Zool. Augusto Nobre, Porto* 184: 1-21, 1 fold. tab. excl. — (Inst. Zool. "Dr Augusto Nobre", Fac. Sci., Univ. Porto, PT-4000 Porto).
This is the second report on the research reported in *OA* 4939. The Odon. are (partly species-wise) also considered.

(4941) GAPUD, V.P., 1984. Insect systematics in the Philippines: status, developments and needs. *Philipp. ent.* 6(1): 105-110. — (Dept Ent., Univ. Philippines at Los Baños, College, Laguna, Philippines-3720).
As far as the Odon. are concerned, 14 fam., 78 gen., and 162 spp. are so far known from the Philippines. 95 spp. (58.5%) are endemic.

(4942) GORNOSTAEV, G.N., 1984. Vvedenie v etologiyu nasekomyh-fotoksenov (lyot nasekomyh na iskusstvennye istochniki sveta). — [Introduction to the ethology of the positive-phototaktic insects (flight towards the light source)]. *Trudy vses. ent. Obshch.* 66: 101-167. (Russ.). — (Author's address not stated).
Monographic treatment of the subject, with 553 bibl. references, incl. 3 on Coenagrionidae, Aeshnidae and Libellulidae. The earlier views are critically discussed, and a new hypothesis is proposed.

(4943) GROSS, H., 1984. Zum Einfluss der zeitlichen Verteilung auslösender Reize auf Habituation des Beutefangverhaltens der Larven von Aeschna cyanea (Odonata: Anisoptera). *Verh. dt. zool. Ges.* 77: 286. (With Engl. title). — (Abt. Verhaltensbiol., Inst. Allg. Zool., Freie Univ. Berlin, Haderslebener Str. 9, D-1000 Berlin-41, West Berlin).
Effects of stimulus distribution on the habituation of the prey-catching behaviour of Aeshna cyanea larvae are stated and briefly analyzed.

(4944) HAAG, H. & E. RICHTER, 1984. Libellen im Kasseler Raum. *Naturschutz Nordhessen* 1984(7): 63-75. — (First Author: Schellingstr. 17, D-3500 Kassel, FRG).
The odon. fauna of 32 localities in the Kassel area, Hessen, FRG is enumerated. Its present status (34 spp.) is compared with earlier inventories, revealing that 19 spp. were not recorded recently. No reference is made to a reference collection on which this work should be based.

(4945) HILTON, D.F.J., 1984. Reproductive behavior of Leucorrhinia hudsonica (Selys) (Odonata: Libellulidae). *J. Kansas ent. Soc.* 57(4): 580-590. — (Dept Biol., Bishop's Univ., Lennoxville, Que., J1M 1Z7, CA).
The reproductive behavior of a small population of L. hudsonica was studied at a black spruce-sphagnum bog near Sherbrooke, Québec, Canada. Males established territories on the oviposition sites and spent most of their time perching except for short attack flights against intruding males. Females only visited the breeding sites to oviposit and were intercepted by territorial males, whereupon tandem formation and copulation ensued. Copulation occurred while pairs perched near the oviposition sites and lasted significantly longer if they changed perches during mating. Females oviposited by rapidly and repeatedly dipping their abdominal tip into small pools of water amid the saturated sphagnum moss. During this process they were guarded by their mates who hovered nearby and attempted to chase away other males. Neither sex fed at the breeding sites. (Author).

(4946) HOWARD, J., A. DUBS & R. PAYNE, 1984. The dynamics of phototransduction in insects: a comparative study. *J. comp. Physiol.* (A) 154(5): 707-718. — (First Author: Dept Physiol., Med. Sch., Univ. Bristol, University Walk, Bristol, BS8 1TD, UK).
The impulse-response was used to measure the dynamics of the photoresponse of 8 spp. from 6 orders, incl. Hemianax papuensis, in both light- and dark-adapted states. In the dark-adapted state, the time-to-peak of the response varies from 38 ms (Syrphidae) to 55 ms (locust); interspecies variation is small. In the light-adapted state, there are highly significant variations: 12.0 ms (housefly) — 17.5 ms (dragonfly — 22.1 ms (cricket); these correlate with flight behaviour. There are significant, though small differences in the shape of the dark-adapted impulse-response, with that of cockroach more symmetrical, and the dragonfly more skew than the others. It is concluded that all spp. have a similar transduction mechanism, and the impulse-responses are compared to those of vertebrates.

(4947) *JOURNAL OF THE BRITISH DRAGONFLY SOCIETY*, Vol. 1, No. 4 (Nov. 1984). — (c/o R.H. Dunn, 4 Peakland View, Darley Dale, Matlock, Derbyshire DE4 2GF, UK).
Banks, B.: Libellula depressa in Cumbria: a case of natural colonisation, or an accidental introduction? (47-48); — *Archer-Lock, A.:* The red-veined darter (Sympetrum fonscolombei (Selys) in Devon and Cornwall, 1984 (48-49); — *Winsland, D.C.:* Population fluctuations in New Forest dragonflies (50); — *Smith, E.M. & R.W.J. Smith:* Brachytron pratense (Müller) and other Odonata of the Black Lochs, Argyll (51-54); - *Milne B.S.:* The dragonfly fauna of the Ouse Valley gravel pits (55-59); — *Clausen, W.:* The exuviae of Aeshna juncea (L.) and Aeshna subarctica (Wlk.) (59-67); — *Winsland, D.C.:* Notes on some New forest dragonflies (68); — *Brooks, S.J.:* [Book review], Welstead, N. & T. Welstead; The dragonflies of the New Forest (69-70).

