ODONATOLOGICAL ABSTRACTS

1981

(5072) THOMAS, K.I. & R. PRASAD, 1981. The chromosomes of five Indian dragonflies (Odonata). *In:* G.K. Manna & U. Sinha, [Eds], Perspectives in cytology & genetics, pp. 629--632, 1 pl excl., Hindasia, Delhi. — (First Author: R.C.M. Sci. Coll., Khallikote, India).
The karyotypes of Tramea basilaris burmeisteri, Orthetrum luzonicum, O. sabina, Brachydiplax contaminata and B. chalybea are described, figured and discussed in terms of the *m*--chromosome variation.

1982

(5073) JERVEY, T.O., 1982. *Prey encounter frequency, encounter surface, and attack rate of Ischnura verticalis (Odonata: Coenagrionidae).* M. Sc. thesis, Univ. Kentucky, Lexington. IV+66 pp. — (c/o Dr P.H. Crowley, T.H. Morgan Sch. Biol. Sci., Univ. Kentucky, Lexington, KY 40506-0225, USA).
[Author's abstract]: The ability of a predator to capture and consume prey from its habitat is a complex result of several factors. In Holling's Disc Equation, that ability is expressed as the attack coefficient "a", measured as prey removed per unit time. In these experiments the attack coefficient for I. verticalis feeding on Daphnia magna decreased from 0.294 to 0.040 ml/s with decreasing hunger under laboratory conditions. The mean horizontal diameter of the encounter volume, that region about the odonate in which it will react to prey, was 19.5 mm. The odonate was more efficient at obtaining prey approaching from in front than from the side (a 36% advantage) and from the rear (a 72% advantage). An attack coefficient that decreases with predator satiation, suggesting a possible decrease with prey densities in the field, may destabilize prey populations.

(5074) MÜLLER, J., K. LOTZING, W. CIUPA, F. CONRAD & D. SPITZENBERG, 1982. Beiträge zur Insektenfauna der Naturschutzgebiete im Bezirk Magdeburg. 1. Einleitung und Libellenfunde (Odonata) am Schallener See (Kr. Havelberg). *Naturschutzarb. Halle Magdeburg* 19(1): 25-38. — (First Author: Pablo-Naruda Str. 9, DDR-3034 Magdeburg, GDR).
The odon. fauna (29 spp.) of the eutrophic lake Schallener See, Distr. Magdeburg, GDR is discussed with special reference to the odon. community structure.

(5075) ONO, E.K.M., 1982. *Desenvolvimento ovo-imago, comportamento e demografie dos adultos de Orthemis ferruginea (Odonata-Libellulidae) no Distrito Federal.* M. Sc. thesis, Univ. Brasilia, Brasilia. XV+124 pp. (Port., with Engl. s.). — (Author's recent address unknown)
[Verbatim abstract]: Larvae of O. ferruginea inhabit lentic or showly moving water. They remain on the bottom, almost entirely buried under disguise with a cover of mud and leaves. They are predatory and developed in the laboratory on a diet of Chironomidae. They showed a high capacity of adaptation to different habitats (oxygen saturation varied from 23--86%). — The offspring of 2 females were raised in the laboratory from egg to adult. One batch of eggs, laid in the cold season, spent 155 days

developing to adults, while the second, laid in the warm season, spent a significantly shorter period in development (110 days). 12 instars were recognized in these individuals, based on several measurements. — A survivorship curve from the 7th to 12th instar was obtained from data on animals captured in the field. Survivorship during this period was 17%. — In the study area the size of the adult male population during the period of highest density was estimated by capture-marking-recapture and analysis of the data by Jolly's method (1965). The maximum size of this population occurred during Feb. 2-8. The maximum observed longevity of sexually mature males was 44 days. — Males are highly territorial defending sites at the sides of the drain. Sex patterns in behaviour of these adults were recognized. The territory is defended against intruding males. After mating, the male defends the female from other males while she oviposits in the territory. The male does not allow the female to oviposit where one has already laid a batch of eggs. Only 6% of the male's time in the territory is spent in reproductive activities, comprising courtship, mating and defense of the female.

(5076) PIERCE, C.L., 1982 *The relationship of behavior to competition and predation in two larval odonate populations.* M. Sc. thesis, Univ. Kentucky, Lexington. IV+111 pp. — (c/o Dr P.H. Crowley, T.H. Morgan Sch. Biol. Sci., Univ. Kentucky, Lexington, KY 40506-0225, USA).
[Author's abstract]: Larvae of Enallagma aspersum and E. traviatum are the dominant odonates (numerically) found in littoral habitats of Bays Mountain Park (Sullivan Co., Tennessee, USA), although their spatial distributions are virtually exclusive. Insectivorous fish are abundant in the habitat of E. traviatum, but absent from the habitat of E. aspersum. — Field enclosure experiments indicated the potential for interference competition within the E. aspersum population. E. traviatum did not respond significantly to the experimental treatments. — Predation experiments in the laboratory indicated that E. aspersum larvae are the more vulnerable to both bluegills and red-spotted newts. However, bluegills appear to pose a greater risk to both Enallagma species than do the newts. — Behavioral differences that have implications for the distributions of these species and the experimental results are discussed. Evidence for the existence of opposing behavioral strategies among odonates is discussed with reference to E. aspersum as an "active" strategist, and E. traviatum as a "sit-and-wait" strategist.

(5077) TANEDA, S. & [J. STEVENS, translator], 1982. *Mountain tasting. Zen haiku by Santoka Taneda, translated and introduced by John Stevens.* Weatherhill, New York-Tokyo. 126 pp. — [ISBN 0-8348-0151-5]. — Price: £ 3.-.
Taneda Santoka (1882-1940) is one of the most prominent representatives of the free-style haiku school, *jiyusitsu.* The present volume contains 3 dragonfly haiku (Nos 23, 243, 271).

(5078) WILSON, A.D., 1982. *Handling time and the functional response of damselfly larvae (Odonata: Zygoptera).* M. Sc. thesis, Univ. Kentucky, Lexington. IV+91 pp. — (c/o Dr P.H. Crowley, T.H. Morgan Sch. Biol. Sci., Univ. Kentucky, Lexington, KY 40506-0225, USA).
[Author's abstract]: Experiments were done to examine the handling-time component of the Type II functional response in the predator Ischnura verticalis. Frequencies of prey addition were manipulated, and the time to capture, time to eat, time to clean the labium number of strikes, and number of ignores were recorded with an event recorder. Results indicate that handling time is not constant over different encounter frequencies. Instead, it rises in a decelerating fashion to an asymptote. This asymptote may increase over the total time the predator is exposed to the prey. This variability in handling time seems to be related to the fullness of the predator's gut rather than to optimal foraging. The time-to-capture subcomponent of handling time increased by about an order of magnitude at the higher frequencies of prey addition. This increase is apparently due to a large time to digest the current food bolus in the predator's gut.

1983

(5079) DAILY, F.K., 1983. [Necrology]. Basil Elwood Montgomery. *Proc. Indiana Acad. Sci.* 93: 51-53. — (Butler Univ., Indianapolis, Indiana, USA).
Extensive biography, partly based on that published in *Odonatologica* 3 (1974): 203-209.

(5080) HENTSCHEL, P., L. REICHHOFF, B. REUTER & B. ROSSEL, 1983. *Die Naturschutzgebiete der Bezirke Magdeburg und Halle,* Bd 3. Urania, Leipzig-Jena-Berlin. 311 pp. — (Authors' addresses not stated).
Descriptive catalogue of nature reserves in the districts of Magdeburg and Halle, GDR. In many places references are made to the local occurrence of Odon.

(5081) LAVERGNE-VIALA, M. & A. THIERY, 1983. Les odonates de Marrakech: inventaire et clé de détermination à base de ptérographies. *Bull. Fac. sci. Marrakech* (Sci. Vie) 1983 (2): 63-74. (With Engl. s.). — (Lab. Ecol.-Hydrobiol., Dép. Biol., Fac. Sci., B.P.S.-15, Marrakech, Morocco).
The odon. fauna (34 spp.) of the surroundings of Marrakech, Morocco is listed, and a pictorial key is presented.

(5082) LENAT, D.R., 1983. Benthic macroinvertebrates of Cane Creek, North Carolina, and comparisons with other southeastern streams. *Brimleyana* 9: 53-68. — (Biol. Monit. Group, N.C. Div. Environ. Manag., Archdale Bldg, P.O. Box 27687, Raleigh, NC 27611-7687, USA).
The Odon. are considered in detail, and a list of 23 odon. taxa is presented.

1984

(5083) (Anonymous), 1984. *Los Shuar y los animales.* Abya-Yala, Quito (Ecuador). 103 pp. — (Publishers: Casilla 8513, Av. 12 de Octubre 14-36, Quito, Ecuador).
A note on dragonflies appears on p. 79.

(5084) ARNOLD, A., 1984. Die Libellenfauna (Odonata) des FND "Drosener Schuttgraben". *Veröff. Mus. Stadt Gera* (Naturw.) 10: 87-90. — (Wildenfelser Str. 34, DDR-9513 Langenbach/Erzgeb., GDR).
The odon. fauna (16 spp.) of this nature reserve in the Gera-Leipzig area, GDR is enumerated and briefly discussed.

(5085) BACALLADO ARÁNEGA, J.J., [Ed.], 1984. *Fauna (marina y terrestre) del archipielago Canario.* Cedirca, Las Palmas. 358 pp. [ISBN 84-85438-37-X]. — (Address not stated).
On pp. 120-122, a list, the island-wise occurrence and the bibliography are given of the Odon. of the Canary Islands, Spain.

