ODONATOLOGICAL ABSTRACTS

1973

(9031) [DEOM, P.], 1973. Pyrrhosoma nymphula, la petite nymphe au corps de feau. *La hulotte des Ardennes* 13: 2-19. – (Orders to: "La Huloite", Boult-aux-Bois, F-08240 Buzancy; – Swiss customers: c/o M. Eisele, 17 rue de Cossonay, CH-1008 Prilly).
The biology and life history are described and illustrated (in a special, humorous style!) in one of the most widespread and popular, very cheaply produced nature conservation periodicals in France. This presentation certainly is among the literary "pearls" in the European odonatological literature. – For more information on the journal and Author (= Ed.) cf. *Marie-France* 319(1982): 14-17. A similar odon. article, by the same Author, appeared also in No. 21 (1974). All issues are continuously available in reprint editions.

1975

(9032) [FRÄNZEL, U.], 1975. Grossrechner simulieren biologische Schädlingsbekämpfung. Im Computer krabbeln Milben und Libellen. *Die Welt* 1975(300), 1 p.; issue of Dec. 27. – (Langwartweg 101, D(W)-5300 Bonn-1).
A renown daily's article on the late Professor H. Kaiser's computer program simulating the adult Aeshna cyanea behaviour. – For his biography and evaluation of work cf. *OA* 6242.

1979

(9033) BEARDSLEY, J.W., 1979. New immigrant insects in Hawaii: 1962 through 1976. *Proc. hawaii. ent. Soc.* 13(1): 35-44. – Dept Ent., Univ. Hawaii, Honolulu, HA, USA).
No accidental odon. immigrant species is on record for the period 1937-1961, and 1 such sp. is reported for Hawaii during 1962-1976. The name is not given, but the statement probably refers to Orthemis ferruginea, recorded for the first time from Oahu on 4-XII-1976. – Cf. also *OA* 9034.

1980

(9034) BEARDSLEY, J.W., 1980. Notes and exhibitions. Orthemis ferruginea (Fabricius). *Proc. hawaii. ent. Soc.* 23(2): 183. – (Dept Ent., Univ. Hawaii, Honolulu, HA, USA).
4 specimens are reported from 4 localities on Oahu, Hawaii. – Recently, this neotropical sp. has also been recorded from the Hawaiian island of Kauai (cf. *OA* 8937).

(9035) HEIMPEL, W., 1980. Insekten. *Bull. Assyrol.* 6(1976/1980): 105-109. – (Author's address unknown).
Contains information on dragonfly terminology and mythology in the Summerian/Akkadian languages and literature. In Akkadian, the dragonfly is called *"ku-li-an-na"* (= *"friend of heaven"*, one of the heroes killed by Ninurta). Dragonfly eggs, *"ku-li-l i(tú)"*, were used as one of the ingredients in a medicine against menstruation pains. – Cf. also *OA* 476, 9100.

1983

(9036) BELLSTEDT, R., 1983. Weitere Nachweise von Sympetrum pedemontanum (Allioni) und

Orthetrum brunneum (Fonscolombe) (Odonata) in Thüringen. *Entomofaun. Inform.* 2(1): 11-12. – (Mus. Natur. Parkallee 15, D(O)-5800 Gotha).
The 2 spp. are recorded from 2 localities each in the districts of Bad Langensalza and Erfurt-Land, Thuringia, Germany.

1984

(9037) KIM, D.H., H.C. PARK & C.E. LEE, 1984. About the chromosome [sic!] of a damselfly Calopteryx atrata Selys (Zygoptera: Odonata). *Nature & Life, Kyungpook* 14(1): 13-17. (Korean, with Engl.s.). – (First Author: Dept. Biol., Coll. Sci., Yeungnam Univ., Kyungsan-632, Kyungbuk, Korea).
[This completes *OA* 8922]. – In lacto-propionic orcein primary spermatocyte squash preparations, n ♂ = 13 is reported. A fragment was noticed at M II, and some geographical variation was evidenced in material from 6 different Korean populations.

(9038) RUSEV, B.K., M.I. NIKOLOVA & M.A. DIMITROVA, 1984. Tendencii v izmeneniyata na hidrobiologichnoto i saprobiologichnoto s'stoyanie na reka Tundzha. I. 1955-1967 g. – Hydrobiological and saprobiological alterations in the Tunja River. I. 1955-1967. *Hidrobiologiya, Sofia* 22: 59-73. (Bulg., with Russ. & Engl.s's). – (Inst. Zool., Bulg. Acad. Sci., Blvd Ruski 1, BG-1000 Sofia).
15 odon. spp. are listed from 14 localities on the Tunja R., Bulgaria.

1985

(9039) GOETHE, F., 1985. Zur Erinnerung an Hennig Schumann (1906-1985). *Ber. naturh. Ges. Hannover* 128: 313-316. – (Kirchreihe 19b, D(W)-2940 Wilhelmshaven).
A good biography with a portrait. – Cf. also *OA* 9041.

(9040) KIM, D.H., W.H. PARK, H.C. PARK & C.E. LEE, 1985. A phylogenetic study of some Korean damselflies (Zygoptera, Odonata). *Nature & Life, Kyungpook* 15(1): 23-28. (Korean, with Engl.s.). – (First 2 Authors: Dept Biol., Coll. Sci., Yeungnam Univ., Kyungsan-632, Kyungbuk, Korea; – Last 2 Authors: Dept Biol., Coll. Nat. Sci., Kyungpook Univ., Taegu-635, Korea).
[This completes *OA* 8924]. – The spermatocyte complements were examined in Calopteryx virgo japonica, C. atrata, Platycnemis phyllopoda (all n ♂ = 13), Ischnura asiatica, Cercion calamorum and C. hieroglyphicum (all n ♂ = 14). In all but I. asiatica, some chromosome fragments were also occasionally noticed. Cytologically, P. phyllopoda is considered closer to the Calopterygidae than to the Coenagrionidae.

(9041) STAVEN, K., 1985. Hennig Schumann zum Gedanken. *Beitr. Naturk. Niedersachs.* 39(1): 1-4. – (Fredener Str. 18, D(W)-3320 Salzgitter-1).
Biography, complete bibliography, evaluation of work and a portrait of the well-known German odonatologist (born: 1-VIII-1906, Magdeburg; deceased: 3-III-1985, Hannover; Dipl.-Ing. in Leipzig, Braunschweig and Hannover). He was publishing (1948-1974) on extant and fossil European odon.; of particular interest are his 2 (almost classical) papers on the capture-mark-recapture studies in the Hannover area (1960, 1961). – Cf. also *OA* 9039.

(9042) WHALLEY, E.S., 1985. The systematics and palaeogeography of the Lower Jurassic insects of Dorset, England. *Bull. Br. Mus. nat. Hist.* (Geol.) 39(3): 107-189. – (Author's current address unknown).
In the Anisozygoptera, the following new taxa are described: Liassophlebia pseudomagnifica sp.n., Hypsothemis fraseri sp.n., and Dorsettia laeta gen.n., sp.n., all from the Lower Lias of Dorset, UK. The environment from which the insects were derived is considered, and the distribution of land masses is postulated based on the data derived from the fossil insect record.

1986

(9043) BREUER, M., 1986. *Die Erfassung der Libellen (Insecta: Odonata) an Still- und Fliessgewässern der Stadt Hannover.* Untersuchungen im Auftrag der Stadt Hannover. ii+41 pp. – (Lehrgeb. Zool.-Ent., FB Biol., Univ. Hannover, Herrenhäuser Str. 2, D(W)-3000 Hannover-21).
The results are presented of the 1986 odon. mapping in the Hannover city area, Germany.

The localities, habitats and local status of each of the 31 recorded spp. are stated, and the "odonatol. value" of the regional wetland habitats is assessed.

1988

(9044) SAMS, J. & D. CARSON, 1988. *The discovery of power through the ways of animals*. Bear, Santa Fe/NM. – ISBN 0-939680-53-X.
The book goes with a separate pack of American Indian medicine cards, by way of an explanation of the cards. Card No. 27 is the "Dragonfly"; the corresponding text appears on pp. 144-146, giving a poem and explaining the meaning of the "dragonfly medicine".

1989

(9045) BRULC, U., 1989. Utrinki s poti po Planinskem polju. – [Notes from a field trip to the Polje of Planina]. *Proteus, Ljubljana* 51(9/10): 374-375. (Slovene). – (Author's address not stated).
Aeshna cyanea is recorded from an unspecified pond in the Polje of Planina ("Planinsko polje"), Slovenia.

(9046) LECLERCQ, J. & C. THIRION, 1989. Les insectes du célèbre diptyque de Joris Hoefnagel (1591) conservé au Musée des Beaux-Arts de Lille. *Bull. Annls Soc. r. belge Ent.* 125: 302-308. – (Zool. gén. & appl., Fac. Sci. Agron., B-5800 Gembloux).
The 4 odon. spp. in the famous diptych of Joris Hoefnagel (1542-1600) "*Allégorie de jour et de la vie*" / "*Allegorie de la nuit et de la mort*", dated 1591 and preserved in the Musée des Beaux-Arts at Lille, are identified and the composition is discussed.

(9047) NISTRI, A. & S. VANNI, 1989. L'evoluzione della vita. *In*: M. Bianca, [Ed.], La scienza a Firenze: itinerari scientifici a Firenze e provincia, pp. 62-71, Provincia di Firenze & Alinea, Firenze. – ISBN none. – (Publisher: Alinea, Via Pierluigi da Palestrina 17/19, I-50144 Firenze; – Second Author: Mus. Zool. "La Specola", Univ. Firenze, Via Romana 17, I-50125 Firenze).
On p. 68, Hemianax ephippiger is recorded from a man-made lake nr San Vincenzo a Torri (Scandicci), Firenze prov., Italy, but no date is stated.

(9048) STALLIN, P., 1989. La faune de la mare-Asse. *Bull. Soc. Etud. Sci. nat. Elbeuf* 1988/1989: 29. – (B.P. 137, F-76501 Elbeuf).
9 odon. spp. are listed from a locality at Martot, Normandy, France.

(9049) STALLIN, P., 1989. Présence en Normandie de Crocothemis erythraea (Brullé, 1832). *Bull. Soc. Etud. Sci. nat. Elbeuf* 1988/1989: 27-28. – (B.P. 137, F-76501 Elbeuf).
The sp. has been recorded for the first time from Normandy, France in June 1988 (Acquigny/Eure). 2 subsequent localities are given here along with the lists of the other odon. spp. evidenced at all 3 habitats.

1990

(9050) HASELHUHN, F., A. HESSE, U. SCHLETTE, H. SCHMEISKY, P. RZEPKA & K. WAGNER, 1990. Voruntersuchungen für eine ökologische Bestandsaufnahme an sechs Tagebaurestgewässern unter Berücksichtigung von Vegetation und Libellenfauna. *Mitt. Ergänzungsstud. ökol. Umweltsicherung* 9: 69-141. (c/o Rzepka/Schmeisky/Wagner, Gesamthochsch. Kassel, Nordbahnhofstr. 1a, D(W)-3430 Witzenhausen).
6 ponds, left over from the open-cast mining works at Klein Steinberg, southern Lower Saxonia, Germany, were studied with special reference to the odon. (19 spp.). Habitat requirements of the resident spp. are described and analysed. The current status of conservation of the area is considered adequate, and suggestions are made for the management in the future.

(9051) YEN, A.L., T.R. NEW, B.D. VAN PRAAGH & P.J. VAUGHAN, 1990. Invertebrate conservation: three case studies in south-eastern Australia. *In*: T.W. Clark & J.H. Seebeek, [Eds], Management and conservation of small populations, pp. 207-224, Chicago Zool. Soc., Brookfield. – (First Author: Invert. Surv. Dept, Mus. Victoria, 71 Victoria Crescent, Abbotsford, Vic. 3067, AU; – Second Author: Dept Zool., La Trobe Univ., Bundoora, Vic. 3083, AU).
The diversity of invertebrate animals and the

lack of detailed information about them limit the development of conservation programs. Species-oriented conservation programs for three contrasting species of invertebrates from southeastern Australia are outlined, the giant Gippsland earthworm (Megascolides australis McCoy), the Eltham copper butterfly (Paralucia pyrodiscus lucida Crosby) and Hemiphlebia mirabilis Selys. These are exceptional cases and the major need for conservation of these and other invertebrates is protection and management of their habitat.