(4948) KOMNICK, H., 1984. Fetttransport im Insektendarm. *Verh. dt. zool. Ges.* 77: 123-126. (With Engl. s.). — (Inst. Cytol., Univ. Bonn, Ulrich-Haberland Str. 61a, D-5300 Bonn-1, FRG).
The paper deals exclusively with the larval Aeshna cyanea. The enterocytes absorb free fatty acid and diglyceride resulting from incomplete lipolysis of dietary triglyceride in the intestinal lumen. The absorbates are resynthetized to triglyceride which is accumulated, stored and transported entirely in the groundplasm as membrane-free lipid droplets. No intracisternal lipid transport through the endoplasmic reticulum and Golgi apparatus is detectable with the electron microscope. The lack of a bounding membrane excludes the possibility of exocytotic triglyceride discharge so that again lipolytic products, diglyceride and free fatty acid, are released into the hemolymph.

(4949) KORI, S.S. & S.D. AMOJI, 1984. A new actinocephalid gregarine, Odonaticola haldari sp. n. from odonate insect, Trithemis aurora (Burmeister). *Acta protozool.* 23(1): 63-66. — (Dept Zool., Gulbarga Univ., Gulbarga-585106, Karnataka, India).

The new gregarine is described and figured (cephalont, sporonts, gametocyst, sporocyst) from odon. material collected at the Gulbarga Univ. Campus, Karnataka, India.

(4950) KUKULIES, J. & H. KOMNICK, 1984. Lipid transport through the enterocytes of larval Aeshna cyanea (Insecta, Odonata). *Eur. J. Cell Biol.* 34(1): 118-129. — (Inst. Cytol., Univ. Bonn, Ulrich-Haberland-Str. 61a, D-5300 Bonn-1, FRG).
The larval enterocytes of A. cyanea absorb lipid after luminal lipolysis in morphologically invisible form by direct membrane transport, presumably molecular diffusion. The lipolytic products are utilized for resynthesis of di- and triglyceride, which become visible in the form of lipid droplets in the groundplasm. The putative site of lipid synthesis is the apical ER, which locally forms highly ordered complexes. Lipid transport occurs in the form of matrix lipid so that the enterocytes of dragonfly larvae resemble in this respect the lipid-secreting mammocytes rather than the lipid-absorbing mammalian enterocytes. Lipid release involves partial lipolysis and direct membrane transport, possibly including membrane delamination, again in contrast to exocytosis in mammalian enterocytes and apocrine extrusion in mammocytes, which are both indirect membrane transport mechanisms.

(4951) LEGGOTT, M.A., 1984. Temperature preference and activity thresholds of the coenagrionid Argia vivida (Odonata). *Proc. a. Meet. ent. Soc. Alberta* 31: 18 [abstract]. — (Dept Biol., Univ.Calgary, Calgary, Alberta T2N 1N4, CA).
[Verbatim]: A. vivida is found throughout western North America as far N as British Columbia and Alberta. It occurs in both geothermally heated streams, with constant temperature regimes and "cool" streams with fluctuating regimes. Populations from both types of habitat were examined to determine if adaptation to temperature has taken place. Both populations displayed a distinct temperature preference of around 28° C; however, individuals from the thermal spring showed a second less pronounced "preference" around 13-15° C. It was postulated that this population has experienced a reduction in the ability to detect spatial differences in temperature, as this mechanism would no longer be of use in a constant temperature regime. This leads to an increase in activity, causing individuals to "get caught" in the lower temperature end, creating the second peak at 13-15° C. Three activity thresholds were also determined for populations from the two types of habitat: escape temperature, critical thermal maximum, and lethal temperature. There was essentially no difference between the populations with respect to these thresholds. Thus, it was concluded that adaptation to temperature, with respect to these 4 parameters, has not occurred.

(4952) MIELEWCZYK, S., 1984. [Krytyki i oceny — Reviews]. Advances in Odonatology, Vol 1. *Przegl. zool.* 28(2): 244-246. (Pol.). — (Dept Agrobiol. & Forest., Pol. Acad. Sci., ul. Swierczewskiego 19, PO-60-809 Poznan).
Extensive review of the volume listed in *OA* 4151.

(4953) MIELEWCZYK, S., 1984. [Krytyki i oceny — Reviews]. D.C. Geijskes & J. van Tol: De libellen van Nederland (Odonata). *Przegl. zool.* 28(2): 246-248. (Pol.). — (Dept Agrobiol. & Forest., Pol. Acad. Sci., ul. Swierczewskiego 19, PO-60-809 Poznan).
Extensive review of the volume listed in *OA* 4101.

(4954) [MIYAZAKI, T. & A. MURAKI], [Eds], 1984. *Dragonflies of Kinki District, central Japan.* Kansai Research group of Odonatology, Osaka. 170 pp. (Jap., with Engl. Contents table, Latin nomenclature). — Price: ¥ 2500.-. — (Orders from outside Japan to: K. Inoue, 5-9 Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA).
The titles of the chapters are: "Preface", "Introductory remarks", "Distribution of each species in Kinki District" (with maps), "Histograms of seasonal occurrence of each species in Kinki District", "Ecological description of each species in Kinki District", "Dragonfly population increase and decrease in Kinki District in the 1970s", "References on dragonflies

in Kinki District" (includes 1198 titles, published during 1891-1983), "Durations of egg and larval stages of Japanese dragonflies", and "Editor's comment". — The Kinki regional fauna consists of 103 spp.

(4955) [*NEWSLETTER OF THE*] BRITISH DRAGONFLY SOCIETY, [No. 4] (Apr.5, 1984); [No. 5] (Oct. 8, 1984); [No. 6] ("Winter Newsletter 1984/85"). — (c/o R. Dunn, 4 Peakland View, Darley Dale, Matlock, Derbyshire, DE4 2GF, UK).
Announcements of meetings, Committee composition, notes on Society's publications, and various other news items of general interest to the membership.