(5086) BIGOT, L. & P. AGUESSE, 1984. Considérations sur les adaptations de la faune des invertébrés aux conditions particulières de fonctionnement des écosystèmes d'un delta méditerranéen (La Camargue ou delta du Rhône). *Bull. Mus. Hist. nat. Marseille* 44: 7-17. (With Engl. s.). — (First Author: Lab. Biol. Anim., Fac. Sci. Saint-Jérôme, rue Henri-Poincaré, F-13396 Marseille; — Second Author: Lab. Biol. Anim., Fac. Sci., Charia Ibn Batouta, B.P. 1014, Rabat Adgal, Morocco).
The adaptations of the invertebrate communities to the particular conditions in a mediterranean delta (the Rhône delta in Camargue, France) are discussed in terms of the demographic strategies. The Odon. are also considered.

(5087) BONET BETORET, C., 1984. Siete citas valencianas de Trithemis annulata (Palisot de Beauvois, 1805) (Anisoptera, Libellulidae). *Graellsia* 40: 3-6. (With Engl. s.) — (Linterna 28, ES-46001 Valencia).
The habitat and local odon. fauna are described of 7 Trithemis annulata localities in the Valencia prov., Spain.

(5088) BRATTON, J.H. & D. LANGLOIS, 1984. Notes on the dragonflies of Bookham Common. *Lond. Nat.* 63: 133-136. — (First Author: Mountsorrel, West End, Winteringham, Scunthorpe S. Humberside DN15 9NU, UK).
The 1982-1983 status of the odon. fauna is compared with that published by R.M. Payne (1945, *Lond. Nat.* 24: 23-31) for the 1942-1944 period. Calopteryx virgo is among the spp.

that became locally extinct.

(5089) CHAO, H.-f., 1984. Notes on gomphid dragonflies from Fujian province, with descriptions of a new species and the nymphs of two known species (Odonata, Gomphidae). *Wuyi Sci. J.* 4: 151-157. (Chin., with Engl. s). — (Biol. Pest Control Rest. Inst., Fujian Agric. Coll., Fuzhou, Fujian, P.R. China).
Leptogomphus divaricatus sp. n. is described and figured (holotype ♂, allotype ♀: Jian-nin Co., 11-VI-1959), Gastrogomphus abdominalis and Amphigomphus hansoni are redescribed, figured and discussed, and the larval stages of Burmagomphus sowerbyi and Nihonogomphus lieftincki are described and figured for the first time.

(5090) [HARITONOV, A. Yu.], 1984. [Otryad Odonata — Strekozy]. — [Order Odonata — Dragonflies]. *In:* A.M. Borodin et al., [Eds], Krasnaya kniga SSSR, Vol. 1 (2nd ed.) pp. 217-224. Lesnaya Promyshlennost', Moscow. (Russ.). — Price: Rub. 12.-. — (Author: inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).
This is the Odon. chapter in the official *USSR Red Data Book*, though, bibliographically, the order is not treated as a separate bibliographic unit. Instead, the name of the compiler is stated at the end of each sp. heading. — The spp. included are: Calopteryx mingrelica, Onychogomphus assimilis, Anormogomphus kiritschenkoi, Coenagrion mercuriale, C. lindeni, Anotogaster sieboldi, Ischnura aralensis, Epallage fatime, Cordulegaster insignis, Caliaeschna microstigma, and Libellula pontica. The treatment of each sp. contains brief sections related to the taxonomic affiliation, status, morphological description, geographic distribution, habitat, mode of threatening, general biology, the existing and the required protective measures, and a brief list of selected references. Also provided for each sp. are the Russian vernacular name, a colour drawing, and a general map of distribution. — The book has folio size, and its typographic production is excellent.

(5091) KORI, S.S. & S.D. AMOJI, 1984. Mukundaella gulbargaensis, a new actinocephalid gregarine from odonate insect, Copera sp. *Acta protozool.* 23(3): 175-178. — (Second Author: Dept. Zool., Gulbarga Univ., Gulbarga-585106, Karnataka, India).
The morphology and life history of the new sp. from the midgut of Copera sp. found in Gulbarga, Karnataka, India, are described and figured.

(5092) LEGGOTT, M.A., 1984. *The effects of temperature on growth, development and activity in three populations of the dragonfly Argia vivida Hagen (Odonata: Coenagrionidae).* M. Sc. thesis, Univ. Calgary, Calgary, Alberta. XI +162 pp. — (c/o Dr G. Pritchard, Dept Biol., Univ. Calgary, Calgary, Alberta, T2N 1N4, CA).
[Verbatim abstract]: Eggs, larvae and adults from 3 populations were examined with respect to their thermal thresholds in the laboratory. The 3 populations inhabited streams with contrasting thermal regimes: Cave and Basin, Banff, Alberta (geothermally heated with a constant temperature of 26° C and 5380 degree-days above 11.25° C, the estimated developmental threshold, annually); Albert Canyon, B.C. (geothermally heated with a constant diel temperature, an annual range of 5-20° C and 950 degree days); Deep Creek, Idaho (with an annual temperature range of 0-32° C, weekly temperature fluctuations of 15-20° C and 1185 degree-days). — Eggs of A. vivida were hatched in the laboratory and larvae were reared through to adult emergence. The number of antennomeres, metathoracic wing pad lengths and head widths were found to be useful in assigning individuals to the appropriate instar. 3 developmental types were observed in the laboratory (12, 13 and 14 instars) and there was a positive correlation between growth rates and the number of instars. — Developmental rates of eggs were positively correlated with temperature (12.5-32.5° C), but the precise form of this relationship differed significantly between the 3 populations, with developmental rates decreasing in the order Deep Creek — Cave and Basin — Albert Canyon. Between 10 and 30° C mean specific growth rates of larvae were positively correlated with

temperature, and larvae from Deep Creek had consistently higher growth rates than larvae from Cave and Basin. An estimated 2600 degree-days above 11.25° C were required for development from oviposition to adult emergence. Thus it was postulated that while Cave and Basin larvae could complete development in one year, larvae from Deep Creek and Albert Canyon would require three years. Activity thresholds (escape temperature — 35.9° C; critical thermal maximum — 39.9° C and upper lethal threshold — 45.3° C), modal temperature preferendum (28° C) and minimum adult flight threshold (25° C) were similar for the populations examined, although the temperature preference of larvae from Albert Canyon was less distinct (i.e. a higher proportion of the time was spent at temperatures below 22° C) than those from Deep Creek. — It was concluded that A. vivida has undergone genetic adaptation to the prevailing thermal regime with respect to developmental rates of eggs and larvae and larval temperature preferenda. This will have contributed, along with seasonal regulation of the life cycle and habitat selection, to the northern range extension of this species. — The thermal thresholds of A. vivida and other odonates were compared with those of other aquatic insects and found to support the conclusions that the Odonata are a relatively warm-adapted group, which probably originated in a tropical or subtropical environment.

(5093) LONG, J., 1984. *Chinese ink painting. Techniques in shades of black.* Blandford Press, Poole, Dorset. 128 pp. [ISBN 0 7137 1491 3]. General principles are described and techniques are outlined in detail. Dragonflies are dealt with on pp. 75-76.

(5094) McPEEK, M.A., 1984. *A laboratory study of intraspecific interference in the larvae of the damselfly Ischnura verticalis (Say).* M. Sc. thesis, Univ. Kentucky, Lexington. IV+168 pp. — (c/o Dr P.H. Crowley, T.H. Morgan Sch. Biol. Sci., Univ. Kentucky, Lexington, KY 40506-0225, USA).
[Author's abstract]: Intraspecific interference was investigated in the laboratory for the last 4 instars by recording the behaviors of larvae at 3 densities (1, 2, and 4 larvae per container) and all pairwise combinations of instars within the higher densities. — All instars decreased movement and responsiveness toward prey as density increased and when paired with successively larger instars. However, prey consumption was inhibited in only the 2 largest instars. — During interactions between larvae, initiations directed at larger-instar larvae and at similar-sized larvae at the highest density were predominantly labial strikes; labial strikes initiated approximately 50% of the interactions against smaller-instar larvae and against similar-sized larvae at the intermediate density. These interactions usually ended in retreats when larger-instar larvae initiated, no reaction by larvae when initiated against by smaller-instar larvae, and unpredictably between larvae of the same instar. Orientations of the larvae during interactions also affected the strategies used. — Increased monitoring by larvae was the primary mechanism causing the feeding inhibition in the two larger instars. The possible implications of these results for population dynamics are discussed. Specifically, the feeding results suggest important implications for development rates and a possible synchronizing mechanism for zygopteran populations.

(5095) MORIN, P.J., 1984. Odonate guild composition: experiments with colonization history and fish predation. *Ecology* 65(6): 1866-1873). — (Dept Biol. Sci., Nelson Biol. Lab., Rutgers Univ., P.O. Box 1059, Piscataway, NJ 08854, USA).
Fewer than half of the anisopteran spp. that oviposited in a North Carolina farm pond successfully metamorphosed from that pond. Odonates metamorphosed during 2 periods: early April through early June, and late May through early Sept. An experiment designed for variance analysis was used to measure the impact of fish and early-breeding odonates on the abundance and species composition of late-breeding odonates. Odonates recruited naturally in open-topped screened pens that either excluded or contained fish. Pens were placed in the pond either during or after the early

species breeding season to alter the abundance of larval early breeders. Fish exclusion increased the combined abundances of all anisopteran species 5-10 times above abundances in pens containing fish. Fish also facilitated the recruitment of 1 sp., Perithemis tenera. Placement of fish exclusion pens in late June instead of early May reduced abundance of early breeders and increased abundances of 2 late breeders, P. tenera and Pachydiplax longipennis. Early-breeders did not reduce late-breeder recruitment in pens with fish. Abundances of early and late breeders were significantly negatively correlated in pens without fish, but abundances of the same species were not significantly correlated in pens with fish. Different histories of colonization by early breeders influenced interspecific interactions among odonates only if fish were absent. Most variation in the composition of experimental communities was explained by a hierarchy of negative effects of fish on odonate abundance, and negative effects of early-breeders on late-breeders in the absence of fish.

