ODONATOLOGICAL ABSTRACTS

1971

(9929) VAJRASTHIRA, S. & S. YAMPUT, 1971. The life cycle of Prosthodendrium molenkampi, a human intestinal fluke in family Lecithodendriidae in Thailand. *SEast Asian J. Trop. Med. public Hlth* 2(4): 585--586. – (Authors' current address unknown; c/o Dept Helminthol., Fac. Trop. Med., Mahidol Univ., Bangkok, Thailand).

P. molenkampi was first discovered in humans in Indonesia (cf. LIE, K.J., 1951, *Documenta neerl. indones. Morb. trop.* 3: 105) and was considered as an accidental infection. Its odon. associated life history was described in the paper listed in *OA* 1089. – In the present paper, the results of an investigation in the Pakplee distr, Nakornnayok, central Thailand, are reported. Metacercariae were found in the common rice field crab, Parathelphus dugasti, and in adult and larval "Celithemis" spp. Epidemiological case history studies carried out among the infected persons suggest the infection by eating either the raw crab mest, or the dragonfly larvae. – (For an excellent account on the subject cf. KOMIYA, Y., 1965, Metacercariae in Japan and adjacent territories, *Progr. med. Parasitol. Jpn* 2: 1-328; Odon. pp. 225-234, with species-wise bibliographies).

1974

(9930) SEN-SARMA, P.K., 1974. Ecology and biogeography of the termites of India. *In*: M.S. Mani, [Ed.], Ecology and biogeography of India, pp. 421-472, Junk, The Hague. – ISBN 90-6193-075-8.

Pantala flavescens is reported to predate at Dehra Dun, India, on the swarming adults of Odontotermes assmuthi, O. feae, O. obesus and O. parvidens.

1977

(9931) BEDFORD, J.J., 1977. The carbohydrate levels of insect haemolymph. *Comp. Biochem. Physiol.* (A)57: 83-86. – (Author's current address unknown).

Data on the concentration of glucose and trechalose in the haemolymph are stated for several terrestrial arthropod and other insect spp., incl. Uropetala carovei and Procordulia smithii. The patterns are discussed in terms of the phylogenetic position of the taxa studied. – Cf. also *OA* 1243.

1981

(9932) KAPPES, E. & W. KAPPES, 1981. Naturkundliche Studien in Jordaniens Wüsten: Nationalpark Azraq, 25. April bis 2. Mai 1980. *MittBl. dt. Bund Vogelschutz Hamburg* (Sonderh.) 9: 139-148. – (Eichenweg 27, D-22359 Hamburg).

Lists 6 identified odon. spp. from the Azraq Oasis, ca 100 km E of Aman, Jordan. A few additional taxa are identified to the genus only.

1983

(9933) STOUT, J., 1983. Megaloprepus and Mecistogaster (Gallito Azul, Helicopter Damselfly). *In*: D.H. Janzen, [Ed.], Costa Rican natural history, pp. 734--735 (Engl.), 748-749 (Span.), Univ Chicago Press, Chicago. – (Author's address unknown).

The biology of Megaloprepus coerulatus, Mecistogaster modestus and M. ornatus in Costa Rica is briefly outlined.

1984

(9934) MATSUKI, K. & I. MAKIBAYASHI, 1984.The types of moulting line appeared in final instar larvae of Odonata. 1. Anisozygoptera, Anisoptera. *Cho-cho* 7(10): 20-32. (Jap., with Engl. title). – (First Author: 3-1575-14, Hasama, Funabashi, Chiba, 274, JA).
[Abstract not available]; 91 spp. of 8 fam. were examined and the moulting line of all of them is also illustrated. – For pt 2 (Zygoptera) cf. *OA* 9888.

1990

(9935) LUDWIG, J., H. BELTING, A.J. HELBIG & H.A. BRUNS, 1990. Die Vögel des Dümmer-Gebietes. *NatSchutz Landschaftspfl. Niedersachs.* 21: 1-129. – (Authors' current addresses unknown).
In the Dümmer area, Lower Saxony, Germany, during the early 1950s, dragonflies represented a major component in the hooby (Falco subbuteo) diet, as evidenced by the published records. Since the late 1970s, this is not any more so. The alteration of diet is ascribed to the decrease of the local odon. populations, triggered by man-caused disappearance of aquatic vegetation.

1991

(9936) WALDERT, R., 1991. Auswirkungen von wasserbaulichen Massnahmen am Lech auf die Insektenfauna flusstypischer Biozönosen. *Augsburg. ökol. Schr.* 2: 109-120. – (Abt. Landschaftsökol., Amt f. Grünordnung u. Naturschutz, Dr.-Ziegenspeck-Weg 10, D(W)-8000 Augsburg).
Contains a checklist of 43 odon. spp., that have ever been recorded from the Lech R., Bavaria, Germany. Recent evidence is available on the occurrence of 36 spp.

1992

(9937) MALKMUS, R., 1992. Zur Verbreitung der Herpetofauna sowie einiger Libellenvorkommen in den Ostalpen. *Nachr. naturw. Mus. Aschaffenburg* 99: 49-60. – (Schulstr. 4, D-97859 Wiesthal).
From 2 localities in the Kreuzeckgruppe Range, Eastern Alps, Austria, 3 odon. spp. are recorded, viz. Bratleitenalm (lake, alt. 2350 m): larval Aeshna caerulea; – Nassfeldtörl (pond, alt. 2110 m): Enallagma cyathigerum, A. caerulea, Somatochlora alpestris.

(9938) MITRA, B. & P.K. MAITI, 1992. Biogeographical analysis of entomofauna of the Great Nicobar Island, Indian Ocean. *Proc. zool. Soc. Calcutta* 45 (Suppl. A): 501-508. – (Zool. Surv. India, 'M' Block, 535 New Alipore, Calcutta-700053, India).
123 spp. and sspp. of 7 orders (incl. 5 odon. spp.) are listed. The fauna shows a strong affinity to the Indian subregion and the Andamans rather than to the Indo-Malayan and Indo-Chinese subregions. – Cf. *OA* 4293.

(9939) PAL, T.K., 1992. Biological control of mosquito with predators: some case studies and applicability of the strategy. *Proc. zool. Soc. Calcutta* 45 (Suppl. A): 527-537. – (Arunachal Pradesh Fld Stn, Zool. Surv. India, Itanagar-791111, India).
Contains a passing reference to the odon., but deals mainly with Sphaerodema annulatum (Heteroptera) and Laccophilus anticatus (Coleoptera).

(9940) SCHIESS, H., 1992. Vielfalt und Verlust sind überall. Dr. Friedrich Ris' "Entomologisches Tagebuch" von 1917 bis 1930 im Vergleich mit heute. *Uni Zürich* 23: 13-15. – (Homberg 325, CH-9925 Brunnadern).
Between 18 June 1917 and 17 Jan. 1931, the great Swiss odonatologist, F. Ris (1867-1931), kept a very detailed diary of his field trips in Switzerland, covering his visits to almost 200 localities and regions, with meticulously precise field notes, annotated lists of collected/sighted spp., descriptions of habitats, etc. Here, some comparisons are made between the fauna inventories noted by Ris and the present situation at the same spot, but no reference is made to the odon. – The title of another article on this subject is listed in *OA* 8006.

1993

(9941) ADAM, R., P. SITHITHAWORN, V. PIPITGOOL, E. HINZ & V. STORCH, 1993. Studies on metacercariae from naiads in northeast Thailand. *SEast Asian J. trop. Med. public Health* 24(4): 701-705. – (First Author: FG Parasitol., Inst. Zool., Univ. Hohenheim, Emil-Wolff-Str. 34, D-70599 Stuttgart).
Metacercariae are described and illustrated from larval Ictinogomphus angulosus, Brachythemis contaminata, Crocothemis servilia, Hydrobasileus croceus, Orthetrum sabina and Trithemis pallidinervis. The trematode sp./spp. is/are not identified. I. angulosus and H. croceus were not previously reported as hosts.

– For some other papers on the odon. trematode hosts cf. *OA* 343, 489, 622-624, 643, 1089, 1761, 2385, 3317, 3715, 5877, 6550-6551, 6687, 8467. For a list of the Japanese odon. host spp. cf. the reference given in *OA* 9930.

(9942) ARNOLD, A., 1993. Libellen (Odonata) im Kreis Schmölln. *Mauritiana* 14: 234. – (Nordstr. 39/551, D-04105 Leipzig).
A commented list of 22 spp., as evidenced during 1981-1989; E Germany.

(9943) CLAUSNITZER, H.-J., 1993. Die Bedeutung temporärer Kleingewässer für gefährdete Arten. *Metelen SchrR. NatSchutz* 4: 41-45. (With Engl. s.). – (Eichenstr. 11, D-29348 Eschede).
The importance of man/made perennial and periodic ponds in conservation programs is emphasised. Lestes barbarus, L. dryas, L. virens, Sympecma spp. and Sympetrum flaveolum are breeding facultatively or obligatorily in temporary ponds.

(9944) FALK, L., G. MOHRBACH, S. OHLIGER & W. STEIGNER, 1993. *Geschützte Natur im Kreis Kusel.* Pollichia, Herschweiler-Pettersheim. ii+58 pp. – (Publishers: Hohlstr. 20, D-66909 Herschweiler-Pettersheim).
Brief descriptions of various nature reserves in the district of Kusel, Westpfälzer Bergland, Germany, listing some odon. spp. from Schwarzbach, Höcherberg-Westrich and from Landstuhler Bruch in the Upper Glantal.

(9945) HANDKE, K., 1993. Zur fauna neu angelegter Gewässer im Niedervieland bei Bremen. *Metelen. SchrR. NatSchutz* 4: 201-216. (With Engl.s.). – (Landschaftsökol. Forschungsstelle Bremen, Am Wall 164, D-28195 Bremen).
The odon. fauna of some newly made ponds in the area of Bremen, Germany, is characterised and the occurrence of some spp. is briefly discussed.

(9946) HECKER, F., 1993. Okologische Untersuchungen an Libellen des Wasserregimes des Nestos. Untersuchungen zur Biologie der Fliessgewässer-Edellibelle Caliaeschna microstigma (Schneider, 1845). *Colloquium Nordost-Griechenland* 2: 54-57. – (Wilhelminenstr. 27, D-24103 Kiel).
This is a preliminary research communication, stating solely the occurrence of 16 hitherto at various Nestos R. localities (Greece) recorded spp., and presenting the outline of a M.Sc. research project on the biology of C. microstigma.

(9947) HEINRICH, B., 1993. *The hot-blooded insects. Strategies and mechanisms of thermoregulation.* Springer, Berlin-Heidelberg-London-Paris-Hong Kong-Barcelona-Budapest. vi+601 pp. ISBN 3-540-56302-4. – Price: NLG 250.- net. – (Author: Zool. Dept, Univ. Vermont, Burlington, VT 05405, USA).
This is a definite masterpiece overview of what is known on thermoregulation in all of the major insect orders, offering new insights on physiology, ecology and evolution. A chapter, titled "Dragonflies now and then" (pp. 117-142, Ref. pp. 535-537), not only summarises in great detail the situation in the odon. (with original interpretations of the published evidence, from which various suggestions are derived) but also gives a list of 5 remaining problems relative to odon. thermoregulation, viz. (1) Do color changes function as temperature sensors in some dragonflies? – (2) Do dragonflies modulate flight effort to affect either heat production or rate of convective cooling? – (3) Why do so many perchers show no shivering response? – (4) Given that flyer dragonflies show immediate heat transfer to the abdomen long before lethal T_{thx} are reached, why do they not heat up the abdomen during shivering warm-up? Do females regulate T_{abd} for egg maturation? – (5) Do the "breathing" movements of dragonflies augment blood circulation for thermoregulation?