(4956) NIMZ, C., 1984. The emergence and adult habitats of the Anisoptera of a southern Alberta pond. *Proc. a. Meet. ent. Soc. Alberta* 31: 12 [abstract]. — (Dept Biol., Univ. Calgary, Calgary, Alberta, T2N 1N4, CA).
Brief review of phenology (June-Sept.), Bredshaw's Pond, nr Bragg Creek (4 spp., excl. several identified to the genus only).

(4957) NOVELO G., R. & E. GONZÁLEZ S., 1984 Reproductive behavior in Orthemis ferruginea (Fabr.) (Odonata: Libellulidae). *Folia ent.mexic.* 59: 11-24 (With Sp. s.). — (First Author: Depto Produccion Agricola, Div. Cien. Biol., Univ. Auton. Metropol. Xochimilco, Apdo Postal 23-181, MX-04960 Mexico, D.F.).
Daily activity, male behaviour, copulation, oviposition, and guarding behaviour are described and discussed. (Cf. also *OA* 3444).

(4958) OCHARAN, F.J., 1984. Captura de Gomphus vulgatissimus (L.) en el norte de España (Odonata: Gomphidae). *Bol. Cien. Naturaleza I.D.E.A.* 34: 3-6. (With Engl. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
A male of G. vulgatissimus, from Astorga, is brought on record, and the Iberian distribution of this sp. is compared with that of Ischnura elegans.

(4959) OCHARAN, F.J. 1984. Odonatos capturados en el Parque Nacional de Covadonga (N. de España). *Bol. Cien. Naturaleza I.D.E.A.* 34: 63-67. (With Engl. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
17 spp. are listed.

(4960) PLOTNIKOVA, S.I. & Yu. A. KARELIN, 1984. Stroenie yadra dorsotegumentarnogo nerva strekozy Aeschna grandis. — The structure of the nucleus of the dorsotegumental nerve in the dragonfly Aeschna grandis. *Zh. evol. Biohim. Fiziol.* 20(2): 212-215. (Russ., with Engl. s.). — (Lab. Invertebr. Neurophysiol., Inst. evol. Physiol. & Biochem., USSR Acad. Sci., Leningrad, USSR).
Methylene blue staining was used to study the structure of the nucleus of the dorsotegumental nerve in the late larva and adult dragonfly A. grandis. Thick and thin fibers pass to the deutorocerebrum of the supraesophageal ganglion via the dorsotegumental nerve. Some of the fibers form branches and terminate in the deuterocerebrum, the other ones produce collaterals and pass to the subesophageal ganglion. In the cellular zone of the supraesophageal ganglion, small effector neurons were found; their dendrites form branches in the nucleus of the dorsotegumental nerve; their axons pass to peripheral parts via the latter. These neurons probably control the activity level in the wind-sensitive receptors of the head. Both right and left nuclei of the dorsotegumental nerve are connected with the protocerebrum.

(4961) SALONA BORDAS, M.I. & F.J. OCHARAN, 1984. Odonatos de Vizcaya. I. Zygopteros. *Cuad. Investnes biol., Bilbao* 5: 45-56. (With Engl. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
18 spp. from the Biscay Prov., Spain are listed and discussed. 9 of these are recorded from the Cantabric region for the first time.

(4962) SALONA BORDAS, M.I. & F.J. OCHARAN, 1984. Odonatos de Vizcaya. II. Anisopteros. *Cuad. Investnes biol., Bilbao* 6: 1-10. (With Engl. s.). — (Depto Zool., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
19 spp. from the Biscay Prov., Spain are listed and discussed. 3 of these are recorded from the

Cantabric region for the first time.

(4963) UBUKATA, H., 1984. Oviposition site selection and avoidance of additional mating by females of the dragonfly Cordulia aenea amurensis Selys (Corduliidae). *Res. Popul. Ecol.* 26: 285-301. (With Jap. s.). — (Dept Sci. Educ., Kushiro Coll., Hokkaido Univ. Educ., Kushiro, 085, JA).
Females of an odon. sp. in which oviposition sites overlap with mating sites may adopt one or more of the following strategies when they lay eggs except when they "trade" mating for access to suitable oviposition sites or for services (guarding, etc.) provided by males: (1) ovipositing at hidden places; (2) ovipositing at a time when males are neither patrolling nor watching; (3) indicating non-receptivity by a behavioral display. The density of ovipositing females of C. aenea amurensis, studied (1970--1983) at a pond in Hôrai-numa, Sapporo, Hokkaido, had a high negative correlation with the distance from "entrance" (a part of shore at which the arrival of most adults seems to have occurred). On the other hand, oviposition was rarely observed at a sector being distant from entrance in spite of the inference that larval survivorship was probably high at this sector. Most females oviposited among emergent vegetation in which approach of males to them was difficult, and they scarcely traveled across the open water in search of oviposition sites. Therefore, most females of the population studied were considered to adopt the first strategy. The second and third strategies were not adopted by the population studied. Finally, the influences of some environmental factors and traits possessed by a species on the adoption of these tactics or on the execution of the "trades" were discussed. (Author).