(5096) MÜLLER, J., 1984. DDR-Erstnachweis der Späten Adonislibelle Ceriagrion tenellum (De Villers) im Naturschutzgebiet Mahlpfuhler Fenn, Kreis Tangerhütte (Bez. Magdeburg). (Insecta, Odonata, Coenagrionidae). *Faun. Abh. st. Mus. Tierk. Dresden* 12(3): 3943. (With Engl. s.). — (Pablo-Naruda Str. 9, DDR-3034 Magdeburg, GDR).
C. tenellum is recorded from the GDR for the first time. Its ecology and biogeography are discussed in some detail. In the Sphagnetum sections of the Mahlpfuhler Fenn, Distr. Magdeburg, the sp. co-occurs with Ophiogomphus serpentinus, Leucorrhinia dubia, Coenagrion hastulatum and Somatochlora arctica.

(5097) POST, J.R. & D. CUCIN, 1984. Changes in the benthic community of a small precambrian lake following the introduction of Yellow Perch, Perca flavescens. *Can. J. Fish. Aquat. Sci.* 41: 1496-1501. (With Fr. s.). — (First Author: Dept Biol., York Univ., 4700 Keele St., Downsview, Ont. M3J 1P3, CA).
The introduction of P. flavescens in Little Minnow Lake, Algonquin Park, Ontario, resulted in changes in biomass and size structure of the benthic community. The Odon. are considered in terms of their percentage occurrence by volume of stomach contents of 3 fish spp., and in a table showing the significant changes in biomass, mean weight and density of benthic invertebrates in the epilimnetic and profundal zones of the lake.

(5098) RABELO, V.M.O., F.A. LIMA, C.A.S. DOS SANTOS & F.F. RACCA, 1984. Levantamanto da entomofauna da Estação Ecológica de Piraí, Rio de Janeiro. *Resum IX Congr. brasil. Ent.*, Londrina: no pag. (Port.). — (Area Ent., UFRRJ, BR-23460 Seropédica, Rio de Janeiro).
5 odon. spp. are listed from the vicinity of the Estação Ecológica at Pirai, Rio de Janeiro, Brazil.

(5099) RAM, R. & V.D. SRIVASTAVA, 1984. Orthetrum mathewi Singh & Baijal 1954, a synonym of Pantala flavescens (Fabr.) (Odonata: Libellulidae). *Bull. zool. Surv. India* 5(2/3): 181. — (Zool. Surv. India, 14 Madan St., Calcutta-700072, India).
The paper is based on the results of the examination of the holotype of O. mathewi.

(5100) ROLDÁN, G., M. CORREA, T. MACHADO, J.J. RAMÍREZ, L.F. VELÁSQUEZ & F. ZULUAGA, 1984. Estudio limnologico de la represa de El Peñol. *Actual. biol.* 13(50): 94-105. — (First Author: Apartado Aereo 567771, Medellin, Colombia).
El Peñol (= Río Nare) is situated 50 km E of Madellín, Colombia (alt. 1850 m). The work contains references to Coenagrionidae and Gomphidae, without spp. names.

(5101) SAINI, R.S. & R.S. SINGH, 1984. Certain aquatic insects of Rewa with notes on their habitat. *Rec. zool. Surv. India* 81(1/2) [1983]: 345-354. — (Coll. Sci., Rewa, M.P., India).
Brief descriptive notes on the larvae of 6 Zygoptera spp., from various localities in Rewa distr., eastern Madhya Pradesh, India.

(5102) SCHAUENBERG, P., 1984. *Le Léman vivant.* Journal de Genève & Gazette de Lau-

sanne, Genève. 224 pp. — [No ISBN number.] — (Price: sFr. 39.-. — (Author: Mus. Hist. Nat., Genève, Switzerland).
A monograph on the natural history of the Geneva lake, Switzerland, directed at the general reader. The Odon. chapter appears on pp. 149-150. Brachytron pratense and Aeshna mixta are the only spp. mentioned. On p. 186, a col. fig. of Ischnura pumilio is included.

(5103) SCHMIEDS, U.J., 1984. Ökologische Studien an Fischen im Schierenseebach — einem norddeutschen Seeausfluss, Teil I (Naturpark Westensee, Schleswig-Holstein). 1. Die Nahrung des Flussbarsches (Perca fluviatilis L.) *Faun-ökol. Mitt.*, Kiel 5(1983/84): 199-216. (With Engl. s.). — (Landesanstalt Fischerei, Heinsberger Str. 53, D-5942 Kirchhundem-1 Albaum, FRG).
The diet of the perch in a Schleswig-Holstein brook, FRG is analysed, with sp.-wise references to the Odon.

(5104) SOMPS, C., M.W. LUTTGES & J.A. BEEL, 1984. Dragonfly flight: matching neuromuscular systems to unsteady fluid mechanisms. *Soc. Neurosci. Abstr.* 10(1): 625. [Abstract only]. — (Second Author: Dept Aerospace Engineering Sci., Univ. Colorado, Campus Box 429, Boulder, Colorado 80309, USA).
[Verbatim]: Quite recently, insects have been shown to depend upon unsteady separated flows in generating the lift necessary to support hovering. These observations have had a considerable impact upon fluid mechanists seeking to understand the principles of novel lift generation mechanisms. The same observations have special implications for the neuromuscular control of the wing kinematics necessary for generating and utilizing such complex flows. The present studies focus upon the flight of dragonflies. Wing kinematics are described for free flight, tethered and "automaton" specimens. The effects of these wing kinematics are corroborated by an integrated force measurement as well as flow field visualization. The precision and stereotype of wing-flow field interactions supportive of high lift generation make rather specific demands upon the motor output systems supporting dragonfly wing kinematics. Direct electrical stimulation of thoracic neural and muscular systems show that wing kinematics are relatively immune to disruption by slight variations in stimulus parameters. Nevertheless, increases in both wing beat amplitudes and frequencies lead to enhanced lift generation without altering wing-flow interactions. Common feedback controls for dragonfly flight, lighting, mean flows, horizon alterations and wing loading produced only minor modifications of wing kinematics. Axiosymmetric variations in wing kinematics were similarly modest but appear able to support the aerodynamic characteristics documented for dragonflies. These results are discussed in terms of the importance of central pattern generators compared to peripheral feedback controls. Response stereotype is evaluated as a major determinant in the use of particular forms of motor output control systems (cf. also *OA* 5170).

(5105) STAMM, R.A. & P. FIORONI, 1984. Adolf Portmann, ein Rückblick auf seine Forschungen. *Verh. naturf. Ges. Basel* 94: 87-120. portrait incl. — (First Author: Zool. Inst., Univ. Münster, Hüfferstr. 1, D-4400 Münster, FRG).
Chronological list of biographic data, retrospective review and comprehensive (but not complete) bibliography. (Cf. also *OA* 4141).

(5106) THORP, J.H. & M.L. COTHRAN, 1984. Regulation of freshwater community structure at multiple intensities of dragonfly predation. *Ecology* 65(5): 1546-1555. — (First Author: Dept Nat. Resour., Fernow Hall, Cornell Univ., Ithaca, NY 14853, USA).
The role played by the larvae of Celithemis fasciata in the regulation of the community structure of a benthic macroinvertebrate assemblage in an 1100-ha reservoir in South Carolina, was examined. Effects of predation intensity on species richness, evenness and density were evaluated by adding 0, 2, 4 and 8 large dragonfly larvae (antepenultimate and penultimate instars) to previously sieved (0.85-mm mesh) bottom sediment containing benthic macroinvertebrates. Predator and prey assem-

blages were then placed in individual field microcosms that consisted of polyethylene trays surrounded by underwater screens (mesh < 2 mm diagonally) and suspended 15 cm below floating platforms. Twelve replicates of each treatment level were run during each of three 6-wk experimental periods: April-May 1980, Aug.-Oct. 1980, and Jan.-Feb. 1981. In addition, colonization of microcosms by invertebrates was quantified, and samples from natural, unenclosed benthic fauna were collected seasonally along a transect for comparison with experimental assemblages. Whether predators enhanced, depressed, both increased and decreased, or had no effect on the complexity of the community structure was tested. The dual effects of predation on community structure is predicted by Connell's intermediate disturbance hypothesis. Results showed that dragonfly larvae can significantly influence the structure of the benthic community. The results did not show that invertebrate predation is the sole or even the primary regulator of community structure. Species richness was significantly greater at intermediate treatment levels (supporting Connell's general hypothesis), but the increase was not great (a range of ~ 10%). The mechanisms by which species richness is maximized at intermediate intensities of predation are not entirely evident, but are probably a combination of prey refuges and nonselective predation with patch switching. In contrast, species evenness, as measured by equitability and by Simpson's index, was greatest at the highest predation level (which does not support the intermediate disturbance hypothesis). Dragonflies appeared to exert a greater influence on prey density than on community diversity.

(5107) WISSINGER, S.A., 1984. Competitive and predatory interactions among larvae of two pond-dwelling dragonfly species. *Am. Zool.* (A) 24(3): 129. [Abstract only]. (Dept. Ent., Purdue Univ., West Lafayette, IN 47907, USA).
[Verbatim]: Field experiments were used to investigate population interactions among late instar larvae of Plathemis lydia and Libellula luctuosa. Data on population structure and resource use in natural habitats suggested the potential for both competitive and predatory interactions. To determine the actual extent of these interactions, field experiments were conducted in artifical ponds. Appropriate densities and larval instars were manipulated to isolate effects of interspecific competition and predation. Growth rate, a competition assay, was reduced in all high-density treatments containing similarly-sized instars. Interspecific competitive effects were symmetrical; however, predatory effects were asymmetrical with decreased survivorship most pronounced for small P. lydia larvae in the presence of larger L. luctuosa instars. This study demonstrates that both competition and predation actually occur among coexisting odonate larvae, and that their effects can be separated by manipulating population density and size structure.