1991

(9052) BHARDWAY, A.C. & N. TYAGI, 1991. Ultrastructure of mesenteron of Pantala flavescens Fabr. (Libellulidae: Odonata). *Uttar Pradesh J. Zool.* 11(2): 157-161. – (P.G. Dept Zool., Sanatam Dharm Coll., Musaffarnagar-251001, India).
Scanning electron microscope study of mesenteron has revealed longitudinal folded inner surface, with numerous irregularly disposed villose. These are considered as an assemblage of secretory cells. The nidi are situated at the base of each fold; slipping out slightly and accomodated well within the musculature. The external surface of mesenteron possesses longitudinal, circular muscle bundles and profuge vascular and tracheal supply. The distinct oesophageal valve incorporates zones of muscle reversal and epithelia deflection. The peritrophic membrane has been poorly sighted at this place, however the same has been noticed distinct in rest of the mesenteron. The pyloric valve made up of 6-8 pyloric pads. The significance of valves, rich blood and aerial supply in the mesenteron are discussed.

(9053) DE MARMELS, J., 1991. The dragonflies (Odonata) of Pantepui: endemisms, distributional patterns and relations to other faunistic regions. *Resum. 3 Jorn. Investig. Fac. Agron., Maracay*, pp. 43-44. (Span. & Engl.). – (Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Aptdo 4579, Maracay 2101-A, Venezuela).
[Verbatim]: 45 endemic spp. or sspp. are presently known to occur in the Pantepuyan region of Venezuela. They belong in 27 genera, 6 of which are also endemic. 11 spp. are widely distributed within Pantepui, while 9 are found only E. of the Caura R. W of this river 3 areas of endemism can be recognized (northern, central and southern distributional centres). The Pantepuyan genera Rimanella Needham, Iridictyon Needham & Fisher and Dimeragrion Calvert suggest relationships with some African genera, with representatives on the high mesas along the Nigeria-Cameroon border. Some Pantepuyan forms have close relatives in the Andes and in the Coastal Cordillera, while only 2 spp. are common to both regions, but are absent from the tropical lowlands.

(9054) GAKKEN ILLUSTRATED NATURE ENCYCLOPEDIA, 1991. *The insects of Japan*, Vol. 3: *Grasshoppers, bees, cicadas, dragonflies, etc.* Gakken, Tokyo. 402 pp., numerous col. pls incl. – ISBN 4-05-103850-5. – Price: ¥4500,- net. (Jap., with Engl. title & taxonomic nomenclature). – (Publishers: 40-5, Kami-Ikedai, 4--chome, Ohta-ku, Tokyo, 145, JA).
The natural-size col. photographs of most Japanese odon. spp. are given on pp. 74-102, and some annotations are added in the text.

(9055) GORB, S.N., 1991. Refleksy fiksacii golovy pri polete strekoz Odonata. – Fixation reflexes of the head in the flight of the dragonflies Odonata. *Zh. evol. Biohim. Fiziol.* 27(4): 472-478. (With Engl.s.). – (Lab. Insect Physiol., Schmalhausen Inst. Zool., Ukrain. Acad. Sci., Lenin St. 15, UKR-252601 Kiev).
In resting insects the head position is fixed. Defixation takes place simultaneously with the beginning of flight. The muscle which provides for the abduction of postcervical sclerite is triggered in accordance with the Fraenkel's reflex. The return to the original position occurs passively, due to the natural elasticity of the postcervical and cervical cuticle, at the inhibition of the said muscle. The functioning of this system in various behavioural activities was investigated.

(9056) HOFFMANN, J., 1991. Perithemis parzefalli spec. nov. (Anisoptera: Libellulidae), a new dragonfly from Peru. *Revta peru. Ent.* 33: 97-101. (With Span.s.). – (Depto Ent., Mus. Hist. Nat., Univ. Nac. San Marco, Apdo 14-0434, Lima--14, Peru).

The new sp. (holotype ♂: Panguana, Rio Llullapichis, Huánuco, alt. 220 m; 2-X-1987; deposited at Author's institution) is described, illustrated and compared with P. mooma Kirby, 1889, also collected at the same locality and habitat. The ♂ of the new sp. is distinguished by the strongly curved hamules (posterior lamina), which end in sharp, black tips. The smooth yellowish wings with wide hyaline tips and differently coloured veins also set P. parzefalli apart from other species in the genus. The territorial behaviour is described and contrasted with that of P. mooma.

(9057) PARKER, S. (author)/KRALJ, A. (translator), 1991. *Ribniki in reke.* – [*Pond and river*]. 64 pp., Pomurska založba, Murska Sobota. – ISBN 86-7195-086-7. (Slovene). – Price in Slovenia: SIT 1575.- net.
This is the Slovene translation of the work, published originally (1988) by Dorling Kindersley, London. On pp. 48-49, it contains brief descriptions, col. photographs and Slovene vernacular names of 14 odon. spp. – (For the Slovene dragonfly names cf. also *OA* 8831).

(9058)* SCHMIDT, B., 1991. *Untersuchung von Libellenvorkommen (Flach- und Zwischenmoorarten) im Bodenseeraum und Oberschwaben. Verbreitung und Ökologie von Nehalennia speciosa (Zwerglibelle), Sympecma paedisca (Sibirische Winterlibelle) und Sympetrum depressiusculum (Sumpf-Heidelibelle) im südwestlichen Alpenvorland.* Landesanstalt Umweltschutz Baden-Württemberg, Karlsruhe, 51 pp. – (Kohlenbacher Talstr. 18, D(W)-7808 Waldkirch-Kollnau).
Based on field studies in the Constance Lake area, S Germany, this is an outstanding work on habitat requirements and population biology of the 3 spp. mentioned in the title.

(9059) TERZANI, F. & A. MASCAGNI, 1991. Ricerche odonatologiche in Toscana. 4. Popolamento di un laghetto artificiale in Val di Pesa. *Atti Mus. civ. Stor. nat. Grosseto* 14: 55-63. (With Engl.s.). – (Mus. Zool. "La Specola", Univ. Firenze, Via Romana 17, I-50125 Firenze).
17 spp. are listed and the composition of the fauna of a man-made lake in the Pesa Valley, Tuscany, Italy, is discussed. Hemianax ephippiger represents the third provincial record of this sp.

(9060) THOMAS, M., 1991. *Comparative studies on the functional morphology of brachial chamber of Ictinogomphus rapax (R.) and Anax guttatus (B.) (Anisoptera: Odonata).* Ph. D. thesis, Univ. Madras. xiv+60 pp., 13 pls excl. – (Dept Zool., Madras Christian Coll., Tambaram, Madras, India).
[In accordance with Author's request, no abstract can be published. Xerox copies of the book are available from the SIO Central Office, at Hfl. 50.- net.]

1992

(9061) AMBRUS, A., 1992. Dragonfly fauna of a small artificial fishing-pond (lake Kacsa at Tatabanya, Hungary). *Counc. Europe environ. Encounters* 14: 98-99. – (Jurisich u. 16, HU-9495 Kópháza).
Some of the locally important sp. are listed. In the Appendix, the status of Stylurus flavipes in Europe and in Hungary is discussed.

(9062) ANDERS, U. & K. GRABOW, 1992. Sympetrum depressiusculum (Libellulidae): Fortpflanzungsverhalten in Massenansammlungen. *Publ. wiss. Film (Biol.)* 21: 45-58. (With Engl. & Fr. s's). – (c/o Prof. Dr G. Rüppell, Zool. Inst., Univ. Braunschweig, Pockelsstr. 10a, D-38106 Braunschweig).
The explanatory text for Film E-3133, by G. Rüppell. – The appearance in vast numbers clearly illustrates the events of the day in this sp. In the morning tandem formation takes place. Around midday, the tandems arrive at the reproduction sites and lay eggs. After the separation, they search for favourable places, where they spend the rest of the day feeding. These places also represent their dormitories. – [Slow motion frames].

(9063) ANĐUS [= also ANDJUS], L., 1992. New data on the distribution of Odonata in Serbia. *Glasn. prir. Muz. Beograd* (B) 47: 149-170. (With Serbian s.). – (Nat. Hist. Mus., Njegoševa 51, P.O. Box 401, YU-11000 Beograd, Serbia).
A commented list of 43 spp. from 69 localities.

Of regional interest are the new records of Lestes macrostigma, Pyrrhosoma nymphula, Aeshna cyanea, Hemianax ephippiger and Somatochlora metallica. – Cf. also *OA* 7580.

(9064) BELLSTEDT, R., C. LEHMANN & W. WESTHUS, 1992. Flora und Fauna der Alperstedter Kiesgruben bei Stotternheim, Kreis Erfurt-Land. *Abh. Ber. Mus. Natur Gotha* 17: 65-82. – (Mus. Natur, Parkallee 15, Postfach 217, D(O)-580 Gotha).
6 odon. spp. are reported from gravel pits nr Stotternheim, Erfurt-Land distr., Thuringia, Germany.

(9065) BOULTON, A.J. & P.S. LAKE, 1992. The ecology of two intermittent streams in Victoria, Australia. II. Comparisons of faunal composition between habitats, rivers and years. *Freshw. Biol.* 27: 99-121. – (First Author: Dept Zool., Univ. Adelaide, G.P.O. Box 498, Adelaide, SA 5001, AU).
Aquatic macroinvertebrate assemblage composition within and between habitats (pools and riffles) at 4 sites is compared. A reference is made to 5 odon. spp., but only Hemicordulia ?tau is listed. – Cf. *OA* 8524.

(9066) BRENDEL, U., 1992. *Die Ansprüche der Kleinen Zanglibelle (Onychogomphus forcipatus) an das Biotop Fliessgewässer (Odonata: Gomphidae) – anhand eines ausgewählten Abschnitts des Regen (Oberpfalz).* DiplArb. Univ. Regensburg. 93 pp. – (Author's address unknown).
The specific association of larvae and adults with running water biotopes is thoroughly examined, analysed and discussed. The larvae prefer sandy bottom and utilise certain bank structures for the emergence. The ♂♂ show preference for sunny sections, with abundant perching sites. The man-made landscape exercises but little influence on adult abundance, except in cases where a direct interference with the aquatic habitat is involved (e.g. intense recreational activities). Man-made structures in and along the stream have a positive impact on population density.

(9067) DE MARMELS, J., 1992. Dragonflies (Odonata) from the Sierras of Tapirapeco and Unturan, in the extreme South of Venezuela. *Acta biol. venez.* 14(1): 57-78. (With Span.s.). – (Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Aptdo 4579, Maracay 2101-A, Venezuela).
During Febr.-March 1989, 80 spp. were collected. Dimeragrion unturanense sp.n. (holotype ♂: Amazonas State, Sierra de Unturán, alt. 950 m, 12-II-1989), Lestes debellardi sp.n. (holotype ♂: Amazonas State, upper Rio Mavaca, alt. 160 m, 1/6-III-1989) and Leptobasis yanomami sp.n. (holotype ♂: Amazonas State, upper Rio Movaca, alt. 160 m, 14-II/6-III-1989) are described and illustrated. Along with the hitherto unknown larvae of 7 spp. 5 spp. are first Venezuelan records. Allopodagrion Förster is re-established in its original full generic rank. All material is deposited at UCV, Maracay.

(9068) DECLEER, K., 1992. Aquatic and semi-terrestrial invertebrates versus lowering of the water table, water pollution and extreme flooding: a case study from an important wetland site in Flanders (Belgium). *Counc. Europe environ. Encounters* 14: 83-86. – (Inst. Anim. Ecol., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).
The effects of the overall intensification of agriculture and sewage draining in the nature reserve "De Blankaart" are summarised. The odon. fauna has been reduced from 13 spp. in the period 1959-1978 to 3-5 spp. at present.

(9069) DUDGEON, D. & I.K.K. CHAN, 1992. An experimental study of the influence of periphytic algae on invertebrate abundance in a Hong Kong stream. *Freshw. Biol.* 27: 53-63. – (First Author: Dept Zool., Hui Oi Chow Science Bldg, Univ. Hong Kong, Pokfulam Rd, Hong Kong).
Contains data on densities and relative abundance of 5 odon. spp. in benthic samples from Kwum Yum Shan stream.

(9070) EVERSHAM, B., 1992. Land use change and wetland invertebrates in Britain. *Counc. europe environm. Encounters* 14: 107-110. – (Biol. Records Cent., Inst. Terrest. Ecol., Monks Wood Exp. Stn, Abbots Ripton, Huntingdon, Cambs PE12 2LS, UK).
The ways in which invertebrates may be used to monitor changes in wetlands are briefly outlined, with emphasis on Odon. and Orthoptera.