(9948) KHALIQ, A., M.L. ABBASI & K.F. AHMAD, 1993. Odonata from Murree Hills of Pakistan. *Pakistan J. Ent.* 8(2): 37-40. – Dept Ent., Univ. Coll. Agric., Rawalakot, AK, Pakistan).
37 spp. are listed from 14 localities. Burmagomphus sivalikensis, Anax immaculifrons, Orthetrum glaucum and Tramea virginia were not previously recorded from Pakistan.

(9949) LAUKOTTER, G., 1993. Limnokrenen als Kleingewässerlebensräume. *Metelen. SchrR. NatSchutz* 4: 235-236. – (Naturschutzzentrum NRW, Leibnizstr. 10, D-45659 Recklinghausen).
In Germany, the Cordulegaster and Gomphus spp. are the sole odon. representatives in the spring-like running water sections (= "quellnahe Fliessgewässerbereiche"). Though rheophilous, they occasionally occur in the cool spring ponds (= "kühle Quellteiche"). In the smaller springs (= "Tümpelquellen"), Calopteryx, Platycnemis, Aeshna and Libellula

depressa are also regularly encountered.

(9950) MARDEN, J.H., 1993. Ontogeny of thermal and metabolic physiology in a dragonfly. *Am. Zool.* 33(5): 142A [abstract only]. – (The precise current address unknown: "Pennsylvania St. Univ., State Park, PA, USA").

[Verbatim]: Adult Libellula pulchella undergo striking changes in thermal and metabolic physiology during adult maturation. Flight performance (maximum lift and induced power output during tethered flight) peaks at thoracic temperatures of 28-34°C in newly emerged adult males, with a gradual decline in performance at higher temperatures. Thermal sensitivity of flight performance in mature males is dramatically right-shifted, with a peak at T_{thx}=40-48°C. Individual males of intermediate age show two peak--performance temperatures, one at T_{thx}=28-34°C and another at 40-48°C, with a decline in performance at thoracic temperatures in between these 2 thermal optima. These changes in thermal physiology coincide with a doubling of body mass, largescale changes in muscle ultrastructure (hypertrophy of mitochondria), and changes in expression of muscle contractile proteins (particularly the calcium regulatory protein troponin-t). In addition, changes in activity of the metabolic enzymes lactate dehydrogenase and citrate synthase indicate that metabolism shifts from anaerobic in nymphs, to a mixture of anaerobic and aerobic in newly emerged adults, to aerobic in mature adults. This suite of changes in thermal and metabolic physiology indicates a previously unknown carryover of physiological traits from nymphs to adults, with resultant effects on behavior (sedentary nymphs; burst flight for foraging in newly emerged and immature adults; continuous territorial flight in mature adults). Such transitions may be common in insects whose life cycle lacks a pupal stage, and may impact our understanding of the evolution of flight in insects.

(9951) MEY, D., 1993. Die Libellen des Mühlberger Torfstiches im LSG "Drei Gleichen" (Insecta, Odonata). *Veröff. NaturkMus. Erfurt* 1993: 114-124. (With Engl.s.). – (Karl-Hermann-Str. 3, D-99848 Wutha-Farnroda).

32 spp. are listed from this locality in the S Thuringia Valley, E Germany, as evidenced during 1988-1992. The composition of the fauna is briefly described and some specified conservations measures are suggested.

(9952) MONNERAT, C., 1993. *Etude faunistique des odonates du canton de Jura et des zones limitrophes.* Mus. Jurassien Sci. Nat., Porrentruy. 99 pp. ISBN none. – Price: review copy supplied by the Author at CHF 15.- net. – (Publishers: 21 rte de Fontenais, CH--2900 Porrentruy).

This is a commercially available booklet, based on the monograph listed in *OA* 8139. 51 spp. are dealt with and their distribution in canton Jura, Switzerland, is mapped. Statements are made on habitats and on the regional status of each sp., but the locality data are not given, and the regional bibliography is greatly incomplete and not crossreferenced. Most spp. and some habitats are shown on 75 col. photographs, and a list of the 115 visited localities (plus some in canton Berne and in France) is provided.

(9953) PASHLEY, D.P., B.A. McPHERON & E.A. ZIMMER, 1993. Systematics of holometabolous insect orders based on 18S ribosomal RNA. *Molec. Phylogen. Evol.* 2(2): 132-142. – (First Author: Dept Ent., Room 402, Life Sci. Bldg, Louisiana St. Univ., Baton Rouge, LA 70803, USA).

Phylogenetic relationships of 19 spp., representing 9 holometabolous and 3 outgroup orders (incl. Libellula vibrans), were examined using sequence data from 2-thirds of the 18S ribosomal RNA molecule. Of 1330 aligned nucleotide sites in 19 taxa, 460 were variable and used for phylogenetic analysis. Parsimony analyses resolved relationships in a few groups, but left the most controversial questions regarding relationships among major lineages unresolved. The inability of the 18S molecule to resolve ancient divergence events may be due to the rapid divergence of holometabolous orders, resulting in few synapomorphies.

(9954) REHFELDT, G., E. KESERU & N. WEINHEBER, 1993. Opportunistic exploitation of prey in the libellulid dragonfly Orthetrum cancellatum (Odonata: Libellulidae). *Zool Jb. Syst.* 120(4): 441-451. (With Germ.s.). – (Zool. Inst., Techn. Univ. Braunschweig, Pockelsstr. 10a, D-38106 Braunschweig).

The sudden mass arrival of O. cancellatum at a small stream in S France was used to study the influence on its prey population, Calopteryx haemorrhoidalis. O. cancellatum perched on bushes of the bank and on the earth near the stream's edge. When its own population density was low, it aggregated at sections of the stream, where C. haemorrhoidalis was most frequent. At higher population densities O. cancel-

latum distributed itself along the stream without regard to the density of the prey. The arrival of the predator was accompanied by a sharp reduction in its prey's population density. C. haemorrhoidalis was usually caught while on a feeding flight (75.4%). Adult males contesting a territory (7.9%) and immatures on their maiden flight (7.0%) were also caught. The distribution of prey captures during the course of the day shows that adult males are usually caught around noon, while adult females and immatures are mainly caught during their most active flight periods in the morning and evening. Taken over the whole day there is no sex- or age-biased predation risk. Predator-avoidance behaviour on the part of the prey sp. was not observed.

(9955) SCHLUPMANN, M., 1993.Zur Bedeutung hydrochemischer Parameter stehender Kleingewässer des Hagener Raumes für die Libellen. *Metelen. SchrR. NatSchutz* 4: 163-164. – (Hierseier Weg 18, D-58119 Hagen-Hohenlimburg).
The direct relationships between the hydrochemistry and odon. fauna of the eutrophic stagnant water habitats could not be demonstrated. Here, the tolerance limits, relative to various hydrochemical parameters, are stated for a number of spp. in the Hagen area, Germany.

(9956) SINSBECK, D., 1993. Die Odonatenfauna des Küstenbereiches des westlichen Nestos-Deltas. *Colloquium Nordost-Griechenland* 2: 66-86. – (Grotemeyerstr. 9, D-48159 Münster).
The odon. fauna of the Nestos R. Delta, NE Greece, was studied during June-July 1992. The habitats are described and 21 spp. are listed. Hemianax ephippiger is among the 14 spp. that are documented also by exuviae.

(9957) TANAKA, M. & K. MATSUKI, 1993. Matsumori-Teneyasu's illustrated book of dragonflies. *Insectarium, Tokyo* 30(11): 380-385. (Jap., with Engl. title). – (First Author: 183 Sakae-cho, Fuchu-shi, Tokyo, 183, JA).
A detailed description (with col. reproduction of figs) of odon. inventory (ca 30 spp., incl. some larvae) in M.-T.'s (1825-1892) natural history book, *"Ryou Hakubutu Zufu"* [publication date and publisher not available], based on material from Turuoka-shi, Tohoku distr., N Japan.

(9958) TERTERIAN, A.E. & 14 joint authors, 1993. O sostoyanii fauny nasekomyh i drugih grupp bespozvonochnyh zhivotnyh Erevana v usloviyah antropogennogo pressa. – On the fauna of insects and other invertebrates in the city of Yerevan with respect to anthropogenic pressure. *Ent. Obozr.* 72(4): 764-775. (Russ., with Engl.s.). – (Inst. Zool., Nac. Acad. Sci. Armenia, Yerevan, Armenia).
Lestes sp. is the sole odon. taxon listed; Yerevan, Armenia.

(9959) ZINTZ, K., D. ROTHMUND & H. RAHMANN, 1993. Abbaugruben und sekundäre Stehgewässer in Oberschwaben: Bedeutung, Schutz, Management. *Metelen SchrR. NatSchutz* 4: 171-178. (With Engl.s.). – (Inst. Zool., Univ. Hohenheim, D-70599 Stuttgart).
45 spp. are listed from 6 gravel pits and 2 other localities in the Ravensburg distr., S Germany. With the advancement of succession, the number of spp. generally increases.

1994

(9960) AIDA, M., 1994. [Adult behaviour of Lestes japonicus Selys]. *Gekkan-Mushi* 284: 18-24. (Jap.). – (1-7-15 Sakae, Ichinomiya-shi, Aichi, 491, JA).
The adult emergence and various aspects of behaviour are described in detail, and habitat segregation relative to Copera annulata and Lestes temporalis is recorded.

(9961) AKURAI, H., 1994. [Five dragonfly species parasitized by fungi]. *Gekkan-Mushi* 284: 36-37. (Jap.). – (2628 Hajima, Minosato-cho, Higashi-Ibaragi-gun, Ibaragi, 319-01, JA).
The adult Aeshna juncea, Planaeschna milnei, Sympetrum darwinianum, S. frequens and S. infuscatum were found parasitized by Claviceps spp. (Ascomycota), at a locality in the Ibaragi pref., central Japan; Dec. 1993-Apr. 1994.

(9962) ANHOLT, B.R., 1994. Cannibalism and early instar survival in a larval damselfly. *Oecologia* 99: 60-65. – (Dept Zool., Univ. Brit. Columbia, Vancouver, BC, V6T 1Z4, CA).
Examined here is the survival of Enallagma boreale eggs, oviposited near the end of the flight season in the presence and absence of potential cannibals, individuals that hatched from eggs earlier in the season, over an extended part of the life-cycle. The role of competition as a modifier of cannibalism was examined by manipulating egg density, environmental

productivity, and habitat complexity. Survival in the absence of potential cannibals ranged from 5% to nearly 50% but was only 0-3% in the presence of cannibals. Survival of small larvae was related to manipulations of habitat complexity but not initial density or resources. There were no significant interactions of the presence of large larvae with other experimental treatments on the survival of small larvae. The mean size of small larvae was greater in the presence of cannibals. This may be because the cannibalism treatment reduced the density of small larvae and reduced competition for resources, or that the cannibals preferentially fed on small larvae and only relatively large individuals remained. Fertilization of the habitat or manipulating the initial density of small larvae did not affect mass of small larvae at the end of the experiment, which would be expected if small larvae were affected by competition for resources. Potential cannibals, however, emerged at higher mass when small larvae were present at low density and when productivity of the habitat was increased. This suggests that the negative effect of competition by small larvae outweighs the positive effect of being potential prey for large larvae.