1985

(5108) (Anonymous), 1985. Des scientifiques du monde entier se penchent sur les libellules du Pinail. *La Nouvelle République* 41 (12436), issue of Aug. 31, p. 5.
A local daily's note on the Post-Symposium Tour to the Pinail, by the participants in the Eighth Int. Symp. Odonatol. A group photograph is also provided. (Cf. *OA* 5132).

(5109) (Anonymous), 1985. Dr T.T. Macan. *Westmoorland Gaz.*, issue of Jan 20.
Obituary for Dr Thomas Townely Macan (deceased Jan 12, 1985), with a brief biographic outline and a portrait. The illustrious British hydrobiologist is well known among the odon. workers by his odonatol. publications and, not the least, as the Organiser of the Third Int. Symp. of Odonatol., Lancaster, 1975. (An obituary was published also in *Selysia* 14/2: 15-16; 1985).

(5110) (Anonymous), 1985. Geijskes, D.C. und J. van Tol (1983): De libellen van Nederland. *Naturk. Beitr. DJN* 14: 77-78.
Book review of the volume listed in *OA* 4101.

(5111) *ABSTRACTS OF PAPERS read at the Eighth International Symposium of Odonatology, Paris,* 1985. Edited by J. Legrand. Issued by the Societas Internationalis Odonatologica (S.I.O.), Paris, 40 pp. — Price: Hfl. 40.- — (incl. the Field Trip Handbook; cf. *OA* 5132). — (c/o S.I.O. Central Office, P.O. Box 256, 3720 AG Bilthoven, NL).

Papers: *Ahmed, A.K.Z. & R.G. Michael:* The predatory propensities of the Orthetrum larvae (Odonata: Libellulidae) (7); — *Cannings, R. & S. Cannings:* The Odonata of saline lakes in central British Columbia, Canada: ecological distribution and zoogeography (7); — *Caron, E. & J.-G. Pilon:* Étude du cycle vital de Cordulia shurtleffi Scudder (Anisoptera: Corduliidae) étude de terrain (8); — *Conrad, K.:* Movement patterns and dispersion in a low-density population of Calopteryx aequabilis Say (Zygoptera: Calopterygidae) (8); — *Castella, E.:* Distribution and descriptive power of dragonflies larvae in a fluvial ecosystem (8-9); — *Corbet, P.S. & I.F. Harvey:* Seasonal regulation in Pyrrhosoma nymphula (Zygoptera: Coenagrionidae): control of larval development by photoperiod (9); — *Crowley, P.:* Larval competition in a semivoltine population of Tetragoneuria cynosura (10-11); — *Fincke, O.:* Competition and co-existence of treehole-dwelling neotropical odonates (10); — *Gambles, R.:* Hagen's tubercle, — a largely overlooked but potentially useful character in gomphid taxonomy (10-11); — *Gonzalez Soriano, E.:* Notes on the microhabitat and reproductive behaviour of Paraphlebia (Zygoptera: Megapodagrionidae) (11); — *Harvey, I.F. & P.S. Corbet:* Adaptive significance of territorial behaviour by larvae of Pyrrhosoma nymphula (Zygoptera: Coenagrionidae) (11-12); — *Jones, S.M. & P.J. Mill:* A population study of adult Pyrrhosoma nymphula (12); — *Kaiser, H.:* Evolution of mating systems in dragonflies (12-13); *Khan, M.W.:* Histological and histochemical characteristics of the mid-gut in relation to digestion and absorption in the larvae of Pantala flavescens (Fabr.) (Anisoptera: Libellulidae) (13); — *Lee, R. & P. McGinn:* Territoriality in Nannothemis bella (Uhler) (Anisoptera: Libellulidae) (13-14); — *Maibach, A.:* Biochemical taxonomy and systematic review of the genus Calopteryx Leach (Zygoptera: Calopterygidae) in Europe (14); — *May, M.:* Body temperature and thermal responses of Tetragoneuria cynosura (Anisoptera: Corduliidae) (14-15); — *Miller, P.L. & M.T. Siva-Jothy:* Mechanisms of sperm competition in Odonata (15); — *Pinhey, E.C.G.:* Some African Odonata and collecting sites (15); — *Pritchard, G. & M. Leggott:* Temperature, development rates and origins of dragonflies (16); — *Reygrobellet, J.L. & E. Castella:* Some observations on the utilization of groundwater habitats by Odonata larvae in temporary environments (16); — *Robertson, H.M.:* Alternative female reproductive strategies in Ischnura damselflies: andromorphs mimic males in Ischnura ramburi (Zygoptera: Coenagrionidae) (17); — *Schmidt, E.:* Habitat management for a re-establishment of endangered Odonata species in industrialized countries (example: Central Europe) (17); — Some remarks on European dragonfly taxa under view of nearctic systematics at genus level (18); — *Shrestha, R.:* Note on the Odonata of Nepal (18); — *Sigwalt, B. & J. Legrand:* A key of the West-African genera of Zygoptera using a phylogenetic methodology (18-19); *Siva-Jothy, M.:* The Aeshnidae: a special case in odonate sperm competition? (19); — *Tembhare, D.B.:* The odonate ovary: structure, vitellogenesis and sterioidogenesis (19-20); — *Thompson, D.J. & M.J. Banks:* Lifetime reproductive success in the damselfly Coenagrion puella (20); — *Van Tol, J.:* The Odonata of the Dumoga-Bone National Park (Sulawesi, Indonesia) (20); — *Tyagi, A.:* Some studies on the oviposition behaviour in certain Indian Zygoptera (21); — *Tyagi, B.K.:* A review of the cytotaxonomic studies on Indian Odonata, with special reference to the fauna of the Dehradun Valley (Uttar Pradesh, India) (21); — Some investigations on the impact of chemical mosquito control agents on nontarget organisms in aquatic ecosystems, with special reference to the dragonfly naiads (21); — *Utzeri, C.:* Female "refusal display" versus male "threat display" in Zygoptera: is it a case of intraspecific imitation? (22-23); — *Utzeri, C. & G. Sorce:* Copulation in Coenagrion scitulum (Rambur) (Zygoptera: Coenagrionidae) (23); — *Waage, J.:* Effect of

oviposition site manipulation on damselfly behavior (23); — *Wasscher, M.T. & L.W. Beukeboom:* Notes on the ecology of Aeshna eremita Scudder in the Canadian Rocky Mountains (Anisoptera: Aeshnidae) (24). — Poster Presentations: *Anselin, A.:* A comparison of distribution and habitat choice of some Odonata between several central Spanish regions (28); — *Beukeboom, L.W.:* The dragonfly fauna of the peat moor Fochtelooerveen, the Netherlands (28-29); — *Blois, C.:* Variations in predatory behaviour in Anax imperator larvae (Odonata: Aeshnidae) in relation to different prey types (29); — *Boudot, J.P., G. Jacquemin & P. Goutet:* Odonates des tourbières vosgiennes (France) (30); — *Conrad, K. & T. Herman:* Territorial and reproductive behaviour of Calopteryx aequabilis Say (Zygoptera: Calopterygidae) in Nova Scotia, Canada (30); — *Corbet, P.S. & R. Prosser:* Diagnosis of intrastadial final-instar larvae of Pyrrhosoma nymphula (Zygoptera: Coenagrionidae) (31); — *Desforges, J. & J.-G. Pilon:* Développement post-embryonnaire de Libellula julia Uhler (Anisoptera: Libellulidae) en milieu controlé (31); — *Francez, A.-J.:* Caractérisation de la faune odonatologique des tourbières du Massif Central (France) (32); — *Harvey, I.F. & P.S. Corbet:* Behavioural sequences during territorial interactions between larvae of Pyrrhosoma nymphula (Zygoptera: Coenagrionidae) (32); — *Jacquemin, G.:* Le genre Orthetrum Newman au Maroc (Anisoptera: Libellulidae) (33); — *Lavoie-Dornik, J. & J.-G. Pilon:* Morphologie antennaire chez les larves d'odonates (33); — *Legris, M. & J.-G. Pilon:* Certains changements morphologiques au niveau des pattes au cours de la vie larvaire chez Argia moesta (Hagen) (Odonata: Coenagrionidae) (33); — *Legris, M., J.-G. Pilon & C. Marullo:* Croissance des étuis alaires chez Argia moesta (Hagen) au cours de la vie larvaire (34); — *Legris, M., J.-G. Pilon & M. Masseau:* Croissance des gonapophyses chez Argia moesta (Hagen) au cours de la vie larvaire (34); — *Legris, M., J.-G. Pilon & L. Pilon:* Eclosion des prolarves chez Argia moesta (Hagen) (Odonata: Coenagrionidae) (34); — *Legris, M., J.-G. Pilon & S. Pilon:* Certains changements môrphologiques chez le labium d'Argia moesta (Hagen) (Odonata: Coenagrionidae) au cours de la vie larvaire (35); — *Machado, A.B.M.:* Comparative morphology of the egg-shell in Mecistogaster, with notes on the oviposition of M. amalia Burmeister (Zygoptera: Pseudostigmatidae) (35); — *Michiels, N.:* Population-dynamics of Sympetrum danae Sulzer, 1776 (Anisoptera: Libellulidae) (36); — *Moens, J. & N. Moens:* Influence of feeding on larval growth of Ischnura elegans (36); — *Pilon, J.-G., M. Legris & D. Bouchard:* Croissance post-embryonnaire chez Argia moesta (Hagen) (Odonata: Coenagrionidae) (36-37). — Workshops [titles only]: *Corbet, P.S.:* Questions of current interest in dragonfly biology (38); — *Waage, J.:* Sperm competition in damselflies (38). — Slide and Movie Presentations [titles only]: *Davies, D.A.L.:* The rediscovery of Hemiphlebia mirabilis Selys (39); — *Van den Broek, W.G.:* Two entomological films, taken by the late Dr M.A. Lieftinck during his dragonfly expeditions to Taiwan (1976) and to the Western Himalaya, N.W. India (1978) (39). — For other Symposium publications cf. *OA* 5108, 5132, 5162.