(9071) FLIEDNER, H., 1992 [?], *Libellen-Info*. Libellengruppe Naturw. Ver. Bremen. 4 pp. – (c/o Dipl.-Ing. J. Ruddek, Butendiek 34, D-28865 Lilienthal).
The pamphlet contains some very general information, apparently directed at young, casual dragonfly watchers. – For the serial of the Group cf. *OA* 8059, 8077, 8115.

(9072) GALBREATH, G.H. & A.C. HENDRICKS, 1992. Life history characteristics and prey selection of larval Boyeria vinosa (Odonata: Aeshnidae). *J. Freshw. Ecol.* 7(2): 201-207. – (First Author: New York Cooperative Fish & Wildlife Res. Unit, Dept Nat. Resour., Fernow Hall, Cornell Univ., Ithaca, NY 14853-3001, USA).
Life cycle and feeding habits were examined over a 3 yr period in Chestnut Creek, Virginia, USA. B. vinosa was univoltine, with a synchronous emergence in late May to early June. These results differ from previous studies which report a semivoltine life cycle. Chironomids, hydropsychids and baetids comprised the majority of prey consumed. Seasonal variation in available prey and prey selection occurred, however proportions of prey consumed did not always correlate with prey availability. Chironomids were consumed throughout the year in roughly the same proportions as they occurred in the environment. Beatids served as the major food source in summer and autumn during which time hydropsychids were under-utilized as prey. We speculate that the conspicuous swimming behavior of baetids drew the attention of B. vinosa larvae and caused them to be preferentially selected.

(9073) GOFFART, P., M. BAGUETTE & M. DUFRENE, 1992. The dragonflies monitoring scheme in southern Belgium: a tool to assist wetlands management. *Counc. Europe environm. Encounters* 14: 91-92. – (Ecol. & Biogéogr., Univ. Cathol. Louvain, 4-5 place Croix du Sud, B-1348 Louvain-la-Neuve).
The preliminary results and perspectives of the scheme (started in 1989) are briefly outlined and discussed.

(9074) GREVE, L., O. OVERVOLL & M. SAETERSDAL, 1992. Vann-nymfen Calopteryx virgo i Hordaland. – The dragonfly Calopteryx virgo (L., 1758) in the province of Hordaland, Norway. *Fauna, Oslo* 45(3): 150-156. (Norw., with Engl.s.). – (Zool. Mus., Univ. Bergen, Musé-plass 3, N-5007 Bergen).
The known distribution in the Hordaland prov., W Norway, is presented. The sp. is reported from 3 localities in the southern part of the province and it is obviously very rare in the area. It is proposed that at least 1 of the localities should be protected to save the sp. from eradication in this province.

(9075) HORRIDGE, G.A. & L. MARCELJA, 1992. On the existence of 'fast' and 'slow' directionally sensitive motion detector neurons in insects. *Proc. R. Soc. Lond.* (B) 248: 47-54. – (Centre Visual Sci., Res. Sch. Biol. Sci., Austr. Natn. Univ., P.O. Box 475, Canberra, ACT 2601, AU).
In a fly, butterfly, locust, and Hemicordulia tau, the responses of a variety of directional motion-sensitive neurons, which run from the brain down the ventral cord, were examined. The stimulus was sinusoidally modulated moving pattern of regular stripes presented at a range of velocities in random order for either 0.1 s or 2.0 s. The response was measured as the total number of spikes to each stimulus. The neurons fall into 2 groups, 'fast' and 'slow'. The responses of the fast type rise progressively to a peak contrast frequency at 15-20 Hz for all four insects, and decline at higher contrast frequencies. The responses of slow neurons rise rapidly to a peak at 1-10 Hz and then decline more slowly across the range where the fast neurons are at their peak. The existence of 2 groups of neurons with overlapping response ranges to different velocities of the same pattern, presented in exactly the same way, provides the insect with a means of measuring angular velocity irrespective of contrast, spatial frequency or intensity. As an input mechanism it is proposed that there are 2 types of unit motion detector, fast and slow, the latter being the main input to the optomotor system. It is also argued that even these inputs are not sufficient to provide a mechanism for the whole repertoire of normal insect vision.

(9076) HORRIDGE, G.A., S.W. ZHANG & D.

O'CARROLL, 1992. Insect perception of illusory contours. *Phil. Trans. R. Soc. Lond.* (B) 337(1279): 59-64. – (Cent. Visual Sci., Res. Sch. Biol. Sci., Australian Natn. Univ., G.P.O. Box 475, Canberra, ACT 2601, AU).
The human visual system sees an illusory contour where there is a fault line across a regular striped pattern. It is demonstrated that bees respond as if they see the same illusory contour. There is also a type of neuron in the lobula of the dragonfly optic lobe, here illustrated by the example of Hemicordulia tau, which responds directionally to motion of the illusory contour as if to an edge or line. Apparently insects have a mechanism that sees illusory contours and therefore assists in the demarcation of edges and objects at places where local contrast falls to zero at an edge, or where one textured object partially obscures another. These results suggest that insect vision, although spatially crude and low in processing power, sees separate objects by similar mechanisms to our own.

(9077) JANNIS, G., 1992. Libellen. – [Dragonflies]. *In*: W. Blom, J. Gabriels & H. Lehaen, [Eds], Budelco, natuurlijk, pp. 85-87, 113-114, Budelco, Budel-Dorplein. (Dutch). – (Author: Hayenhoek 18, B-3580 Neerpelt; – the book can be ordered by remitting Hfl. 25.- to the Postal Giro Account No. 109509064 of the Rabo Bank, at Budel, with reference to "Harmonie--Dorplein: Budelco-natuurlijk").
A briefly commented checklist of 38 odon. spp., recorded on the property of the Budelco industries, at Budel-Dorplein, Noord Limburg prov., the Netherlands.

(9078) KERIHUEL, C., 1992. Présence de la Grande Aeschne dans le Masiff Armoricain. *Bull. Groupe sarhois ornithol.* 22: 8-9. – (2 place des sables, Appt 562, F-72190 Coulaines).
Aeshna grandis, Boyeria irene and 10 other spp. are reported from the Vallée de la Sarthe, France.

(9079) KURILLO, J., 1992. Zelenomodri kačji pastir in njegova ličinka. – The blue-green dragonfly and its larva. *Proteus, Ljubljana* 55(3): 123--124, 127. (Slovene, with Engl. title). – (Smledniška 12 a, SLO-64000 Kranj, Slovenia).
A brief outline of the biology of Aeshna cyanea, with special reference to its occurrence in Slovenia.

(9080) LINGNAU, C., 1992. Raumkonkurrenz bei der Prachtlibelle Calopteryx haemorrhoidalis (Calopterygidae). *Publ. wiss. Film* (Biol.) 21: 61--73. (With Engl. & Fr.s's). – (c/o Prof. Dr G. Rüppell, Zool. Inst., Univ. Braunschweig, Pockelsstr. 10a, D-38106 Braunschweig).
The explanatory text for Film D-1766, by G. Rüppell. – The film shows spatial distribution and the behaviour on characteristic reproduction sites. The great importance of the availability of suitable perching sites is obvious. Various types of behaviour (e.g. threatening, courting, copulation, oviposition) are shown in different film speeds.

(9081) MENZE, R., 1992. *Auswirkungen der maschinellen Gewässerunterhaltung auf aquatische Lebensgemeinschaften*. Parey, Berlin-Hamburg, xviii+109 pp. – ISBN 3-490-09997-4. – [*Schr. dt. Verb. Wasserwirtsch. Kulturbau* 99]. (With Engl.s.). – (Available from: Deutscher Verband für Wasserwirtschaft und Kulturbau, Gluckstr. 2, D(W)-5300 Bonn-1).
This is a detailed report on the 1988-1989 investigation of the effects on aquatic communities of regular maintenance works in the rivers Ise and Kleine Aller (distr. Gifhorn, Germany). It contains records of, and data on a number of odon. spp., mostly Calopterygidae and Gomphidae.

(9082) NARAOKA, H., 1992. Daily food consumption of immature adults of Coenagrion lanceolatum Selys (Odonata). *New Entomol.* 41(3/4): 53-58. (Jap., with Engl.s., tabs & fig. captions). – (Fukunoda Aza-montoizumi 36-71, Itayanagi--cho, Kita-gun, Aomori Pref., 038-36, JA).
At the Byobusan Marsh, Aomori, Hokkaido, Japan, the adult season lasts from mid May to mid July. The immature adults feed by picking up small insects (Dipt., Lepidopt., Hemipt., spiders) from the vegetation in the bush. The daily food intake is 3.13 mg (= 24.9% of the dragonfly dry weight). Some behavioural details are described.

(9083) NEL, A. & J.C. PAICHELER, 1992. Odonata fossiles: état actuel des connaissances. Deux-

ième partie: les Petaluridae et Cordulegastridae fossiles (Odonata, Anisoptera, Petaluroidea). *Nouv. Revue Ent.* (N.S.) 9(4): 305-323. (With Engl.s.). – (First Author: 8 ave. Gassion, F-136000 La Ciotat).
A revised and annotated list of Petaluridae and Cordulegastridae is presented, and it is emphasized that all the petalurid fossil taxa have an uncertain position in the Petaluridae-Cordulegastridae-Gomphidae group. All types need to be redescribed. Petalura(?) acutipennis Hagen, 1859 is a Cordulegastridae of uncertain position. A new (and unnamed) "Aeschnogomphus sp." (perhaps a petalurid?), from the Upper Jurassic of Bavaria, is described.

(9084) ROSEMOND, A.D., S.R. REICE, J.W. ELWOOD & P.J. MULHOLLAND, 1992. The effects of stream acidity on benthic invertebrate communities in the south-eastern United States. *Freshw. Biol.* 27: 193-209. – (First Author: Dept Biol., Vanderbilt Univ., Nashville, TN 37235, USA).
Patterns of invertebrate community structure were determined from analysis of benthic samples taken quarterly for 1 yr from 4 sites in the Great Smoky Mts Natn. Park. Dromogomphus sp. and Lanthus sp. are the only odon. recorded. Due to their very low numbers, no test for significant differences in their density was made.

(9085) ROSSBECK, B., 1992. Heimische Libellen und ihr Lebensraum. Vom Aussterben bedrohte Flugkünstler. *Natürlich, Stuttgart* 1992(4): 30-33. – (Author's address not stated).
General; on the status of the German odon. fauna.

(9086) RUDOLPH, B.-U. & J. SACHTELEBEN, 1992. Flurbereinigung in Bayern: landschaftsökologische Folgen von Verfahren in Oberfranken. *Natur Landschaft* 67(12): 586-591. – (Kreisgruppe Forchheim, Bund Naturschutz in Bayern, Zweibrückenstr. 39, D(W)-8550 Forchheim).
A reference is made to the disappearance of Calopteryx virgo in the Schnaid/Hallerndorf area, Franconia, which is tentatively ascribed to the local stream regulations.

(9087) *SAMMELBERICHT (1992) ÜBER LIBELLENVORKOMMEN IN BADEN-WÜRTTEMBERG.* No. 8 (1992). Published by the Schutzgemeinschaft Libellen Baden-Württemberg, Freiburg i. Br.; compiled by R. Buchwald, B. Höppner & A. Schanowski. 36 pp. – (c/o Dr R. Buchwald, Sautierstr. 75, D-79104 Freiburg i. Br.). Updated ed. (Feb., 1992); cf. *OA* 7867.

(9088) SMITH, L.C. & L.A. SMOCK, 1992. Ecology and invertebrate predators in a coastal plain stream. *Freshw. Biol.* 28(3): 319-329. – (Inst. Ecosystem Stud., Cary Arboretum, Box AB, Millbrook, NY 12545, USA).
The spatial and temporal abundance patterns, production and feeding habits of invertebrate predators were determined in a sand-bottomed, headwater stream in Virginia, U.S.A. Annual mean density and biomass of predators in debris dams were 3897 individuals m^{-2} and 2.5 g dry mass m^{-2}, respectively, but only 711 individuals m^{-2} and 0.2 g m^{-2} on the sediment. Predator production was 8.36 g m^{-2} yr^{-1} in debris dams compared to 1.52 g m^{-2} yr^{-1} on the sediment. Annual predator production weighted by habitat availability, was 1.73 g m^{-2} yr^{-1}. The predominant taxa in terms of production were the chironomids Thienemannimyia spp. complex, Ablabesmyia parajanta, Zavrelimyia sp., and Cordulegaster maculata, Chironomidae and Odon. together comprised 77% of the production of the predator guild. Based on gut content analysis and calculations of the trophic basis of production, estimated predator production was supported mostly by Chironomidae (38%), detritus (20%), unidentifiable insects (14%) and Ephemeroptera (11%). Total food ingestion by predators was 9.8 g m^{-2} yr^{-1}, 63% of which was detritus and 37% of which was animal material on an areal basis. The predator guild consumed an estimated 94% of primary invertebrate consumer production on the channel surface of the stream.