(9963) AOKI, S., 1994. [A note on feeding behaviour in Anisogomphus maacki (Sel.)]. *Nature & Insects* 29(14): 35. (Jap.). – (4-4-36 Minami-Sakai, Kashiwa--shi, Chiba, 277, JA).
A record of predation on Argynnis paphia (Lepidoptera); Chino-shi, Nagano, central Japan, 23-VIII--1994.

(9964) ARAI, Y., 1994. [A note on predation of Orthetrum albistylum speciosum (Uhler) on Sympetrum frequens (Sel.) at Ohnohara, Chichibu-shi, Saitama, Japan]. *Gekkan-Mushi* 284: 35-36. (Jap.). – (1233-2 Sueno, Yorii-machi, Oosato-gun, Saitama, 369-12, JA).
[Abstract not available].

(9965) ARAI, Y., 1994. Adult behaviour of Stylogomphus suzukii at the reproductive site. *Nature & Insects* 29(11): 32-35. (Jap., with Engl. title). – (1233-2 Sueno, Yorii-machi, Oosato-gun, Saitama, 369-12, JA).
A detailed account is presented of observations (16--VII/7-VIII-1994) in Saitama pref., central Japan. The ♂ do not have distinct territories, and the sp. seems to have evolved a unique mating behaviour, different from that in the other gomphids.

(9966) ARAI, Y., 1994. [Annual fluctuations of the beginning of oviposition in Sympetrum r. risi Bartenef]. *Nature & Insects* 29(14): 18. (Jap.). – (1233-2 Sueno, Yorii-machi, Oosato-gun, Saitama, 369-12, JA).
At Chichibu-shi, Saitama, central Japan, oviposition commenced during 1983-1994 between July 17 and Aug. 27.

(9967) ARAI, Y., 1994. [Mnais pruinosa costalis passed the night with its wings spread]. *Insectarium, Tokyo* 31(10): 343. (Jap.). – (1233-2 Sueno, Yorii-machi, Oosato-gun, Saitama pref., 369-12, JA).
In the evening (18.30 h) and early morning (04.50 h), on 22/23-V-1994, at the Hirakura R., Saitami pref., Japan, the individuals were found sleeping with the wings spread. The phenomenon seems conditioned by the cool night. When disturbed, they perched on the ground with the wings half spread. After 06.00 h, they began to fly up, and perched in the usual way, wings folded.

(9968) ARAI, Y., 1994. [The larvae of Sympetrum baccha mutatinum Ris have a weakness for dry conditions]. *Gekkan-Mushi* 283: 37 (Jap.). – (1233-2 Sueno, Yorii-machi, Oosato-gun, Saitama, 369-12, JA).
[Abstract not available].

(9969) ASAHINA, S., 1994. A revision of the genus Rhipidolestes from Taiwan and Japan. 4. Okinawa and Amami Islands representatives. *Gekkan-Mushi* 283: 14-17. (Jap., with Engl.s. & fig. captions). – (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA).
The taxa of the Ryukyu islands of Okinawa, Tokashiki, Tokunoshima and Amami-oshima are dealt with. They are all referable to R. okinawanus, as described from Okinawa, but the populations from the other 3 islands show slight peculiarities in the penile structure, and are assigned here the status of local "forms", under the respective names, tokashikiensis f.n., tokunoshimensis f.n. and amamiensis f.n. – [In the spirit of the note in *OA* 9247], R. aculeatus kyushuensis Asahina, 1993 is synonymised with R. a. yakusimensis Asahina, 1951. For the Kyushu population of this ssp., the name kyushuensis f.n. is proposed.

(9970) ASAHINA, S., 1994. A revision of the genus Rhipidolestes from Taiwan and Japan. 6. A new spe-

cies from Koshikijima Island and descriptions of larval forms. *Gekkan-Mushi* 284: 7-11. (Jap., with Engl.s. & fig. captions). – (4-4-24 Takadanobaba, Shinjuku-ku, Tokyo, 169, JA).
R. asatoi sp.n. is described and illustrated from a small island, Koshiki-jima, situated close to Kyushu (holotype ♂ & 4 ♂ paratypes, 15-VII-1979; all in Author's coll.). Also provided are descriptions & figs of the larval stage of R. haroi and R. aculeatus yakushimensis f. kyushuensis.

(9971) ASAHINA, S., 1994. A revision of the genus Rhipidolestes from Taiwan and Japan. 7. *Gekkan-Mushi* 285: 13-17. (Jap., with Engl.s.). – (4-4-24 Takadanobaba, Shinjuku-ku, Tokyo, 169, JA).
Comments are given on the problematical genus Taolestes Needham, 1928, described from a single ♀ from Hangchow, Chekiang prov., China. Since the holotype was not available, its status is left open. – Geographic distribution of the Rhipidolestes taxa and forms is stated and mapped, and the peculiar oviposition behaviour in R. hiraoi is described and compared with that in the other spp.

(9972) BEDJANIČ, M., 1994. Seznam odonatne favne Slovenije. – Annotated checklist of the odonate fauna of Slovenia. *Acta ent. slov.* 2: 43-54. (Slovene, with Engl.s.). – (Fram 117 A, SLO-62313 Fram).
The history of odon. exploration in Slovenia is briefly traced from 1685 to present, the complete bibliography is presented, and a bibliographically crossreferenced checklist of the 71 hitherto recorded spp. is given.

(9973) BIERWIRTH, G., 1994. Die Libellen im östlichen Teil des Landkreises Altötting. *Mitt. zool. Ges. Braunau* 6(2): 109-133. (With Engl.s.). – (Nikolausstr. 7a, D-84533 Marktl).
During 1985-1993, 43 spp. were recorded in the E part of Altoetting Co., Bavaria, Germany. The local status of each of these is stated, Leucorrhinia caudalis became extinct during the study period.

(9974) BRAUN, M., 1994. *Libellenvorkommen im NSG "Untere Alz" mit Hinweisen zur Pflege- und Entwicklungsplanung*. DiplArb. Univ. München. iv+120 pp., App. + 2 maps excl. – (Author's current address unknown).
During May-Oct. 1993, 30 spp. were evidenced at this Nature Reserve in Bavaria, Germany. An appreciable breeding population of Onychogomphus forcipatus is of particular local interest. The sp. assemblages of various types of habitats are analysed, their "conservancy value" is assessed, and detailed suggestions for the management of the area are provided.

(9975) BRÜMMER, I. & A. MARTENS, 1994. Die Asiatische Keiljungfer Gomphus flavipes in der mittleren Elbe bei Wittenberge (Odonata: Gomphidae). *Braunschw. naturk. Schr.* 4(3): 497-502. (With Engl. s.). – (Zool. Inst., Techn. Univ., Pockelsstr. 10 a, D-38106 Braunschweig).
Larvae are recorded from 5 localities on the Elbe, at which river the sp. has not been taken since 1929. This is the northwesternmost recent record of G. flavipes in Europe. The habitat and sampling methods are described.

(9976) CAMPOS, R.E., 1994. Importancia de las larvas de culicidos en la dieta de Ischnura fluviatilis Selys (Odonata: Zygoptera) en habitats naturales de los alrededores de La Plata, provincia de Buenos Aires. *Revta argent. Ent.* 53(1/4): 51-56. – (With Engl.s.). – (Cent. Estud. Parasitol. & Vectores, CEPAVE, Calle 2, No. 584, AR-1900 La Plata).
In order to determine the relevance of culicid larvae in the I. fluviatilis diet, immature stages of this sp. were collected from 2 ditches and the pellets' analysis was made. The surrounding fauna was collected to assess any other preys as well. The analysis revealed the presence of Culicidae, Chironomidae, microcrustaceans, and nematode Rabditidae. Chironomidae (30.67%) were the best represented in La Granja, together with Copepoda (23.48%), while in Ringuelet there were Culicidae (18.98%) and Chironomidae (11.68%). Significant dependence between the presence of odon. larvae, larval mosquito habitats, and food condition was seen, while independence between prey-diversity and larval mosquito habitat ($P > 0.01$) was found.

(9977) DIJKSTRA, K.D., 1994. Vlinderen in Hongarije en Roemenië. – [Butterfly collecting in Hungary and Romania]. *Stridula* 18(1): 3-10. (Dutch). – (Oude Rijnsburgerweg 36/k7, NL-2342 BC Oegstgeest).
5 odon. spp. are listed from 3 localities in Hungary, viz. Sympetrum pedemontanum (from Kisújzállás), Calopteryx splendens and Orthetrum coerulescens (from Pocsaj), and Somatochlora flavomaculata and S. metallica (from Biharkeresztes); – and 6 spp. from 3 localities in Romania, viz. Gomphus vulgatissimus (from Sarmizegetusa in the Valea Bistrei), Onycho-

gomphus forcipatus and Orthetrum brunneum (on the Stei R. nr Pui, Valea Riul Mare), and Anax parthenope, Orthetrum albistylum and Sympetrum depressiusculum (in the Danube Delta nr Garvăn).

(9978) *The DRAGON-FLIER. Newsletter of the Ohio Dragonfly Survey*, Columbus, Vol. 4, No. 3 (Sept. 1994). – (c/o B. Glotzhober, Ohio Hist. Soc., 1982 Velma Ave., Columbus OH 43211-2497, USA).
Contains various management items, and new Ohio records for Gomphaeschna furcillata (new for Ohio!), Cordulia shurtleffi, Epitheca canis, Helocordulia uhleri, Leucorrhinia frigida and Nannothemis bella.

(9979) EDA, S., 1994. [A note on the unusual oviposition behaviour in Somatochlora uchidai Förster]. *Nature & Insects* 29(14): 11. (Jap.). – (3-4-25 Sawamura, Matsumoto, Nagano, 390, JA).
The oviposition on Sphagnum, 2 m off the shore is briefly reported; Kama-ike, Otari-mura, Nagano, 2--VIII-1994.

(9980) EDA, S., 1994. [Interspecific tandem of Cercion calamorum (Ris) (Coenagrionidae) and Indolestes peregrinus (Ris) (Lestidae)]. *Nature & Insects* 29(14): 11. (Jap.). – (3-4-25 Sawamura, Matsumoto, Nagano, 390, JA).
An annotated photographic record; Okada, Matsumoto-shi, Nagano, central Japan, 8-VIII-1994.

