

ODONATOLOGICAL ABSTRACTS

1973

- (4591) KURIBAYASHI, S., [Ed.], 1973. *Insects of Okinawa*. Gakken [0045-261711-1002]. 184 pp., 233 col. figs incl. (Jap., with taxonomic names). — Price: Y 7500.-.
Album, with 11 large dragonfly photographs on pp. 100-107. Brief comments and a taxonomic index are provided.

1979

- (4592) SAKAGUTI, K., 1979. *Insects of the World. I. Southeast Asia I, including Australia*. 259 pp., 62 col. pls incl., 1 map excl. Hoikusha, Osaka. (No ISBN number). — Price: Hfl. 338.-. (Jap., with Engl. title and Latin taxonomic names). Luxurious volume, superb graphic make-up, but moderate scientific quality. The Odon. are dealt with on pp. 186-193 (pls. 47-48 incl.), listing some "spectacular" spp. of Chlorogomphinae, Calopterygidae, Euphaeidae, and Chlorocyphidae. A map of the geographic distribution of some Chlorogomphus taxa (p. 189) is useful.

1981

- (4593) CARCHINI, G., 1981. Missione Maghreb 1979 — osservazioni entomologiche. *Keimer Reports, Basel* 2: 81-84. (With Engl. s.). — (Dip. Biol. anim., Univ. Roma, Viale dell'Università 32, I-00185 Roma).
Calopteryx h. haemorrhoidalis, Platynemis subdilata, Ischnura sahariensis and Orthe-

trum chrysostigma are listed from various localities in the Moroccan Sahara. Habitat descriptions are provided for some of them.

- (4594) FRY, C.H., 1981. The diet of large green bee-eaters *Merops superciliosus* supersp. and the question of bee-eaters fishing. *Malimbus* 3: 31-38. — (Author's last known address: Zool. Dept, Univ. Aberdeen, Tillydrone Ave., Aberdeen AB9 2TN, UK).
Comprehensive analysis of prey of *Merops persicus*, in which the Odon. prevail. (Cf. also OA 918).

- (4595) HIGLER, L.W.G. & F.F. REPKO, 1981. The effects of pollution in the drainage area of a Dutch lowland stream on fish and macro-invertebrates. *Verh. int. Ver. Limnol.* 21: 1077-1082. — (St. Res. Inst. Nature Manag., P.O. Box 46, 3956 ZR Leersum, NL).
The situation of the Hierden Book, a third-order lowland stream (length: 20 km, fall: 0.0013) is analysed. A passing reference to the Odon. is included.

1982

- (4596) ALEXANDER, D.E., 1982. *Studies on flight control and aerodynamics in dragonflies*. PhD thesis, Duke Univ. 144 pp. — (Dept Biol., Bellarmine Coll., Newburg Rd, Louisville, KY 40205, USA). — Microfilm or xerox copy (Order No. DA 8311170) available from the University Microfilms International, Dissertation Copies, P.O. Box 1764, Ann Arbor, Mich. 48106, USA.

[Verbatim abstract from *Diss. Abstr. int.* 44/1 (1983)]: Flying insects have no separate control surfaces, all maneuvering must be accomplished by changes in the wing-beat pattern. To study the wing movements that initiate turns, I used high-speed cinematography to record dragonflies' wing movements in a wind tunnel, either on flexible tethers or untethered. The films showed 2 distinct types of turns. "Conventional" turns use increase in wingbeat amplitude and sometimes angle of attack on one side to bank the dragonfly so that it turns analogously to an airplane; it may be limited to use at higher flight speeds. "Yaw" turns are turns about a vertical axis without banking, and are extremely fast (180° in three to seven wingbeats). They are apparently produced by differences in anterior-posterior wing motion between left and right wings, but could not be analyzed in detail due to equipment limitations. Yaw turns are particularly well-suited to turning during slow flight and hovering. The high-speed films also revealed that dragonflies commonly shift from flapping forewings and hindwings out of phase to flapping them in phase for short periods in situations where dragonflies produce more aerodynamic force than for level flight. Because flapping out of phase should be more efficient aerodynamically, I suggest a mechanical advantage for the fore- and hindwing articulations when dragonflies flap in phase. — Changes in the forces on the wings are crucial to maneuvering. Since flapping wings have more in common with propellers than with fixed wings, I measured the force on detached dragonfly wings while rotating them like a propeller. Wings were attached to a spinning shaft via a force transducer and spun in a wind tunnel. Both the rotational speed and pitch ("incidence") were varied. Compared to a flat plate of similar shape, the wing produced more lift when not rotating ("gliding"), and it produced more at high incidence angles when rotating; the wing also showed less sensitivity to incidence changes than the plate. Both wing and plate showed four- to eight-fold increases in lift when rotating compared to "gliding". Comparison with previous studies on non-rotating

wings show that rotating wings have qualitatively different lift characteristics, particularly higher lift at low incidence angles.

- (4597) AMEEN, M.-U., U.S.R. AKHTER & M.F. RABBI, 1982. Final instar larvae of common damselflies (Odonata: Zygoptera) of Dhaka city and their identification key. *Bangladesh J. Zool.* 10(2): 81-91. — (First Author: Dept Zool., Univ. Dhaka, Dhaka-2, Bangladesh). The ultimate instar larvae of *Pseudagrion rubriceps*, *Ischnura forcipata*, *Ceriagrion coromandelianum*, and *Agriocnemis pygmaea* are described and figured.
- (4598) BONET BETORET, C., 1982. Siete citas valencianas de *Trithemis annulata* (Odonata, Libellulidae). [*Resum.*] *V. Jorn. Asoc. esp. Ent., Valencia*, p. 96. — (Author's address not stated). 7 localities from the Valencia prov., Spain, are listed.
- (4599) COMPTE SART, A., 1982. Odonatos y neuropteros de la Reserva Biologica de Doñana (Huelva). [*Resum.*] *V. Jorn. Asoc. esp. Ent., Valencia*, p. 95. — (Inst. Esp. Ent., José Gutierrez Bascal 2, Madrid-6, Spain). The odon. Fauna of the Doñana Reserve, Spain, consists of 8 Zygoptera and 13 Anisoptera spp. Some of these are mentioned along with statements on their local status.
- (4600) CONESA GARCIA, M.A. & J.E. GARCIA RASO, 1982. Aportaciones a la biología de *Brachythemis leucosticta* (Burmeister, 1839) (Anisoptera, Libellulidae) en el sur de España. *Mon. Trab. Zool., Málaga* 3/4: 21-24. (With Engl. s.). — (c/Esperanto 14/6° A, Málaga, Spain). The breeding of *B. leucosticta* (Málaga, Spain) is evidenced for Europe for the first time. The data on its distribution, ecology and morphology are presented, and a figure of larval labium is provided.
- (4601) FERRERAS ROMERO, M., 1982. Conocimiento actual de la fauna odonologica de Andalucía. [*Resum.*] *V. Jorn. Asoc. esp. Ent., Valencia*, p. 101. — (Dep. Zool., Fac. Cien.,

Univ. Córdoba, Córdoba, Spain).

58 spp. (out of 70 spp. known to occur in Spain) were recorded from Andalusia, of which *Macromia splendens* (from Cádiz) and *Selysiothemis nigra* (from Zóñar) are mentioned. A brief comparison in the status of the odon. faunae of various Spanish provinces is made.

- (4602) HILL, D.S., P.M. HORE & I.W.B. THORNTON, 1982. *Insects of Hong Ko.g.* xxx + 503 pp. Hong Kong Univ. Press, Hong Kong (ISBN 962-209-008-7). — Price: HK \$ 168.66.

A general review of the insects of Hongkong. The Odon. are dealt with on pp. 100-109. Photographs are shown of larvae (*Pantala flavescens*, *Epophthalmia elegans*, *Helio-gomphus* sp., *Onychogomphus sinicus*, *Zygonyx iris*, *Euphaea decorata*), and of some adults (12 spp.).

- (4603) KHAN, A.A. & J.V. RICHESON, 1982. Mercury in adult aquatic and terrestrial insects in the Terlingua Creek area of Brewster County, Texas. *Proc. Symp. recent benthol. Invest. Texas*, pp. 161-168. Aquatic Sci. Sect., Texas Acad. Sci., Austin. — (Dept. Biol., Sul Ross St. Univ., Alpine, Texas 79830, USA).

No detectable levels of mercury were found in the immature aquatic macroinvertebrates. Mercury was detected in adult odonates and several terrestrial insects within the study area. The absence of mercury in the aquatics was believed to be due to the low concentrations of mercury in the water. The soil within the Terlingua Creek area has a high concentration of mercury. Terrestrial insects presumably picked up the mercury via grooming and by consuming prey contaminated with mercury. Adult odonates probably acquired their mercury by eating contaminated prey.

- (4604) LOHINAI, G., 1982. A *Coenagrion vernale* (Hagen, 1839) előfordulásáról hazánkban (Odonata) — On the occurrence of *Coenagrion vernale* (Hagen, 1839) in Hungary (Odonata). *Folia ent. hung.* 43(1): 245-247. (Hung., with Engl. title). — (Author's address not stated).

The Hungarian records are stated, and the adult structural features of both sexes are figured.

- (4605) MINAILOVA, N.M. & M.G. MUSHKAMBAROVA, 1982. [Insects in the plain eastern Turkmen SSR as intermediate helminth hosts]. *Izv. Akad. Nauk turkm. SSR* (Biol) 1982 (1): 29-35. (Russ.). — (V. I. Lenin Chardzhou Pedagog. Inst., Chardzhou, USSR).

[Abbreviated from *Biol. Abstr.*; original not available for abstracting]: — Spontaneous helminth invasion was studied in 30 insect spp. (Coleoptera, Blattodea, Orthoptera, Odon., Hymenoptera). Larvae of 3 *Acanthocephala* spp. and 16 nematode spp. (Spirurata, Oxyurata) were found.

1983

- (4606) BÁEZ, M., 1983. Poblamiento animal de las Islas Canarias. In: T. Bravo, M. Báez & J.F. Navarro Mederos, Canarias: origen y poblamiento, pp. 25-84. Queimada, Madrid. — (Dep. Zool., Univ. La Laguna, Islas Canarias, Spain).

There are 10 odon. spp. known from the Canary Islands, Spain. On pp. 67-68, 5 of these are listed.