(9089) STALLIN, P., 1992. Informations odonatologiques. *Bull. Soc. Étud. Sci. nat. Elbeuf* 1990/1992: 14. – (B.P. 137, F-76501 Elbeuf).
The occurrence of Coenagrion scitulum and Crocothemis erythraea in Normandy, France, is briefly discussed, and 5 spp. are listed from the Vallée de l'Eure.

(9090) VAN TOL, J., 1992. Optimisation of wetland management for the conservation of dragonflies (Odonata). *Counc. Europe environ. Encounters* 14: 62-66. – (Natn. Mus. Nat. Hist., P.O. Box 9517, NL-2300 RA Leiden).
Some points of discussion related to the conservation and optimisation of management of aquatic biotopes for dragonflies are summarised. Wetland management can only be a contribution to a particular group of spp.; spp. most under threat are inhabiting virtually unmanagable biotopes. Management should focus on eliminating the sources rather than the effects of undesired developments. In general, the optimal management for the Odon. should be directed towards lower productivity, maximum site diversity, maintenance of current, and eliminating site isolation.

(9091) VLESSMANN, R., 1992. Libellen-Bestandsaufnahme im LSG Bachauen, Donnersbergkreis. *JBer. Pflanzen Tiere Rheinland-Pfalz* 1992(3): 87. – (Precise Author's address not stated).
A checklist of 14 spp., with a statement on the abundance of each sp. (Donnersberg distr., Rhineland-Palatinate, Germany).

(9092) WEISS, K. & H.-J. SCHWAB, 1992. Libellen--Bestandsaufnahme in der Verbandsgemeinde Bellheim, Landkreis Germersheim. *Jber. Pflanzen Tiere Rheinland-Pfalz* 1992(3): 88--89. – (Author's addresses unknown).
An annotated list of spp., with statements on abundance and the dates of the first and last adult observation (Germersheim distr., Rhineland-Palatinate, Germany).

1993

(9093) *ABSTRACTS [of the] INTERNATIONAL SYMPOSIUM ON THE CONSERVATION OF DRAGONFLIES AND THEIR HABITATS*, 14 August 1993, Kushiro International Communication Center, Kushiro. Edited by H. Ubukata. 20 pp. (Jap. & Engl.). – (Available, at Hfl. 40.- net, from the SIO Central Office, P.O. Box 256, NL--3720 AG Bilthoven).
Contains the Programme (p. 1), brief biographies and portraits of the panel members *P.S. Corbet, M.J. Samways, J.A.L. Watson, S. Eda, S.W. Dunkle, E. Schmidt, B. Kiauta* and *H. Ubukata* (pp. 4-5), and the following abstracts of papers: *Ubukata, H.*: Aims of the International Symposium on the Conservation of dragonflies and their habitats (pp. 2-3); – *Corbet, P.S.*: Habitat and habits of world dragonflies and the need to conserve species and habitat [the presentation, but not the text of the abstract, are said to be largely identical to that given at the 12th Symp. of German Odonatol. Soc.; cf. *OA* 9021] (pp. 6-9); – *Samways, M.J.*: Conservation of red-listed dragonflies and their habitats in South Africa (pp. 10-11); – *Watson, J.A.L.*: The conservation status and management of the enigmatic Australian damselfly Hemiphlebia mirabilis Selys (pp. 12-14); – *Eda, S.*: The conservation of dragonflies and the endangered or vulnerable species in Japan (p. 15); – *Dunkle, S.W.*: Conservation of dragonflies and their habitats in North America (pp. 16-17); – *Schmidt, E.*: A survey of threatened dragonfly habitats from central Europe, especially bogs and bog management (pp. 18-20); – [presented, but the text received too late for publication]: *Kiauta, B.*: Collectors' Code of Ethics in the light of odonate conservation; – *Ott, J.*: Aspects of dragonfly conservation in the European industrialised countries. – Also not included are the extensive reports by 3 Hokkaido regional reporters (*Fukumoto, A., Hiratsuka, K., Iijima, K.*), and the Opening Address, by *N. Ichijo*.

(9094) ADOMSSENT, M., 1993. *Beiträge zur Libellenfauna des Kreises Herzogtum Lauenburg. Ökologische Analyse aktueller und historischer Odonatenfunde*. MagisterArb. Angew. Kulturw., Univ. Lüneburg. vi+184 pp. – (Drosselweg 3, D(W)-2121 Wendisch Evern).
This is a very comprehensive monograph on the odon. fauna (57 spp.) of the Herzogtum Lauenburg distr., Schleswig-Holstein, N Germany, with emphasis on ecology, status, range extension, and conservation measures.

(9095) *ARGIA*. The news journal of the Dragonfly Society of America, Vol. 5, No. 1 (May 15, 1993). – (c/o Dr T.W. Donnelly, 2091 Partridge Lane, Binghamton, NY 13906, USA).
[*Donnelly, T.W.*]: [Obituary notice for Dr Janny M. van Brink] (p. 1); – [News from Carl Cook] (p. 1); – *Donnelly, T.W.*: Adirondack

trip update (pp. 2-3); – *Valley, S.*: July 16-19, 1993 Oregon DSA Meeting: update and notes about some proposed collecting sites to visit (pp. 3-4); – Noteworthy Oregon records for recent years (pp. 4-5); – *Garrison, R.W.*: The role of amateur and professional insect collecting (pp. 5-9); – *Orr, R.*: A proposed DSA statement on collecting guidelines (pp. 9-11); – *Dunkle, S.W.*: Odonata in protected areas (pp. 11-12); – *May, M.*: Interim report on DSA dragonfly migration project (pp. 12-13); – *Bechly, G.*: Fossil odonates in Dominican and Baltic amber (pp. 13-15); – SGSPO – Specialist Group for Systematic and Phylogenetic Odonatology (pp. 15-16); – *Flint, O.S.*: A short trip to Texas (pp. 16-17); – *Garrison, R.*: Early recollections on the Odonata (pp. 17-18); – *Novelo-G., R.*: Mexican Odonata activities (p.19); – *Notices and requests* (pp. 19-20).

(9096) ASAHINA, S., 1993. A revision of the genus Rhipidolestes from Taiwan and Japan. 1. *Gekkan-Mushi* 267: 15-17. (Jap., with Engl.s.). – (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA).
This first part of the series deals with R. bidens Schmidt (Chekiang prov., China), serving as an example of a continental sp. which are, in general, large-sized insects as compared with the Taiwanese and Japanese congeners.

(9097) ASAHINA, S., 1993. A revision of the genus Rhipidolestes from Taiwan and Japan. 2. Taiwanese and Yayeyama islands representatives. *Gekkan-Mushi* 269: 14-18. (Jap., with Engl.s.). – (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA).
The original description of R. aculeatus Ris is clearly based on material pertaining to the southern lowland race of Taiwan. In addition, specimens from high altitudes of central and northern Taiwan were checked. A small-sized form, closely allied to the Taiwanese lowland race, occurs in 2 small islands of the Yayeyama archipelago of the Ryukyus. The various forms are keyed and the names "montanus" and "sakishimanus" are introduced for the resp. north- and central Taiwanese and for Yayeyama "forms". These do not fall under the Code of nomenclature.

(9098) ASAHINA, S., 1993. [Libellula angelina]. *Insectarium, Tokyo* 30(5): 181. (Jap.). – (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 169, JA). [Abstract not available].

(9099) BATTIN, T., 1993. Revision of the puella group of the genus Coenagrion Kirby, 1890 (Odonata, Zygoptera), with emphasis on morphologies contributing to reproductive isolation. *Hydrobiologia* 262: 13-29. – (Abt. Allg. Ökol., Inst. Pflanzenphysiol., Univ. Wien, Althanstr. 14, A-1091 Wien).
A journal version of the paper listed in *OA* 8681.

(9100) BONET BETORET, C. [authorship stated erroneously as "Betoret, Bonet"], 1993. Two Odonata citations in ancient Mesopotamian literature. *Cultural Entomology Digest* 1(1): 15-16. – (C. Linterna 28, ES-46001 Valencia).
A briefly commented Engl. translation is given of the odon. texts in the Akkadian epics of Gilgamesh and Atrahasis. The Akkadian expression for "*exuviae*" is ""*ku-li-li-ki-lip.pa*". – (The Akkadian text, found in the king Ashurbanipal library at Nineveh, represents but a summary of the original Sumerian poems, written during the first half of the 2nd millennium BC.). – Cf. also *OA* 9035.

(9101) BRITISH DRAGONFLY SOCIETY, 1993. *Managing habitats for dragonflies*. Purley, iv+8 pp. (cover incl.). – (c/o Mrs R.I. Silsby, 1 Haydn Ave., Purley, Surrey, CR2 4AG, UK).
A nicely illustrated pamphlet, containing also a tab., showing the odon. distribution and habitats in the British Isles.

(9102) *BULLETIN OF AMERICAN ODONATOLOGY*, Vol. 1, No. 4 (May 1993). – (c/o Dr T.W. Donnelly, 2091 Partridge Lane, Binghamton, NY 13906, USA).
Daigle, J.J.: A checklist of the Odonata of the Dominican Republic by province (pp. 65-69); – *Gómez Anaya, J.A. & R. Novelo Gutiérrez*: Odonate de la Sierra de Huauchinango, Puebla, México (pp. 71-73).

(9103) CARFÍ, S. & F. TERZANI, 1993. Attuali conoscenze del popolamento odonatologico della Sicilia e delle isole dipendenti (Odonata). *Mem. Soc. ent. ital.* 71(2): 427-454. (With Engl.s.).

– (First Author: Dipto Biol. Anim. & Genet., Univ. Firenze, Via Romana 17, I-50125 Firenze).
A comprehensive review and biogeographic analysis of the odon. fauna of Sicily and the adjacent islands: 59 spp., of which the autochthony of 11 is uncertain and 7 are either erroneously cited, or their synonymy is unclear. Particular attention is given to the problematic taxa, viz. Calopteryx splendens xanthostoma, Coenagrion coerulescens caesarum, Ceriagrion tenellum and Orthetrum ramburi.

(9104) CARVALHO, A.L., 1993. A morfologia externa da larva de último estádio de Coryphaeschna perrensi (McLachlan, 1887) (Odonata, Aeshnidae). *Revta bras. Ent.* 37(1): 167-179. (With Engl.s.). – (Depto Zool., Inst. Biol., Univ. Fed. Rio de Janeiro, C.P. 68044, Cidade Universitaria, BR-21944-970 Rio de Janeiro, RJ).
A very detailed description and figs are given of the ultimate instar, based mainly on exuviae of reared specimens. Comments on the definition of Coryphaeschna Wilmsn, 1903 and on the species groups within the genus are presented.

(9105) CHOVANEC, A., 1993. Das Tritonwasser. Betreuung eines neugeschaffenen Feuchtgebietes auf der Donauinsel in Wien sowie seine Besiedlung durch Amphibien und Libellen. *Monogr. Bundesminist. Umwelt, Wien* 37: vi+56 pp., 40 figs. excl. – ISBN 3-85457-116-X. – (Orders to: Austrian Federal Environmental Agency, Spittalauer Lände 5, A-1090 Wien).
The man-made pond (1989/90) on the Danube island of Vienna, Austria, called the "Tritonwasser", is described with reference to its planning, design and construction, management and control of the flow of visitors, and to the efficiency control by the use of bioindicators. The succession in the development of the odon. community is documented in considerable detail. – Cf. also *OA* 7275, 8530.

(9106) CHURCHMAN, D., 1993. Dragonflies. *Ranger Rick* 1993 (May): 16-19. – (c/o Eds: Natn. Wildlife Fed., 8925 Leesburg Pike, Vienna, VA 22184-0001, USA).
A brief, nicely illustrated account of the principal "high-lights" of dragonfly morphology and biology, directed at the general reader. Prof. *M.J. Westfall* has helped with some suggestions.

(9107) CORDERO, A., S. SANTOLAMAZZA CARBONE & C. UTZERI, 1993. Reperti. Somatochlora meridionalis Nielsen, 1935. *Boll. Ass. romana Ent.* 47: 122. – (Third Author: Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Vlale dell'Universitá 32, I-00185 Roma).
3 ♂ are recorded from Pontecorvo, Latium, Italy, representing the second adult regional record. – (*Abstracter's Note*: The larvae were recently collected from 2 caves in the same region; cf. *OA* 8161).