(5112) ALLEN, G.A. & R.A. CANNINGS, 1985. Museum collections and life-history studies. *In:* E.H. Miller, [Ed.], Museum collections: their roles and future in biological research, pp. 169--194. British Columbia Prov. Mus., Victoria. — (Second Author: Dept. Ent., British Columbia Prov. Mus., 601 Belleville St., Victoria, B.C., V8V 1X4, CA).
Contains a number of examples from the Odon.

(5113) ARNOLD, A., 1985. Grosslibellen als Singvogelnahrung. *Die Falke* 32(7): 236-237. — (Wildenfelser Str. 34, DDR-9513 Langenbach/Erzgeb., GDR)
Observations on various song-bird spp. feeding on Leucorrhinia dubia and Lestes sponsa during the massive dragonfly emergence are brought on record.

(5114) ASAHINA, S., 1985. A list of the Odonata recorded from Thailand. Part VIII. Lestidae. *Chô Chô* 8(8): 2-13. (With Jap. s.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).

9 spp. are redescribed and figured.

(5115) ASAHINA, S., 1985. Illustrated common dragonflies of Southeast Asia, III. *Chô Chô* 8(8): 21-23. — (Jap., with Engl. title and Latin nomenclature). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
7 Orthetrum spp. are described.

(5116) ASAHINA, S., 1985. Change of a preoccupied name in the Odonata. *Kontyu* 53(2): 334. — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
Protosticta grandis nom. nov. is proposed for P. robusta Asahina (cf. *OA* 4920), since the latter is preoccupied by P. robusta Fraser, 1933.

(5117) BELYSHEV, B.F., 1985. Osobennosti rasprostraneniya vidov relictovogo roda Mortonagrion Fras. (Insecta, Odonata). — [Distributional features of the species pertaining to the relict genus Mortonagrion Fras. (Insecta, Odonata)]. *In:* G.S. Zolotarenko, [Ed.], Chlenistonogie Sibiri i Dal'nego Vostoka, pp. 39-43. Nauka, Novosibirsk. (Russ.). — (Ul. Kirova 76, kv. 7, USSR-630102 Novosibirsk).
The biogeography of the 13 Mortonagrion spp. is analysed and the geographic distribution is mapped.

(5118) BELYSHEV, B.F. & A.Yu. HARITONOV, 1985. Monotipicheskie taksony strekoz (Insecta, Odonata) boreal'nogo faunisticheskogo carstva. — [Monotypic dragonfly taxa (Insecta, Odonata) of the boreal faunal realm]. *In:* G.S. Zolotarenko, [Ed.], Chlenistonogie Sibiri i Dal'nogo Vostoka, pp. 44-47. Nauka, Novosibirsk. (Russ.). — (First Author: Ul. Kirova 76, kv. 7, USSR-630102 Novosibirsk).
A general note on the distribution of 25 genera.

(5119) BEUTLER, H., 1985. Freiland-Daten zur Koexistenz von Aeshnidenlarven. *Ent. Nachr. Ber.* 29(2): 73-76. (With Engl. & Russ.s's). — (Frankfurter Str. 23b, DDR-1230 Beeskow, GDR).
Samples of aeshnid exuviae from 7 ponds in the "Mark Brandenburg", GDR were studied from the point of view of coexistence of different spp. Although in most ponds 6-7 spp. co-occurred, in all cases only a single sp. was clearly numerically dominant. In ponds harbouring large colonies of Anax imperator, all other aeshnids were almost completely lacking. It is suggested that A. imperator represents a "pioneer sp.".

(5120) BLINOV, V.N., T.K. BLINOVA, B.K. STROGANOVA, A.Yu. HARITONOV & I.B. KNOR, 1985. Znachenie bespozvonochnyh v pitanii voronovyh ptic. — [The role of invertebrates in the crow diet]. *In:* G.S. Zolotarenko, [Ed.], Chelenistonogie Sibiri i Dal'nego Vostoka, pp 207-219. Nauka, Novosibirsk. (Russ.). — (Fourth Author: Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).
7 insect orders and various other invertebrates are considered. Save for Aeshna juncea, the odon. spp. are not specified.

(5121) BLOIS, C., 1985. Diets and resource partitioning between larvae of three anisopteran species. *Hydrobiologia* 126: 221-227. — (Lab. Ethol., Univ. Rennes-I, Campus de Beaulieu, Av. Général Leclerc, F-35042 Rennes).
Analysis of resource partitioning showed that larvae of Aeshna cyanea and Anax imperator tend to occupy similar ecological niches, which are not shared by Libellula depressa. The prey varies according to season and predator sp., and there is indication of some selection as to the prey spp.

(5122) BLOIS, C., 1985. The larval diet of three anisopteran (Odonata) species. *Freshw. Biol.* 15: 505-514. — (Lab. Ethol., Univ. Rennes-I, Campus de Beaulieu, Av. Général Leclerc, F-35042 Rennes).
Comparison between the diets of Anax imperator, Aeshna cyanea and Libellula depressa indicates that their food intake is subject to season and developmental stage. Comparison between prey availability and diets indicates a differential selectivity of the predators.

(5123) BLOIS, C. & A. CLOAREC, 1985. Influence of experience on prey selection by Anax imperator larvae (Aeschnidae-Odonata). *Z. Tierpsychol.* 68: 303-312. (With Ger. s.). — (Lab.

Ethol., Univ. Rennes-I, Campus de Beaulieu, Av. Général Leclerc, F-35042 Rennes).
Reactions of ultimate and penultimate instar larvae to 6 different experimental prey spp. suggest that the preference order of food selection may be related to the behavioural features of both predator and prey. The spontaneous prey selection can be modified experimentally.

(5124) BROGGI, M.F., 1985. Überprüfung der Retentionsbecken Nationalstrasse N 13 (Haag-Trübbach) aus der Sicht des Natur- und Umweltschutzes. *Ber. bot.-zool. Ges. Liechtenstein-Sargans-Werdenberg* 14: 159-178. — (Heilig-FL-9495 Vaduz, Liechtenstein).
Contains a preliminary note on the occurrence of cadmium in a number of taxa of aquatic insects, snails and amphibians from various habitats in Liechtenstein. Odon. (Sympetrum spp., Libellula depressa) and amphibian larvae generally show higher cadmium values than coleopteran larvae and adult frogs.

(5125) BROGGI, M.F., 1985. Ökologisches Gewässer-Inventar des Fürstentums Liechtenstein. *Ber. bot.-zool. Ges. Liechtenstein-Sargans-Werdenberg* 14: 179-210. — (Heiligkreuz 52, FL-9495 Vaduz, Liechtenstein).
Cordulegaster bidentatus is recorded for the first time from Liechtenstein (Triesen; p. 202).

(5126) BROGGI, M.F., 1985. IUCN/WWF-Projekt 1367-Ruggeller Riet. Jahresbericht 1984: Schutz, Forschung, Betreuung und Unterhalt. *Ber. bot.-zool. Ges. Liechtenstein-Sargans-Werdenberg* 14: 247-251. — (Heiligkreuz 52, FL-9495 Vaduz, Liechtenstein).
The odon. fauna of the Nature Reserve "Ruggeller Riet", Liechtenstein was studied by Dr J. Biedermann (Blachastr. 78, FL-9494 Planken), who recorded 28 spp. Save for Calopteryx splendens, a list of these is not presented.

(5127) COLLINS, N.M. & J.A. THOMAS, 1985. Why this decline? *Naturopa* 49: 23-27. — (First Author: IUCN Cons. Monit. Cent., 219 c Huntingdon Rd, Cambridge C83 OLD, UK).
Some "highlights" of insect regression in Europe, with a brief outline of the IUCN-WWF work. A chapter on the Odon., with reference to the work of the IUCN/SSC Odon. Specialist Group is also included.

(5128) CONESA GARCÍA, M.A., 1985. Aportaciones a la biología de Diplacodes lefebvrei (Rambur, 1842) (Odon., Anisop., Libellulidae) en la Península Ibérica. *Bol. Asoc. esp. Ent.* 9: 321-330. (With Engl. s.). — (Dep. Zool., Fac. Cien., Univ. Málaga, Málaga, Spain).
The breeding of D. lefebvrei in Europe is reported for the first time, notes are provided on its behaviour and biology, and the known Iberian distribution is mapped.

(5129) DE MARMELS, J., 1985. Chalcothore gen. nov., un genero nuevo de Zygoptera-venezolanos (Odonata: Polythoridae). *Resum. IX Congr. venez. Ent.*, San Cristóbal, p. 63. — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
Chalcothore gen. n. is erected for reception of Euthore montgomeryi Racenis. The genus is concisely defined and its primitive phylogenetic position is stated. — (*Abstracter's Note:* The Congress took place during July 1-4. 1985, not in 1984, as erroneously stated on the cover).

(5130) DJM, 1985. Nature notes. *The Times*, No. 62, 232 (Sept. 2), p. 30.
A note on the "brown aeshna dragonflies", in the famous British daily.