- (4607) BÖTTGER, K. & B. STATZNER, 1983. Die ökologischen Folgen der Ausbaggerung eines norddeutschen Tieflandsbaches, dargestellt am Beispiel des Unteren Schierenseebaches (Naturpark Westensee, Schleswig-Holstein). *Schr. naturw. Ver. Schlesw.-Holst.* 53: 59-81. (With Engl. s.). — (First Author: Zool. Inst., Univ. Kiel, Olshausenstr., D-2300 Kiel, FRG). 13 odon. spp. are listed. The dredging of the stream caused the increase in macrophyte vegetation and the decrease in benthic macroinvertebrate density (by 80-90%) and in number of taxa (by 40-50%). On the other hand, the shading off the stream by *Alnus glutinosa* resulted in a rapid decrease of macrophyte vegetation, coupled with the increase of benthic macroinvertebrate fauna. The succession in the biotic community

- structure is documented and discussed in detail.
- (4608) BREUER, M. & C. RITZAU, 1983. Bestandsaufnahmen zur Odonatenfauna des Bremer Blocklandes und Hollerlandes (Insecta: Odonata). *Abh. naturw. Ver. Bremen* 40: 1-14. (With Engl. s.). — (First Author: Bauernweide 6, D-2800 Bremen-21, FRG).
The odon fauna (23 spp.) of the Blockland and Hollerland area, northeastern Bremen, Germany, is analysed with reference to the agricultural impact.
- (4609) BUCCIARELLI, I., P.A. GALETTI & M. PAVESI, 1983. Attuali conoscenze sul popolamento odonatologico della Sardegna. *Lav. Soc. ital. Biogeogr. (NS)* 8: 467-544 (With Engl. s.). — (First Author: Mus. Civ. Stor. Nat., Corso Venezia 55, I-20121 Milano)
A monograph on the odon. fauna of the island of Sardinia, Italy (44 spp.), based on original research (159 biotopes) and museum collections. The biogeographic structure is analyzed, a comparison is made with the fauna of Corsica and Sicily, and an exhaustive regional bibliography is provided.
- (4610) BURMEISTER, E.-G. & F. REISS, 1983. Die faunistische Erfassung ausgewählter Wasserinsektengruppen in Bayern (Eintagsfliegen, Libellen, Steinfliegen, Köcherfliegen, Zuckmücken). *InfBer. bayer. Landesamt Wasserwirtschaft* 7: 1-193. — (Zool. Staatssammlung, Maria-Ward-Str. 1 b, D-8000 München-19, FRG).
The odon. fauna of Bavaria, Germany, is discussed, and a checklist of the spp. so far recorded in the state is supplied.
- (4611) CANNINGS, R.A., 1983. *Libellula subornata* (Odonata: libellulidae) in Canada. *J. ent. Soc. Br. Columb.* 80: 54-55. — (Ent. Div., Brit. Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C., V8V 1X4, CA).
L. subornata is recorded from Nanaimo, British Columbia. The sp. is new to Canada, and the features distinguishing it from the common *L. forensis* and *L. lydia* are noted.
- (4612) CANNINGS, R.A. & S.G. CANNINGS, 1983. The Odonata from the Brooks Peninsula, Vancouver Island, British Columbia. *J. ent. Soc. Br. Columb.* 80: 46-51. — (First Author: Div. Ent., Brit. Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C., V8V 1X4, CA).
20 spp. are listed and the zoogeography of the Odon. of the British Columbia coast is discussed.
- (4613) CARFI, S., P. DEL CENTINA & R. LA GRUA, 1983. Odonati della penisola Salentina. *Redia* 66: 131-136. (With Engl. s.). — (Ist. Zool., Univ. Firenze, Via Romana 17, I-50125 Firenze).
18 spp. are listed from the Salentina peninsula, southern Italy.
- (4614) CARFI, S. & F. TERZANI, 1983. Odonati del Gargano. *Redia* 66: 227-233. (With Engl. s.). — (Ist. Zool., Univ. Firenze, Via Romana 17, I-50125 Firenze).
A list of 21 spp. from the Gargano promontory, Foggia Prov., Italy. Of particular interest are *Calopteryx splendens caprai* Coenagrion puella, and *Selysiothemis nigra*. The latter represents the southernmost record on the Adriatic side of the peninsula.
- (4615) CARFI, S., F. TERZANI & I. VELLUZZI, 1983. Odonati della Basilicata. *Redia* 66: 173-178. (With Engl. s.). — (Ist. Zool., Univ. Firenze, Via Romana 17, I-50125 Firenze).
A list of 15 spp., of which *Pyrrhosoma nymphula* is new for the Basilicata region, Italy. (Cf. also *OA* 497, 936).
- (4616) CHÖWDHURY, S.H. & M. AKHTERUZ-ZAMAN, 1983. Ecology of dragonfly (Anisoptera: Odonata) larvae. *J. Asiatic Soc. Bangladesh (Sci.)* 9(1): 1-16. — (First Author: Dept Zool., Univ. Chittagong, Chittagong, Bangladesh).
A number of physico-chemical and biological factors of 5 ponds around the Chittagong Univ. campus, Bangladesh, were recorded along with their odon. larvae populations. The seasonal population fluctuations are reported, and their possible relationships with the

environmental factors were studied.

- (4617) CHOWDHURY, S.H. & M. AKHTERUZ-ZAMAN, 1983. Developmental biology of *Zyxomma petiolatum* Rambur (Anisoptera, Libellulidae). *J. Asiatic Soc. Bangladesh* (Sci). 9(2): 91-99. — (Second Author: Inst. Forest., Univ. Chittagong, Chittagong, Bangladesh). The life history of *Z. petiolatum* was studied under laboratory conditions. There are 12 larval instars. The duration of each stage is recorded, the mortality rates per instar are stated, and the egg and all larval stages are figured and described in detail.
- (4618) CONESA GARCÍA, M.A., 1983. *Odonatos*. Claves per la identificacion de la fauna española, Vol. 19, 40 pp. Dep. Zool., Fac. Cien. Univ. Málaga, Málaga. — Price and ISBN number not stated. — (Author: c/Esperanto 14/º A, Málaga, Spain). Identification key for the 70 spp. known to occur in Spain, with annotations on larval habitats and adult phenology. The larval stages are not considered.
- (4619) CORREA, M., R.A. COLER & R.A. DAMON, 1983. Oxygen consumption by nymphs of dragonfly *Somatochlora cingulata* (Odonata: Anisoptera). *J. Freshw. Ecol.* 2(2): 109-116. — (Dept Environ. Sci, Univ. Massachusetts, Amherst, MA 01003, USA). Determination of oxygen consumption at $20 \pm 1^\circ \text{C}$ was made. 3 methods of measuring oxygen uptake rates were compared with respect to reproducibility and sensitivity. A flow-through regime, employing chemical titration of oxygen yielded the most reproducible results, though titration is not as sensitive as monometric based procedures. The Gilson respirometer and static chemical titration procedures were both more variable. (Authors).
- (4620) DEL CENTINA, P. & F. TERZANI, 1983. La collezione odonatologica del Museo Civico di Storia Naturale di Brescia. *Redia* 66: 167-171. (With Engl. s.). — (Mus. Zool., Univ. Firenze, Via Romana 17, I-50125 Firenze). Inventory of the odon. collection of the Mus. Civ. Stor. Natur. Brescia (69 spec., 25 spp.). It contains material from various Italian provinces, incl. Friuli-Venezia Giulia, Alto Adige, Veneto, etc. Of particular interest are *Ischnura pumilio* and *Hemianax ephippiger* from Venice, and *Cordulegaster bidentatus* from Valcamonica (Lombardy).
- (4621) DELCARPIO, J.B., R.J. BAERWALD & L.J. MAGNUSON, 1983. Multiple SR-T tubule junctions in a single insect flight muscle fiber. *J. Ultrastr. Res.* 84(2): 151-160. — (First Author: Dept Anat., Louisiana St. Univ. Med. Cent., New Orleans, Louisiana 70119, USA). The membranes of mesothoracic dorsoventral flight muscle of *Libellula needhami* and *Erythemis simplicicollis* were studied by transmission electron microscopy using uranylacetate en bloc staining. Intact fibers were studied by conventional scanning electron microscopy procedures. Dyadic, triadic, and tetradic transverse tubule (TT)-sarcoplasmic reticulum (SR) junctions as well as plasma membrane-SR junctions are described for the first time in the same insect muscle fiber. Triadic (SR-TT-SR) and, rarely tetradic (TT-SR-TT-SR) junctions were limited to regions between adjacent myofibrils and near the ends of fibers. Dyadic (TT-SR) junctions are found between myofibrils or within indentations of slablike mitochondria. Interspecific variation in SR-TT junctional assemblies from previous similar studies is reviewed and summarized and a three-dimensional model based on SEM and TEM observations is presented.
- (4622) DOMANGET, J.-L. & M. MARTINEZ, 1983. Contribution à l'inventaire des Odonates du Lot et Garonne. *Cah. Liaison OPIE* 17(1-4): 48-51. — (First Author: 7 rue Lamartine, F-78390 Bois d'Arcy). A preliminary list is given of the odon. fauna (34 spp.) of the Départements Lot and Garonne, France. Some locally interesting taxa are briefly discussed.
- (4623) ERBEN, R., 1983. Phenol accumulation in the larvae of the species *Agrion puella* L. (Insecta,

Odonata) under laboratory conditions. *Acta hydrochim. hydrobiol.* 11(5): 577-581. — (Dept Zool., Fac. Nat. Sci., Univ. Zagreb, Rooseveltov trg 6, pp 933, YU-41000 Zagreb). In an aerated batch experiment for 1-6 days the phenol accumulation was investigated in the surviving and killed larvae of *Coenagrion puella*, at phenol concentrations of 50-200 mg/l in the medium. The rate of mortality increases with the initial concentration of phenol although about 40% phenol is microbially digested during the test. The phenol accumulation in $\mu\text{g/g}$ wet substance is always higher in the surviving individuals than in the killed ones, but it shows an identical time trend for both. On the first day, accumulation is high, and till the third day it decreases. On the fourth day, it reaches a maximum, and then it drops sharply to its minimum on the sixth day. The measured actual accumulation is the result of changing intake and elimination rates, especially the elimination rates decreasing with increasing duration of tests and test concentration due to metabolic disturbances. The absolute minimum on the sixth day is determined also by the reduced phenol concentration. The limit of accumulation for a chronic poisoning can be estimated at 70 $\mu\text{g/g}$ phenol. (Authors).