(9108) DE GROOT, T., W. REINBOUD & M. WASSCHER, 1993. *Odon-tabel voor het op naam brengen van libellen zonder te vangen*. Jeugdbondsuitgeverij, Utrecht. 71 pp. (Dutch). – (Third Author: Minstraat 15 bis, NL-3582 CA Utrecht).
A revised book edition of the 2 works listed in *OA* 7551 and 8262. – (Copies can be ordered by remitting Hfl. 5.- to the Postal Giro Account 233040 of the Jeugdbondsuitgeverij, Utrecht; 10% discount on orders exceeding 10 copies).

(9109) DELL'ANNA, L., 1993. Reperti. Ceriagrion tenellum (Villers, 1789), Anaciaeschna isosceles (Müller, 1767), Ladona fulva (Müller, 1764). *Boll. Ass. romana Ent.* 47: 121. – (Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Universitá 32, I-00185 Roma).
The 3 spp. are recorded for the first time from the Abruzzo region, Italy.

(9110) DELL'ANNA, L., C. UTZERI & G. CARCHINI, 1993. Su un'invasione di Hemianax ephippiger (Burmeister, 1839) in Italia nel 1990, con note di corologia e compartamento (Odonata, Aeshnidae). *Boll. Ass. romana Ent.* 47: 3-6. (With Engl.s.). – (Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell' Universitá 32, I-00185 Roma).
The 1990 immigrations of H. ephippiger to Italy are reported from Sardinia (Aug.-Sept.), Latium (Oct.) and Puglia (Nov.). The populations were particularly large, and in the latter 2 localities the oviposition was observed though, at least at Castel Porziano (Latium), no emergence took place in 1991.

(9111) DORDA, D., 1993. Die Gefleckte Smaragdlibelle Somatochlora flavomaculata v.d. L. im Naturschutzgebiet "Kühnbruch" (Insecta: Odonata, Corduliidae). *Faun.-flor. Notizen Saarland* 24(4): 252. – (Am Eichberg 29, D(W)-6653 Blieskastel).
S. flavomaculata is for the first time recorded from Saarland, Germany (nr Altstadt, Saar-Pfalz distr.; summer 1991).

(9112) DUMONT, H.J. & S.N. BORISOV, 1993. Description of the full-grown larva of Sympecma gobica (Förster, 1900) (Odonata: Lestidae). *Bull. Annls Soc. r. belge Ent.* 129: 57-61. – (First Author: Inst. Anim. Ecol., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).
The larva is described and figured from 2 exuviae of Tadjik provenience. It appears to be more closely related to that of S. fusca than to S. paedisca. A provisional key to the last larval instar of the 3 spp. of the genus is also provided.

(9113) DUMONT, H.J. & S.N. BORISOV, 1993. Three, not two species in the genus Sympecma (Odonata: Lestidae). *Bull. Annls Soc. r. belge Ent.* 129: 31-40. – (First Author: Inst. Anim. Ecol., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).
It is demonstrated that S. gobica, S. paedisca and S. fusca, which occur sympatrically and syntopically in central Asia, differ not only in colour and body markings, but also structurally. The best discriminating characters are linked to tandem formation mechanics: presence or absence of a triangular terminal crest on abdominal segment 10 in males (to a lesser degree in females), and the shape of the carinal fork of the synthorax in females. The situation of the basalmost inner spine on the appendices superiores of the males, the length of the styli (cerci) in the females, and the size of the spines along the margin of the ovipositor in the females are also useful. S. gobica (both sexes) also stands out by the central lobe of the pronotum, which is free of tubercules, while it is tuberculated in both the other species. S. fusca and S. paedisca appear more closely related to each other than to S. gobica, which occupies a rather isolated position within the genus.

(9114) DUMONT, H.J., J. MERTENS & A. MIHO, 1993. A contribution to the knowledge of the Odonata of Albania. *Opusc. zool. flumin.* 113: 1-10. – (First 2 Authors: Lab. Anim. Ecol., Univ. Gent, Ledeganckstraat 35, B-9000 Gent; – Third Author: Chair of Botany, Fac. Nat. Sci., Univ. Tirana, Tirana, Albania).
40 spp. and sspp. were collected across Albania in June 1993. 14 of these are first records for that country. Several cases of subspecific East-West replacements between taxa, with suspected or confirmed cline formation, are recorded. Altitudinal biotopes appear unexpectedly rich on Enallagma cyathigerum, Aeshna cyanea, Cordulia aenea and Libellula quadrimaculata.

(9115) DUNN, R., 1993. 1992 dragonfly (Odonata) report. *J. Derbyshire ent. Soc.* 111: 15-17. – (4 Peakland View, Darley Dale, Matlock, Derby., DE4 2GF, UK).
A mixed year weather-wise, but an outstanding season for numbers of individuals on the wing and for records received. Only some of these could be listed here. – For the previous Derbyshire (UK) annual reports by the same Author cf. *OA* 4670, 5044, 5387, 5921, 6375, 6864, 7397, 7832, 8701. His county odon. book is listed in *OA* 4935.

(9116) ENDERSBY, I.D., 1993. A new locality for Hemiphlebia mirabilis Selys (Odonata: Hemiphlebiidae). *Victorian Ent.* 23(1): 4-5. – (56 Looker Rd, Montmorency, Vic. 3094, AU).
2 populations are recorded from Flinders Isl., Bass Strait, Tasmania, and the habitats are described.

(9117) FROBEL, K., F. GRIMMER & J. WERZINGER, [Eds], 1993. *Libellen unserer Bäche und Flüsse. Tips und Anregungen zum Bestimmen und Beobachten.* Bund NatSchutz Bayern & Naturh. Ges. Nürnberg & Bezirk Mittelfranken, Forchheim. 6 fold. pp. – (No addresses stated).
A general, nicely illustrated brochure, directed at amateur dragonfly watchers in Bavaria, Germany.

(9118) [FÜLLEMANN, F.] (dr.), 1993. Die wundersame Welt der Libellen. *Rorschacher Ztg* 1993 (8 June): 1 p. – (Güetlistr. 17, CH-9403 Goldach).
A note on odonatological activities of F. Fülle-

mann, canton St. Gallen, Switzerland. – Cf. also *OA* 7359.

(9119) GERHARDT, A., 1993. Review of impact of heavy metals on stream invertebrates with special emphasis on acid conditions. *Water Air Soil Pollut.* 66: 289-314. – (Dept Ecol., Univ. Lund, S-22362 Lund).
Studies of the accumulation and toxicity of Cd, Zn, Fe, Pb and Cu under acid conditions to stream invertebrates are reviewed, and references to the odon. are included. The influence of pH on metal speciation decreases in the following order: Cu > Pb > Cd > Zn. The free metal ion is one of the most toxic species and is generally taken up directly from the water by organisms. The role of food in the uptake of metals depends mainly on feeding habits of the species, body size, life span and duration of the exposure. Surface adsorption can be regarded as a form of metal 'uptake' which increases at high pH. Biomagnification of metals along aquatic trophic food chains has not been proved for many metals. Toxicity of Cd, Fe, Zn and Pb increases at low pH, however not for all invertebrates. More knowledge is needed concerning sublethal effects of metals on invertebrates at different pH values and uptake, bioconcentration and biomagnification of metals at different pH values. Future studies should include experiments in artificial streams or in the field instead of short term tests and simple recording of field data.

(9120) *GOMPHUS*. Mededelingsblad van de belgische libellenonderzoekers – Bulletin de liaison des odonatologues belges, Vol. 9, No. 1 (Apr. 1, 1993). – (c/o Ms A. Anselin, KBIN, 29 rue Vautier, B-1040 Bruxelles).
Tailly, M.: [Dragonflies of the provincial nature reserve "de Gavers") (Harelbeke, West Flanders)] (pp. 3-11; Dutch, with Fr.s); – *Goffart, P.*: Surveillance de l'état de l'environnement wallon par la méthode des bioindicateurs: appel à la collaboration pour la saison 1993 (pp. 12-18); – *Anselin, A.*: [Report on the Gomphus indoor meeting, Brussels, 20 Feb. 1993] (pp. 19-20; Dutch); – [*Anselin, A.*]: In memorian Janny van Brink (p. 23; Dutch). – A book review, several announcements, a request for cooperation, and the 1993 field trip programme complete the issue.

(9121) GUČEK, M., 1993. *Ocena gostote populacije ličink kačjega pastirja vrste Thecagaster bidentata (Selys, 1843) (Cordulegastridae, Odonata) v pritoku ribnika pri cerkvi na Rakovniku, Ljubljana (SLO).* – [*The population density assessment of larval Thecagaster bidentata (Selys, 1843) (Cordulegastridae, Odonata) in the fishpond tributary near the Rakovnik church, Ljubljana, Slovenia*]. Seminarska naloga (Animal Ecol.), Univ. Ljubljana. 9 pp. (Slovene). – (Marohovih 11, SLO-62000 Maribor, Slovenia).
The larval population in a 60 m section of a stream was assessed at 278-520 individuals (Excel Microsoft CP). The total length/head width correlation is positive (coefficient 0.9825), and the frequency histogram indicates 3 size-groups, but the duration of larval development could not be assessed.

(9122) HAN, F., X. LIU & J. PEI, 1993. A study on the antennal sensilla in five dragonfly species using scanning electron microscopy (Insecta: Odonata). *J. Shanxi Univ.* (Nat. Sci.) 16(2): 223-227. (Chin., with Engl.s.). – (c/o Dr H.-q. Zhu, 42-38, Dept Biol., Shanxi Univ., Taiyuan-030006, P.R. China).
Orthetrum albistylum, O. lineostigma, Sympetrum depressiusculum, S. eroticum ardens and Pantala flavescens were examined and 4 types of sensilla were encountered. Their number and arrangement are species and genus peculiar.

(9123) HARPER, P.P. & L. CLOUTIER, 1993. Systematics and the synecology of aquatic insects: phenology and temporal structure of temperate lake assemblages. *Mem. ent. Soc. Can.* 165: 243-256. (With Fr.s.). – (Dép. Sci. biol., Univ. Montréal, C.P. 6128, Montréal, Que., H3C 3J7, CA).
4 emergence series were collected, at different distances from shore and in different vegetation, from a small mesotrophic-dystrophic lake in the southern Laurentians, Quebec, Canada. The paper contains some information on Enallagma hageni.

(9124) HASHIMOTO, M., Y. TAKASHIMA, T. HARYU & K. KOYANAGI, [no date], 1993[?].

A guide to Kushiro Shitsugen. – Un guide à Kushiro Shitsugen. Reg. Promotion Committee for the Ramsar Conf., Kushiro. 190 pp. (Bilingual: Engl. & Fr.).
Contains col. photos of, and annotations on Erythromma najas baikalense, Aeshna subarctica and Leucorrhinia intermedia ijimai from the Kushiro Shitsugen National Park, E Hokkaido, Japan.

(9125) HAVENS, K.E., 1993. Acid and aluminium effects on the survival of macro-invertebrates during acute bioassays. *Environ. Pollut.* 80(1): 95-100. – (Dept Biol. Sci., Kent St. Univ., Kent, OH 44242-0001, USA).
6 common macroinvertebrates were exposed to soft water at pH 4.5, with or without 200 µg liter^{-1} Al added. Survivals were determined at 6, 12, 24 and 48 h and compared with neutral pH, Al-free controls. The order of acid-sensitivity among the test animals, from greatest to least (with mean 24/48 h survivals in the pH 4.5, low Al treatment in parentheses), was: Caenis sp. (2%) > Hyalella azteca (12%) > Enallagma sp. (20%) > Gyraulus sp. (55%) > Chironomidae (94%) > Hydracarina (99%). Aluminium significantly reduced the survivals of Gyraulus, Hyalella and Chironomidae. The latter group experienced no significant mortality at pH 4.5 except when Al was present. In contrast, the Hydrocarina were unaffected by both acid and acid plus Al exposure, and the survivals of Enallagma and Caenis at low pH were enhanced by Al. These differential responses to the treatments indicate that both acid and Al stress may control the structure of the littoral macroinvertebrate community in acid lakes.

(9126) HIEMEYER, F., 1993. Die Libellen – eine heute stark bedrohte Insektenordnung. *Ber. naturw. Ver. Schwaben* 97(2): 26-33. – (Göggingerstr. 120, D(W)-8900 Augsburg-22).
A general paper on habitat requirements, biology and conservation status of German spp., with brief annotations on some endangered spp.