(4964) US DEPARTMENT OF AGRICULTURE / CORPS OF ENGINEERS COOPERATIVE AQUATIC PLANT CONTROL RESEARCH, 1984. Annual report for FY 1982. *Aquatic Plant Contr. Res. Progr. Misc. Pap.* A-84-2: 1-227. — (Available from: Natn. Techn. Inf. Serv., 5285 Fort Royal Rd, Springfield, Virginia 22161, USA).
The report includes 3 chapters, the purpose of the first of which was to compile a list of insects associated with hydrilla in the US, and which is based on 267 collections from 58 Florida locations, and on 22 collections from 17 out-of--state locations. The Odon. section (pp. 27-34) was prepared by *J.K. Balciunas* (Aquatic Plant Manag. Lab., Univ. Florida, 3205 SW 70th Ave., Fort Lauderdale, Fla 33314, USA). 1104 odon. larvae were found in 173 hydrilla collections from 31 sites; additional 74 specimens were collected at 10 sites in California, Georgia, Texas and Panama. An annotated locality list is presented for 42 taxa, 33 of which are identified to the sp. level.

(4965) VAN VEEN, M., 1984. Verslag ACJ. *Stridula* 8(2): 55-59. (Dutch). — (Kruidbergerweg 89, 2071 Rc Santpoort, NL).
Contains a list of 17 odon. spp. collected Aug. 2-6, 1984, at 6 localities in The Netherlands and in the FRG.

(4966) WAAGE, J.K., 1984. Sperm competition and the evolution of odonate mating systems. *In:* R.L. Smith, [Ed.], Sperm competition and the evolution of animal mating systems, pp. 251--290, Academic Press, New York-London. — (Div. Biol. & Med., Brown Univ., Providence, RI 02912, USA).
[Verbatim summary]: This paper presents and begins to evaluate the hypothesis that sperm competition has been a major selective factor in the evolution of odonate genitalic morphology and reproductive behavior. The data at present suggest that the hypothesis is viable and that its subset of hypotheses are testable. Sperm removal or displacement can be indirectly evaluated for odon. by taking advantage of their unique reproductive behavior and morphology. This method involves the comparison of sperm volumes of females collected before, during, and after copulation; and by dissection of in copula pairs. Sperm displacement (at levels of 40-100%) has been shown to occur in five odonate species: the zygopterans, Calopteryx maculata and C. dimidiata, and Lestes vigilax: and the anisopterans, Celithemis elisa and Erythemis simplicicollis. Sperm displacement probably also occurs in two other zygopteran genera, Argia and Enal-

lagma, and in other libellulids. — In the Zygoptera, sperm removal involves use of structures on the distal segment of the penis that scoop or pull clumps of sperm from one or both of the female's sperm storage organs. Some penis morphology in other genera (e.g., Lestes) may function in displacing and repositioning sperm within the female's storage organs. Damselfly penis morphology appears to have been shaped through natural selection for the efficient transfer of sperm to the female, and by sexual selection, in the context of sperm competition, for the removal or displacement of rival sperm prior to insemination. Structures associated with these functions are clearly separable in most species. Comparative morphology of zygopteran genitalia suggests that the same structures used to remove or reposition sperm by the species above are found in species representing the vast majority of genera. This suggests that sperm displacement ability is widespread among Zygoptera. Females of most Zygoptera spp. and all Anisoptera so far examined carry stored sperm from previous matings, and after ovipositing. Although sperm displacement ability may be widespread in Zygoptera, there are indications that males of some species may not always have opportunity to displace sperm. Many more spp. must be examined to determine the true extent of both ability and opportunity to displace sperm. — Anisopterans have erectile penises whose functional morphology is difficult to evaluate. Only a few libellulids have been examined for sperm displacement ability. Celithemis elisa and Erythemis simplicicollis remove sperm, but Sympetrum rubicundulum does not appear to. It is possible that males of this latter species push sperm of rivals into the recesses of female storage organs prior to insemination, but this needs verification. It is not presently possible to evaluate the full nature and extent of sperm displacement ability in anisopterans. — The morphology of the distal segment of the odon. penis might serve several functions other than sperm removal or displacement. These include: aiding in sperm transfer, holding genitalia together during copulation, and mechanical reproductive isolation. However, the evidence weighs heavily in favor of sperm displacement as the most likely function of the distal segment. — Odon. postcopulatory interactions fall into 3 categories: tandem oviposition, non-contact guarding of ovipositing females, and solitary oviposition by females. The first 2 categories are effective means to avoid take-overs of ovipositing females by other males. The vast majority of Zygoptera and most Libellullidae exhibit one or the other of these postcopulatory behaviors. Solitary oviposition probably occurs occasionally in most odon. spp., especially following a period of tandem or guarded oviposition; however, it is the principal postcopulatory behavior only of the more primitive anisopteran families (Aeshnidae, Cordulegastridae, Gomphidae, Petaluridae). In general, solitary oviposition occurs in situations where male-female encounters are rare or where females effectively avoid male interference. Postcopulatory interactions (tandem and guarded oviposition) appear to function in avoiding sperm competition and/or disturbance of ovipositing females. Non-contact guarding seems to be a compromise between protection of a mate while allowing the male to either gain access to additional mates of defend his territory, or both. — Odon. mating systems range from non-localized, opportunistic encounters to highly localized pair formation at oviposition sites within male territories. Durations of copulation (several sec to several hr) and postcopulatory behaviors correlate well with the 3 types of mating systems. The major determinants of mating systems appear to be ecological (habitat structure and male density), but these in turn result in conditions strongly conducive to sexual (intrasexual and sperm competition) selection. A parallel exists between the calopterygids and libellulids. Both groups exhibit frequent, short copulations, territoriality, and non-contact guarding, characteristics likely to have evolved in the context of sperm competition. Many odon. are flexible in their reproductive behavior. Habitat structure and population densities influence encounter rates and likelihood of interference with mating and oviposition. These factors in turn determine the relative benefits of guarding previous mates vs seeking new ones. Opportunities abound for comparative and manipulative

studies of the interactions among various factors that influence odonate reproductive behavior. Future studies that consider the female perspective in odon. sperm competition may be especially fruitful.