(9981) FINCKE, O.M., 1994. Population regulation of a tropical damselfly in the larval stage by food limitation, cannibalism, intraguild predation and habitat drying. *Oecologia* 100: 118-127. – (Dept Zool., Univ. Oklahoma, 730 Van Vleet Oval, Rm 314, Norman, OK 73019-0235, USA).
The relative importance of intraspecific, interspecific, and seasonal causes of larval mortality were investigated for aquatic larvae of Megaloprepus coerulatus in Panama. These live in water-filled holes in fallen and living trees, where they and 3 other common odon. spp. are the top predators. By mid wet season, M. coerulatus larvae were found in nearly half of all tree holes that harbored odonates. Although they were typically, but not always, eliminated from holes inhabited by larger heterospecifics, M. coerulatus were more likely to encounter conspecifics than other odon. spp. Holes with less than 1 l of water rarely contained more than a single larva. In large holes where M. coerulatus was the only odon. sp. present, multiple larvae coexisted at a density of 1 larva per 1-2 l of water. There the absence of 2-4 of the 5 larval size classes, despite a continuous input of eggs, suggested that cannibalism was a common cause of mortality. The size of the final instar, which determined adult body size, was correlated positively with tree hole volume for ♂, but not ♀, larvae. Experiments showed that when 2 larvae were placed together in 0.4-l holes with abundant tadpole prey, the larger larva killed the smaller one. Often the larva that was killed was not eaten. Small larvae were more tolerant of each other than were pairs of medium or large larvae. Before killing occurred, the presence of larger larvae reduced the growth of smaller individuals, relative to controls. 'Obligate' killing was density-dependent. In 3.0-l holes with ad libitum prey, conspecific killing occurred until the larval density stabilized at 1 larva per 1-1.5 l, similar to the density found in large holes under field conditions, for M. coerulatus, cannibalism functions to reduce the number of potential competitors for food in addition to providing nutrition. When interactions between paired larvae in small holes were experimentally prevented, competition for food reduced the growth of 1 or both larvae relatively to controls. Holes that were watered during the dry season supported larval densities similar to those in the wet season. Thus, dry season mortality could not be attributed to a decrease in available prey. Rather, M. coerulatus larvae could not survive more than 1 month of complete drying. Because the dry season typically lasts more than 6 weeks, habitat drying is a secondary source of mortality, affecting second- or third-generation larvae that fail to emerge before tree holes dry out completely.

(9982) FRANKOVIČ, M., 1994. Reliktna vretenca (Insecta: Odonata) kao mjerilo vrednovanja visokoplaninskih vodenih staništa. – [Relict dragonflies (Insecta: Odonata) as a tool for the assessment of mountain habitats]. *Zborn. Saž. Ref. Simp. 45-god. Nac. Parka "Paklenica", Starigrad*, pp. 20-21. (Croatian). – (Barutanski breg, CRO-41000 Zagreb).
The spp. that occur in Croatia as Pleistocene relicts and are usually cold stenothermic, are of particular importance for the quality assessment of their breeding habitats. The mountainous regions in Croatia are inadequately explored, and several odon. spp. that are known from the adjacent countries, (incl. those in the South) were not yet recorded there.

(9983) GÄDE, G., M.P.-E. JANSSENS & R. KELLNER, 1994. A novel peptide in the AKH/RPCH fam-

ily isolated from corpora cardiaca of the Emperor Dragonfly, Anax imperator. *Peptides* 15(1): 1-6. – (First Author: Zool. Dept, Univ. Cape Town, Private Bag, Rondebosch-7700, RSA).
Using a heterologous (in locusts and cockroaches) and a homologous bioassay, the neuropeptide pGlu--Val-Asn-Phe-Ser-Pro-Ser-Trp-NH_2 was isolated from extracts of corpora cardiaca. The sequence elucidation was achieved by Edman degradation of the deblocked peptide and by electrospray mass spectrometry. Low concentrations of the synthetic peptide injected into the dragonfly increased the hemolymph lipid concentration, suggesting a possible role of the peptide in lipid homeostasis during flight. Therefore, it is named Ani-AKH, Anax imperator adipokinetic hormone.

(9984) GARRISON, R.W., 1994. A revision of the New World genus Erpetogomphus Hagen in Selys (Odonata: Gomphidae). *Tijdschr. Ent.* 137(2): 173-269. – (1030 Fondale St., Azusa, CA 91702-0821, USA).
This revision of adult Erpetogomphus includes a phylogenetic assessment of all 21 spp., using outgroup comparison and parsimony algorithm, descriptive biogeography, keys to both sexes, synonymies, descriptions, type designations, and illustrations, including distribution maps of all species. 6 new spp. are described: agkistrodon, leptophis, elaphe, liopeltis, bothrops, heterodon. E. coluber is considered a junior synonym of compositus. E. natrix is considered a ssp. of lampropeltis, and a neotype is designated for E. cophias. Phylogenetic assessment of 41 mostly somatic characters shows Erpetogomphus to be partitioned into 3 monophyletic groups: (1) dark green spp. (constrictor, sabaleticus, tristani, agkistrodon, schausi, ophibolus) with mostly allopatric or parapatric distributions along the eastern coast of Mexico, S into northern Colombia and Venezuela, (2) 2 spp. (leptophis, eutainia) with distributions from southern Texas S through Mexico and up the W coast to Michoacan states, and (3) 13 remaining spp. (elaphe, elaps, liopelti, bothrops, viperinus, designatus, sipedon, lampropeltis, crotalinus, heterodon, compositus, boa, cophias) with distributions in the central United States, S through Mexico to Costa Rica. Derived characters states were gleaned mostly from primary and secondary genitalic characters (head structure, penis, hamules, caudal appendages, vulvar lamina); but satisfactory resolution of terminal clades, especially of the third group, is difficult due to apparent character reversals.

(9985) GORB, S.N., 1994. Central projections of ovipositor sense organs in the damselfly, Sympecma annulata (Zygoptera, Lestidae). *J. Morph.* 220: 139--146. – (Dept Insect Physiol., Schmalhausen Inst. Zool., Ukrain. Acad. Sci., B. Chmelnickogo 15, UKR-252601 Kiev).
Central projections of sensilla on different parts of the endophytic ovipositor are traced. Sensilla include apical hairs of the stylus (STh), hair rows on the ventral part of the valvula (Vh), and distal campaniform sensilla of upper (ULc) and lower (LLc) ovipositor leaves. Backfilling of afferent fibers, using anterograde cobalt fills, reveals the presence of contralaterally projecting fibers for all organs. The main fiber bundle of the LLc enters the terminal ganglion laterally via the genital nerve, but the fibers from ULc enter via the posterior nerve. Main fiber bundles of both leaves end in a lateral part of the ganglion called the lateral neuromere; they demonstrate that sensory information from the two leaves has the same target area. It is hypothesized that the independent pathways of nerves from upper and lower ovipositor leaves (ULc and LLc) may indicate the phylogenetic origin of these appendages from different abdominal segments – the lower leaf from the 8th and upper from 9th. The convergence of afferent fibers from the sensilla of the different ovipositor parts (median, anterior, and lateral processes) in common ganglionic centers may provide the anatomical basis to account for coordination of the movements of different ovipositor parts during oviposition.

(9986) *GRACILE. [Newsletter of Odonatology].* Published by the Kansai Research Group of Odonatology, Osaka, No. 51 (March 27, 1994), No. 52 (Dec. 4, 1994). (Jap., with Engl. titles). – (Distribution outside Japan: K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA).
[No. 51]: *Aoki, T.*: Preparation of larval specimens for exhibition (pp. 1-4); – *Tsuda, S.*: Lestes temporalis Selys, 1883 has oval spots on its post-sternum (p. 5); – *Nishiura, N.*: List of the odonate fauna of Sennan dist., Osaka prefecture (pp. 6-10); – *Tabata, O.*: Report of survey trip on the odonate fauna of North Kyoto (1) in early spring, 1993 (pp. 11-13); – ditto, (2) in late autumn, 1993 (p. 14); – *Inoue, K.*: Thanks to the members of the Kansai Research Group of Odonatology for the success of the XII International Symposium of Odonatology (pp. 15-21); – *Aoki, T.*: Three field meetings of the SIO Symposium (pp. 22--24); – *Matsuda, I.*: SIO Post-Symposium Tour. Re-

port of the pre-survey trip for SIO Post-Symposium Tour in Oshibuti, Mie prefecture, 1993 (pp. 24-26). [No. 52]: *Hirake, T.*: Oligoaeschna pryeri closed its wings after the maiden flight (p. 1); – *Nisiura, N.*: Considerations on unsuccessful emergence of Odonata (pp. 2-5); – Light orange-winged males of Mnais p. pruinosa found at Sennan distr., Osaka prefecture and northern part of Wakayama prefecture (pp. 6-7); – *Anaze, N.*: Notes on dragonflies of an uncultivated rice field and a marsh at Shimowada, Nachi-katsuura-cho, Wakayama prefecture (p. 8); – *Nagase, K*: Report of the survey trip on the odonate fauna of Doki River, Kagawa prefecture (pp. 9-10); – *Tabata, O.*: Report of the survey trip on the odonate fauna of North Kyoto (3) in late spring, 1994 (pp. 10-12); – ditto, (4) in early autumn, 1994 (pp. 13-14); – *Matsuda, I.*: "Tombo-turi" (catching dragonflies by threads) meeting held in Osaka prefecture (4), 1994 (pp. 15-17); – *Miyatake, Y.*: Report of the field survey on the odonate fauna of Yodo River (5), at "Yakumo-Wando-Group", Moriguchi city, Osaka prefecture (pp. 18-19); – ditto, (8), at Shirokita Park and "Shirokita-Wando-Group", Osaka city (pp. 20-21); – *Matsuda, I.*: ditto, (9), in summer, 1994 (pp. 22-25); – On the removal of self-disciplined collecting prohibition of dragonflies at certain areas (pp. 25-27).

(9987) GROVER, S. & H. IKIN, 1994. *Leicestershire dragonflies.* Leicestershire Co. Council, Leicester. 64 pp. ISBN 0850223598. – Price: £ 6.50 net. – (Available from: Museum, Arts & Records Serv., The Rowans, College St., Leicester, LE2 0JJ, UK).
Subsequent to the journal paper by H. Mendel (cf. *OA* 6182), this now is a commercially available booklet on the same subject (19+2 doubtfully recorded spp.). The first county odon. record comes from a paper by G. Crabbe (rather than "Nichols", as erroneously stated), published in J. NICHOLS, 1795, *The history and antiquities of the county of Leicester* 1/1: cxci-ccviii, Nichols, London), but the bibl. reference is not stated here (and it is missing also in all standard entomol. bibliographies, such as e.g. Hagen, Horn & Schenkling, etc.). – The general species treatment is as usual in this kind of works, with a few attractive novelties, of which the graphs, indicating the percentages of records per type of habitat will be more than regionally useful. Water paintings are provided of all spp.; these are somewhat simple, but generally not inadequate. The simple key will be also useful for the novice, at whom the book is directed at the first place. Encouraging is the information that no spp. are thought to be declining in Leicesterhire; – to the contrary: the number of spp. is slowly increasing. – This is a good work that will certainly perfectly serve for the purpose of recording and conservation, for which it has been designed.

(9988) [HATTO, Y.] (Anonymous), 1994. [The catchers in the summer vacation]. [Dragonfly]. [Toriko master Hatto-o teaches a traditional method of aeshnid catching]. *Be-pal, Tokyo* 158 (Aug.): 77. (Jap.). – (4-17-19 Yakumo, Meguro-ku, Tokyo, 152, JA).
The article is based on an interview of this outdoor-life monthly with Yuichi HATTO, the popular absolute "Master" of the Japanese traditional *buri* and *toriko* dragonfly catching techniques. A portrait and 9 technical col. phot. illustrate the brief description of the technique. – For other papers on this subject cf. *OA* 9491, 9819.