(5131) DOMMANGET, J.-L. 1985. Coenagrion scitulum (Rambur, 1842), espèce nouvelle pour la Corse (Odon., Coenagrionidae). *Entomologiste* 41(3): 100. — (7 rue Lamartine, F-78390 Bois d'Arcy).
With references to the paper listed in *OA* 4564, C. scitulum is recorded as new for the island of Corsica.

(5132) DOMMANGET, J.-L. 1985. *Field trip handbook of the Eighth International Symposium of Odonatology, Paris.* 16 pp. Societas Internationalis Odonatologica (S.I.O.), Paris. — Price: Hfl. 40. — (incl. Abstracts of Papers booklet; cf. *OA* 5111). — (c/o S.I.O. Central Office, P.O. Box 256, 3720 AG Bilthoven, NL).
Contents: "Generalities", "The Brenne", "The Pinail", "Odonata of the Brenne and of the

Vienne Subdivision, 1976-1984", "References". (Cf. also *OA* 5108).

(5133) [DUFOUR, C.], 1985. La cartographie des libellules de Suisse romande: une visualisation rapide de la santé de la faune. *In:* W. Matthey et al., [Eds], Centre suisse de cartographie de la faune, pp. 4-5. Neuchâtel. — (Mus. Hist. Nat., Terreaux 14, CH-2000 Neuchâtel).
A general explanatory note in a pamphlet announcing the foundation of the "Centre suisse de cartographie de la faune", incl. distribution maps of Anax imperator, Cordulegaster bidentatus and Leucorrhinia albifrons in western Switzerland.

(5134) EVERS, A.M.J., 1985. Entomologie und Umweltschutz. Vorschläge für zukünftige Artenschutzverordnungen. *Entomol. Bl. Biol. Syst. Käfer* 81(1/2): 104-109. — (Dürerstr. 13, D-4150 Krefeld, FRG).
Critical comments on the German Federal Species Conservation Act of 1980 (cf. *OA* 3112), by a distinguished taxonomist, with the text of the Resolution issued by the Symposium of the Rhineland Coleopterologists on Aug. 25, 1980. The latter emphasizes that at variance with the case in vertebrates, the invertebrates are endangered by environmental changes rather than by collecting, and that specimen documentation is indispensable for adequate taxonomic identification. The Resolution was submitted to the Government of the Fed. Rep. Germ. on June 15, 1984.

(5135) FRANCEZ, A.-J., 1985. Les odonates d'Auvergne: répartition de quelques espèces rares ou peu connues — essai de zoogéographie régionale. *Entomologiste* 41(3): 101-111. (With Engl. s.). — (Stn Biol. Besse-en-Chandesse, B.P. 45, F-63170 Aubière).
The distribution of 16 spp. is stated, and the zoogeographic zonation of the Auvergne region, France is proposed on the basis of botanical, climatic and odonatol. evidence.

(5136) *FRASERIA*, Newsletter of the S.I.O. National Office in India, Pondicherry, No. 8 (June 1, 1985). — (c/o Dr B.K. Tyagi, Vector Control Res. Cent., I.C.M.R., Medical Complex, Indira Nagar, Pondicherry-605006, India).
With the present issue the production technique has been changed from offset to (classical) book print, consequently, the periodical became typographically the most beautiful of all SIO newsletters. — Contents: *Tyagi, B.K.:* Dr M.A. Lieftinck passed away (33); — *Prasad, M.:* Oviposition behaviour of Pseudagrion australasia Selys (Zygoptera: Coenagrionidae); (33-34); — *Tyagi, B.K.:* Proceedings of the First Indian Symposium of Odonatology published (35); — Second Indian Symposium of Odonatology — First circular (35); — Papers invited for *Indian Odonatology*, the first official mainstream journal of the SIO National Office in India (36); — SIO journals in great demand in the libraries of the Indian scientific institutions (35). — (Mutations in the SIO India membership list appear on pp. 35-36).

(5137) GEIGER, W. & C. DUFOUR, 1985. Protection of invertebrates in Switzerland: legislation and reality. *Naturopa* 49: 10-11. — (Second Author: Mus. Hist. Nat., Terraux 14, CH-2000 Neuchâtel).
A note on legislation policy and current field situation, with references to the Odon. As expected, there is no perceptible difference in the status of the invertebrate fauna between e.g. the canton of Vaud, where all invertebrate spp. are under a cantonal Species Conservation Act, and that of canton Neuchâtel, where practically none enjoys a "legal protection". The contraproductive effect of general prohibition of collecting is emphasized, and the introduction of a "moral code for collectors" is advocated.

(5138) HILDER, B.E. & P.W. COLGAN, 1985. Territorial behaviour of male Nannothemis bella (Uhler) (Anisoptera: Libellulidae). *Can. J. Zool.* 63(5): 1010-1016. (With Fr. s.). — (Dept Biol., Queen's Univ., Kingston, Ont., K7L 3N6, CA).
Males of N. bella are territorial at the breeding site. On the basis of the male behavioural time budgets, the sp. can be regarded as a territorial percher. Those acts involved in territorial maintenance (patrolling and fighting) are more closely related to territorial dimensions than

are those not concerned with the territory (feeding). Territoriality appears closely related to some aspect of the water area within a territory, as maintenance and defence behaviour vary most consistently with the size of this area. Territorial size increases as the season progresses. Defensive behaviour is directed at both conspecifics and a heterospecific, Leucorrhinia frigida. The usefulness of a marking technique for dragonflies was tested statistically. (Authors).

(5139) HORSTKOTTE, J. & A. WENDLER, 1985. Neusiedler See 1983. *Naturk. Beitr. DJN* 14: 4-36. — (First Author: Am Schulwald 21, D-2000 Hamburg-62, FRG).
24 odon. spp., recorded at the Neusiedler See, Austria, June 27-July 12, 1983, are listed and discussed (pp. 23-27).

(5140) HUANG, Y.P., T. KOMIYA & K. MARUYAMA, 1985. Actin isoforms of insect muscles: two-dimensional electrophoresis studies. *Comp. Biochem. Physiol.* (B) 79(4): 511-514. — (Dept Biol., Fac. Sci., Chiba Univ., Chiba, 260, JA).
Two-dimensional electrophoresis was carried out to determine the isoelectric points of actins from thoracic and leg muscles of representatives of 7 orders, incl. Orthetrum albistylum and Sympetrum darwinianum. The isoelectric points of insect muscle actin ranged from 5.6 to 5.9. In the 2 odon. spp. the values amounted to 5.65 both in thoracic and in leg muscles.

(5141) *JOURNAL OF THE BRITISH DRAGONFLY SOCIETY*, Vol. 1, No 5 (July, 1985). — (c/o R.H. Dunn, 4 Peakland View, Darley Dale, Matlock, Derbyshire DE4 2GF, UK).
Clifford, T. & J.R. Walker: Observations on the emergence of Libellula quadrimaculata L. and the predation of freshly emerged imagines on the Saltfleetby-Theddlethorpe Dunes NNR (71-72); — *Bailey, B. & J. Bailey:* Terrestrial feeding by a larva of Calopteryx virgo (L.) (72); — *Halstead, K.H.:* Heminanax ephippiger (Burmeister) in Hampshire (73); — *Butler, S.:* Rearing dragonfly larvae (74-77); — *Benton, E.:* The dragonflies of Essex (77-83); — *Jones, S.P.:* A note on the survival of dragonflies in adverse conditions in Cornwall (83-84); — *Marren, P.:* A short history of dragonfly recording in north east Scotland (85-88); — *Winsland, D.C.:* Preliminary site and pH evaluation for assessing the distribution of Coenagrion mercuriale (Charp.) in the New Forest (89-93); — *Brooks, S.:* [Book review] Derbyshire dragonflies, by Roderick Dunn (93-94).

(5142) KERKUT, G.A., 1985. Which insects are most used in physiological and biochemical research? *Comp. Biochem. Physiol.* (A) 81(4): 705-706. — (Dept Neurophysiol., Southampton Univ., Southampton, SO9 3TU, UK).
Based on the cumulative species index of the 13-volume Pergamon Press work, *Comprehensive insect physiology, biochemistry and pharmacology*, a list is given of 79 insect spp. Aeshna cyanea is the only dragonfly mentioned. It occupies the 68th place on the list.

(5143) KERN, M.J., 1985. Metabolic rate of the insect brain in relation to body size and phylogeny. *Comp. Biochem. Physiol.* (A) 81(3): 501-506. — (Hoechst AG. Pflanzenschutzforschung-Biologie H 872, Postfach 80 03 20, D-6230 Frankfurt/Main-80, FRG).
The respiratory rate of isolated brains from 36 spp. of 6 orders, incl. Lestes sponsa and Sympetrum sanguineum, was determined in order to ascertain whether or not poikilotherms exhibit an inverse relationship between respiratory rate and weight of the organ or whole body. Index of cephalization, i.e. the ratio between brain and body weight, was found to decrease with increasing body size. Specific metabolic rate (SMR) (oxygen consumption/mg dry weight/hr) of the brain corresponds to the resting metabolic rate of the whole organism. The SMR of brains from different species is inversely related to the brain mass. Similarly, respiratory rates of whole insects are also inversely correlated with body size. The index of cephalization as well as the SMR of the brain tend to be relatively higher in predatory insects and those which are strong flyers.

(5144) KINGSOLVER, J.G. & M.A.R. KOEHL, 1985. Aerodynamics, thermoregulation, and the evolution of insect wings: differential sca-

ling and evolutionary change. *Evolution* 39(3): 488-504. — (Dept Zool., Univ. California, Berkeley, CA 94720, USA).
Several aerodynamic and thermoregulatory hypotheses on the possible adaptive factors in the wing evolution are examined. Using a physical model of paleozoic insects in a wind tunnel, the potential effects of wings for increasing gliding distance, increasing dispersal distance during parachuting, improving attitude control or stability, and elevating body temperatures during thermoregulation are explored. The effects of body size and shape, wing length, number and venation, and meteorological conditions are also considered. Hypotheses consistent with both fixed and movable wing articulations are examined. At appropriate places brief references are made to the Odon.