- (4624) FINCKE, O.M., 1983. *Lifetime mating patterns and reproductive success in the damselfly Enallagma hageni (Walsh) (Odonata: Coenagrionidae)*. PhD thesis, Indiana Univ. 138 pp. — (Smithsonian Trop. Res. Inst., APO 34002, Miami, Fla, USA). — Microfilm or xerox copy (Order No. DA 8327378) available from the University Microfilms International, Dissertation Copies, P.O. Box 1764, Ann Arbor, Mich. 48106, USA. [Verbatim abstract from *Diss. Abstr. int.* 44/8 (1984): P2322-B]: The reproductive biology of *E. hageni* was studied to determine the potential for sexual selection on this non-territorial, short-lived, promiscuous damselfly. Variance in male and female reproductive success, measured by variation in mating success and number of eggs fertilized over an individual's lifetime, was quantified in an isolated population of individually marked

Enallagma. Of the males, 41% failed to mate in their lifetime, compared to 3% mating failure by females. Lifetime mating success was positively correlated with longevity; effects of size, relative age, and female color morph were not significant. — Dissection and sterile male experiments measuring sperm competition revealed that second mates can displace 83% of the first mate's sperm by volume, and fertilize 96% of the female's immediate clutch. — Males guarded mates while they oviposited underwater. Non-contact guarding benefitted males by preventing displacement of sperm should their mates prematurely resurface; females benefitted because guarding males saved them from drowning. Sperm competition benefits a female because it increases a male's investment in her clutch, making him less likely to abandon her while she is submerged. — Alternative mate-finding tactics were identified: males (1) searched for females around the pond or (2) waited at oviposition sites for resurfacing, gravid females. Although fitness gains from the searching tactic were greater than those accrued by the waiting tactic, the latter is maintained in the population because males using both tactics had a greater lifetime fitness than males using only the searching tactic. — Total variance in male reproductive success was partitioned into variance due to differences in female fertility and variance due to differences in the number of mates per male. In *E. hageni*, 68-73% of the variance in number of mates per male resulted from variance in longevity and 27-32% resulted from differences in mating rates among males. Because mating success correlated positively with longevity, and differences in longevity may arise from random mortality, the potential for sexual selection in this species may be low, even if variation in mating rates is assumed to reflect gene differences among males.

- (4625) FOSTER, S., 1983. Dragonflies of Rushy-moor and Shirley Pool. *Doncaster Naturalist* 1(2): 12-16. — (33 Arden Gate, Balby, Doncaster, S. Yorks., DN4 9DW, UK). 14 spp. are listed briefly discussed from this area, N of Doncaster, U.K.

- (4626) GERKEN, B. & WINSKI, 1983. Führer zur Exkursion der Deutschen Botanischen Gesellschaft am 18. September 1982 in die Südliche Oberrheinaue. *Ber. dt. bot. Ges.* 96: 323-341. — (First Author: Abt. Biol., Univ. Paderborn, An der Wilhelmshöhe 44, D-3470 Höxter, FRG).
The paper contains some faunistic data on the Odon. of the Rhine R., in the area between Burkheim and Weisweil nr Freiburg/Br., GFR.
- (4627) GUSENLEITNER, F., 1983. Systematische Aufstellung der Evertebraten-Literatur Oberösterreichs 1781-1982, mit besonderer Berücksichtigung der Entomologie. Gleichzeitig Zusammenfassung der insektenkundlichen Arbeiten oberösterreichischer Entomologien. *Linzb. biol. Beitr.* 15(1/2): 3-266. (With Engl. s.). — (Oberösterreichisches Landesmus., Museumstr. 14, A-4020 Linz).
The Upper Austrian odonatol. bibliography (1781-1982) appears on pp. 44-47, 226 (43 titles).
- (4628) GUSENLEITNER, F. & J. GUSENLEITNER, 1983. Bibliographie zur Landeskunde von Oberösterreich 1930-1980. Naturwissenschaften: Wirbellose Tiere. *Jb. oberöstr. Musealver.* (ErgänzBd 2) 128(1): 189-244. — (Oberösterreichisches Landesmus., Museumstr. 14, A-4020 Linz).
The Upper Austrian odonatol. bibliography (1930-1980) appears on pp. 196-197 (19 titles).
- (4629) HIGLER, B., 1983. Dierenleven in de beken. [The animal life in streams]. In: H. Schimmel, R. Borman & G. Gonggrijp, *Ontdek de Achterhoek*, pp. 211-217. Instituut voor Natuurbeschermingseducatie, Amsterdam. (Dutch). — (St. Res. Inst. Nature Manag., P.O. Box 46, 3956 ZR Leersum, NL).
Calopteryx splendens and *C. virgo* are mentioned (p. 216) from the Achterhoek District, Gelderland Prov., The Netherlands.
- (4630) HIGLER, L.W.G., 1983. Libellen. — [Dragonflies]. In: Rijksinstituut voor Natuurbeheer, [Eds], *Natuurbeheer in Nederland: dieren*, pp. 394-397. Pudoc, Wageningen. ISBN 90 220 0826 6. (Dutch). — (St. Res. Inst. Nature Manag., P.O. Box 46, 3956 ZR Leersum, NL).
A brief narrative on the types of dragonfly habitats (and their spp.) in The Netherlands, directed at the general reader.
- (4631) KANO, M. & T. SHIMOZAWA, 1983. The elicitation of the predatory labial strike of dragonfly larvae in response to a purely mechanical stimulus. *J. exp. Biol.* 107: 391-404. — (Inst. Zool., Fac. Sci., Hokkaido Univ., Sapporo, 060, JA).
The predatorial labial strike of *Aeshna nigroflava* and *A. juncea* larvae could be elicited by an artificial water jet stimulus. The larvae showed fair prey-catching ability even when visually deprived; when deprived of mechanosensory and visual information, the ability decreased sharply. Also immobilized prey were unable to elicit a strike even from intact larvae. The percentage of labial strike (PLS) increased in proportion to the logarithm of the water velocity at the body surface. Animals starved for 1 day or more showed higher PLS than satiated ones. In addition to the water velocity, the movement of the jet nozzle (temporary change in the velocity) was also important in eliciting the labial strike. Although repetitive stimuli resulted in a rapid habituation of the labial strike, the 2nd stimulus in a series was always the most effective: an arousal state to the newness was observed. The anterior parts of the body surface (including the legs) showed higher sensitivity of PLS to the water jet stimulus; the posterior parts elicited responses other than the labial strike: turning, head orientation and the setting of a posture. These results explain nocturnal predation of larvae and predation in turbid pond beds where visual cues will be unavailable.
- (4632) MASČAGNI, A. & F. TERZANI, 1983. Raccolte di Odonati in Trentino-Alto Adige (Insecta: Odonata). *Studi trent. Sci. nat.* (Biol.) 60: 55-56. (With Engl. & Germ. s's). — (Second Author: Mus. Zool., Univ. Firenze, Via Romana 17, I-50125 Firenze).
17 spp., originating from 17 localities in

Trentino-Alto Adige (South Tyrol), Italy, are listed and discussed. The local *Cordulegaster boltoni* appears in a form transitional to *C. pictus*. Its male terminalia are figured.

- (4633) McMILLAN, V.E., 1983. *Postcopulatory mate-guarding in the dragonfly, Plathemis lydia (Drury) (Odonata: Anisoptera)*. PhD thesis, Syracuse Univ. 172 pp. — (Author's address unknown). — Microfilm or xerox copy (Order No. DA 8400779) available from the University Microfilms International, Dissertation Copies, P.O. Box 1764, Ann Arbor, Mich. 48106, USA.
[Verbatim abstract from *Diss. Abstr. int.* 44/10 (1984): 2970-B]: The postcopulatory behavior of *P. lydia* was studied during 1977-1980 under natural and experimental conditions at a small, natural pond near Hamilton, New York, U.S.A. After copulation, a male hovered over his ovipositing mate and chased away unpaired males attempting to clasp her. Such behavior lessened interference with oviposition and decreased the probability that the female would re-mate with a different male before laying all her mature eggs. If we assume a last-male fertilization advantage in *P. lydia*, then guarding also extended the period during which the female laid eggs likely to be fertilized by the guarder's sperm. — The strong, persistent guarding generally shown by males probably was related to intense competition for females, frequent male harassment during oviposition, and a low probability of encountering other females while guarding. Nevertheless, a guarder sometimes increased his hovering distance from the female and/or deserted her intermittently to perch or patrol. Weaker guarding left her more vulnerable to re-mating, but increased the guarder's chances of encountering other females. Guarding variations may be viewed as subtle shifts of emphasis between protecting one mate and seeking others. — Guarding intensity was correlated positively with the frequency of aggressive interactions between the guarder and other males. When all males but one were removed from the pond, lone males showed significantly weaker guarding behavior compared to males under naturally high densities.
- Males also tended to guard less intensely with time as their mate's egg content diminished during oviposition; these behavioral shifts occurred most rapidly in the absence of male harassment. Guarding intensity was correlated negatively with potential gains from other matings (as measured by average female quality conditions). However, multiple regression analysis suggested that changing take-over probabilities generally exerted more influence on guarding behavior than did changes on opportunities for additional matings. — Postcopulatory variability in male *P. lydia* and other odonates is discussed using indifference curve models of consumer behavior, which assume that selection favors those individuals whose overall strategies of mate-investing and mate-searching achieve maximum reproductive success. Evolutionary perspectives of females also are briefly discussed.
- (4634) MEDEDELINGEN LIBELLENVERSPREIDINGSONDERZOEK [in België], Nos 1 (May), 2 (July), 3 (Oct., 1983). Published by the "Libellenwerkgroep" of the "Jeugdbond voor Natuurstudie in Milieubescherming" (= Odonatol. Section, Belgian Youth Federation for Nature Study and Environment Conservation), Turnhout. Edited by N. Michiels & A. Anselin. (Dutch). — (c/o N. Michiels, Renier Sniedersstr. 73, B-2300 Turnhout).
Newsletter, set up to facilitate the odon. inventarisatie program in Belgium. Most of the news and instruction items are anonymous, and there are no technical articles. A few notes are signed by A. Anselin and N. Michiels. — The newsletter ceased publication with No. 3; its objective was taken over by the new quarterly, *Gomphus* (cf. OA 4676).
- (4635) ONYEKA, J.O.A., 1983. Studies on the natural predators of *Culex pipiens* and *Culex torrentium* (Diptera: Culicidae) in England. *Bull. ent. Res.* 73(2): 185-194. — (Dept Zool., Univ. Jos, Jos, Plateau State, Nigeria).
The natural predators of the 2 mosquito spp. in artificial containers and ponds were studied in southern England, using serological techniques. The antisera were from rabbits immunized by injections of saline extracts of *Culex* spp.

into the inguinal lymph nodes and made relatively more specific by absorption. The gut contents or whole individuals of 1098 potential predators were smeared on to filter paper and tested. The most important predators in the ponds were odon. larvae, while those of artificial containers were larval Dytiscidae. Diptera and Araneae preyed on emerging adults. The length of time a mosquito meal remained detectable in the gut of predators varied from a minimum of 8 h for the newt *Triturus vulgaris* to 24 h for the zygopteran *Ischnura elegans*. These results of laboratory tests indicated that the anisopteran *Sympetrum striolatum* was potentially more important as a biological control agent for larval culicines in ponds than the zygopteran *Coenagrion puella*.