(9127) HIGASHI, T. & M. WATANABE, 1993. Fecundity and oviposition in three skimmers, Orthetrum japonicum, O. albistylum and O. triangulare (Odonata: Libellulidae). *Ecol. Res.* 8(1): 103-105. – (Dept Biol., Fac. Educ., Mie Univ., Tsu-shi, Mie, 514, JA).
Field collected ♀♀ were dissected and examined for the number of submature and mature eggs. O. japonicum and O. abistylum developed eggs continuously throughout their reproductive period. The volume of mature eggs in O. albistylum was the smallest among the 3 spp. The number of mature eggs in ovaries decreased from morning to afternoon, suggesting that oviposition is taking place around noon. The number of eggs laid by O. japonicum, O. albistylum and O. triangulare was estimated at approx. 400, 800 and > 2000 a day, resp.

(9128) HIROSE, Y., 1993. Research of dragonflies from Ogasawara Islands, Tokyo, Japan. *Gekkan-Mushi* 169: 19-21. (Jap., with Engl. title). – (Katuramachi 4-56-7, Ramodo 102, Abashiri-shi, Hokkaido, 093, JA).
A commented list of 10 spp.

(9129) HIROSE, Y. & S. ITOH, 1993. *A guide to the dragonflies of Hokkaido.* Hirose & Itoh, Abashiri/Shizunai. xii+188 pp. – ISBN 4-900234--1-2. Price in Japan: ¥ 4500.- net. (Jap., with Engl. title, preface & fig. captions). – (Published privately, it is solely available from the Authors: First Author: Lab. Bioindustry, T.U.A., Yasaka 196, Abashiri, 099-24, JA; – Second Author: Shizunai Municip. Mus., Furukawa--cho 1-1-1, Shizunai, 056, JA).
This is an excellent and very beautiful made up commercial monograph on the odon. fauna of Hokkaido, Japan (75 spp., 2 sspp.). The history of odonatological exploration of Hokkaido is traced from 1858 to present, and a complete bibliography is provided. The general introductory chapter is followed by a pictorial key to the adults, and by descriptions of the characteristic Hokkaido odon. habitats. The main body of the book contains small "monographs" of the regional spp. On a single page, for each of these are given col. photos of the specimens of both sexes, a brief description of the adult, statement on the distribution, and an outline on the biology, supplemented by a flight period graph and by a Hokkaido distribution map. In addition, the province-wise occurrence of all spp. is indicated in a tab. – Hokkaido harbours several endemic taxa, and represents for many others the northern limit of their range. – Compared

with the numerous other works on various regions of Japan, this certainly is one of the best treatments in this type of literature. Due to the peculiar character of the fauna, conditioned by the largely subarctic position of the island, the book will be of considerable interest also to the workers that are not actively involved in the faunistics of the Japanese archipelago.

(9130) ICHIJO, N. & H. IGUCHI, 1993. Phenology of dragonflies on "The Dragonfly Pond" beside Lake Harutori in Kushiro City. *Sylvicola* 11: 49-53. (Jap., with Engl. title, fig. & tab. captions). – (Hokkaido Kushiro Koryô Senior High Sch., Kushiro, 085, JA).
13 spp.; Kushiro, Hokkaido, Japan.

(9131) IMAMORI, M., 1993. *Let's visit the world of dragonfly*. Fukuinkan-Shoten, Tokyo. viii+40 pp. – ISBN none. – Price in Japan: ¥ 620.- net). (Jap., with Engl. title). – (Author's address not known).
The book is directed at young people, and contains excellent col. photos of specimens of the common Japanese spp., therefore it could be used as a beginner's aid for identification (Jap. nomenclature only). Well organised and nicely presented!

(9132) IVANOV, V.D., 1993. Andrei Vasilievich Martynov: a life story 9.(22.)8.1879-29.1.1938. *Braueria* 20: 11-13. – (Dept Ent., Fac. Biol., St. Petersburg State Univ., Universitetskaya nab. 7/9, RUS-199034 St. Petersburg).
A comprehensive biography, with 2 portraits and bibl. of the published obituaries. – For another biography cf. *OA* 7520.

(9133) JIGGINS, C., 1993. Dragonflies and damselflies: diversity and behaviour studies on three tributary rivers. *In*: I. Sheldon, [Ed.], Murung '92. The Cambridge Zoological Expedition to Borneo. Final report, pp. 77-94, Cambridge Expeditions Committee, Cambridge, UK. – (c/o I. Sheldon, 5 Elder Close, Woodhead Drive, Cambridge, CB4 1XY, UK).
Transect walks were used to survey the odon. diversity at 3 sites near the Murung Camp, Borneo. The method effectively highlights the differences. The effects of forest clearance are confounded with pre-existing differences between the sites, although the endemic spp. are disproportionately affected by disturbance, which would lead to a loss of biogeographic diversity, 48 spp. are listed, and behavioural observations on various of these are included.

(9134) JÖDICKE, R., 1993. Die Typen von Sympecma paedisca annulata (Selys, 1887) (Odonata: Zygoptera: Lestidae). *Ent. Z., Essen* 103 (11): 189-197. (With Engl.s.). – (Grossenging 14, D-49699 Lindern).
The taxon annulata was established as ssp. of Sympecma paedisca (Brauer, 1877), based on 3 specimens from eastern Turkey. Due to the short description and the taxon's extinction in the region of the type locality it remained an insufficiently known element within the paedisca-puzzle. A re-examination of the type material confirms its subspecific status to S. paedisca. The male from Malatya is designated the lectotype. The morphological and colour traits of the type series are described, figured, and compared with the Asiatic material. The nomenclatural consequences of the conspecific relationship between annulata and paedisca are discussed.

(9135) JOHANSSON, F., 1993. Diel feeding behavior in larvae of four odonate species. *J. Insect Behav.* 6(2): 253-264. – (Dept Anim. Ecol., Univ. Umea, S-90187 Umea).
The diel larval feeding behaviour in the coexisting Aeshna juncea, Coenagrion hastulatum, Cordulia aenea, and Leucorrhinia dubia was studied in the laboratory. C. hastulatum and L. dubia were equally active during day and night. While C. hastulatum consumed an equal number of prey during day and night, L. dubia consumed more prey during night. In contrast, A. juncea larvae were most active and consumed more prey during day, while C. aenea larvae were most active and consumed more prey during night. In contrast to the other three species, A. juncea showed a longer reactive distance under light conditions. In A. juncea and L. dubia capture efficiency was higher under light conditions, whereas in C. hastulatum and C. aenea it was the same irrespective of illumination. The results show that the time niche is an important component of the feeding in this guild.

(9136) JURZITZA, G., 1993. *Libellules d'Europe. Europe centrale et meridionale.* Delachaux & Niestlé, Lausanne-Paris. 191 pp. – ISBN 2-603-00908-7. – (Author: Rainmuthstr. 27, D-76187 Karlsruhe).
French ed. of the volume listed in *OA* 6282, with a Preface by *J. d'Aguilar*. – Unfortunately, due to the poor communication with the publisher, the few errors appearing in the original German ed. could not be corrected. In addition, several new errors were introduced, the most unfortunate among which is the indiscriminate use of parentheses in species-group names. Likewise, the listing of "Coenagrion freyi" and "Lestes viridis" does not reflect the Author's view re the status of these taxa, i.e. C. hylas freyi and Chalcolestes viridis. Also the address of the German periodical, *Libellula*, is wrong and should read: A. Krüner, Geldemer Str. 39, D-41189 Mönchengladbach. – A list of corrections is available from the Author.

(9137) KOTARAC, M., 1993. *Biometrične meritve ličink kačjega pastirja vrste Epitheca bimaculata (Charpentier, 1825) (Odonata, Corduliidae) v akumulačijskem jezeru Komarnik pri Lenartu (SLO). – [Biometric data on the larvae of Epitheca bimaculata (Charpentier, 1825) (Odonata, Corduliidae) from the Komarnik accumulation lake near Lenart, Slovenia]*. Seminarska naloga (Animal Ecol.), Univ. Ljubljana. 10 pp. (Slovene). – (Marohovih 11, SLO-62000 Maribor, Slovenia).
The total length, head width and the length of the left hind tibia were measured in 244 individuals and a positive correlation between these parameters is demonstrated. The frequency histograms are bimodal, but the unrepresentative sampling does not allow any conclusions as to the duration of larval development. In the laboratory, the individuals of 23-30 mm lengths emerged into adults.

(9138) [KOTARAC, M.], 1993. Slovensko odonatološko društvo. – [Slovene Odonatological Society]. *Proteus, Ljubljana* 55(9/10): 365. (Slovene). – (Marohovih 11, SLO-62000 Maribor, Slovenia).
The 1993 field trip programme of the SIO Section in Slovenia.

(9139) KUHN, K., 1993. Die Libellen im Raum Augsburg. *Ber. naturw. Ver. Schwaben* 97(2): 33-42. – (Jakoberwallstr. 25, D-86153 Augsburg).
The status and biology of 46 spp. known from the area of Augsburg, Bavaria, are briefly outlined.

(9140) LILLIG, M., 1993. Die grüne Keiljungfer Ophiogomphus cecilia (Fourcroy, 1785) im Saarland (Insecta: Odonata, Gomphidae). *Faun.-flor. Notizen Saarland* 24(4): 253-255. – (Krämersweg 55, D(W)-6600 Saarbrücken).
The occurrence of O. cecilia in Saarland (Germany) is reviewed, and its habitat requirements are briefly outlined.

(9141) *LINDENIA*. Notiziario dell'Ufficio Nazionale Italiano della Società Odonatologica Internazionale, Roma, No. 20 (July 1, 1993). – (c/o Prof. Dr C. Utzeri, Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).
Utzeri, C.: 10 anni di Lindenia (pp. 87-88); – Archivio Hemianax (p. 89); – *D'Antonio, C.*: Gli odonati del Molise (p. 89); – *Di Domenico, M.*: Gli odonati del Lago di Ventina (Lazio) (p. 90); – *Utzeri, C.*: Distribuzione regionale odonati italiani: aggiornamenti (pp. 90-91); – É morta Janny van Brink, 5 maggio 1923-28 marzo 1993 (pp. 91-92); – *Elenco aggiornato dei lettori italiani di Lindenia* (pp. 93-94).

(9142) LIU, Z., 1993. A new species of the genus Lamelligomphus Fraser from Fujian (Odonata: Gomphidae). *Wuyi Sci. J.* (A) 10: 21-23. (Chin., with Engl.s.). – (Shanghai Inst. Ent., Acad. Sinica, Chungkin Rd (S) 225, Shanghai-200025, P.R. China).
L. jiuquensis sp.n. is described, illustrated and compared with L. formosanus (Matsumura). Holotype ♂: Chong'an Xingcun, Fujian prov., China; 7-VI-1960; deposited at Author's institute.

(9143) MANCINI, L., F. FORNASIER, C. JACOMINI & C. UTZERI, 1993. Reperti, Paragomphus genei (Selys, 1841). *Boll. Ass. romana Ent.* 47: 121-122). – (Last Author: Dipto Biol. Anim. & Uomo, Univ. Roma "La Sapienza", Viale dell'Università 32, I-00185 Roma).

The sp., which typically inhabits the larger central Tyrrhenian islands, is recorded for the first time from continental Italy (Rosario, Calabria).

(9144) *MARTINIA*. Bulletin des odonatologues de France. Vol. 9, No. 2 (June 1993). – (c/o J.-L. Dommanget, 7 rue Lamartine, F-78390 Bois-d'Arcy).
Papazian, M.: Contribution à l'inventaire des odonates du département de l'Ariège (pp. 29-34); – *Votat, P.-P.*: Les odonates du nord-est de la Mayenne, du sud-ouest de l'Orne et du nord-ouest de la Sarthe (suite). Notes sur quelques espèces remarquables ou rares (34-41); – *Kerautret, L.*: Sympetrum danae (Sulzer, 1776), espèce nouvelle pour le département du Finistère (p. 42); – *Dommanget, J.-L.*: Les odonates du département de l'Indre: evolution des populations depuis le siècle dernier (pp. 43-51). – *Second Colloquium of French odonatologists* will be convened at Azay-le-Ferron (Indre), June 17-19, 1995. For details and suggestions the Ed. should be contacted.

(9145) MAUERSBERGER, R., 1993. Bemerkenswerte Libellenfunde in einem Braunkohlen-Tagebau südlich von Leipzig (Odonata). *Ent. Nachr. Ber.* 37(1): 63-65. – (Waldstr. 4, D(O)-1321 Steinhöfl).
The fauna (23 spp.) of a pond, left from an open cast mine (abandoned ca 20 yr ago) is analysed (distr. Borna, S of Leipzig, Germany). The relatively high number of thermophilic spp. is amazing (e.g. Anax partenope, Orthetrum coerulescens, Sympetrum fonscolombei, etc.).