(9989) HECKER, F., 1994. *Einnischung bei Libellen des Nestos-Flusssystems, Nordost-Griechenland.* Dipl-Arb. Univ. Kiel, Kiel. x+143 pp. – Available from the Author, at DEM 45.- net. – (Wilhelminenstr. 27, D-24103 Kiel).
The Nestos R. represents the border between the NE Greek provinces of Macedonia and Thrace. The work is basically an account of the odon. fauna (47 spp.) of the lower reaches of the river, with thorough, species-wise descriptions of habitat preferences, autecology and biology. It was carried out during March-Sept. 1993, but no voucher specimens were collected and the identification is solely based on photographs. An attempt was also made to produce a checklist of the odon. fauna of Greece, but the Author was not familiar with most of the relevant literature, therefore the list contains but some 60% of the spp. hitherto reported from that country. – Aside of these shortcomings, the work represents a valuable contribution towards our knowledge of the odon. fauna of one of the little explored regions of SE Europe.

(9990) ISHIZAWA, N., 1994. [A note on ♀ Sympetrum baccha mutatinum Ris and on andromorphic ♀ S. e. eroticum (Sel.) at Chichibu-shi, Saitama, central Japan]. *Nature & Insects* 29(14): 6-7. (Jap.). – (1644-15, Yamaguchi, Tokorozawa-shi, Saitama, 359, JA). [Abstract not available].

(9991) ISHIZAWA, N., 1994. [Notes on oviposition

behaviour in Sympetrum e. eroticum (Sel.)]. *Nature & Insects* 29(14): 20-21. (Jap.). – (1644-15, Yamaguchi, Tokorozawa-shi, Saitama, 359, JA).
Several cases are described from 2 habitats in the Yamanashi and Saitama prefectures, Honshu, central Japan. The advantage of the oviposition in tandem is considered from the points of view of energy saving and keeping the ♀ temperature.

(9992) *JAHRESBERICHT [DER] ARBEITSGEMEINSCHAFT LIBELLEN IM LKR. SCHWÄBISCH HALL* [6] [1993/1994], 1994. 33 pp. – (c/o B. Kunz, Veinauer Str. 25, D-74523 Schwäbisch Hall).
The periodical commenced publication in 1987, but the volumes are not consecutively numbered. Those listed in *OA* 7513, 7514 and 9416 actually correspond to vols 3, 4 and 5, resp. – Contents: *Kunz, B. & A. Nowak*: Die Libellen des Landkreises Schwäbisch Hall (pp. 1-33), representing an updated edition of the work listed in *OA* 9416.

(9993) JOHANSSON, F. & L. SAMUELSSON, 1994. Fish-induced variation in abdominal spine length of Leucorrhinia dubia (Odonata) larvae? *Oecologia* 100: 74-79. – (Dept Anim. Ecol., Univ. Umeå, S-90187 Umeå).
The lengths of dorsal and lateral spines on abdominal segments 4, 6 and 9 were measured on last-instar larvae from 7 natural lentic systems containing fish and nine systems lacking fish. Larvae from systems with fish had significantly longer spines than larvae from systems without fish. In contrast, lake/pond area and pH had no effect on the length of spines. The length of the spines was not correlated with larval size, but there was a high correlation between the length of the three spines measured. Also, abundances of L. dubia larvae differed between systems, being significantly lower in systems with fish. Laboratory experiments showed that perch (Perca fluviatilis) handled long-spined larvae for significantly longer times than short-spined larvae. The results suggest that fish predators may induce morphological defences in insects.

(9994) KANO, K. & H. KITA, 1994. [Observations on reproductive behaviour in Aeshna subarctica in Hokkaido]. *Gekkan-Mushi*. 283: 33-34. (Jap.). – (First Author: No. 601, 19-17. Koishigawa 5-chome, Bunkyo-ku, Tokyo, 112, JA).
[Abstract not available].

(9995) KANO, K. & H. KITA, 1994. [Observations on reproductive behaviour in Hemicordulia okinawensis Asahina on Okinawa Island, the Ryukyus, Japan]. *Gekkan-Mushi* 284: 33-34. (Jap.). – (First Author: No. 601, 19-17, Koishigawa 5-chome, Bunkyo-ku, Tokyo, 112, JA).
[Abstract not available].

(9996) KARUBE, H., 1994. A new species and a newly recorded species of the genus Chlorogomphus (Odonata, Cordulegastridae) from West Malaysia. *Bull. Kanagawa prefect., Mus.* (Nat. Sci.) 23: 7-12. (With Jap.s.). – (1-7-34, Tsurumi, Tsurumi-ku, Yokohama, 230, JA).
C. yoshihiroi sp.n. is described and illustrated (holotype ♂: 19 mi from Tapha in the Cameron Highlands direction, W Malaysia, 24-III-1990, deposited at Kanagawa Prefect. Mus.), and C. arooni is recorded from the same and 2 other localities. The new sp. is similar to C. dyak.

(9997) KLINGENBERG, K., 1994. Die Libellen an den Kanäle der Crau, Südfrankreich (Insecta: Odonata). *Ent. Z., Essen* 104(23): 449-460. (With Engl.s.). – (Zool. Inst., Techn. Univ. Braunschweig, Pockelsstr. 10 a, D-38106 Braunschweig).
31 spp. were identified at 22 sampling sites on 6 running water systems in the Crau, southern France. Various aspects of the aquatic habitat assessment through the odon. community analysis are discussed.

(9998) KLIPA, M., T. RADIŠA & M. RADOŠEVIČ, 1994. U carstvu vilenjaka. – [In the kingdom of elfs]. *Priroda, Zagreb* 84(806): 42-43. (Croatian). – (c/o Dr M. Franković, Barutanski breg 30, CRO-41000 Zagreb).
General; mostly brief notes on Libellula depressa, based on observations at Prkovac, Vukomeričke gorice, Croatia.

(9999) KÖNIGSTEDT, B., 1994. [Aeshna affinis, Lenzen, Brandenburg, Juli 1994]. *Limicola* 8(6): 325.– (Author's address unknown).
A photographic record.

(10000) KRONSHAGE, A., 1994. *Bestandserfassung ausgewählter Tiergruppen und ihre Biotopnutzungen im Raum Schwelm. Ein faunistisch-ökologischer Beitrag zur Landschaftsplanung und Stadtökologie (Aves, Reptilia, Amphibia, Insecta: Lepidoptera--Diurna, Saltatoria, Odonata)*. Natur u. Wissenschaft,

Solingen, 183 pp. ISBN 3-927889-13-X. – (Author: Schulte-Bernd-Str. 29, D-48161 Münster).
On pp. 59-69, the odon. assemblage (15 spp.) is listed and its ecological features thoroughly discussed; Westfalia, Germany.

(10001) KURY, D., 1994. Die Wirbellosenfauna der Fliessgewässer in der Region Basel. *Verh. naturf. Ges. Basel* 104: 19-44. (With Engl.s.). – (Murbacherstr. 34, CH-4056 Basel).
Contains a reference to the occurrence of Cordulegaster bidentata and C. boltonii in the region of Basel, Switzerland, without locality data.

(10002) LAISTER, G., 1994. *Naturschutz vor der Haustür: Libellen.* Lay-in: *Öko-L* 16(3): 8 pp. – (Naturk. Stn Stadt Linz, Roseggerstr. 22, A-4020 Linz).
A comprehensive presentation of the order, directed at the general, nature-conscious reader.

(10003) *LA LETTRE DES SOCIETAIRES* [of the Société Française d'Odonatologie], No. 3 (Dec. 31, 1994). – (c/o J.-L. Dommanget, 7 rue Lamartine, F-78390 Bois-d'Arcy).
On 6 pp., it contains lists of SFO publications and various activities, further details on the Brenne Colloquium (with the registration blank), and various management items.

(10004) *LIBELLULA. Mitteilungsblatt der Gesellschaft deutschsprachiger Odonatologen (GdO)*, Vol. 13, No. 3/4 (Dec. 1994). – (c/o Mrs U. Krüner, Gelderner Str. 39, D-41189 Mönchengladbach).
Buck, K.: Libellen im Kreis Steinburg: Bestandserfassung der Funde aus den Jahren 1989 bis 1992 (pp. 81-171).

(10005) LOTZING, K., 1994. Bemerkenswertes gemeinsames Auftreten von 6 Heidelibellenarten in den "Salzwiesen" bei Hohenerxleben (Odonata). *Ent. Nachr. Ber.* 39(2): 129-131. (With Engl. & Fr.s's). – (Strasse d. Deutsch. Einheit 7, D-39418 Stassfurt).
17 spp. are listed from this locality in Nature Reserve "Bodeniederung" nr Hohenerxleben, Sachsen-Anhalt, Germany. The co-occurrence of Sympetrum danae, S. flaveolum, S. pedemontanum, S. sanguineum, S. striolatum and S. vulgatum is remarkable.

(10006) MARTIN, G. & E. THÉVENON, 1994. *Les libellules. La vie secrète des filles de l'air.* La Martinière, Paris. 128 pp. – ISBN 2-73-242028-X. – Price: NLG 120.- approx. Hard cover, 24 x 28 cm.
Directed at the general reader, this is a "monograph" on all aspects of biology, with emphasis on col. photographs, many of which show spectacular motifs, and their reproduction is excellent. The following are the titles of the main chapters: "Introduction" (pp. 9-14), "Histoire et morphologie" (pp. 15-44), "Physiologie et biologie" (pp. 45-66), "Reproduction et vie aquatique" (pp. 67-100), "Biotopes et équilibres écologiques" (pp. 101-116) and "Conclusion" (pp. 117-124). Also added are a brief technical "Glossaire" (p. 126) and a [too brief] "Bibliographie" (p. 128), containing mostly the titles of some of the French commercial books. – It is a refreshing work. In view of the wealth of photographic material, the price is not too high.

(10007) *MARTINIA. Bulletin des odonatologues de France*, Vol. 10, No. 4 (Dec. 1994). – (c/o J.-L. Dommanget, 7 rue Lamartine, F-78390 Bois-d'Arcy).
Grand, D.:Sur Trithemis annulata (Pallisot de Beauvois, 1805) en France continentale et en Espagne du nord-est (Odonata, Anisoptera, Libellulidae) (pp. 65-71); – *Orieux, G.*: Présence d'Onychogomphus uncatus (Charpentier, 1840) dans le département de la Nièvre (Odonata, Anisoptera, Gomphidae) (p. 72); – *Manach, A.*: Captures d'Enallagma cyathigerum (Charpentier, 1840) par les plantes carnivores du genre Drosera (Odonata, Zygoptera, Coenagrionidae) (pp. 73-76); – *Kerautret, L.*: Aeshna isosceles (Müller, 1767) redécouverte dans le département du Pas-de-Calais (Odonata, Anisoptera, Aeshnidae) (pp. 77-78); – *Vigneron, P.*: Les libellules printanières de la montagne de Reims (département de la Marne) (pp. 79-80); – *Dommanget, J.-L.*: Rubrique bibliographique (pp. 80-83); – Analyse d'ouvrages (pp. 84-88).