- (4636) PAJANI, H.R. & K. KAUR, 1983. A report on the Anisoptera (Odonata) of Chandigarh and the surrounding areas. *Res. Bull. Punjab Univ. (Sci.)* 34(3/4): 15-18. — (First Author: Dept Zool., Punjab Univ., Chandigarh, India). Annotated list of 38 spp., collected during Aug. 1975-July 1976.
- (4637) PARRY, D.A., 1983. Labial extension in the dragonfly larva *Anax imperator*. *J. exp. Biol.* 107: 495-499. — (Dept Zool., Univ. Cambridge, Downing St., Cambridge CB2 3EJ, UK). The mechanics is mathematically described.
- (4638) PERRY, T.E., 1983. Additions to state and local lists of dragonflies and damselflies (Odonata). *Ohio J. Sci.* 83(3): 141. — (Chagrin River Rd, Gates Mills, Ohio 44040, USA). New Ohio records are given for *Chromagrion conditum*, *Enallagma basidens*, *E. boreale*, *Lestes congener*, *L. disjunctus*, *L. forcipatus*, *Boyeria grafiana*, *B. vinosa*, *Somatochlora tenebrosa*, and *Libellula quadrimaculata*.
- (4639) RIND, J.D., 1983. *Electrophysiology and pharmacology of dragonfly ocellar nerve impulse activity*. PhD thesis, City Univ., New York. 137 pp. — (Author's address unknown). — Microfilm or xerox copy (Order No. DA 8401907) available from the University Microfilms International, Dissertation Copies, P.O.

Box 1764, Ann Arbor, Mich. 48106, USA. [Verbatim abstract from *Diss. Abstr. int.* 44/12 (1984): 3618-B]: A preparation has evolved which utilizes extracellular recordings of the light inhibited impulse activity from the cornea of the dragonfly ocellus to study the pharmacology of the ocellus. Computer software was developed which collects and analyzes spike frequency data. Ablation studies suggest that the impulse activity recorded in this fashion is originating from the lateral ocellar nerves and not the median ocellar nerve. TTX blocks all impulse activity. Latencies between action potentials suggest that there is only one spiking cell so recorded per lateral ocellar nerve that fires light inhibited spikes. Impulse activity appears to be more sensitive to green light (484 nm) than it is to UV light (360 nm) and unlike the ocellar photoreceptors or L-neurons it does not exhibit a reverse Purkinje shift at higher light intensities. — Intracellular recordings from the lateral ocellar nerve reveal non-spiking cells that have L-neuron like light responses (resting potentials = -30 to -55 mv). The spiking neuron (resting potential = -55 mv) fires light inhibited spikes analogous to those recorded extracellularly. The amplitude of the impulses was 30 mv. Recordings of extracellular impulse activity made simultaneously with an intracellular recording from an L-neuron suggest that the slow potential responses of the L-neuron may be normal for that cell and that it is not a damaged spiking neuron. — Agents that have been reported to effect the L-neuron also effect the corneally recorded impulse activity. 50 μ M curare lowered the response threshold of the light response and decreased the interflash spike frequency. 50 μ M curare also changed the slope of the intensity-frequency relationship. It has been suggested that these effects are mediated by curare's effect on the presumptive lateral inhibitory interactions between photoreceptors. Increasing doses of curare greater than 100 μ M block the light mediated inhibition of impulses and cause an increase in the interflash spike frequency and spontaneous dark adapted impulse rate. — GABA inhibited spontaneous impulse activity in the dark and caused a light

dependent increase in spike frequency which is shifted towards light "off" at high intensities. 12 mM cobalt, an inhibitor of synaptic transmission blocked all impulse activity. A model was suggested to explain the data which proposes that spiking activity occurs between two thresholds.

- (4640) ROSSEL, S., 1983. Binocular stereopsis in an insect. *Nature, Lond.* 303(5911): 821-822. — (Zool. Inst., Univ. Zürich, Winterthurerstr. 190, CH-8057 Zürich).
The binocularly was studied in the mantodeans Tenodera and Mantis, and a brief references is made to binocular vision in odon. larvae.
- (4641) RUDOLPH, R., 1983. Libellen (Odonata). In: W. Pflug, H. Ant, M. Horbert & H. Wedeck, [Eds], Landschaftsökologisches und landschaftsgestalterisches Gutachten zum Kernkraftwerk Kalkar, Vol. 1, pp. 132-143, Vol. 2, tabs 145, 158, Vol. 3, map 20. Schnell-Brüter-Kernkraftwerksgesellschaft, Essen. (With Fr. & Dutch cumulative s's). — (Abt. Biol. Didaktik, Univ. Münster, Fließnerstr. 21, D-4400 Münster, FRG).
A detailed inventory and evaluation of the odon. fauna (27 spp.) of the Kalkar area, Rhineland-Westfalia, northern Germany, based on inventarisation and ecological analysis of 8 water bodies.
- (4642) SAVAGE, H.M., 1983. Perissophlebioides, a replacement name for Perissophlebia Savage nec Tillyard (Ephemeroptera: Leptophlebiidae). *Ent. News* 94(5): 204. — (Dept Ent., Florida A & M Univ., Tallahassee, Fla 32307, USA).
A new generic name is proposed in Ephemeroptera, and a misspelling of Perissophlebia Tillyard (Anisozygoptera) is noted.
- (4643) SHERMAN, K.J., 1983. The adaptive significance of postcopulatory mate guarding in a dragonfly, *Pachydiplax longipennis*. *Anim. Behav.* 31: 1107-1115. — (Dept Epidemiol., SC-36, Univ. Washington, Seattle, WA 98195, USA).
In both high- and low-density populations of

P. longipennis, ovipositing females are frequently disturbed by conspecific males. A disturbed female usually leaves the pond or copulates with one of the males. In most cases, a male guards his mate while she oviposits in his mating territory. A male that hovers above his mate and repulses intruders can both maintain his territory and decrease the amount of interference to his mate, allowing her to oviposit for an average of 4 times longer than unguarded females. Because females are scarce and multiple matings are common, non-contact mate guarding appears to be an effective method for territorial males to maximize their reproductive success. Tandem mate guarding is a more effective reproductive behaviour in species such as *Tramea carolina*, where territorial behaviour does not occur. (Author).

- (4644) SLOOFF, W., 1983. Benthic macroinvertebrates and water quality assessment: some toxicological considerations. *Aquat. Toxicol.* 4: 73-82. — (Chem. Biol. Div., Natn. Inst. Water Supply, P.O. Box 150, 2260 AD Leidschendam, NL).
The susceptibility of invertebrate spp. of 13 taxonomic groups (Oligochaeta, Diptera, Hirudinea, Isopoda, Gastropoda, Tricladida, Hydrozoa, Heteroptera, Amphipoda, Odon., Trichoptera, Ephemeroptera, Plecoptera) to 15 chemical compounds and to a mixture of organics concentrated from river Rhine water was determined in acute toxicity tests. The results indicated that the tolerance of macroinvertebrate species are pollutant-specific, whereas the differences in their susceptibility to toxic conditions due to pollution by several toxicants may be negligibly small. Therefore, the reliability of using biological systems based on the macrobenthos distribution to classify surface waters polluted with a variety of chemical pollutants should be seriously doubted.

- (4645) SMITH, D.C., 1983. Factors controlling tadpole population of the chorus frog (*Pseudacris triseriata*) on Isle Royale, Michigan. *Ecology* 64(3): 501-510. — (Biol. Dept, Williamson Coll., Williamstown, Mass. 01267,

USA).

At the NE end of Isle Royale, the chorus frog breeds nearly exclusively in pools on the exposed rocky shores of Lake Superior. The persistence of breeding pools increases with size and distance from the lake. Small pools and those next to the lake last less than the 55-83 days required for metamorphosis, and survivorship in these is low. Large pools nr the forest edge are permanent, but contain the predators *Anax junius* and *Ambystoma laterale*. *Anax* eliminates the frog if they occur together in the same pool.

- (4646) STATZNER, B., 1983. Ökologie gleich Ökonomie am Beispiel heimischer Bäche. Kosten von Zerstörung und Renaturierung von kleineren Fließwasserökosystemen. *Umschau* 83(12): 363-373. — (Zool. Inst., Univ. Karlsruhe, Postfach 6380, D-7500 Karlsruhe, FRG).

Contains an example of erroneous odon. habitat conservation policy in practice.

- (4647) STÖCKEL, G., 1983. Ein unscheinbarer Kiesgrubentümpel — Fundort interessanter Libellen- und Käferarten. *Ent. Nachr. Ber.* 27: 215-219. (With Engl. & Russ. s's.). — (Rudower Str. 22, DDR-2080 Neustrelitz, GDR).

16 odon. spp. are listed from a gravel pit (made in 1979/80) nr Neustrelitz, East Germany.

- (4648) STÖCKEL, G., 1983. Zur derzeitigen Verbreitung von *Sympetrum pedemontanum* Allioni (Odonata) in der DDR. *Ent. Nachr. Ber.* 27: 261-266. (With Engl. & Russ. s's.). — (Rudower Str. 22, DDR-2080 Neustrelitz, GDR).

The known East German records of *S. pedemontanum* are listed, the distribution of the sp. is mapped, and the regional bibliography is given. (Cf. also OA 992).