(4967) WHITE, III. H.B., 1984. Philip Powell Calvert: student, teacher, and odonatologist. *Ent. News* 95(4): 155-162, 2 portraits incl. — (Dept Chem., Univ. Delaware, Newark, DE 19716, USA).
A biographic account, largely based on previously unused archive material, and accompanied by 2 portraits, list of archive materials, and by a bibliography of biographic and bibliographic works on Calvert.

(4968) WILDERMUTH, H., 1984. Drei aussergewöhnliche Beobachtungen zum Fortpflanzungsverhalten der Libellen. [*Mitt.*] *ent. Ges. Basel* 34(4): 121-129. (With Engl. s.). — (Mythenweg 20, CH-8620 Wetzikon).
3 unusual observations on the reproductive behaviour are brought on record, viz. egg--laying behaviour of a Sympetrum striolatum tandem, the female of which had been killed by a spider; — triple-connection in Aeshna affinis; — and interspecific pairing between Calopteryx haemorrhoidalis (♂) and C. splendens (♀). The evidence is discussed from the point of view of "natural experiments" that may contribute to the understanding of the mechanisms of the normal reproductive behaviour.

(4969) WILLEY, R.L. & J.G. GIANCARLO, 1984. Bridging polymers in cell-substrate attachment by Colacium libellae (Euglenophyceae). *J. Phycol.* 20 (Suppl.): 29 [Abstract]. — (Dept Biol. Sci., Coll. Lib. Arts & Sci., Univ. Illinois, P.O. Box 4348, Chicago, Illinois 60680 USA).
[Verbatim]: C. libellae is an epibiont found in the rectums of zygopteran larvae. The cells readily attach to artificial substrates in the laboratory. The attachment behavior includes (1) a normal swimming approach, (2) a spiral swimming orientation normal to the substrate surface, (3) initial attachment by the extrusion of an attachment disc accompanied by paralysis of the flagellum, (4) resorption of the flagellum, and (5) extrusion of a stalk which normally attaches the cell to its host. The polymer forming the attachment disc is an acid polysaccharide with relatively high solubility. The stalk contains an additional neutral polysaccharide of lower solubility. Neither polymer contains trypsin-sensitive (10 mg/ml 0.01 M tris-maleate pH 8.0) protein components.

1985

(4970) ASAHINA, S., 1985. A list of Odonata from Thailand. Part V. Platycnemididae 2 (Calicnemia and Indocnemis). *Chô Chô* 8(1): 2-12. (With Jap. s.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
Descriptive notes and figs are provided for C. imitans, C. miles, C. erythromelas and I. orang.

(4971) BRUSERUD, A., 1985. The ultrastructure of the larval heart and aortic diverticula in Coenagrion hastulatum Charpentier (Odonata, Zygoptera. *Zool. Anz.* 214(1/2): 25-32. — (Zool. Lab., Univ. Bergen, Allegt. 41, N-5000 Bergen).
The wall of the heart and aortic diverticula in larvae of C. hastulatum consists of a single layered myocardium lined on both sides by a thin basal lamina. The sarcomeres show Z-, A- and I-bands. The T-tubules invaginate at the Z- and A-I-levels. The sarcoplasmic reticulum (SR) is well developed and forms sheaths at the Z- and A-band levels. These sheaths are interconnected by SR-tubules. Interior and peripheral couplings are located at the A-band levels. The aortic diverticula differ from the heart in having rough sarcoplasmic reticulum and a tendency of alignment of mitochondria on either side of the Z-band.

(4972) CANNINGS, S., 1985. An entomological visit to Burns Bog, a wild island in the Delta farmlands. *Discovery, Vancouver* 14(1): 15. — (Spencer Ent. Mus., Dept Zool., Univ. British Columbia, 6270 University Blvd, Vancouver, B.C., V6T 2A9, CA).
Text is identic to that listed in *OA* 4928, but a nice photograph of Aeshna sitchensis is added.

(4973) CORBET, P.S., C. LONGFIELD & N.W.

MOORE, 1985 [reprint] *Dragonflies*. Collins, London. XIV+260 pp., 24 pls excl. [ISBN 0 00 219064 8]. — Price: £ 6.50. — (First Author: Dept Biol., Univ. Dundee, Dundee DD1 4HN, UK).
This is a limpback edition of the classical work, the original publication of which (1960) has given a tremendous impetus to research on odon. behaviour. The original col. pls are reproduced in black and white, and the authors have provided a new Preface, pointing out the main achievements of the past 2 decades.

(4974) DE MARMELS, J., 1985. La náyade de Leptagrion fernandezianum Rácenis, especie bromelícola (Odonata: Coenagrionidae), y consideraciones sobre la posible relación filogenética del género Leptagrion Selys. *Bol. Ent. venezol.* (NS) 4(1): 1-7. (With Engl. s.). — (Depto & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
The bromeliad-dwelling larva of L. fernandezianum is described and figured. It differs from that of Mecistogaster modesta Selys only by its smaller size and the distribution of the mental setae. The single pair of setae present in L. fernandezianum recalls the pattern of one pair of principal setae, commonly found in Telebasis Selys and Aeolagrion Williamson, with which Leptagrion shares, in the adult stage, the angulate frons. Also Mecistogaster Rambur and the other Pseudostigmatids show the angulate frons, certainly a primitive character. Diceratobasis Kennedy, another bromeliad-dwelling species, exhibits a mosaic of features: the caudal gills are of the same simple type found in Telebasis, with which it shares, in the adult stage, the angulate frons, as well as the metallic colour of the head. The larval labium, however, shows several convergences with the modified type found in Leptagrion and Mecistogaster. The comparative observations suggest a parallel evolution of Diceratobasis and Leptagrion, starting both from Coenagrionids referable to the "Nehalennia-Telebasis series" of Kennedy (1920). While Diceratobasis appears to be a very close relative of Metaleptobasis Calvert and Telebasis, Leptagrion shares features at once with Aeolagrion/Telebasis and with Mecistogaster, this last one retaining almost all larval characteristics of Leptagrion, suggesting the same common origin.