(10008) MATSUKI, K., 1994. Resting form of Libellula angelina Selys, 1883 (Libellulidae; Odonata). *Nature & Insects* 29(12): 30-35. (Jap., with Engl. title). – (3-1575-14, Hasama, Funabashi, Chiba, 274, JA).
Resting posture is reported for 38 ♂ and 7 ♀ from several localities in Kyushu, Japan (24-IV/5-V-1994).

(10009) MATSUKI, K., 1994. Techniques for collecting dragonfly larvae. *Nature & Insects* 29(13): 17-21. (Jap., with Engl. title). – (3-1575-14, Hasama, Funabashi, Chiba, 274, JA).
[Abstract not available]. The Author is one of the most prolific Japanese students of odon. larvae.

(10010) MERMOD-FRICKER, F., 1994. Bibliographie concernant la faune entomologique suisse, 1992. *Bull. romand Ent.* 12(2): 81-94. – (Centre suisse Cartogr. Faune, Terreaux 14, CH-2000 Neuchâtel).
Contains 11 odonatol. titles.

(10011) MIŠKIĆ, H. 1994. *Vretenca (Insecta, Odonata) Maksimirskih jezera.* – [*Dragonflies (Insecta, Odonata) of the Maksimir lakes*]. Dipl. Rad, Univ. Zagreb. x+56 pp. (Croatian). – (c/o Prof. P. Durbečić, Dept Zool., Univ. Zagreb, Rooseveltov trg 6, CRO-41001 Zagreb).
The odon. fauna (15 spp.) of 4 ponds in the Maksimir Park, Zagreb, Croatia (alt. 119-142 m, total surface 71.730 m²) is described and analysed. On the basis of its composition, the ponds are assessed as oligosaprobic-ß-mesosaprobic. The occurrence of Epitheca bimaculata is of particular interest. – Cf. also *OA* 8731.

(10012) MIZUNAMI, M., 1994. Information processing in the insect ocellar system: comparative approaches to the evolution of visual processing and neural circuits. *Adv. Insect Physiol.* 25: 151-265, pls 1-2 excl. – (Lab. Neuro-Cybernetics, Res. Inst. Electronic Sci., Hokkaido Univ., Sapporo, 060, JA).
The monograph is divided into 7 chapters, viz. "Distribution and structure of insect ocelli", "Functional properties of ocellar neurons", "Behavioural roles of ocelli", "Neural organization of ocellar pathways", "Molecular basis of the ocellar system", "Information processing in the ocellar system", and "Comparative approaches to the evolution of visual systems". It contains several references to the odon., and a very comprehensive bibliography.

(10013) [MONSERRAT, V.], 1994. [Navasia]. *Neuropterist's Newsl.* 1994(4): 3. (Engl.s.). – (c/o Dr M. Ferreras Romero, Depto Biol. Animal (Zool.), Fac. Cirn., Univ. Córdoba, Avda San Alberto Magno s/n, ES-14004 Córdoba).
Journal notice. – For the hitherto published issues cf. *OA* 8737, 9308, 9894.

(10014) MURAKI, A., 1994. [Notes on Macromia urania Ris from the Ryukyus. 3]. *Gekkan-Mushi* 283: 20-26 (Jap.). – (Shigino-nishi 4-2-309, Shigino-nishi 3-chome, Joto-ku, Osaka, 536, JA).
Based on field observations at Ishigaki-jima (1990-1993), the breeding habitat and various aspects of larval and adult behaviour are described. The geographic distribution is stated and some considerations on the conservation of the sp. are provided.

(10015) NARAOKA, H., 1994. Diurnal rhythm of the damselfly Ischnura asiatica Brauer (Coenagrionidae, Odonata). 2. Sperm displacement. *Gekkan-Mushi* 279: 18-21. (Jap., with Engl. title; an unabridged Engl. translation is available from the Author). – (Motoizumi-Fukunoda, Itayanagi-machi, Kitatsugaru-gun, Aomori, 038-36, JA).
The series commenced with the paper listed in *OA* 7414. – Field observations were carried out at a locality in Aomori, Japan. In July-Sept., the copulation takes place between 06.00-11.00 h, lasting per pair 2-3 h, during the later hours the duration is longer. The ♀ sperm storage organs and their swelling are described and illustrated. It is assumed, the ♂ removes sperm from the bursa and from the spermatheca early during stage I.

(10016) *ODONATOLOGICAL LIBRARY NEWS.* Published by the Kansai Research Group of Odonatology, Osaka, No. 14 (March 27, 1994), No. 15 (Dec. 4, 1994). (Jap., with Engl. title). – (Distribution outside Japan: K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA).
In the 2 issues, on resp. 14 and 8 pp., 477 bibliographic units and titles from Japanese periodicals are listed.

(10017) PHILIP, K., 1994. How to collect insects (legally) in Alaska. *News Lepidopterists' Soc.* 194(3/4): 57-64. – (Inst. Arctic Biol., Fairbanks, AK, USA).
Contains a very detailed account of restrictions, legal regulations and collecting permit arrangements, with addresses of National Parks, National Wildlife Refuges, National Forests, BLM District Officers, State Parks and Villages by Native Regional Corporations in Alaska. A scientific research permit is also required for any kind of scientific work in the (Canadian) Yukon and Northwest Territories. Address for aquatic insect collecting permit in Alaska: Div. Sport Fish, AK Dept Fish & Game, Capital Office Park, P.O.B. 25526, Juneau, AK 99802-5526, USA. – Permit applications for Yukon: Director, Heritage Br., Dept Tourism, Governm. Yukon, Box 2703, Whitehorse, YT, Y1A 2C6, Canada; – Northwest Territories: Science Administrator, Sci. Inst. NW Territ., Box 1617, Yellowknife, NT, X1A 2P2, Canada.

(10018) REDER, G., 1994. Beobachtungen zur Kälteresistenz der Grossen Heidelibelle (Sympetrum striolatum) (Charpentier, 1840) (Insecta: Odonata). *Fauna Flora Rheinland-Pfalz* 7(3): 751-756. – (Am Pfortengarten 37, D-67592 Flörsheim-Dalsheim).
A detailed circumstantial evidence is presented on the adult occurrence of S. striolatum at Author's garden pond (Rheinhessen/Rheinland-Pfalz, Germany), during Oct. 27-Nov. 13, 1991, when night temperatures repeatedly dropped to -3°C. – Cf. also *OA* 5475, 7716, 8394, 8553.

(10019) SAHLEN, G., 1994. Rapportera alla fynd av trollsländor! *Ent. Tidskr.* 115(3): 80. (Swed.). – (Sect. Ent., Dept Zool., Univ. Uppsala, Villavägen 9, S-752 36 Uppsala).
A call for records, required for the odon. mapping in Sweden.

(10020) SANTOS QUIRÓS, R., 1994. Emergencia fallida de Orthetrum chrysostigma (Burmeister, 1839) (Odonata: Anisoptera: Libellulidae). *Boln Soc. ent. aragon.* 7: 3-4. – (c./Pacheco y Núñez de Prado 38/1'C, ES-41002 Sevilla).
This is the first definitive record of the sp. for Sevilla, Spain. An abortively emerged individual is briefly described and illustrated.

(10021) SCHLUMPRECHT, H., 1994. Leistungsbeschreibung und Zeitbedarf für zoologische Untersuchungen. *In*: H. Schlumprecht, [Ed.], Handbuch landschaftsökologischer Leistungen, Empfehlungen zur aufwandbezogenen Honorarermittlung, pp. 48-92, Veröff. Ver. umweltwiss. Berufsverbände Dtschl., Vol. 1, Erlangen. ISSN 0945-8204. – (Büro ökol. Stud., Alexanderstr. 5, D-95444 Bayreuth).
The paper represents an absolute novelty in odonatol. literature; the odon. are dealt with on pp. 67-69. For the sake of estimates of the financial costs of odonatol. work, as performed for a variety of customers by the "environmental agencies" in Germany, the standard odonatol. field research methods are briefly described, the required minimal time-expenditure stated, and the objectives and utility of each of them in the assessment of the quality of a particular environment/habitat are briefly specified.

(10022) SEIDENBUSCH, R., 1994. Dragonflies in southern Turkey. *Aqua Geographia* 2(7): 72-80. – (Klenze-Str. 5, D-92237 Sulzbach-Rosenberg).
Engl. ed. of the paper listed in *OA* 9908.

(10023) *SIOJA. [Information bulletin of the SIO Japan Branch Office]*, Osaka, 1994, No. 4 (Nov. 25). (Jap.). – (c/o K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA).
In addition to several management items, the issue contains an almost unabridged translation of the Editorial circular on the future of the SIO periodicals, as circulated with *Odonatologica* 23(4), Dec. 1, 1994.

(10024) STERNBERG, K. & K. BUCK, 1994. Kommensalische Fliege auf Anaciaeschna isosceles (Odonata, Aeshnidae)? *Ent. Nachr. Ber.* 38(3): 211-212. – (First Author: Staatliches Mus. Naturk., Rosenstein 1, D-70191 Stuttgart; – Second Author: Johann-Meyer-Str. 3a, D-25554 Wilster).
While checking a series of photographic slides, a small fly was discovered in the wing of an A. isosceles, taken in the vicinity of Bois Verdun, France, 22-VI-1991. Its identity is uncertain, but Desmometopa is mentioned as a tentative possibility.

(10025) SUHLING, F., 1994. *Einnischungsmechanismen der Larven von Onychogomphus uncatus (Charpentier) (Odonata: Gomphidae).* [Dr rer. nat. Diss. Univ. Braunschweig] Cuvillier, Göttingen. iv+174 pp. – ISBN 3-89588-042-6. (With Engl. & Fr.s's). – (Author: Zool. Inst., Techn. Univ. Braunschweig, Spelmannstr. 7, D-38092 Braunschweig; – Available, at NLG 50.- net, from SIO Central Office, P.O. Box 256, NL-3720 AG Bilthoven).
[Verbatim summary]: Investigating 23 running waters in southern France it could be shown that the larvae predominantly inhabit brooks and diversily structured artifical canals (chapter 3). Whereas most of the structures in 2 intensively studied running waters are colonized, significant differences in larval density were found. Highest larval densities of more than 200 individuals m^{-2} (up to 600 individuals m^{-2}) could be found in areas with sandy to gravelly sediments or boulder situated in the open stream channel. Informations of other dragonfly species living together with O. uncatus are given. – Sampling these structures in a single running water, the Canal de Vergière (CdV), during a period of three years only slight or seasonally influenced correlations between larval density and abiotic factors as sediment grain size, current velocity and depth were found (chapter 4). But an increase of sand particles in the sediment leads to an increase in total larval density. Larval microdistribution depends on larval age and size. Whereas younger and therefore smaller instars pre-