(5145) KREBS, J.R. & M.I. AVERY, 1985. Central place foraging in the European bee-eater, Merops apiaster. *J. Anim. Ecol.* 54: 459-472. — (First Author: E. Grey Inst. Fld Ornithol., South Parks Rd, Oxford OX1 3PS, UK).
The purpose of this investigation was to discover if variation in the size of prey fed by parent bee-eaters to nestlings could be explained by a model of central-place foraging. For each of the main prey types, dry weight, caloric value and abundance were estimated. Most of the prey brought to the nest were Odon. and Hymenoptera. There was a decrease in proportion of small prey items with increasing travel time. Estimates of relative prey abundance and observations of parents collecting food for themselves showed that differential availability of small prey at different distances from the nest could not account for the size-distance relationship. (Cf. also *OA* 4856).

(5146) KUKALOVA-PECK, J., 1985. Ephemeroid wing venation based upon new gigantic Carboniferous mayflies and basic morphology, phylogeny, and metamorphosis of pterygote insects (Insecta, Ephemerida). *Can. J. Zool.* 63(4): 933-955. (With Fr. s.). — (Dept Geol., Carleton Univ, Ottawa, Ont. KIS 5B6, CA).
Detailed comparisons between the earliest fossil Ephemeroptera, Odon., extinct haustellate Paleoptera, and Neoptera showed that the wings evolved only once; the Pterygota are a monophyletic group, and the first major division was in Paleoptera and Neoptera. — Paleoptera are composed of 2 sister groups, derived from unknown, common ancestors: one with haustellate, sucking mouthparts, now extinct, and the other with chewing mouthparts, including the living Ephemeroptera and Odon. and the extinct Protodonata. — Emphemeroptera and Odonatoidea are sister groups, sharing the following synapomorphic venational characters: the venal anal brace AA & AA1-2 and AA1 fused with CuP at an area important for flight. The sister groups diverged when the venal and anal brace became fused to CuP at a kink in CuP in Odonatoidea. In Ephemeroidea the same area was marked by a bulla in CuP. — The relationship between the wing venation of recent Ephemerida and Odon. is evident only if the odonatoid Tillyard-Fraser venal system is replaced by the system proposed by Riek & Kukalova-Peck in 1984 (cf. *OA* 4786). — Further characters separating ephemeroids and odonatoids are the following: 1 axillary plate in mayflies and 2 in dragonflies, and the original pterygote voluntary anterior mandibular articulation turned into a mandibular slider in mayflies, but was transformed into a permanent anterior mandibular articulation in dragonflies.

(5147) LAHTI, P., 1985. Korenot, kesän kaunottaret. [Dragonflies, the beauties of the summer]. *Totto*, Helsinki 86(7): 36. (Finnish). — (Author's address not stated).
Abridged version of the article listed in *OA* 3772, with 2 not previously published photographs.

(5148) LEGRAND, J., 1985. Elattoneura afrotropicaux nouveaux ou peu connus (Odonata, Protoneuridae). *Nouv. Revue Ent.* (N.S.) 2(2): 159-168. (With Engl. s.). — (Lab. Ent., Mus. Natn. Hist. Nat., 45 rue de Buffon, F-75005 Paris).
E. lliba sp. n. (♂ holotype, ♀ allotype: Makokou, Gabon), E. l. mayombensis ssp. n. (♂ holotype, ♀ allotype: Dimonika, Congo), and E. morini sp. n. (♂ holotype, ♀ allotype: Brazzaville area, Congo) are described, illustrated and discussed. A syntype of E. pruinosa (Sel.)

from the Selys collection is redescribed and designated as lectotype. The synonymy proposed by E. Pinhey (1971, *J. ent. Soc. sth. Afr.* 34: 215-229) between E. pruinosa (Sel. 1886) and E. aethiopia Fraser, 1941 is confirmed and a lectotype is designated for the latter. Finally, the synonymy between E. pruinosa (Sel., 1886) and E. josemorai Compte Sart, 1964, suggested by Pinhey (1971), is rejected for the time being.

(5149) LIU, Z., 1985. A new species of the genus Stylurus from China (Odonata: Gomphidae). *Acta ent. sin.* 28(2): 210-211. (Chin., with Engl. s.). — (Shanghai Inst. Ent., Acad. Sinica, Shanghai, P.R. China).
S. nanningensis sp. n. (♂ holotype: Guangxi Prov., Nanning, 25-V-1958) is described, figured, and compared with S. clathratus (Needham). The type is in the Shanghai Inst. Ent.

(5150) MACHADO, A.B.M., 1985. Mecistogaster martinezi n. sp. from the forests of Bolivia (Odonata-Pseudostigmatidae). *Cienc. Cult.* 37(7): 854. — (Dep. Morf., Inst. Cien. Biol., Univ. Fed. Minas Gerais, C.P. 2486, BR-30000 Belo Horizonte, MG).
Detailed description (without figs), based on 5 females (Tacu, Pallilo, Ichilo prov., Buenavista, St. Cruz, Bolivia; II-1951), all in author's coll., save for 1 paratype which is in the SIO Coll., Gainesville. The new sp. is close to M. asticta; the distinguishing features are also outlined.

(5151) *MALANGPO.* Newsletter of the Thai National Office of the International Odonatological Society, Chiang Mai, Vol. 1, No. 1 (Sept 1, 1985). (Thai). — Free for the Thai members and subscribers of the International Odonatological Society (S.I.O.), free upon application to the National Office or to the Editors of Odonatologica for odonatologists resident in Burma, Cambodja, Malaysia, Singapore and Vietnam; all others: US$ 1.- per issue (foreign orders to the Editors of Odonatologica).
(c/o Dr M. Titayavan, Dept Ent., Fac. Agric., Chiang Mai Univ., Chiang Mai 50002, Thailand).
The newsletter appears semiannually and serves as a vehicle for communication among Thai workers. *"Malangpo"* is the Thai expression for *"Dragonfly"*. This is the first odonatol. periodical in the Thai language. The first issue contains a general outline of the organisational structure, publication program and objectives of SIO, the names of the SIO officers, and the addresses of the Thai members.

(5152) MAUSS, V., 1985. Ohmoor 1984. Vergleich der Ergebnisse von 1981-84 für Libellen und Vögel. *Naturk. Beitr. DJN* 14: 51-58. — (Winfridweg 39, D-2000 Hamburg-54, FRG).
The 1981-1984 observations are discussed. For details on this locality cf. *OA* 4776.

(5153) MAY, M.L., 1985. Thermoregulation. *In:* G.A. Kerkut & L.I. Gilbert, [Eds], Comprehensive insect physiology, biochemistry and pharmacology. pp. 507-552. Pergamon Press, Oxford - New York - Toronto - Sydney - Paris - Frankfurt — (Dept Ent., Rutgers Univ., New Brunswick, NJ 08903, USA).
Review paper, with detailed references to the Odon. Chapter titles: "Introduction", "Patterns of body temperature regulation", Mechanisms of thermoregulation", "Ecology and evolution of thermoregulation", "References".

(5154) MIECH, P., 1985. Erlebnisse mit Libellen. *Tier & Natur Fotogr.* 1985 (3): 28-29. (Bramwaldweg 20, D-1000 Berlin, West Berlin).
Some technical hints for beginners in dragonfly photography.

(5155) MILLER, A.K. & P.L. MILLER, 1985. Simultaneous occurrence of crepuscular feeding and sexual activity in Boyeria irene (Fonsc.) in southern France (Odonata, Aeshnidae). *Ent. mon. Mag.* 121(1452/1455): 123-124. — (Dept Zool., Univ. Oxford, South Parks Rd, Oxford OX1 3PS, UK).
This well known phenomenon is described in detail (Cèze R., Gard prov.) and its biological significance is briefly discussed.

(5156) MILLER, A.K. & P.L. MILLER, 1985. Flight style, sexual identity and male interactions in a non-territorial dragonfly, Onychogomphus

forcipatus unguiculatus (Van der Linden) (Odonata: Gomphidae). *Ent. mon. Mag.* 121(1452/1455): 127-132. — (Dept Zool., Univ. Oxford, South Parks Rd, Oxford OX1, 3PS, UK).
The subject is described in detail (Cèze R., southern France) and it is suggested that frequent interactions among males maintain them in a state of high arousal which in turn may allow them to compete for females more successfully.

(5157) NEL, A., 1985. Sur la présence d'un Lestes Leach, (1815) fossile de la lignée de Lestes regina Théobald dans les calcaires Stampiens d'Aix-en-Provence (Odon., Lestidae). *Ent. gall.* 1(4): 317-319. — (8 av. Gassion, F-13600 La Ciotat).
L. aquisextana sp. n. is described and illustrated from the Stampien (Lower Oligocene) of Aix-en-Provence, France. The holotype is in the author's collection.

(5158) NEL, A. & M. PAPAZIAN, 1985. Description d'une nouvelle espèce fossile de Lestes Leach, 1815, du Stampien de Céreste (Alpes-de-Haute-Provence) (Odon., Lestidae). *Ent. gall.* 1(4): 275-279. — (Second Author: 23 blvd de Roux-Prolongé, F-13004 Marseille).
L. ceresti sp. n. is described and illustrated from the Stampien (Lower Oligocene) of Céreste, Provence, France. The holotype is in the collection of the first author.