- (4649) TERZANI, F., 1983. Odonati dell'isola d'Elba. *Redia* 66: 137-145. (With Engl. s.). — (Mus. Zool., Univ. Firenze, Via Romana 17, I-50125 Firenze).

Annotated list of 9 spp. from the island of Elba, Italy, 7 of which were not reported earlier

for the local fauna.

- (4650) TÓTH, S., 1983. Libellen und ihre Biotope im Bakony-Gebirge. *Folia Mus. hist.-nat. bako-nyie*. 2: 45-54. (With Engl. & Hung. s's.). — (Rákóczi tér 1, HU-8420 Zirc).

The odon. fauna of the Bakony Mts, Hungary is discussed. This is the text of the author's paper presented at the Sixth Int. Symp. Odonatol., Chur (1981). Cf. also OA 3141.

- (4651) VAN VIERSEN, W. & J.T.A. VERHOEVEN, 1983. Plant and animal communities in brackish supra-littoral pools ("dobben") in the northern part of the Netherlands. *Hydrobiologia* 98: 203-221. — (Lab. Aquatic Ecol., Catholic Univ., Toernooiveld, 6525 ED Nijmegen, NL).

50 brackish supra-littoral pools bordering the Waddenzee were studied. From some of these *Ischnura elegans* and *Aeshna affinis* are reported. — (*Abstracter's Note*: *A. affinis* probably stands for *A. mixta*).

- (4652) WILDERMUTH, H. & A. KREBS, 1983. Die Bedeutung von Abbaugruben aus der Sicht des biologischen Naturschutzes. *Reih. Veröff. Naturschutz Landschaftspf. Bad.-Württ.* 37: 105-150. — (First Author: Mythenweg 20, CH-8620 Wetzikon).

The significance of gravel pits and comparable surface mining landforms for nature conservation is documented and discussed in detail. The Odon. are dealt with on pp. 129-133, and a list is given of 39 spp. recorded from 12 gravel pits in Switzerland.

- (4653) ZHU, H.-q. & J.-l. WU, 1983. Cytological notes on *Platycnemis foliacea foliacea* Selys from Shanxi (Odonata: Platycnemidae [sic!]). *Pap. First Shanxi Symp. Entomol., Taiyuan*, pp. 1-5, 1 pl. (Chin., with Engl. title). — (Dept Biol., Univ. Shanxi, Taiyuan, Shanxi; P.R. China).

The spermatogonial and spermatocyte chromosome morphology are described and figured ($2n=25$, $n=13$, no *m*).

1984

- (4654) ALEXANDER, D.E., 1984. Unusual phase relationship between the forewings and hindwings in flying dragonflies. *J. exp. Biol.* 109: 379-383. — (Dept Biol., Bellarmine Coll., Newburg Rd, Louisville, KY 40205, USA).
The phase relationships were analysed by means of high-speed ciné films of individuals flying in a wind tunnel. It is evidenced that dragonflies often take off with in-phase flapping, and then the forewings slow and the hindwings speed up their beat, the animal assuming the normal antiphase pattern of 1 or 2 beats. Flapping in phase appears to be employed in situations calling for greater than normal force production.
- (4655) ASAHINA, S., 1984. Undescribed and undesignated dragonfly species from the Ryukyu Islands. *Akitsu* (NS) 59: 1-7. — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
The allotype specimens of *Gomphus amamiensis* okinawanus Asahina (male) and *Oligoaeschna kunigamiensis* (Ishida) (female) are described, and a revised allotype designation of *Coeliccia r. ryukyuanus* Asahina is made.
- (4656) ASAHINA, S., 1984. A proposed list of the Odonata to be protected in the Ryukyu Islands. *Akitsu* (NS) 59: 7-8. — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
9 spp. are proposed for Okinawa, 7 for Ishigaki, and 12 spp. for Iriomote Island.
- (4657) ASAHINA, S., 1984. "Copera annulata (Selys)" composed of two different species! *Chô-Chô [Rhopalocerists' Mag.] Kitakyushu* 7(7): 2-10. (Jap., with Engl. s.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
On the basis of penile characters and various other structural features, 2 "groups" could be discerned within *C. annulata*. These are named A and B, and their geographic ranges are stated. It is tentatively assumed that group B is referable to *C. ciliata* (Sel.).
- (4658) ASAHINA, S., 1984. *Gynacantha japonica* and *G. incisura*. *New. Entomol.* 33(1): 1-12. (Jap., with extensive Engl. s.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
The 2 spp. are described and figured, their synonymy and ranges are stated, and additional material is brought on record.
- (4659) ASAHINA, S., 1984. [Odonatological works published in 1983. (International publications)]. *Gekkan Mushi* 156: 2-7. (Jap.) — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
Highlights odonatol. literature published in 1983, with notes on, and photographs from the Seventh Int. Symp. Odonatol., Calgary.
- (4660) BASSET, A., 1984. Notes entomologiques. Odonates. *Libellula vulgata*. *Annls Soc. Sci. nat. Charente-Marit.* 7(2): 179-180. — (Author's address not stated).
2 migrations of "*Libellula vulgata*" (= *Sympetrum vulgatum*?), 1983, France, are briefly described; they occurred resp. at La Rochelle (Charente-Maritime, Oct. 23), and in Jard-sur-Mer (Vendée, Oct. 26).
- (4661) BATTIN, T., 1984. Libellenschutz als Naturschutz. *Paiperlek* 6(1): 1-9. — (21 rue de l'Hôpital, L-4137 Esch-sur-Alzette).
The problems of dragonfly conservation, with special reference to the situation in Luxembourg, are analysed and discussed.
- (4662) BELLE, J., 1984. Idiogomphoides a new genus from Brazil (Odonata: Gomphidae). *Ent. Ber., Amst.* 44(7): 106-109. — (Onder de Beumkes 35, 6883 HC Velp, NL).
Idiogomphus gen. n. is erected for accommodation of *Gomphoides demoulini* and *G. icinia*. A key to the gomphoidine genera is presented.
- (4663) BRUNEL, C. & M. DUQUEF, 1984. Les libellules de Picardie (1e note). *Bull. Soc. Sci. nat., Compiègne* 42: 1-6. — (Lab. Biol. anim., Fac. Sci., 33 rue St Leu, F-80039 Amiens).
34 spp. are listed, and the records are briefly annotated.
- (4664) CHANDLEY, J.W., 1984. Curious behaviour

- of *Aeshna cyanea* Müller: Southern Hawker. *Ent. Rec. J. Var.* 96(3/4): 80. — (121 Tarnwood Park, Court Rd, Eltham, London, SE9 5PE, UK).
Oviposition in the rotting wood of a log, serving as a beam for a tiny bridge over a pond at Eltham, London, is described.
- (4665) CLAUSEN, W., 1984. Die Exuvien der Torf-Mosaikjungfer (*Aeshna juncea* L.) und der Hochmoor-Mosaikjungfer (*Aeshna subarctica* Wlk.) Odonata: Aeshnidae. *Natur & Heimat* 41(2): 59-64. — (Oppenwehe 459, D-4995 Stemwede-3, FRG).
Detailed description and figs of the exuviae of the 2 spp. are provided.
- (4666) CONTACTBLAD NEDERLANDSE LIBELLENONDERZOEKERS — [*Newsletter of the Dutch Dragonfly Workers*], No. 7 (May, 1984). (Dutch). (Orders to: M. Verdonk, Floraliaan 47, 1402 NJ Bussum, NL; — for order conditions cf. OA 3214).
In addition to various local and international news items, there is a list (7-11) of interesting faunistic records in The Netherlands (1982-1983), while a note on the 80th birthday of Dr M.A. Liefstinck (by *M. Wasscher*) concludes the issue.
- (4667) DHRK, 1984. The dragonflies of Great Britain and Ireland (Second edition) by C.O. Hammond, revised by Robert Merritt. *Bull. amat. ent. Soc.* 43(343): 101-102.
Book review of the volume listed in OA 4311.
- (4668) DOMMANGET, J.-L., 1984. Remarques sur la distribution géographique et la biologie de *Somatochlora arctica* en France (Odonates, Corduliidae). *Bull. Soc. Versaill. Sci. Nat.* (IV) 11(2): 40-46. — (7 rue Lamartine, F-78390 Bois d'Arcy).
The distribution of *S. arctica* in France is outlined (map incl.), and its biology is discussed.
- (4669) DONNELLY, T.W., 1984. A new species of *Macrothemis* from Central America with notes on the distinction between *Brechmorhoga* and *Macrothemis* (Odonata: Libellulidae). *Fla Ent.* 67(1): 169-174. (With Span. s.). — (Dept Geol. Sci., St. Univ. New York, Binghamton, NY 13901, USA).
M. aurimaculata sp. n. (♂ holotype, ♀ allotype: Finca La Cajeta, Estancia La Virgen, El Progreso Dept, Guatemala; alt. 700 m; 20-VIII-1965; deposited in FSCA, Gainesville) is described and figured. It is closely related to *M. inequinguis* (Calv.). The most constant distinction between *Macrothemis* and *Brechmorhoga* is the narrowed discoidal field in the front wing of the former.
- (4670) DUNN, R.H., 1984. Odonata survey (1983). *Quart. J. Derbys. ent. Soc.* 1984 (75): 7-12. — (4 Peakland View, Darley Dale, Matlock, Derbys DE4 2GF, UK).
21 spp., most of which breeding in Derbyshire, UK, are listed along with annotations on localities, habitats, and local occurrence.
- (4671) ELLINGTON, C.P., 1984. The aerodynamics of flapping animal flight. *Am. Zool.* 24(1): 95-105. — (Dept Zool., Univ. Cambridge, Cambridge CB2 3EJ, UK).
The "quasi-steady" aerodynamics of a flapping wing is discussed, the unsteady aerodynamic mechanisms are demonstrated in some hovering spp. (Diptera, Hymenoptera), and some new calculations on the hover flight of *Aeshna* are presented. These are based on primary data published by A. Norberg (cf. OA 2667).
- (4672) FERRERAS ROMERO, M. & V. PUCHOL CABALLERO, 1984. *Los insectos odonatos en Andalucía bases para su estudio faunístico*. Servicio Publ. Univ. Córdoba, Córdoba. IV+152 pp. [ISBN 84-600-3585-9]. — Price: Ptas 750.-. — (Orders should preferably be sent to the first Author: Siete de Mayo 10/2° C, ES-14005 Córdoba, Spain).
This very carefully prepared little volume presents a complete account of all published and hitherto unpublished odon. records from Andalusia, Spain. The literature data are stated verbatim, new records are given in great detail, incl. a statement on the altitude of the locality. Each sp. is biogeographically briefly characterized, and a grid map of its distribution in the province is provided.