(4975) DE MARMELS, J., 1985. Acanthagrion dichrostigma sp. n. y Acanthagrion tepuiense sp. n. de Venezuela (Odonata: Coenagrionidae). *Bol. Ent. venezol.* (NS) 4(2): 9-16. (With Engl. s.). — (Depto & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
A. dichrostigma sp. n. (holotype ♂: El Guácharo, Monagas, Venezuela, 21-VIII-1962), and A. tepuiense sp. n. (holotype ♂: Guayaraca, Auyan-Tepuí, Bolívar, Venezuela, 16-IV-1956) are described and illustrated. In the latter 2 "forms" can be distinguished: a smaller, paler one, from the foothills of the "tepuí", at about 1000 m above sea level (represented by the holotype) and a larger, darker one which inhabits the plateau, between 1600 and 2200 m. — While A. dichrostigma sp. n. stands between the "Rubrifrons Group" and A. phallicornis Leonard, A. tepuiense sp. n. is linking A. ablutum Calvert with A. vidue Selys, in spite of the long tibial spines in tepuiense sp. n. — All types are deposited at the Instituto de Zoología Agrícola, Facultad de Agronomía, Universidad Central de Venezuela, Maracay.

(4976) DETZEL, P., 1985. Die Libellenfauna des Naturdenkmals Hinterer See (Tübingen, Baden-Württemberg). *Ent. Z.* 95(9): 122-125. — (Staatl. Mus. Naturkd., Rosenstein 1, D-7000 Stuttgart, FRG).
17 spp. are listed and some are briefly discussed.

(4977) dpa [DEUTSCHE PRESSE AGENTUR], 1985. Die meisten Libellen sind gefährdet. *Münstersche Ztg*, issue of March 16.
Summary of the Dragonfly Red List data, presented in the publication listed in *OA* 4981. The same (official) text was published in numerous other local daylies in the Rhineland-Palatinate, FRG).

(4978) EDA, S., 1985. Chronicle of Japanese odonatology in 1984, with supplemental notes of

1983. *Nature & Insects* 20(3): 19-26. (Jap., with Eng. title). — (3-4-25 Sawamura, Matsumoto, Nagano, 390, JA).
A comprehensive review.

(4979) *GRACILE.* [Newsletter of Odonatology]. Published by the Kansai Research Group of Odonatology, Osaka, No. 34 (Feb. 3, 1985). (Jap., with Engl. titles). — (c/o K. Tani, 129 Jizo-cho, Nara, JA).
Obana, S.: A tentative consideration on Japanese Mnais evolution, Pt. 3 (1-6); — *Obana, S. & H. Ichii:* A rhapsodic survey trip for Yayeyama Islands (7-13); — *Obana, S.:* Report on the survey trip for Somatochlora clavata (14); — A survey trip for Mnais pruinosa nawai on the borders between Okayama and Tottori prefectures (14-15); — Report on the survey trip for Mortonagrion hirosei along Yodogawa River (16); — Report on the survey trip for Sympetrum species at Komyoike Pond (16-17); — *Nagase, K.:* On the larval behaviour of Stylurus annulatus (17-19); — *Arai, Y.:* Rice field and dragonflies. 1. (19-20).

(4980) HANSON, B.J., K.W. CUMMINS, A.S. CARGILL & R.R. LOWRY, 1985. Lipid content, fatty acid composition and the effect of diet on fats of aquatic insects. *Comp. Biochem. Physiol.* (B) 80(2): 257-276. — (Dept Fish. & Wildlf., Oregon St. Univ., Corvallis, OR 97331, USA).
The majority of 58 genera of aquatic insects (incl. Octogomphus sp., Anomalagrion hastatum, Argia sp., Ischnura sp.) had total lipid contents of 10-20% of total dry wt. Arachidonic and eicosapentaenoic acids were found in quantities up to 7.2 and 24.7% resp. of total fatty acids. The presence of large amounts of these acids, compared to terrestrial insects, appears to be an adaptation to the aquatic environment. Relative compositions of these fatty acids were similar to those reported for related terrestrial spp. Fatty acid composition differed predictably among orders and functional feeding groups.

(4981) ITZEROTT, H., M. NIEHUIS, M. WEITZEL, R. KIKILLUS, S. OHLIGER & E.SCHMIDT, 1985. *Rote Liste der bestandsgefährdeten Libellen (Odonata) in Rheinland-Pfalz. (Stand: April 1983).* 24 pp., 3 col. pls incl. Ministerium für Sociales, Gesundheit und Umwelt, Mainz. — (Publisher: Bauhofstr. 4, D-6500 Mainz, FRG).
The odon. Red List for the Fed. State of Rhineland-Palatinate, FRG. The status of 48 spp. is stated, the causes of the local deterioration of the odon. fauna are outlined, and some protective measures are suggested. — (A summary was published in numerous local newspapers, e.g. *OA* 4977).