(9146) MAUERSBERGER, R., 1993. Gewässerökologisch-faunistische Studien zur Libellenbesiedlung der Schorfheide nördlich Berlins. *Arch. NatSchutz Landschftspf.* 32: 85-111. (With Engl.s.). – Waldstr. 4, D(O)-1321 Steinhöfl).
An account is given of the odon. fauna (51 spp.) of "Schorfheide", 50 km N of Berlin. Some 30 streams and ponds were surveyed, and new localities are reported for a number of spp. that are generally rare and local in Germany, e.g. Sympecma paedisca, Aeshna viridis, A. subarctica, A. isosceles, Anax parthenope, Onychogomphus forcipatus, Epitheca bimaculata, Libellula fulva, Leucorrhinia albifrons, L. caudalis and Sympetrum fonscolombei.

(9147) McCOLLUM, S.A. & J. VAN BUSKIRK, 1993. Costs and benefits of phenotypic plasticity in larval Gray Treefrogs. *Bull. ecol. Soc. Am.* (Suppl.) 47(2): 351 [abstract only]. – (First Author: Dept Biol., Duke Univ., Durham, NC 27708, USA).
[Verbatim]: Inducible defenses are generally assumed to evolve when predation risk is highly variable and there is a trade-off between the costs and benefits of having a defended phenotype. To determine if the predator-induced polyphenism in tadpoles of the gray treefrog (Hyla chrysoscelis) represents such a trade-off, we reared tadpoles with and without non-lethal cues from predatory dragonflies. We then exposed tadpoles from these 2 rearing treatments to predation by dragonflies. Non-induced tadpoles suffered higher mortality from predation, but survived better in the absence of predation than did the predator-induced tadpoles. H. chrysoscelis inhabits temporary ponds in which predation pressure varies unpredictably in both time and space. In such environments, a plastic inducible defense appears superior to either the defended or undefended fixed strategy.

(9148) McPEEK, M.A., 1993. Morphological patterns among two damselfly communities: adaptation versus phylogenetic constraint. *Bull. ecol. Soc. Am.* (Suppl.) 74(2): 356 [abstract only]. – (Dartmouth Coll., Hanover, NH 03755, USA).
[Verbatim]: I studied morphological variation among Enallagma spp. in 2 lakes with and without fish. Spp. in fishless lakes are morphologically very similar to one another and differ greatly from fish lake spp., although cladistic analyses indicate that each is more closely related to spp. in fish lakes. Fishless lake spp. avoid their primary predators, dragonflies, by swimming once attacked; these spp. all have the widest abdomens, largest and roundest caudal lamellae, and the longest legs, which should make them powerful swimmers and runners. In contrast, spp. from fish lakes do not attempt to evade attacking predators. Fish lake spp. differ greatly in the sizes and shapes of their abdomens, lamellae and legs, and species cluster in morphospace according to their hypothesized phylogenetic relationships. In addition, fishless lake spp. have relatively larger mouthparts than fish lake species, suggesting the hypothesis that

prey are much larger in fishless lakes. These results suggest that morphologies of fishless lake spp. are the result of adaptation to inhabiting fishless lakes, but morphologies of fish lake spp. are determined primarily by phylogenetic constraints. Further, whether morphology is the result of adaptation of phylogenetic constraint appears to be strongly influenced by behavior.

(9149) MOSCONI, P., 1993. Note de chasse. *Revue Assoc. roussillonnaise Ent.* 1(2): 14. – (Author's address not stated).
Brachytron pratense and Sympetrum danae are recorded from the Département of Pyrénées--Orientales, France.

(9150) MÜLLER, O., 1993. Beobachtungen zur abendlichen Dämmerungsaktivität von Aeshna grandis (Linnaeus, 1758) und Aeshna mixta (Latreille, 1805) (Odonata, Aeshnidae). *Ent. Nachr. Ber.* 37(1): 39-44. (With Engl. & Fr.s's). – (Gr. Müllroser Str. 8, D(O)-1200 Frankfurt/Oder).
During 2 seasons detailed observations were recorded on the activities at dusk of the 2 spp. These are here described and analysed, and the tentative factors influencing them are discussed.

(9151) NAKASHIMA, T., 1993. *Kushiro Shitsugen nature guide*. Jap. Soc. Preserv. Birds, Kushiro. iv+16 pp. (cover incl.). – (Publisher: Onnenai, Tsurui Vil., Aka-gun, Hokkaido, 085-11, JA).
Lists 5 odon. spp., to be encountered on the Onnenai Trial through the Kushiro Shitsugen National Park, Hokkaido, Japan. – For the complete fauna cf. *OA* 9176.

(9152) NEL, A., X. MARTINEZ-DELCLOS & J.-C. PAICHELER, 1993. Essai de révision des Aeschnidioidea (Insecta, Odonata, Anisoptera). *Cah. Paléont.* 1993: 13-99. (With Engl.s.). – (First Author: 8, av. Gassion, F-13600 La Ciotat).
A thorough revision, with descriptions of the following new taxa: Iberoaeschnidium conquensis gen.n., sp.n., Gigantoaeschnidium ibericum gen.n., sp.n., Nannoaeschnidium pumilio gen.n., sp.n. and Lleidoaeschnidium valloryi gen.n., sp.n., all from the Lower Cretaceous of Spain (Las Hoyas and Montsec), and Lithoaeschnidium viohli gen.n., sp.n. and Malmaeschnidium mayeri gen.n., sp.n. from the Upper Jurassic of Germany (Eichstätt-Solenhofen). Several autapomorphic venational characters are described and discussed. The lectotype is designated for Aeschnidium densum (Hagen, 1862). The Aeschnidioidea appears a sister-group of Gomphidae or Petaluridae, and a cladogram of the major anisopteran taxa is proposed.

(9153) NEL, A., X. MARTINEZ-DELCLOS, J.-C. PAICHELER & M. HENROTAY, 1993. Les "Anisozygoptera" fossiles: phylogenie et classification (Odonata). *Martinia* (hors ser.) 3: 1--311. (With Engl.s.). – (Orders to: Coc. Fr. Odonatol., 7 rue Lamartine, F-78390 Bois-d'Arcy).
Reclassification and phylogeny, with (re)description of all the known taxa, of which the following are new: Mesoepiophlebia veronicae Nel & Henrotay gen.n., sp.n. (in Epiophlebiidae), Stenophlebia eichstattense sp.n. and Prostenophlebia jurassica Nel & Martinez-Delclos gen.n., sp.n. (in Stenophlebiidae), Paraheterophlebia marcusi Nel & Henrotay gen.n., sp.n. and Paraplagiophlebia loneuxi Nel & Henrotay gen.n., sp.n. (in Myopophlebiidae). The "Anisozygoptera" is considered a paraphyletic group, and a criticial review of the anisopteran Liassogomphidae is appended.

(9154) NOBLECOURT, T., 1993. Synthèse des observations d'odonates citées dans le département des Pyrénées Orientales et réflexions sur les potentialités. *Revue Assoc. roussillonnaise Ent.* 1(2): 6-15. – (Chemin de la Garenne, F-11190 Antugnac).
A checklist is given of the 53 spp. & sspp. recorded from the Département during 1900--1991, and the endangered (Red List) taxa are specified.

(9155) NOMAKUCHI, S. & K. HIGASHI, 1993. Mating behaviour of the two male forms of Mnais pruinosa – mechanism of coexistence of the two male forms. *Insectarium Tokyo* 30(5): 160--166. (Jap., with Engl. title & fig. captions). – (Dept Biol., Coll. Liberal Arts, Saga Univ., Saga, 840, JA).
[Abstract not available].

(9156) NUYTS, E. & N.K. MICHIELS, 1993. Integra-

tion of immediate and long-term sperm precedence patterns and mating costs in an optimization model of insect copulation duration. *J. theor. Biol.* 160: 271-295. – (First Author: Zool. Res. Gr., Limburgs Universitair Centrum, B-3590 Diepenbeek).
Though nowhere stated, it can be inferred from the text the paper is largely based on the evidence from the odon. The optimal copulation duration (t) in insects is strongly influenced by the existence and importance of sperm precedence mechanisms. Using an optimization model, the effects of sperm precedence patterns on the copulation duration for which "number of fertilized eggs"/"costs" is maximized are predicted. Effects of the costs of territoriality and clutch size were also analysed. Initially it was assumed that males can only respond to the population average of any particular parameter, and, hence, that each male has only one t_{opt} (only inter-individual differences). These conclusions are extended to situations in which the male can adjust his behaviour to exact values of particular parameters, resulting in a variable t_{opt} for each male (intra-individual differences). For inter-individual comparisons, the model predicts the following: (1) The existence of (long-term) sperm mixing within the female genital tract will increase t_{opt}; (2) In addition to this effect, sperm mixing combined with either a higher probability of a take-over between or during the first oviposition bouts, or a prolonged expected time between copulation and oviposition, will result in an increase of t_{opt}. However, in the absence of long-term sperm mixing neither of these behavioural characteristics will influence t_{opt}; (3) t_{opt} also increases with the mate encounter time for the male. It is not influenced by the expected clutch size of the female; (4) Both energetic and territorial costs wil reduce t_{opt} when high. For cases in which intra-individual adjustment of t_{opt} is possible, we made the following predictions: (1) The presence of a higher than average probability of a take-over of the female before or during the following oviposition bouts, will reduce t_{opt}; (2) A larger than average clutch size will increase t_{opt}.

(9157) OTT, J., 1993. *Studie zur Umsetzung des Libellenschutzes im Rahmen der Leitbildentwicklung zur Sicherung und Entwicklung naturnaher Fliessgewässerökosysteme*. Landesamt für Umweltschutz [Projekt Nr. 100/92], Kaiserslautern. 59 pp. – (Author: Am Moosberg 10, D-67705 Stelzenberg).
This is an important review of all what is known on the character, habitat requirements, status, threats, etc. of rheophilous spp. in Germany, with special reference to the Rhineland-Palatinate fauna. The work also includes a list of the research projects on rheophilous odon. currently under execution in Germany, and a very comprehensive bibliography on the subject.

(9158) PECK, S.B., 1993. The dragonflies and damselflies of the Galapagos Islands, Ecuador (Insecta: Odonata). *Psyche* 99(2/3) [1992]: 309-321. – (Dept Biol., Carleton Univ., Ottawa, K1S 5B6, CA).
A review is given of all what is known on distribution and bionomics of the Galapagos odon. (1 zygopt. and 7 anisopt. spp., incl. the endemic Aeshna galapagoensis). The adult Anis. are keyed, and a complete bibliography is provided.

(9159) PILON, J.-G. & D. LAGACÉ, 1993. Structure du peuplement odonatologique d'un ruisseau ombragé de la zone climatique de l'érablière à caryers du Québec, Canada. *Opusc. zool. flumin.* 111: 1-5. (With Engl.s.). – (Dép. Sci. Biol., Univ. Montréal, C.P. 6128, Montréal, Que, H3C 3J7, CA).
During several years of systematic observations, 22 spp. were evidenced at the stream of Streit, in the cold temperate zone of southern Quebec. The provincial flight period extension was recorded for Argia fumipennis violacea, Coenagrion interrogatum, C. resolutum and Enallagma cyathigerum vernale. The abundance analysis indicates the biotope was adequately sampled (a/N=0; n=20). Calopteryx maculata, Enallagma ebrium and Sympetrum internum are the dominant spp., and the fauna is significantly different from that at the Rivière-aux-Chiens, a similar habitat in the same geographic region.

(9160) POGGI, R., 1993. In ricordo del dr. Felice Capra. *Mem. Soc. ent. ital.* 71(2): 363-389. – (Mus. civ. Stor. nat., Via Brigata Liguria 9, I-16121 Genova).
A very comprehensive biography, evaluation of

work, complete bibliography (143 titles; 1913--1988), with several portraits and photographs of Dr F. Capra (born: 14-VII-1896, Vercelli; deceased: 7-X-1991, Vercelli), the doyen of Italian odonatologists.

(9161) PUJOL-LUZ, J.R., 1993. Uma nova espécie do género Zenithoptera Bates in Selys, 1869 (Odonata, Libellulidae, Palpoplerinae). *Revta brasil. Biol.* 53(1): 1-6. (With Engl.s.). – (Depto Biol. Animal, Inst. Biol., Univ. Fed. Rural Rio de Janeiro, BR-23851-970 Seropédica, Itaguaí, RJ).
Z. anceps sp.n. (holotype ♂: Conceiçao da Barra, Esperito Santo, Brazil, 9-XI-1968; paratypes of both sexes, allotype ♀ not designated; all deposited at MNRJ) is described, illustrated, and compared with the related Z. americana (L.) and Z. lanei Santos.