(5159) PETERS, G., 1985. Die Libellenfauna der westlichen und nördlichen Mongolei und einige Phänomene ihrer intrakontinentalen Isolation. *Mitt. zool. Mus. Berl.* 61(1): 11-42. (With Eng. & Russ. s's). — (Mus. Naturk., Humboldt-Univ., Invalidenstr. 43, DDR-1040 Berlin, GDR).
A brief survey of the odon. fauna of Mongolia is presented, incl. 12 spp. recorded here for the first time, and the morphometric features of the Mongolian Odon. are discussed in detail. The spp. studied seem to represent 4 "constitutional types", which are discussed in terms of evolutionary strategies.

(5160) PINHEY, E., 1985. A survey of the dragonflies (Odonata) of South Africa. Part 2. Anisoptera. *J. ent. Soc. sth. Afr.* 48(1): 1-48. — (Wye View, Villa, Gloucester Rd, Tutshill, Chepstow, Gwent NP6 7DH, UK).
The second and final part of the work listed in *OA* 4784.

(5161) PINHEY, E.C.G., 1985. Order Odonata (dragonflies and damselflies. *In:* C.H. Scholz & E. Holm, [Eds], Insects of Southern Africa, pp. 41-48. Butterworths, Durban. — (Wye View Villa, Gloucester Rd, Tutshill, Chepstow, Gwent NP6, 7DH, UK).
Brief introduction to the Order, with general morphological characterisation of, and identification key to the regional families.

(5162) *PROGRAM AND GENERALITIES of the Eighth International Symposium of Odonatology, Paris,* 1985. Edited by J. Legrand. Issued by the Societas Internationalis Odonatologica (S.I.O.), Paris, 30 pp. — While stocks last: available free to those ordering the Symposium Abstracts and the Symposium Field Trip Handbook (cf. *OA* 5111, 5132). — (c/o S.I.O. Central Office, P.O. Box 256, 3720 AG Bilthoven, NL).
Akatombo (4); — Symposium Officers (5); — Acknowledgements (6); — Symposium location (7-9); — General informations (10-13); — Agenda Business Meeting of the SIO (15-16); — Scientific Program (17-24); — List and addresses of participants (25-29). — For the other Symposium publications cf. *OA* 5111, 5132.

(5163) RETTIG, K., 1985. Neues aus der Insektenwelt Ostfrieslands. (3. Ergänzung und Anschluss an den 17. Bericht). *Beitr. Vogel-Insektenwelt Ostfrieslands* 20: 14-18. — (Danzigerstr. 11, D-2970 Emden, FRG).
Additions to the odon. list in *OA* 4700.

(5164) ROHDE-ARNDT, D., 1985. *Haiku-Sommer.* Privately published, Freiburg Br. 56 pp., unnumbered. (Natur. Mus. Freiburg, Gerberau 32, D-7800 Freiburg, FRG).
Contains a nice haiku on dragonfly emergence.

(5165) SCHMIEDEL, J., 1985. Wedeler Kiesgruben.

Naturk. Beitr. DJN 14: 37-50. — (Egenbüttelweg 52, D-2000 Wedel, FRG).
3 autochthonous odon. spp. are listed from the gravel pits of Wedel, FRG.

(5166) SCHNEIDER, W., 1985. Beitrag zur Kenntnis der Odonaten des Libanon. *Ent. Z., Frankfurt/Main* 95(13): 183-192. (With Engl. s.). — (Inst. Zool., Univ. Mainz, Saarstr. 21, D-6500 Mainz, FRG).
Information on the Middle East distribution of Platycnemis dealbata, P. kervillei, P. pennipes, Coenagrion syriacum and C. puella is provided. Diagnostic characters of the latter sp. are briefly discussed and figured.

(5167) *SELYSIA*. Newsletter of the Societas Internationalis Odonatologica and the U.S. National Office, Vol. 14. No 2 (Sept 1, 1985). — (c/o Dr M.J. Westfall, Dept Zool., Univ. Florida, Gainesville, Fla 32611, USA).
[*Westfall, M.J.*]: Dr M.A. Lieftinck (7-8); — *Müller-Meyre, P.*: Thurgau dragonfly inventory, Switzerland (8); — *Kiauta, B.*: Formalities concerning dragonfly collecting in Nepal (8-9); — *Dunkle, S.W.*: "Mating pairs" in Odonata (9-10); — [*Westfall, M.J.*]: Walkeria, Canadian newsletter publication (10-11); — British Dragonfly Society, Newsletter No. 7(11); — British dragonflies by Roderick Dunn (11-12); — *Donnelly, T.W.*: Aeshna mutata in New York (12-13): — *Westfall, M.J.*: More about New York State Odonata (13); — *Additions* and changes to list of S.I.O. members (13-15); — *Westfall, M.J.*: Dr Hennig Schumann dies (15); — Dr Thomas Townely Macan dies (15-16); — [*Westfall, M.J.*]: Nick Donnelly off on another trip (16).

(5168) SILVA, P., S. DE JESUS SORIA, G.V. DOS SANTOS, F.P. BENTON, J.M. DE ABREU, M. DE MENEZES, G.E. SMITH FIGUEROA, E.C. DE ALMEIDA FERRAZ & P.F.N. DA CRUZ, 1985. A entomoteca Gregório Bondar do CEPEC, lista preliminar de insectos. *Bolm. tecn. CEPEC*, Bahia 125: 1-63. (Port.). — (Div. Zool. Agric., Centro Pesquisas do Cacau, APT Ceplac, BR-45600 Itabuna, Bahia).
Gynacantha bifida, identified by A.B.M. Machado, is listed without locality data (p. 11).

(5169) *SIOJA*. [Information Bulletin of the SIO National Office in Japan], Osaka, 1985, No. 1 (June 15). (Jap.). — (c/o K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA).
Obituary for Dr M.A. Lieftinck, various internal SIO communications, and address mutations in the Japanese membership list.

(5170) SOMPS, C. & M. LUTTGES, 1985. Dragonfly flight: novel uses of unsteady separated flows. *Science* 228 (4705): 1326-1328. — (Dept Aerospace Engin. Sci., Univ. Colorado, Boulder, Colorado 80309, USA).
Large lift forces were measured during flight episodes elicited from dragonflies tethered to a force balance. Simultaneously, stroboscopic photographs provided stop-action views of wing motion and the flow-field structure surrouding the insect. Wing kinematics were correlated with both instantaneous lift generation and vortex-dominated flow fields. The large lift forces appear to be produced by unsteady flow-wing interactions. This successful utilization of unsteady separated flows by insects may signal the existence of a whole new class of fluid dynamic uses that remain to be explored. (Cf. also *OA* 5104).

(5171) SUGIMURA, M., 1985. [*Dragonfly kingdom*]. Shinchosa, Tokyo. 224 pp., numerous col. figs, author's biogr. & portrait on dust jacket. [ISBN 4-10-140801-7-CO 145]. (Jap.). — (Author: 9-7 Uyama-satsuki-cho, Nakamura, Kochi Pref., 787, JA; — Publishers: Shinchosha Publ. Co., Yarai-cho 71, Shinjuku-ku, Tokyo, 162, JA).
Attractive profile of the Japanese dragonfly world, in a somewhat poetical style, and containing some photographs of exceptional quality. Size: 10.5x15 cm. — (Engl. translation of captions and chapter titles is available from the Editors of Odonatologica).

(5172) TAMM, J.C., 1985. Zur Fauna eines Sumpfes im Werratal ("Franzosenried" bei Witzenhausen). *Decheniana* 138: 104-117. (With Engl. s.). — (Arbeitsgr. Oekol., Fachber. Biol., Goethe Univ., Siesmayerstr. 70, D-6000 Frankfurt/

Main, FRG).
The fauna of the fen (Hessen, FRG) is listed and discussed. Coenagrion puella is the only odon. sp. recorded.

(5173) THEISCHINGER, G., 1985. A revison of the Australian genus Telephlebia Selys (Odonata: Aeshnidae: Brachytroninae). *Aust. J. Zool.* 33: 245-261. — (20 Leawarra Street, Engadine, N.S.W. 2233, AU).
The genus is briefly redefined, and its spp. are reviewed. A subdivision into 2 species-groups is proposed. T. undia sp. n. and the hitherto undescribed female of T. tryoni Tillyard are described. It is established that T. mjobergi Sjöstedt is a junior synonym of T. tillyardi Campion. A lectotype of T. godeffroyi Selys is designated. Descriptions and illustrations of all known spp. are presented, and an identification key is provided.

(5174) UZUNOV, J.I. & S.G. KOVACHEV, 1985. Macroinvertebrate communities structures in the Maritsa River under human activity impact. *Hidrobiologiya,* Sofia 24: 33-47. (With Russ. s.). — (Inst. Zool., Bulgarian Acad. Sci., BG-1000 Sofia).
Contains data on the relative abundance of the Odon. in various sections of the Maritsa R., Bulgaria.

(5175) VAN TOL, J., 1985. The current situation of dragonflies. *Naturopa* 49: 13-19. — (Rijksmus. Nat. Hist., Raamsteeg 2, P.O. Box 9517, 2300 RA Leiden, NL).
A brief general outline of the problems concerning the current status of the European odon. fauna, by the Organizer of the Council of Europe project on this subject.

(5176) WATERSTON, A.R., 1985. Insects of southern Arabia. Odonata from the Yemens and Saudi Arabia. *Fauna Saudi Arabia* 6: 451-472. (With Arabic s.). — (9 Moray Place, Edinburgh, EH3 6DS, UK).
26 spp. are now known from the Yemens, incl. 2 endemic spp., Arabicnemis caerulea Waterston, 1984 and Aeshna yemenensis sp. n. The fauna is predominantly of Ethiopian origin. It is compared with that of Saudi Arabia (32 spp., 1 endemic), and the nomenclature of Saudi Arabian spp. is revised.