(4982) JOHNSON, D.M., P.H. CROWLEY, R.E. BOHANAN, C.N. WATSON & T.H. MARTIN, 1985. Competition among larval dragonflies: a field enclosure experiment. *Ecology* 66(1): 119-128. — (First Author: Dept Biol. Sci., East Tennessee St. Univ., Johnson City, Tenn. 37614, USA).
Tetragoneuria cynosura and Celithemis elisa dominate the larval dragonfly assemblage of Bays Mountain Lake, Tennessee, USA, where they coexist in the extensive submerged macrophyte and allochthonous detritus habitats despite relatively high overlap in both seasonal occurrence and diet. Field enclosure experiments, designed to determine the intensity of intraspecific competition at approximately natural densities, were conducted during September 1981 and April 1982. Survival rate for both species was dependent on intraspecific density in September, and that for C. elisa was also affected by the presence of T. cynosura. These effects are attributed to interference (encounter) competition rather than to exploitation (consumption) competition. The mechanism of competition seems to be predation by larger larvae on smaller larvae. No evidence of either exploitation or interference competition was found in the April experiment.

(4983) LEGRAND, J., 1985. Additions à la faune des odonates des Monts Nimba (Afrique occidentale). *Revue fr. Ent.* (NS) 7(1): 37-38. (With Engl. s.). — (Lab. Ent., Mus. Natn. Hist. Nat., 45 rue de Buffon, F-75005 Paris).
With reference to the paper listed in *OA* 4424, 9 spp. are briefly discussed.

(4984) *LIBELLULA.* Mitteilungsblatt der Gesellschaft deutschsprachiger Odonatologen (GdO), Vol 4, No. 1/2 (March, 1985). — (Subscription Orders/Membership Applications to: Prof. Dr R. Rudolph, Abt. Biol. Didaktik, Univ. Münster, Fliednerstr. 21, D-4400 Münster, FRG).
Detzel, P.: Die Libellenfauna des Lochmooses und des Bannbühlweihers (Landkreis Ravensburg/Bad.-Württ.) (1-7); — Die Libellenfauna des Egger Riedes (Landkreis Ravensburg/Bad.-Württ.) (8-10); — Zur Entwicklung der Libellenfauna des Lanzenreuter Weihers (Landkreis Ravensburg/Bad.-Württ.) (11-13); — Das Vorkommen von Sympecma paedisca Brauer im Kreis Ravensburg (Bad.-Württ.) (14); — *Frank, H.:* Ergänzende Beobachtungen zur Libellenfauna des Pfrunger Riedes (Bad.-Württ.) (15-20); — (*Anonymous*): Ziele und Aufgaben der Gesellschaft deutschsprachiger Odonatologen (GdO) (20); — *Schmidt, E.:* Zum Kannibalismus bei mitteleuropäischen Zygopteren (21-31); — Suchstrategien für unauffällige Odonatenarten. I: Coenagrion lunulatum (Charp. 1840), Mond-Azurjungfer (32-48); — *Landmann, A.:* Strukturierung, Ökologie und saisonale Dynamik der Libellenfauna eines temporären Gewässers (49-80); — *Schmidt, E.:* Brachytron pratense (Müll. 1764) an Rekultivierungsseen des Braunkohlen-Abbaugebietes in der Ville südlich Köln (81-85); — Diagnosehilfen für Sympetrum fonscolombei Selys, 1840 nach Belegfotos (86-91); — *Clausnitzer, H.-J.:* Die Arktische Smaragdlibelle (Somatochlora arctica Zett.) in der Südheide (Niedersachsen) (92-101); — *Landmann, A.:* Bemerkenswerte Libellenfunde aus dem südlichen Burgenland (Österreich) (102-108); — *Schmidt, E.:* Fotonotizen zur Biologie heimischer Libellen. II: In der Riedvegetation verfangene Paarungsräder von Aeshniden (109-112); — Fotonotizen zur Biologie heimischer Libellen. III: Flugstudien an Anax imperator Leach, 1815 (113-116).

(4985) NIEHUIS, M., 1985. Libellen im Landkreis Bad Kreuznach: Artenrückgang als Warnung vor Umweltgefahren. *Bad Kreuznach. Heimat Bl.* 1985(1): 1-3. — (Im Vorderen Grossthal 5, D-6743 Albersweiler, FRG).
The status of the 38 odon. spp., known from the Bad Kreuznach District, Rhineland-Palatinate, FRG, is discussed.

(4986) NIEHUIS, M., 1985. Materialien zum Libellenschutz in Rheinland-Pfalz: I. Katalog wichtiger Libellenbrutgewässer im südlichen Rheinland-Pfalz. *Naturschutz Ornithol. Rheinland-Pfalz* 3(4): 536-607. — (Im vorderen Grossthal 5, D-6743 Albersweiler, FRG).
Catalogue of 50 selected odon. breeding sites in the northern Rhineland-Palatinate, FRG, with data on topographic situation, general features (incl. a photograph), characteristic odon. fauna, conservational aspects, and bibliography. (Cf. also *OA* 4997).

(4987) NISHIKAWA, Y., 1985. The dragonflies of Minoo. *Nature & Insects* 20(2): 24-26. (Jap., with Engl. title). — (Author's address unknown).
List of 76 spp. Latin nomenclature, and brief annotations for some taxa.

(4988) NITSCH, J., 1985. Untersuchungen zur Odonatenfauna im Kreis Offenbach. *Ber. Offenbach. Ver. Naturk.* 85: 43-56. (Rheinstr. 8, D–6057 Dietzenbach-2, FRG).
The odon fauna (24 spp.) of various habitats in the Offenbach District, FRG is discussed. The specimens were actually collected, but it is not stated whether or not they were deposited in a reference collection. It is emphasized that, due to the German Species Conservation Act, this type of fieldwork has become extremely difficult, involving time-consuming administrative procedures.