- (4673) FINCKE, O.M., 1984. Sperm competition in the damselfly, *Enallagma hageni* Walsh (Odonata: Coenagrionidae): benefits of multiple mating to males and females. *Behav. Ecol. Sociobiol.* 14: 235-240. — (Smithsonian Trop. Res. Inst., APO 34002, Miami, Fla, USA). Sperm competition was investigated in the non-territorial *E. hageni*. Using irradiated (sterile) male techniques, the last male to mate was found to fertilize up to 95% (∇ 80%) of the eggs of the first clutch laid after mating. Dissection of females collected before, during, and after copula showed that a male removes a maximum of 87% of the sperm by volume of a previous mate. These data verify an earlier estimate of lifetime reproductive success in this species which was based on mating success, and suggest that indirect dissection methods offer minimum estimates of sperm precedence. Male *E. hageni* have ample opportunity of benefit from sperm precedence, since at least 10% of the receptive females encountered had already mated once that day, but still contained complete or partial clutches of eggs. Female *E. hageni* benefit directly from high sperm precedence because it allows them to "exchange" matings for guarding service by males during oviposition bouts under water.
- (4674) FOLSOM, T.C. & N.C. COLLINS, 1984. The diet and foraging behaviour of the larval dragonfly *Anax junius* (Aeshnidae), with an assessment of the role of refuges and prey activity. *Oikos* 42: 105-113. (With Russ. s.). — (Environ. Serv. Sect., Duke Power Co., Rt. 4, Box 531, Huntersville, NC 28078, USA). Larvae living in a small pond consumed largely amphipods and Chaoborus larvae. Minor components of the diet were Coleoptera, Chironomidae, and Zygoptera. These prey types were consumed disproportionately to their relative abundance in the pond on the four dates studied. The effects of habitat complexity (refuges) and prey activity on the capture rate of prey by *Anax* larvae were investigated in the laboratory to obtain insight into how capture rates are limited in the field. The presence of sand, gravel, and Elodae stems significantly reduced the capture rate of amphipods. Relatively inactive prey types (Ephemeroptera, Chaoborus) were captured at a much lower rate than the more active Zygoptera, Amphipoda, and brine shrimp.
- (4675) GELJSKES, D.C., 1984. What is *Oligoclada abbreviata* (Rambur, 1842)? (Odonata: Libellulidae). *Zool. Meded.* 58(12): 175-185. — (St. Mus. Nat. Hist. P.O. Box 9517, 2300 RA Leiden, NL). A re-examination of the female holotype of *Libellula* (*Oligoclada*) *abbreviata* Rambur, 1842 from Cayenne, has brought to light that this is a female of *Oligoclada raineyi* Ris, 1919, described after a single male from British Guiana. The misidentified male of *O. abbreviata*, discussed by F. Ris (1911, *Collns zool. de Selys Longchamps* 12/4: 385-700), is now named *O. risi* sp. n.
- (4676) *GOMPHUS. Mededelingblad van de Belgische libellenonderzoekers — Feuille de contact des odonatologues belges*, Vol. 1, No. 1 (March, 1984). Published by the "Libellenwerkgroep" of the "Jeugdbond voor Natuurstudie en Milieubescherming" (= Odonatol. Section, Belgian Youth Federation for Nature Study and Environment Conservation), Turnhout. Edited by M. Van Mierlo & N. Michiels. (Dutch & Fr.). — Subscription for 1984: bFr. 100.-, for the addresses in Belgium only; all other subscribers should contact Mr F. Dumortier, Libellenwerkgroep, Overzetweg 25, B-8510 Kortrijk-Marke. — (Editors: Mr Michiels, Renier Smiedersstr. 73, B-2300 Turnhout). This is a quarterly bulletin of the association "Belgische Libellenonderzoekers", replacing the earlier published newsletter, *Mededelingen Libellenverspreidingsonderzoek* (cf. OA 4634). It is to serve primarily as a newsletter bringing news items either in Dutch or in French. — The first issue is entirely in Dutch. In addition to an "Editorial" (*N. Michiels*), 2 notes on the 1983 progress of the Belgian odon. mapping scheme (*A. Anselin*), and 2 notes on the 1984 work in this field (*N. Michiels*), there is a single article, viz. *Lerner, S.* (St. Hubertusstr. 20, B-1850 Grimbergen): Tweede waarneming voor België van de Zuidelijke Keizerlibel (*Anax parthenope*) te Zemst-Laar in Brabant [*Anax*

- imperator at Zemst-Laar, Brabant Prov., — the second record for Belgium] (8-9). A list of the addresses of the members of the Association (60) concludes the issue. — (*Abstracter's Note*: For the sake of record it is worth noting that in 1966 A. Heymer and G. Jurzitza were planning the publication of a journal, *Gomphus - Acta odonatologica europaea*. The cover, marked "Band 1, Heft 1", was printed and circulated among odonatologists; the journal was never published).
- (4677) HALVERSON, T.G., 1984. Autecology of two *Aeshna* species (Odonata) in Western Virginia. *Can. Ent.* 116(4): 567-578. (With Fr. s.). — (Dept Nat. Sci. & Mathem., Stockton St. Coll., Pomona, NJ 08240, USA). *A. tuberculifera* and *A. umbrosa* were studied in the Shenandoah Mountains, Rockingham County, Virginia for 5 years. Both spp. had 2-year life cycles. They passed the first winter in an embryonic diapause and the second in a larval diapause. Although *A. umbrosa* was slightly smaller and developed earlier in the year, growth patterns of the two species were similar. Adults emerged from mid-summer to mid-fall with a slight protandry. Sex ratio at emergence was equal in *A. tuberculifera* but slightly biased toward males in *A. umbrosa*. Individuals emerging later in the season tended to be smaller than those emerging earlier, and the decline in size was linear over time. The maturation period lasted 4-6 weeks. Poor recovery of marked teneral and breeding adults indicates either high mortality or high dispersal, but observed movement among ponds by marked breeding adults suggests high dispersal. Breeding males of both species defended entire ponds for short periods. Both males and females were present more frequently in the afternoon than during the morning or at mid-day. Females often oviposited in the late afternoon or early evening when males were usually absent from the ponds. *A. tuberculifera* used stems of *Juncus effusus*, almost exclusively for oviposition, while *A. umbrosa* used a variety of dead plant or other material and rarely used *J. effusus* stems.
- (4678) HÄMÄLÄINEN, M., 1984. *Orthetrum coerulescens* — sudenkorennon (Odonata, Libellulidae) levinneisyydestä ja esintymisestä Suomessa — The distribution and occurrence of *Orthetrum coerulescens* (Odonata, Libellulidae) in Finland. *Notul. entomol.* 64(2): 74-75. (Finn., with Engl. & Swed. s's). — (Tullilaboratorio, Tekniikantie 13, SF-02150 Espoo-15, Finland). The Finnish localities are listed and mapped, and brief comments on habitat selection and phenology are provided.
- (4679) HÄMÄLÄINEN, M., 1984. *Coenagrion puella* — tytönkorennon (Odonata, Coenagrionidae) esiintymisestä Suomessa — The occurrence of *Coenagrion puella* (Odonata, Coenagrionidae) in Finland. *Notul. entomol.* 64(2): 75-76. (Finn., with Engl. & Swed. s's). — (Tullilaboratorio, Tekniikantie 13, SF-02150 Espoo-15, Finland). *C. puella* is recorded from Finland for the third time. The 3 known localities are briefly described and mapped, and notes are provided on habitat selection and phenology.
- (4680) HAPGOOD, F., 1984. The importance of being Ernst. *Science* 84 5(5): 40-46. — (Author's address not stated). The article is based on an interview with Ernst Mayr. On p. 46, *Anax junius* and *A. strenuus* from the Hawaiian Islands are given as an example of island evolution.
- (4681) HIGLER, L.W.G., 1984. *Verzuring door atmosferische depositie. Oppervlaktewater en hydrobiologie: effecten van verzuring op het oppervlaktewater en de daarin levende planten en dieren.* — [*Acidification through atmospheric deposition. Surface water and hydrobiology: effects of acidification on the surface waters and their plant and animal life*]. Ministerie van Landbouw en Visserij & Ministerie van Volkshuisvesting, Ruimtelijke ordening en Milieubeheer, The Hague. IV + 48 pp. (Dutch). — (St. Res. Inst. Nature Manag., P.O. Box 46, 3956 ZR Leersum, NL). This is an official report on the subject, prepared for the Netherlands Government. Passing references to the Odon. appear on