dominantly colonize sandy sediments, larvae in the last two instars were found in highest density in pebble or boulder areas. Similar results were found exponating baskets with gravelly sand, gravel and boulder in the CdV. But during substrate choice experiments in an artificial laboratory running water the distribution of larvae of the last two instars differed from those found in the field. As young instar larvae they significantly prefer gravelly sand. – In chapter 5 informations about life cycle and seasonal regulation are given. Investigations on larval population structure and emergence in the CdV showed clear differences between different sample sites. These differences are effected by larval mortality in the winter season as well as by drift and upstream migration. – Carrying out laboratory and field experiments it could be shown that mortality was density dependent. High larval density leads to intraspecific competition for food, but also effected cannibalism. High density is also responsible for reduced growth and therefore for differences in population structure. Larval activity patterns, which were investigated using video, are influenced by hunger level. The larvae are usually active at night; but whereas saturated larvae are only little active, activity increases after 4 days without food, but decreases again after 10 days (chapter 6). – In chapter 7 informations about the influence of interspecific competition and predation on O. uncatus are given. Using again artificial laboratory streams (see above) it could be shown that substrate choice behaviour of larval O. uncatus is significantly influenced by larvae of two other dragonfly species, Cordulegaster boltonii and Gomphus simillimus, but not by Onychogomphus unguiculatus. In presence of C. boltonii and G. simillimus, which colonize predominantly the sand substrate, the larvae switch from the preferred sand to gravel substrate. This behavior is interpreted as a direct reaction to a strong predator (C. boltonii) or a better adapted competitor (G. simillimus), respectively. Especially young instar larvae are vulnerable to different predators. In contrast the only important predator of full-grown larvae is C. boltonii. Most investigated predators, as fish, caddisfly larvae, and dragonfly larvae, have substrate specific effects. Predation is usually lowest in sand substrate. Therefore the substrate choice behaviour is, as well as the very low larval activity, interpreted as adaption against predation pressure. – O. unguiculatus, which occurs together with O. uncatus in many running water systems, does, in contrast to O. uncatus, not colonize small shady brooks. The reason for this seems to be high predation pressure by C. boltonii. The high vulnerability of O. unguiculatus is causally related to its higher activity effecting more contacts with C. boltonii. Downstream habitats are presumably colonized only by O. unguiculatus because of higher vulnerability of O. uncatus larvae to habitat instability (e.g. because of floods), (chapter 8). – In chapter 9 a valuation of the effects of abiotic and biotic factors on O. uncatus larvae is given.

(10026) SUZUKI, S., 1994. [Orthetrum albistylum speciosum (Uhler) feeding on Sympetrum frequens (Sel.)]. *Nature & Insects* 29(14): 36. (Jap.). – (452 Kashiwa, Kashiwa-shi, Chiba, 277, JA).
Recorded at Iwai-shi, Ibaragi pref., central Japan, 8--X-1994.

(10027) *SYMNET. Newsletter of the Aka-tombo Network*, Ishikawa, No. 1 (Apr. 1, 1994). Edited by Dr T. Ueda (Nat. Sci. Lab., Ishikawa Agric. Coll., Suematsu, 1-308, Nonoichi-machi, Ishikawa-gun, Ishikawa, 921, JA). The newsletter is available in a Jap. and in an (abridged) Engl. ed. The Manager of the latter is Mr N. Ishizawa (1644-15, Yamaguchi, Tokorozawa, Saitama, 359, JA).
The newsletter appears at irregular intervals, several issues annually, and it is devoted to all aspects of "Aka-tombo" research, under which all Sympetrum spp. are here understood (e.g. faunistics, biology, folklore, etc.). It also brings summaries of papers, notes and reports on this subject, published in other periodicals, incl. the daily press, etc. Publication is open to all. The manuscripts are to be prepared in the easy "mushi-pen" style rather than as technical papers. For the time being, the membership in the "Aka-tombo Network" is free. The newsletter is supplied to all members. – C o n t e n t s (of the Engl. ed.): *Ueda, T.*: Invitation to grass roots surveys of Aka-Tombo (p. 1); – *Tone, S.*: On the ocean flight of Sympetrum frequens (p. 2); – *Ishizawa, N.*: S. frequens and S. eroticum eroticum ovipositing secretly under the rice grasses (pp. 2-3); – Delayed emergence of S. frequens in 1993 (p. 3); – Pterothoracic patterns of S. frequens at Tokusawa in the Kamikochi Heights (p. 3): – Oviposition of S. frequens in hot summer (p. 3); – *Shimizu, N.*: Observations of reproductive behaviours of S. frequens in the middle of August (pp. 3-4); – *Yagi, T.*: Observations of S. frequens in 1993 (p. 4); – *Ueda, T.*: Records on the reproductive behaviours of the Sympetrum

species at Tomakomai in the summer of 1978 (p. 4); – *Ishizawa, N.*: The perching height of S. frequens in the Sayama Hills in mid summer (p. 4). – (*Abstracter's Note*: The Jap. ed. has 8 pp. and includes figs & tabs.).

(10028) *TOMBO. ACTA ODONATOLOGICA.* Published by the Society of Odonatology, Tokyo, Vol. 37, Nos 1/4 (Dec. 25, 1994). – (c/o Dr S. Asahina, Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA). *Eda, S.*: Submerged oviposition of Cercion calamorum (frontispiece col. phot., p. 1); – *Asahina, S.*: Records of the gomphid dragonflies recently collected by Japanese entomologists from Nepal and Darjeeling district (pp. 2-17; incl. the description of Davidius aberrans schmidi ssp.n. from Assam); – Description of the female of Rhipidolestes asatoi Asahina, 1994 (pp. 17-18); – A record of the prevalence of Sympetrum species in 1994 as observed in a small premises forest in Tokyo (pp. 19-24); – *Higashi, K. & S. Eda*: New record of Mortonagrion selenion from Saga prefecture (p. 24); – *Arai, Y.*: Ecological observations of Sympetrum frequens in Chichibu city, central Japan. 2 (pp. 25-30); – *Ohgai, H.*: Trithemis aurora Burmeister discovered from Yakushima Island (p. 30); – *Aoki, T.*: Larval development of Asiagomphus pryeri (Selys) in nature. 2. Hatching, larval period, number of instars and emergence (pp. 31-36); – *Sonehara, I.*: Life-history of Mortonagrion selenion (Ris) observed at Tazawa, Nagano prefecture (pp. 37-43); – *Eda, S.*: An introduction to some new magazines devoted to dragonflies in Japan (p. 43); – *Kohama, T.*: Odonata from Iohtorishima, the Ryukyus (pp. 44-45); – Odonata from Irabu and Shimoji Islands, the Ryukyus (pp. 45-46); – *Taketo, A.*: Seasonal change of emergence and sex ratio of Anaciaeschna martini Selys (pp. 47-48); – *Suzuki, K., R. Futahashi & H. Negoro*: Successive invasion and colonization of odonate species into reclaimed land Koshino-kata, Shinminato city, Toyama prefecture, central Honshu, Japan (pp. 49-55); – *Suzuki, K. & R. Futahashi*: Recent conditions of odonate fauna in Toyama prefecture, central Honshu, Japan (pp. 56--60); – *Tanabe, H.*: Documentary pictures of emergence of Rhipidolestes hiraoi Yamamoto (pp. 61-67); – *Inoue, K. & T. Murakami*: Observation on the oviposition of Sympetrum frequens at a high marsh in Hokkaido (pp. 68-69); – *Eda, S.*: Pattern variations of thorax of Lanthus fujiacus (Fraser) (p. 69); – *Asahina, S.*: Dr J.A.L. Watson in memoriam (pp. 70--71); – *Eda, S.*: Bibliography on the Matsumura's Illustrated common insects of Japan, Vol. 5, published in 1933 (pp. 71-72); – Annual meeting of the Society of Odonatology, 1994, held in Tokyo (p. 72).

(10029) TSUBAKI, Y., M.T. SIVA-JOTHY & T. ONO, 1994. Re-copulation and post-copulatory mate guarding increase immediate female reproductive output in the dragonfly Nannophya pygmaea. *Behav. Ecol. Sociobiol.* 35(4): 219-225. – (Second Author: Dept Anim. & Plant Sci., Univ. Sheffield, Sheffield, S10 2UQ, UK).

After copulation, ♂ guards by hovering over ovipositing ♀, repelling conspecific males. Copulation is not always a prerequisite for oviposition in this sp., because females can store the sperm received during previous visits/copulations. An oviposition "episode" consists of several "bouts" of oviposition, separated by periods of perching. – 2 types of ♂-removal experiments were conducted to examine the effects of mating and post-copulatory mate guarding on the ♀ oviposition behaviour. In the first experiment, all males were removed from the habitat to eliminate the effect of re-copulation, mate-guarding and harassment by males. In the second experiment, males were removed immediately after copulation to eliminate the effects of guarding and other post-copulatory ♂-♀ interactions. The experimental data were compared with data obtained under natural conditions. The dipping rate in an oviposition bout was not influenced by copulation or guarding. However, guarded females made more dips per episode than did solitary females. The proportion of time actually spent ovipositing (total bout duration/oviposition episode duration) of guarded females was higher than that of solitary females. Solitary females often oviposited in more than one territorial site, while guarded females usually oviposited within a single territorial site during an oviposition episode. Because males tend to hold territories at sites where egg survival is high, guarded females (and the ♂ guardian) benefit from guarding in terms of egg hatchability. The possible benefits for solitary females are discussed.

(10030) UEDA, T. & N. ISHIZAWA [Ed.], 1994. *Questions in the life history of Sympetrum frequens*, Part 3. Ishizawa, Tokorozawa. 8 pp. – (N. Ishizawa, 1644--15, Yamaguchi, Tokorozawa, Saitama, 359, JA).

This is an excellent Engl. ed. of the work listed in *OA* 9462. It contains the concluding part of the Symposium, with the following papers: *Tsubuki, T.*: The flight activity of the teneral dragonfly, Sympetrum

frequens Selys in relation to the environmental factors (pp.1-2); – *Ishizawa, N.*: Thermoregulation of Sympetrum frequens (pp. 2-3); – *Watanabe, Y.*: Embryonic development of Sympetrum frequens (p. 3); – and the record of discussion on the following topics: "The relation to Sympetrum depressiusculum" (pp. 3-4; by *K. Inoue, N. Ishizawa, T. Ueda, Y. Watanabe*); – "Eggs" (p. 5; by *T. Ueda, Y. Watanabe*); – "Factors of the flight activity" (pp. 5-6; by *K. Ishida, S. Ishida, N. Ishizawa, S. Tone, T. Tsubuki, T. Ueda*); – "Thermoregulation" (p. 6; by *K. Inoue, N. Ishizawa, T. Tsubuki, T. Ueda*); – "Migration" (pp. 6-7; by *K. Inoue, N. Ishizawa, T. Ueda*); – "Sympetrum frequens in the Awajishima Island" (p. 7; by *K. Inoue, S. Ishida, N. Ishizawa, S. Tone, T. Ueda*); and – "Sympetrum frequens ovipositing in swimming pools" (pp. 7-8; by *K. Ishida, S. Ishida, T. Ueda, Y. Watanabe*). – Pts 1 & 2 are not available in Engl. ed.

(10031) URICH, K., 1994. *Comparative animal biochemistry.* Springer, Berlin-Heidelberg-New York-London-Paris-Tokyo-Hong Kong-Barcelona-Budapest. xviii+782 pp. – ISBN 3-540-57420-4 & 0-387-57420-4. – Price: CHF 178.- net. – (Author: Inst. Zool., Univ. Mainz, Niklas-Vogt-Str. 25, D-55131 Mainz).
This is an advanced text- and reference book, dealing with the molecular structures of body substances and the chemical processes of metabolism for the first time throughout the whole animal kingdom. It includes also a reference to the odon. The biochemical variation is explained as adaptation to particular environmental conditions, or as the result of phylo-genetic diversification. The value of the work is enhanced by listing more than 4600 bibl. references of primary publications.