(4989) OPLER, P.A., [Ed.], 1985. Species of special concern in Pennsylvania. Chapter 2. Invertebrates. *Spec. Publ. Carnegie Mus. nat. Hist.* 11: 81-168. — (US Fish & Wildlife Serv., Edit. Office, Room 259, Aylesworth Hall, Colorado St. Univ., Fort Collins, CO 80523, USA).
34 spp. (20%) of the Pennsylvanian Odon. (171 spp.) are treated (pp.91-161). The considerations are largely based on the evidence provided by Dr Clark Shiffer (254 S. Gill St., State College, PA 16801, USA). Most of the spp.

dealt with are known from 6 or fewer counties. For each sp. the following information is provided: (1) Red List status, (2) taxonomic & Engl. name, (3) description, (4) range, (5) habitat, (6) life history & ecology, (7) specialized or unique characters, (8) basis of status classification, (9) recommendations, and (10) selected references. Distributional maps and photographs are also supplied.

(4990) PFAU, H.K., 1985. Die eigentümliche Eiablage der Cordulegaster-Weibchen. *Natur & Museum* 115(3): 77-86. — (Inst. Zool., Univ. Mainz, Postfach 3980, Saarstr. 21, D-6500 Mainz, FRG).
Details on the oviposition of Cordulegaster are illustrated by a sequence of pictures taken with a motor-camera. The functional morphology of the solidly built ovipositor (provided with only six small muscles) is analyzed and compared with that of the endophytic ovipositor of the Zygoptera, Anisozygoptera and Aeshnidae (the elements of which are moved by at least 16 muscles). In contrast to views expressed by earlier workers, the highly complex mechanism of the endophytic ovipositor (which is of the orthopteroid type) is considered plesiomorphic. Based on a phylogenetic system of the Anisoptera (H.K. Pfau, 1971, *Z. Morph. Tiere* 70: 281-371) it is assumed that oviposition in the Cordulegastridae may have evolved from a petaluroid-exophytic mode. In coincidence with this, Petalura in certain morphological characters, for example of the valvula 3, represents a transitional stage. Comments on the evolution of oviposition in the Gomphidae and Libelluloidea are included. (Author).

(4991) RÜPPELL, G., 1985. Calopteryx splendens (Calopterygidae): Flugverhalten des Männchens und Balz. Abstr. *In:* Neue Filme, Inst. wiss. Film, Göttingen, p. 7 (Ref. No. E 2741). — (Author: Kleikamp 5, D-3301, Lagesbüttel, FRG; — Orders to: Institut für den wissenschaftlichen Film, Nonnenstieg 72, Postfach 2351, D-3400 Göttingen, FRG).
Movie, available also in a video version, duration 8.5 min, text in German, produced in 1982.

(4992) *SELYSIA*. Newsletter of the Societas Internationalis Odonatologica and the U.S. National Office. Vol 14, No. 1 (March 1, 1985). — (c/o Dr M.J. Westfall, Dept Zool., Univ. Florida, Gainesville, Fla 32611, USA).
Shrestha, R.: Ninth International Symposium of Odonatology (Advance Announcement) (1--2); — *Westfall, M.J.:* Past history of Selysia (2-3); — Dragonflies of Botswana (3); — *Corbet, P.S.:* Peter Mill awarded senior doctorate (4); — *Davies, D.A.L.:* Odonata species lists (4); — [*Anonymous*]: New publications (4); — [*Battin, T.*]; Larvae of Zygoptera needed (4); — *Additions* and changes to the list of S.I.O. members (4-5); — *Bick, G. & J. Bick:* Dr Lothar E. Hornuff dies (5-6).

(4993) SIWOLOP, S., 1985. Unsteady as she flows. *Discover, Los Angeles* 6(4): 66-69. — (Publishers: Time Inc., 10880 Wilshire Blvd, Los Angeles, CA 90024, USA).
By studying the extraordinary turbulence, created by the beating of the dragonfly wings, aerospace engineers may be able to design safer and more efficient airplanes. This article is largely an interview with one of the aerospace scientists of the Univ. of Colorado, working on this project for the US Air Force.

(4994) SMITHERS, C.N. & W.H. BUTLER, 1985. Dragonflies and damselflies (Odonata) from Barrow and nearby islands off the coast of Western Australia. *Aust. ent. Mag.* 12(1): 9-12. — (Australian Mus., 6-8 College Str., Sydney, N.S.W. 2000, AU).
Records of 6 spp. from the Montebello, Lowendal and Barrow Islands groups, off the coast of Western Australia, are provided and briefly discussed.

(4995) STARK, W., 1985. Zur Libellenfauna der Grazer Teiche (Ins., Odonata). *Ber. ArbGem. ökol. Ent., Graz* 10: 35-40. — (Abt. Biol., Burgenländisches Landesmuseum, Museumgasse 5, A-7000 Eisenstadt).
The odon. fauna (45 spp.) of the ponds of the city area of Graz, Styria, Austria is enumerated, and its ecological and biogeographic composition is analysed.

(4996) TANAKA, T., 1985. Marking of Sympetrum frequence. *Nature & Insects* 20(2): 10-14. (Jap., with Engl. title). — (Author's address unknown).
Abstract not available.

(4997) WEITZEL, M., 1985. Materialien zum Libellenschutz in Rheinland-Pfalz: II. Katalog wichtiger Libellenbrutgewässer im nördlichen Rheinland-Pfalz. *Naturschutz Ornithol. Rheinland-Pfalz* 3(4): 608-724. — (Auf der Steinrausch 15, D-5500 Trier, FRG).
Catalogue of 50 selected odon. breeding sites in the northern Rhineland-Palatinate, FRG, with data as mentioned in *OA* 4986, but without odon. lists.