- several places. — (For copies of the booklet apply to the Author).
- (4682) HUIJS, L., 1984. Libellen (Odonata) van de Noordlimburgse beken: de Wilderbeek. — [Dragonflies (Odonata) of the Noordlimburg brooks: The Wilderbeek]. *Natuurh. Maandbl.* 73(5): 104-108. (Dutch, with Engl. s.). — (Huijbersstr. 89 6524 NT Nijmegen, NL). The synecology of the odon. fauna (21 spp. of the Wilderbeek brook, Noord Limburg prov., The Netherlands is dealt with.
- (4683) HUIJS, L.G.J. & H.P.J. PETERS, 1984. *Libellen in het Strijper Aa gebied: een landschapsecologische analyse.* — [Dragonflies of the Strijper Aa area: a regional ecological analysis]. Rijksinstituut voor Natuurbeheer, Leersum. Vol 1, (VI + 72 pp.), Vol. 2 (IV + 64 pp., 3 folded maps excl.). — [ISN 196871-01]. (Dutch). — Publishers: St. Res. Inst. Nature Manag., P.O. Box 46, 3956 ZR Leersum NL).
Based on the Twinspan-computer program, 16 faunal types are distinguished in the 224 grids (100x100 m) studied in the Strijper Aa area, nr Eindhoven, The Netherlands. The odon. sociology and synecology are discussed in detail, and a synecological map of the regional odon. fauna (37 spp.) is produced.
- (4684) HUNT, A., 1984. Curtis Williams lauded for research in entomology. Wildlife expert joins Strecker Staff. *Baylor* 4(11/12): 24-25. — (c/o Office Publ. Relations, Div. External Affairs, Baylor Univ., CSB 393, Waco, Texas 76798, USA).
Interview with C.E. Williams, with a portrait, and emphasis on his odonotol. work. (Cf. also *OA* 4557, 4690).
- (4685) *JOURNAL OF THE BRITISH DRAGONFLY SOCIETY*, Vol. 1, No. 3 (April, 1984). Edited by S. Brooks. — (Orders to the Secretary of the British Dragonfly Society: 4 Peakland View, Darley Dale, Matlock, Derbyshire DE4 2GF, UK).
Boston, R.N.: Survey of adult and nymph dragonfly populations on Holme Fen NNR (31-36); — *Smith, E.M.*: Some observations at breeding sites of emeralds (Corduliidae) in Scotland (37-38); — *Holmes, J.D.*: Rapid larval development in *Brachytron pratense* (Müller) (38); — *Taylor, G.*: Risley Moss: a nature reserve in the making (39-42); — *Welstead, A.R. & N.I. Welstead*: A key to identify females of three species of Coenagrionidae (43-44); — *Gaunt, R.G.*: A remarkable emergence of *Aeshna cyanea* at a small pond in the Forest of Dean (45-46).
- (4686) KOMATSU, A., 1984. Ascending interneurons that convey a respiratory signal in the central nervous system of the dragonfly larva. *J. comp. Physiol. (A)* 154: 331-340. — (Dept Physiol., Tokyo Women's Med. Coll., 10 Ichigaya-Kawada-cho, Shinjuku-ku, Tokyo, 162, JA).
Intracellular recordings were made in axonal processes of interneurons in abdominal ganglia of the dragonfly larva, *Anax parthenope julius*. These interneurons produced rhythmic bursts of spikes in phase with expiration. Intracellular staining with a fluorescent dye, Lucifer Yellow, showed that these neurons have their cell bodies in the terminal abdominal ganglion and an axon ascending to the anterior abdominal ganglia via the ipsilateral connective. The axons have secondary processes in all abdominal ganglia in which their structure was determined (4th to 7th abdominal ganglia). These neurons were designated as the ascending interneurons (AE neurons). — The injection of depolarizing current into an AE neuron indicated that some expiratory motoneurons were excited by the evoked discharges of the AE neurons, whereas an unidentified motoneuron was inhibited by it. — The injection of long-lasting current into an AE neuron could not affect the rate of motor burst rhythm. The injection of short current pulse could not alter the timing of the bursts of spikes of the AE neuron. Thus, these tests failed to demonstrate that the AE neurons are elements involved in the rhythm generating system. — Stimulation of a sensory nerve reset the rhythmic bursts of the AE neuron as well as the respiratory motor rhythm. Consequently, the AE neurons appear to be elements that drive the segmental motor systems under the

control of the central pattern generator in the last abdominal ganglion. (Author).

- (4687) LEGRAND, J., 1984. Un nouveau Cordulidae de l'archipel des Comores *Nesocordulia villiersi* n. sp. et notes sur les espèces malgaches du genre (*Odonata*, *Anisoptera*). *Revue fr. Ent.* (NS) 6(2): 93-96. (With Engl. s.). — (Lab. Ent., Mus. natn. Hist. nat., 45 rue de Buffon, F-75005 Paris).

N. villiersi sp. n. is described and illustrated on a single male from Moheli Island (Lac Iconi; XI-1955); the type is deposited in MNHN, Paris. Notes on the Malgasian members of the genus are given, and lectotypes are designated for *N. rubricauda* Martin and *N. spinicauda* Martin.

- (4688) LIEFTINCK, M.A., J.C. LIEN & T.C. MAA, 1984. *Catalogue of Taiwanese dragonflies (Insecta: Odonata)*. Asian Ecological Society, Taichung, Taiwan. IV + 81 pp. [No ISBN number; publication date: Aug. 1]. — (First Author: "Kalliste", Nwe Veenendaalseweg 224, 3911 MS Rhenen, NL; — Third Author: Dept Ent., Natn. Chung Hsing Univ., 250 Kuo Kuang Rd, Taichung, Taiwan).

This work covers all the information on the Taiwanese Odon., published between 1684-1982 incl. The following are the titles of the main sections: "Geography, topography and climate" (with a map), "Faunistic composition" (with a map), "Distribution pattern", "List of Taiwanese species", "Catalogue", "Doubtful and incorrect records", "Bibliography" (titles of non-European papers given in Engl. translation, names of Chinese and Japanese authors in original script and in Latin transliteration), "Index of geographic names" (original script and Latin transliteration, with postal zip code numbers), "Index of scientific names". The catalogue covers 135 spp./spp., in 78 genera of 14 families, known to occur in Taiwan and the satellite islands. For each sp. the synonymy, annotated bibliographic citations, a summarized review of its distribution in Taiwan, and a statement on its general geographic range are presented. The bibliography contains 280 papers, by 64 authors. —

Agriion kagiensis Matsumura, 1910 and *Merogomphus chui* Asahina, 1968 are sunk as synonyms of *A. pygmaea* Rambur, 1842 and *M. paviei* Martin, 1904, resp.

- (4689) *LINDENIA*. *Notiziario dell'Ufficio Nazionale Italiano della Società Odonatologica Internazionale*, Roma. No. 2 (June 1, 1984). — (c/o Dr C. Utzeri, Dip. Biol. anim., Viale dell'Università 32, I-00185 Roma).

Various administrative communications and news items directed to the Italian SIO membership and odon. workers. Among the other items there is a formal congratulation of "the small odonatological population in Italy" to Dr S. Asahina for his 70th birthday. A book review (P.S. Corbet, Current topics in dragonfly biology) and a book announcement (J. d'Aguilar & J.L. Dommanget, Guide des libellules d'Europe et d'Afrique du Nord) conclude the issue.

- (4690) LYONS, T., 1984. Dragonflies hold special spot in Marlin dispatcher's heart. *Temple Daily Telegram*, Temple (Texas) 77(136): 12-A (issue of Apr. 1). — (c/o C.E. Williams, 704 Foster Str., Marlin, Texas 76661, USA). Notes on C.E. Williams's odonatol. work. (Cf. also *OA* 4557, 4684).

- (4691) MACHADO, A.B.M., 1984. Estudos sobre a aeshnas do grupo *punctata* com observações sobre os tipos de *A. punctata* Martin, 1908 (*Odonata* — *Aeshnidae*). *Resum. XI Congr. brasil. Zool., Belem*, p. 161. (Port.). — (Dep. Morf., Inst. Cien. Biol., Univ. Federal Minas Gerais, C.P. 2486, BR-30000 Belo Horizonte, MG).

The Mexican females of "*A. punctata*" in the coll. Martin, Paris, are referable to *A. jalapensis*, therefore *A. punctata* should be omitted from the odon. fauna list of Mexico. — *A. eduardoi* sp. n. (Minas Gerais) is provisionally described and compared with *A. punctata*. *A. eduardoi* sp. n., *A. punctata* and *A. decussus* represent a homogenous group, here called the *punctata*-group, and characterized by the morphology of the superior anal appendages.

- (4692) McMILLAN, V., 1984. Dragonfly monopoly. *Nat. Hist., N.Y.* 93(7): 32-39. — (Author's address not stated).
A popular account on odon. reproductive behaviour.
- (4693) MIYAKAWA, K., 1984. *Calopteryx japonica*. *Insectarium, Tokyo* 21(7): 195. (Jap., with the above translation of the title). — (Imafuku 1024, Kawago, Saitama 356, JA).
A general note on the taxonomic status of this sp. (Cf. *OA* 4327).
- (4694) MOL, A.W.M., 1984. Limnofauna neerlandica: een lijst van meercellige ongewervelde dieren aangetroffen in binnenwateren van Nederland. — Limnofauna neerlandica: a checklist of invertebrate metazoans recorded from the inland waters of the Netherlands. *Nieuwsbr. Europ. Invert.-Surv. Nederland* 15: 1-122. (Dutch, with Engl. s.). — (Landstrekelaan 21, 5235 LH Den Bosch, NL).
Annotated checklist and selected bibliography, listing 3342 species-group taxa, incl. 69 odon. spp.
- (4695) MOORE, N.W., 1984. The conservation of dragonflies. *Proc. Trans. Br. ent. nat. Hist. Soc.* 17(1/2): 40-43. — (The Farm House, Swavesey, Cambridge CB4 5RA, UK).
This is the text of the Cyril Hammond 1983 Memorial Lecture. The status and conservation of British dragonflies, and the achievements in the world odon. conservation are outlined.
- (4696) NARAOKA, H., 1984. [Abdominal bobbing in damselflies]. *Celastrina* 1984 (13): 8-11. (Jap.). — (36-71, Aza Motozumii, Oaza Fukunoda, Itayanagi-cho, Kita-gun, Aomori Pref., 038-36, JA).
The literature on the "abdominal bobbing" in *Zygoptera* is reviewed, new observations (8 spp., 3 fam.) are presented, and the biological meaning of this behavioural phenomenon is hypothesized. — (*Abstracter's Note*: A slightly abridged Engl. translation is available from the Editors of *Odonatologica*).
- (4697) PINHEY, E., 1984. A check-list of the Odonata of Zimbabwe and Zambia. *Smithersia* 3: 1-64. — (Wye View Villa, Gloucester Rd, Tutshill, Chepstow NP6 7DH, UK; — Reprints available from: Dr D.L. Hancock, Dept Ent., Natn. Mus., P.O. Box 240, Bulawayo, Zimbabwe).
The data from the research collection of the National Museum, Bulawayo, Zimbabwe, are recorded and supplemented with some further localities from other sources. Comparative faunae for Zimbabwe, Zambia, and neighbouring territories are briefly outlined. Keys to spp., type designations and depositories, distribution, and short notes on ecology are included, and a gazetteer is appended. *Diastomma ortizi* Compte Sart is found to be a synonym of *D. selysi* Schouteden. — (*Abstracter's note*: Publication date on the cover is shown as March 14, 1984, consequently, the reference to "1983", given in the abstract, is erroneous).
- (4698) QIU, J. & Z. LIU, 1984. On the life histories of *Prosthogonimus ovatus* and *P. pellucidus*. Larval development in the intermediate hosts (Trematoda: Prosthogonimidae). *Acta zool. sin.* 30(2): 167-172. (Chin., with Engl. s.). — (Dept. Parasitol., Bethune Med. Univ., Chang Chun, P.R. China).
The life history cycle of the 2 spp. is described. *Anax parthenope* and *Gynacantha* sp. are the intermediate hosts. — (*Abstracter's notes*: In the paper listed in *OA* 4537 the name of the first author is spelled as "Qju". — Since the attempts made by the P.R. China Government to decree the use of "pinyin", the transliteration of the Chinese personal and topographic names into Latin alphabet is in the state of a total chaos. Not only in "western" literature, but even in works published in the P.R. China, the "pinyin" and the traditional Wade-Giles transliteration systems familiar throughout the world are not seldom used in one and the same volume, journal issue, or even within one and the same paper. In this way, the recognition of topographic and authors' names is often almost impossible).
- (4699) REBER, U., 1984. Libellenwanderung am Schwarzen Meer. *Aralanta* 15(1/2): 103. —

(Zerrenbergweg 50, D-6950 Mosbach/Baden, FRG).