(10032) VONWIL, G. & R. OSTERWALDER, 1994. *Libellenfauna Reusstal 1988-1992.* Baudepartement Aargau, Aarau [Grundlagen und Berichte zum Naturschutz, Vol. 7], 83 pp. – Price: CHF 10,- net. – (Orders to: Abt. Landschaft & Gewässer, Sekt. Natur & Landschaft, Baudepart. Kant. Aargau, Mühlemattstr. 54, CH-5001 Aarau).
The volume contains 2 papers, viz. *Vonwil, G.*: Libellenfauna Reusstal 1988-1992. 1. Stillgewässer (pp. 1-53); and – *Osterwalder, R.*: Die Grüne Keiljungfer (Ophiogomphus cecilia) und andere Fliessgewässerarten im aargauischen Reusstal (pp. 53-82).

(10033) WATANABE, Y. & H. ANDOH, 1994. [Twin embryo of Epiophlebia superstes Selys]. *New Ent.* 43(1/2): 28. (Jap.). – (First Author: 205 Shukugawa-Hills, 2-20 Suehiro-cho, Nishinomiya, Hyogo pref., 662, JA; – Second Author: Seisen Women's Coll., 2-120-8 Ueno, Nagano, 381, JA).
[Abstract not available]; 7 micrographs of the embryo are included.

(10034) WENDLER, A. & J.-H. NÜSS, 1994. *Libellules. Guide d'identification des libellules de France, d'Europe septentrionale et centrale.* Soc. Fr. Odonatol., Bois-d'Arcy. vi+130 pp. – ISBN 2-9507291-1-8. – Price: FF 85.- net. – (Orders to: Société Française d'Odonatologie, 7 rue Lamartine, F-78390 Bois-d'Arcy).
French ed. of the work listed in *OA* 8018, translated and adapted by H. Heidemann and J.-L. Dommanget.

(10035) YAMANE, S. & T. HASHIGUCHI, 1994. [Pantala flavescens dived into the sea]. *Insectarium, Tokyo* 31(10): 342. (Jap.). – (Second Author: Sato-mura, Satsuma-gun,Kagoshima pref., 896-11, JA).
July 24, 1994, at Sato-mura, Kami-Koshi, Kikai-jima Is., Kagoshima pref., Japan, when rice was harvested, numerous P. flavescens, normally residing in paddy fields, took off to the seashore and were diving into the sea at the W coast of the island. – On Sept. 5, 1994, numerous individuals of the same sp. were seen gathering at the light of a schoolship, "tens of kilometers" off the Kikai-jima Is., Japan. – (*Abstracter's Note*: In a personal communication to the Editor of *Odonatologica*, the translator of this note, Mr N. Ishizawa [1644-15, Yamaguchi, Tokorozawa, Saitama, 359, JA], very strikingly compared the Pantala sea diving with the well known suicidal behaviour of the lemming).

(10036) YANG, Z. & S. LI, 1994. Description of a new species of Polycanthagyna from Mt Dabashan, China (Odonata: Aeshnidae). *Acta zootaxon. sin.* 19(4): 445-448. (Chin., with Engl.s. & fig. captions). – (Dept Biol., Hanzhong Teachers' Coll., Hanzhong, Shaanxi-723000, PR China).
P. chaoi sp.n. is described and illustrated (holotype ♂, paratype ♂: Mt Dabashan, Sichuan prov., no date; deposited at authors' institution). It is similar to P. erythromelas, from which it can be separated by the black background colour of thorax (with yellow-green patterns), and by the subapical dorsal tubercles on the superior anal appendages.

1995

(10037) *The DRAGON-FLIER. Newsletter of the Ohio Dragonfly Survey*. Columbus, Vol. 5, No. 1 (Jan. 1995). – (c/o B. Glotzhober, Ohio Hist. Soc., 1982 Velma Ave., Columbus, OH 43211-2497, USA).
In addition to some management notes and the "News of members", the issue contains an illustrated summary of *Y. Hatto's* paper on the traditional Japanese ("buri" or "toriko") method of catching dragonflies, as published in *Odonatologica* 23(1994): 283-289.

(10038) ISHIDA, S., 1995. The dragonfly fauna of Bonin Islands and its present condition. *Nature & Insects* 30(1): 12-17. (Jap., with Engl. title). – (Author's address not stated).
[Abstract not available].

(10039) JURZITZA, G., 1995. [Buchbesprechung] Libellen-Larven bestimmen. *Kosmos* 1995(2): 67. – (Reinmuthstr. 27, D-76187 Karlruhe).
A book review of the volume listed in *OA* 9273.

(10040) KOTARAC, M., 1995. *Zasnova atlasa kačjih pastirjev (Odonata) Slovenije. – Principles for the distribution atlas of dragonflies (Odonata) of Slovenia*. M.Sc. thesis, Fac. Biol., Univ. Ljubljana, Ljubljana. ix+104 pp. (Slovene, with Engl.s.). – (Marohovih 11, SLO-62000 Maribor).
The objective of the present work was to develop a tentative method for the storage and retrieval of computerized information on the odon. distribution in Slovenia. Technical details are described and compared with the information and coverage presented in a number of similar works on the European odon. fauna. General distribution maps (UTM grid, 10 × 10 km) and vertical distribution graphs (100 m) are presented for the 71 spp. hitherto known to occur in Slovenia. Detailed locality data and the circumstantial evidence on the respective records, though stored in the computer, are omitted in the present (abridged) edition. The information presented is based on critical assessment of faunistic literature (8%), on unpublished museum and private collections (8%) and on 869 registration blanks, contributed by 11 collaborators of the Slovene Odonata Mapping Scheme (84%). In all, 4493 records, from 636 localities, are considered. For each sp., the total number of records and localities, the number of localities evidenced after 1979, the number of documented breeding sites, and the year of the last record are stated. Although the coverage of the national territory (and that of most of the UTM squares and many localities) is considered as yet unsatisfactory, some more or less definite distribution patterns are evident in some spp. Consequently, the work represents a useful tool for preparation of national and regional Red Lists, and for the drafting of various research projects in the fields of ecology and biogeography.

(10041) *LIBELLENNIEUWSBRIEF*, Hilversum, Vol. 3, No. 1 (Jan. 1995). – (c/o V. Kalkman, v. Hogendorplaan 11, NL-1215 EG Hilversum).
T. de Groot reports on her 2-yr systematic observations on the odon. community succession in a newly made pond at the outskirts of the city of Utrecht (pp. 3-4). *M. van der Weide* is emphasizing the importance of adequate record documentation that should enable the subsequent identification check, when necessary (pp. 4-5). – The rest of the issue contains various management notes. So far 2128 blanks for the (new) Netherlands Mapping Scheme were contributed by 95 colaborators (1157 by the 10 most active persons). Likewise, out of the ca 10000 hitherto gathered records, 5792 were brought together by 10 collectors.

(10042) *LINDENIA. Notiziaro dell'Ufficio nazionale italiano della Società odonatologica internazionale*, Roma, No. 23 (Jan. 1, 1995). – (c/o Prof. Dr C. Utzeri, Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma). [*Utzeri, C.*]: Il futuro della SIO: risposte dei soci al questionario verde (p. 103); – Primo simposio odonatologico della comunità regionale adriatico-alpina (pp. 103-104); – [*Kiauta, B.*]: Periodici di odonatologia attualmente in stampa (pp. 104-106); – [*Utzeri, C.*]: Bibliografia (p. 106; 18 titles).

(10043) MITRA, T.R., 1995. Additions to the odonate fauna of the Great Nicobar island, Indian Ocean. *Opusc. zool. flumin.* 129: 1-6. – (18/1 Dakshin Para Rd, Calcutta-700028, India).
Pseudagrion pruinosum (Burm.), P. williamsoni Fr., Libellago aurantiaca (Sel.), Anaciaeschna jaspidea (Burm.), Gynacantha dravida Lieft., G. subinterrupta Ramb., Acisoma p. panorpoides (Ramb.), Camacinia gigantea (Br.), Diplacodes trivialis (Ramb.), Orthetrum s. sabina (Dru.), and Tramea virginia (Ramb.) are added to the fauna of the island. The previously known spp. are also listed, the biogeographic composition of the fauna is assessed, and the regional

bibliography is appended.

(10044) *PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON THE CONSERVATION OF DRAGONFLIES AND THEIR HABITATS*, Kushiro, Hokkaido, Japan, 13-15 August 1993. Edited by P.S. Corbet, S.W. Dunkle & H. Ubukata; published (Jan. 1995) by Jap. Soc. Preserv. Birds, Kushiro. xii+70 pp. – (Available at NLG 70.- from SIO Central Office, Bilthoven).
Moore, N.: Preface: Dragonfly conservation – international and national (p. i); – *Corbet, P.S., S.W. Dunkle & H. Ubukata*: Editors' preface (pp. ii-iii); – *Ubukata, H.*: Dragonflies of Kushiro Marsh (Kushiro Shitsugen National Park) which are rare in Japan (p. v; col. pl., with reference to p. ii); – *Corbet, P.S.*: Habitats and habits of world dragonflies and the need to conserve species and habitats (pp. vi+1-7); – *Samways, M.J.*: Conservation of the threatened, endemic dragonflies of South Africa (pp. vii+8-15); – *Watson, J.A.L.*: The conservation status of the enigmatic Australian dragonfly Hemiphlebia mirabilis Selys (pp. viii+16-18); – *Eda, S.*: The conservation of dragonflies, including endangered or vulnerable species, in Japan (pp. ix+19-22); – *Dunkle, S.W.*: Conservation of dragonflies (Odonata) and their habitats in North America (pp. x+23-27); – *Ott, J.*: Do dragonflies have a chance to survive in an industrialised country like Germany? (pp. xi+28-44); – *Schmidt, E.*: A survey of threatened dragonfly habitats in central Europe, especially bogs, and bog management (pp. xii+45-68); – *Moore, N.*: Message to the International Symposium on the Conservation of Dragonflies and their Habitats (p. 69); – *"Kushiro Appeal"* arising from the International Symposium on the Conservation of Dragonflies and their Habitats (p. 70). – (*Abstracter's Note*, with reference to the statement on p. iii: Due to the unfortunate circumstances beyond his control, *B. Kiauta* was unable to meet the deadline for submission of the manuscript of his presentation on "Collectors' code of ethics in the light of odonate conservation". According to the Organising Secretary's information, dated 11 March 1994, the Japanese tape-recorded text of this address is scheduled to appear in the Japanese ed. of the Proceedings).

(10045) RETTIG, K., 1995 [published Nov. 1994]. Verbreitung und Flugzeiten der Libellen Ostfrieslands. *Beitr. Vögel- Insektenwelt Ostfrieslands* 78: 2-9. – (Danziger Str. 11, D-26725 Emden).
Distribution maps and statements of the first and last adult record of 40 spp.; Ostfriesland, Germany. No comments.