Large-scale dragonfly migrations that have taken place at Sotschi, Black Sea coast, USSR (Aug. 11-19, 1983) are described in some detail. Incomprehensibly not a single specimen was taken, consequently, the name of the sp. involved is not stated.

- (4700) RETTIG, K., 1984. Verbreitung und Flugzeiten von Insekten (Libellen, Heuschrecken, Falter, Käfer, Wanzen pp.) Ostfrieslands im Zeitraum 1968-1984. *Beitr. Vogel- Insektenwelt Ostfriesland* 17: 1-56. — (Danziger Str. 11, D-2970 Emden, FRG).

Contains distribution maps for 32 odon. spp., without text. (Cf. *OA* 4468).

- (4701) *RUNDSCHREIBEN [DER] GESELLSCHAFT DEUTSCHSPRACHIGER ODONATOLOGEN*, Münster, No. 1 (May 15, 1984). — (c/o Prof. Dr R. Rudolph, Biol. Didaktik, Univ. Münster, Fliegerstr. 21, D-4400 Münster, FRG).

This is a newsletter of the German Odonatol. Soc., compiled by Prof. Rudolph, and sent free to the membership. It is to appear at irregular intervals; the subscription price for non-members is not stated. The first issue (8 pp.) contains notes on the forthcoming Symposia of the Society (1985: Forbach; 1986: Höxter), Exhibit of dragonfly photographs (Bad Salzflun: June, 1984), on the 1984 publication program of *Libellula*, a review of recent literature, and of various regional mapping schemes in Germany and western Europe, and some notes on the European national odonatol. societies. A membership list is appended (182 addresses).

- (4702) SAHLÉN, G., 1984. Trollsländor — en speciell insektgrupp. — [Dragonflies — a peculiar insect group]. *Fältbiologen* 1984(3): 16-18). (Swedish). — (Bellmansgatan 24, S-754 28 Uppsala).

A general characterization of the Order, directed at young people.

- (4703) SANTOS, N.D., 1984. Descrição da ninfa de *Chalcopteryx rutilans* (Rambur, 1842) (Odo-

nata: Polythoridae). *Resum. XI Congr. brasil. Zool. Belem*, pp. 158-160. (Port.). — (Museu Nac., Univ. do Brasil, Quinta da Boa Vista, BR-20970 Rio de Janeiro).

The exuvia from Chapada dos Guimarães, MT, Brazil, is described. No figs.

- (4704) SATO, Y., 1984. Transmissivity of damselfly wings. *Insectarium, Tokyo* 21(5): 112-115. (Jap., with Engl. s. & fig. captions). — (3-17-16, Narita-nishi, Suginami-ku, Tokyo, 166, JA).

The light absorption in the wings of *Calopteryx cornelia*, *C. japonica* and *Mnais pruinosa costalis* was examined. The values are plotted on graphs, and compared with those of plastic films of various colours.

- (4705) SCHNEIDER, W., 1984. De libellen van Nederland, [von] D.C. Geijskes & J. van Tol. *Ent. Z. Frankfurt/M* 94(10): 143-155. (Germ.). — (Inst. Zool., Univ. Mainz, Saarstr. 21, D-6500 Mainz, FRG).

Comprehensive book review of the volume listed in *OA* 4101.

- (4706) SCHNEIDER, W., 1984. Die Typen von *Sympetrum tibiale* (Ris, 1897) (Odonata: Anisoptera: Libellulidae). *Ent. Mitt. zool. Mus. Hamburg* 7(120): 449-452. (With Engl. s.). — (Inst. Zool., Univ. Mainz, Saarstr. 21, D-6500 Mainz, FRG).

S. tibiale is redescribed on the basis of the holotype and paratype in the Zool. Mus., Hamburg. Structural features of the type specimens are figured for the first time.

- (4707) SHRESTHA, R.L. & M. MAHATO, 1984. Some odonates of Nepal. *J. nat. Hist. Mus., Kathmandu* 7(4): 69-77. (With Nepali s.) — (Nat. Hist. Mus., Anadakuti, Swayambhu, Kathmandu, Nepal).

A list of close to 60 spp. (some identified to the genus only), collected at various localities, at elevations between 182 and 3606 m a.s.l.

- (4708) *SIOJA*. [Information Bulletin of the SIO National Office in Japan], Osaka, 1984. No. 1 (May 1), No. 2 (July 15). (Jap.). — (c/o K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku,

Osaka, 545, JA).

Various internal SIO communications. No. 1 was issued as an invitation for the formal SIO Celebration Party of Dr S. Asahina's 70th birthday, held at Hitotsubashi Gakushi Kaikan, Tokyo, on June 10, 1984, and organized by the National Office in Japan.

- (4709) SPURIS, Z.D., 1984. [Kritika i bibliografiya]. C.O. Hammond, The dragonflies of Great Britain and Ireland. *Ent. Obozr.* 63(2): 419-420. (Russ.). — (Hortus Botanicus, Latvian Acad. Sci., Miera iela 19-6, USSR-229021 Salaspils, Latvia).
A very detailed book review of the volume listed in OA 4311.
- (4710) TENNESSEN, K.J., 1984. The nymphs of *Calopteryx amata* and *C. angustipennis* (Odonata: Calopterygidae). *Proc. ent. Soc. Wash.* 86(3): 602-607. — (1949 Hickory Ave., Florence, Alabama 35630, USA).
The ultimate instar of the 2 spp. is described, and the larvae of the North American members of the genus are keyed.
- (4711) TENNESSEN, K.J. & J.A. LOUTON, 1984. The true nymph of *Gomphus* (*Gomphurus*) *crassus* Hagen (Odonata: Gomphidae), with notes on adults. *Proc. ent. Soc. Wash.* 86(1): 223-227. — (Second Author: Dept Zool., Univ. Tennessee, Knoxville, Tenn. 37916, USA).
Reared larvae from Tennessee are described and diagnostic characters are illustrated. A previous description, based on supposition (J. Broughton, 1928, *Can. Ent.* 60: 32-34), was in error.
- (4712) TRAUTNER, J. & K. GEIGENMÜLLER, 1984. Insektenbeobachtungen auf einer Frühjahrsexkursion zum Neusiedler See. *Naturk. Beitr. DJN* 12: 78-79. — (Schönbuchstr. 51, D-7031 Neuweiler, FRG).
10 odon. spp., collected during early May, at the Neusiedler Lake, Austria, are listed.
- (4713) WAAGE, J.K., 1984. Female and male interactions during courtship in *Calopteryx maculata* and *C. dimidiata* (Odonata: Calopterygidae): influence of oviposition behaviour. *Amin. Behav.* 32: 400-404. — (Div. Biol. & Med., Box G, Brown Univ., Providence, R.I. 02912, USA).
The females of the 2 spp. respond to male courtship with specific displays which signal differences in their receptivity. These include a rejection (wing spreading) and an invitation (wing-flipping) display, as well as a neutral (sit still) response. There are interspecific differences in the likelihood of each female display and in male responses to these displays. *C. maculata* males persist in courtship irrespective of female response, while *C. dimidiata* males generally stop courting when the female's response is rejection or neutrality. I suggest that these differences result from interspecific differences in oviposition behaviour. Female *C. maculata* oviposit at the water surface, which exposes them to disturbance by males attempting to mate. Females are therefore likely to remate to secure postcopulatory guarding when changing oviposition sites and males are expected to be persistent in courtship. Female *C. dimidiata* submerge to oviposit, which frees them from male disturbance and means that males have less control over female access to oviposition sites. Males therefore have less influence on mating by females and are expected not to persist in courtship of non-receptive females.
- (4714) WARINGER, J., 1984. Das akzessorische Kopulationsorgan der Grosslibellen. *Natur & Museum* 114(6): 175-179. — (Limnol. Abt., Zool. Inst., Univ. Wien, Althanstr. 14, A-1090 Wien).
Structure and function of the accessory copulatory organ in Anisoptera are outlined. The article is directed at the general reader, and the text is illustrated by a number of REM-photographs.
- (4715) WELSTEAD, N. & T. WELSTEAD, 1984. *The dragonflies of the New forest*. Hampshire & Isle of Wight Naturalists' Trust, Southampton. VI + 41 pp. [No ISBN number; price and order address not stated]. — (Authors: 3 Kelvin Close, Hythe, Southampton, Hants. SO4 5LW, UK).

An attractive, well-written and nicely illustrated field-guide to this "classical" odonate area in Britain.

- (4716) ZHU, H., J. WU & R. DUAN, 1984. Odonata (Insect) II. A survey of the natural enemy insect resources in Shanxi (2). *J. Shanxi Univ.* (nat. Sci.) 1984(2): 76-86. (Chin., with Engl. s.). — (Dept Biol., Univ. Shanxi, Taiyuan, Shanxi Prov., P.R. China).

The series was commenced with the paper listed

in *OA* 4555. In this (concluding) part 25 spp. of Aeshnidae, Cordulegastridae, Corduliidae and Libellulidae are treated; 10 of these were not earlier reported from Shanxi, and 2 are new to China.

- (4717) ZWICK, P., 1984. Geijskes, D.C., J. van Tol, De libellen van Nederland (Odonata). *Aquatic Insects* 6(1): 12. (Engl.). — (Author's address not stated).

Book review of the volume listed in *OA* 4101.