(9162) RAYMO, C., 1993. The energizer bunnies of evolution. *Boston Globe* 1993 (July 26), 1 p. – (Dept Physics, Stonehill Coll., North Easton, MA, USA).
An elegant general article on dragonflies, directed at the general reader.

(9163) RETTIG, K., 1993. Fauna und Flora des Landschaftsschutzgebietes "Restmoorfläche bei Ochtelbur" und des ehemaligen "Ihlower Moores". *Beitr. Vögel- Insektenwelt Ostfrieslands* 64: 2-19. – (Danziger Str. 11, D-26725 Emden).
Pyrrhosoma nymphula is the only odon. sp. recorded (p. 12).

(9164) RICHARD, D., 1993. Les réglementations nationales et internationales relatives aux insectes. *Insectes, Opie* 89(2): 13-16. – (c/o Secrétariat de la Faune et de la Flore, Mus. Natn. Hist. Nat., 57 rue Cuvier, F-75231 Paris).
The provisions of international legislation on species conservation in Europe are reviewed. The odon. conservation is dealt with by Berne Convention (1979) and by the Directive 92/43/CEE of the Council of Europe (1992, to become operative June 5, 1994). – The Berne Convention lists 16 spp., all but Calopteryx syriaca and Brachythemis fuscopalliata are covered by the Council of Europe Act as well. – In its Appendices 2 and 4, the latter contains the following provisions: (1) the individuals, their reproduction habitats, etc. are protected and special zones of conservation are to be designated of Cordulegaster trinacriae, Gomphus graslinii, Leucorrhinia pectoralis, Lindenia tetraphylla, Macromia splendens, Ophiogomphus cecilia and Oxygastra curtisii; – (2) zones of conservation are to be designated for Coenagrion hylas and C. mercuriale; – and (3) protection of individuals, their reproduction habitats, etc. is ruled for Aeshna viridis, Leucorrhinia albifrons, L. caudalis, Stylurus flavipes and Sympecma braueri. – The Act is applicable to the member states of the Council of Europe only. – For a review of the various national legislations cf. *OA* 6006; in the present paper only that of France is considered, but it does not contain any odon. provisions.

(9165) ROWE, R., 1993. Agonistic behaviour in full-grown larvae of the damselfly Diphlebia euphoeoides (Odonata: Amphipterygidae). *J. Zool., Lond.* 229(1): 1-15. – (Dept Zool., James Cook Univ., Townsville, Qld 4811, AU).
Zygoptera are conventionally regarded as consisting of 2 broad divisions, viz. the "narrow-winged" and the "broad-winged" spp. Agonistic displays are known from many larval "narrow-winged" damselflies. This is the first description of agonistic behaviour in the larva of a "broad-winged" sp. 26 major displays were distinguished. Several new major displays, unlike those described for any other odon. larva, were found. Other display motor patterns showed a strong similarity with those recognized in larval Coenagrionidae. Such displays probably represent symplesiomorphies. The potential use of larval agonistic display characters in phylogenetic analysis is discussed. Contrary to recent hypotheses on turnover of agonistic displays, change within odon. lineages appears to be very slow.

(9166) SALSI, S., 1993. Segnalazioni faunistiche italiane. 219. Cordulia aenea (Linneo, 1758) (Odonata Corduliidae). *Boll. Soc. ent. ital.* 125(1): 71. – (Via Montefiorino 4, I-42100 Reggio Emilia).
First record from Emilia-Romagna.

(9167) SALSI, S., 1993. Segnalazioni faunistiche ita-

liane. 220. Trithemis annulata (P. De Beauvois, 1805) (Odonata Libellulidae). *Boll. Soc. ent. ital.* 125(1): 71-72. – (Via Montefiorino 4, I-42100 Reggio Emilia).
Second record from Tuscany (cf. *OA* 8011).

(9168) SAMIETZ, J., K. RAINHARDT & R.-P. NUSSBAUM, 1993. Zur Naturausstattung des ehemaligen Truppenübungsplatzes am Windknollen bei Cospeda (Stadt und Landkreis Jena). *LandPfl. NatSchutz Thüringen* 30: 12-17. – (Second Author: Hauptstr. 38, D-09244 Oberlichtenau).
3 odon. spp. are recorded from the locality at Jena, Germany.

(9169) *SAMMELBERICHT (1993) ÜBER LIBELLENVORKOMMEN IN BADEN-WÜRTTEMBERG*, No. 9 (1993). Published by the Schutzgemeinschaft Libellen Baden-Württemberg, Freiburg i.Br.; compiled by H. Borsutzki, R. Buchwald, B. Höppner & A. Schanowski. 36 pp. – (c/o Dr R. Buchwald, Sautierstr. 75, D-79104 Freiburg i.Br.).
Updated ed. (Feb. 1993); cf. *OA* 9087.

(9170) *SELYSIA*. Newsletter of the Societas Internationalis Odonatologica and of the U.S. National Office. Vol. 22, No. 2 (Sept. 1, 1993). – (c/o Dr D.M. Johnson, Dept Biol. Sci., East Tennessee St. Univ., Box 70703, Johnson City, TN 37614-0703, USA).
Kiauta, B. & M. Kiauta: Janny van Brink, 1923--1993 (p. 9); – *Moore, N.W.*: Dragonfly conservation (pp. 9-11); – *May, M.L.*: Summary of current research (p. 12); – *Gorb, S.*: Functional morphology of Odonata; brief summary of my research plans (p. 13); – *Gorb, S. & E. Gorb*: Mapping of Odonata in the eastern part of the Kiev province (Ukraine): a first trial (p. 13); – *Kotarac, M.*: First Odonatological Symposium of the Alps-Adriatic Regional Community (p. 14); – *Harr, L.E.*: How I got the name Tombo (p. 14). – The issue also contains several (partly signed) notices, without titles, a list of the hitherto published issues of *Bull. am. Odonatol.* and a reprinted text from *Argia* 5(1). – (*Abstracter's Note*: According to the information from the Editor, this could be the last issue published by him. The modalities for the continuation are under discussion. During several years, the ETSU has generously covered production costs, while the SIO was contributing in the oversea postage, lately close to Hfl. 1000.- annually. This figure represents ca 10% of the current total income from the US membership fees, leaving only 90% for covering the costs of *Odonatologica* & *Notul. odonatol.*, which, in view of the volume of the resp. periodicals, is considered a rather disproportional liability. The said figures are approximate and informal estimates only).

(9171) SMIT, J.T., 1993. Odonata (libellen). *In*: Inventarisatie "Stikke trui" 1990-1992, p. 9, Insektenwerkgroep KNNV, afd. Arnhem. (Dutch). – (Author's address not stated).
Additions and a correction relative to the list in *OA* 8590.

(9172) STEENBERGEN, H., [Ed.], 1993. *Macrofaunaatlas van Noord-Holland: verspreidingskaarten en responsies op milieufactoren van ongewervelde waterdieren. – macrofauna-atlas of North-Holland: distribution maps and responses to environmental factors of aquatic invertebrates.* Prov. Noord Holland, Dienst Ruimte en Groen, Afd. Onderzoek en Informatie, Haarlem. 651 pp., 1 fold. tab. excl. – ISBN 90-72624-41-6. (Bilingual: Dutch/Engl.). – (Publisher: P.O. Box 6090, NL-2001 HB Haarlem).
This is a monumental work, based on ca 1140 sampling sites in prov. Noord Holland, the Netherlands. Along with the distribution maps, a very detailed evidence is presented on abiotic and biotic environmental features for each sp. 19 odon. spp. are mapped and provided with so-called "Response Tables" on pp. 268-288.

(9173) TAGUCHI, M. & M. WATANABE, 1993. Life history of the larvae of Mnais pruinosa costalis (Odonata, Calopterygidae). *Jap. J. Ent.* 61(2): 371-376. (Jap., with Engl.s., tab & fig. captions). – (First Author: Hashimoto High Sch., Hashimoto, Sagamihara, Kanagawa, 229, JA).
Larval growth was investigated on material from the upper reaches of the Sakai R., NW Kanagawa pref., Japan. The population density was increasing from Aug. to Oct., then decreased, and it was stable in the winter (sex ratio roughly 1:1). Frequency distribution of the body

length values was close to normal in each month; the length in March, as recorded during 4 yr, did not significantly vary. At the site studied, the sp. was univoltine, hatching in summer and emerging in Apr. of the following yr. The Sakai R. individuals were almost identic in the adult abdominal length to those from Hokkaido, suggesting the latter should require 2 or more yr for completion of a generation.

(9174) TERZANI, F., 1993. Segnalazioni faunistiche italiane. 218. Boyeria irene (Fonscolombe, 1838) (Odonata Aeshnidae). *Boll. Soc. ent. ital.* 125(1): 71. – (Mus. Zool. "La Specola", Univ. Firenze, Via Romana 17, I-50125 Firenze).
First record from Emilia-Romagna.

(9175) THEISCHINGER, G., J.A.L. WATSON & R.J. ROWE, 1993. Larvae of Australian Synlestidae (Odonata: Zygoptera). *J. Aust. ent. Soc.* 32: 113--119. – (First Author: 20 Leawarra St., Engadine, NSW 2233, AU).
The available information on the subject is summarised and the final instar larvae of Australian Synlestidae are keyed. The larvae of Episynlestes albicauda (Tillyd), E. cristatus Watson & Moulds, E. intermedius Theisch. & Watson, Synlestes selysii Tillyd, S. tropicus Tillyd and the 3 sspp. of S. weyersii Sel. (weyersii, negrescens Tillyd, tillyardi Fr.) are described, and further details are given of the larva of Chorismagrion risi Morton.

(9176) UBUKATA, H., 1993. *Kushiro Shitsugen nature guide. [Dragonflies of Kushiro Shitsugen].* Amway Nature Center & J.S.P.B., Kushiro. 40 pp.+ 8 col. pls (48 figs) excl. – ISBN none. – Price in Japan: ¥ 500.- net. (Jap., with Engl. general title & taxonomic nomenclature). Available at the SIO Central Office, Bilthoven (with unabridged Engl. translation of the text), at Hfl. 50.- net. – (Author: Kushiro Coll., Hokkaido Univ. Educ., Shiroyama 1-15-55, Kushiro, 085, JA).
This is an authoritative treatment of the odon. fauna (47 spp.) of the Kushiro Shitsugen National Park, E Hokkaido, Japan, with detailed descriptions of the habitats, a comprehensive analysis of the local phenology, numerous biological notes, and concise, very informative "monographs" of all regional spp.

(9177) UBUKATA, H., Y. HIRAMA & M. NAKATANI, 1993. The dragonflies of Kiritappu Marsh. *Sylvicola* 1993 (Suppl.: Insects of Kiritappu Marsh): 25-34. (Jap., with Engl. title). – The complete book (ii+150 pp., 4 col. pls excl.) can be ordered, at ¥ 1500.- net., from the first Author: Kushiro Coll., Hokkaido Univ. Educ., Shiroyama 1-15-55, Kushiro, 085, JA).
A commented list of 30 spp. and the discussion of the Kiritappu Marsh odon. fauna, Hokkaido, Japan.

(9178) VAN BIEMA, D. & T. SKARI, 1993. Lord of the dragons. *Life* 1993 (Feb.): 62-65.
A richly illustrated note on dragonflies of the Brenne area, France, but without any spp. names.

(9179) VAN BUSKIRK, J. & D.C. SMITH, 1993. Phenotypic design, plasticity, and ecological performance in tadpoles. *Bull. ecol. Soc. Am.* (Suppl.) 74(2): 467 [abstract only]. – (Inst. Ecosyst. Stud., Milbrook, NY 12545, USA).
[Verbatim]: Our goal is to connect community structure to phenotypic design in tadpoles of Pseudacris crucifer and P. triseriata, which partition a gradient in predator density at Isle Royale. The 2 sp. differ phenotypically as expected from functional studies: crucifer coexists with dragonfly predators, is inactive, and has a deep muscular tail; triseriata is in pools with no predators, is active, and has a shallow tail and a large visceral mass. A reciprocal transplant experiment between the 2 habitats illustrated the importance of phenotypic plasticity. P. crucifer showed no phenotypic differences between habitats, whereas triseriata showed strong behavioral and morphological shifts when moved between habitats. As a result, crucifer performed poorly in pools without predators, while triseriata did relatively well in the presence of predators. The results indicate that focus on phenotypic design and plasticity represents a feasible approach to mechanistic and predictive community theory.

(9180) VAN LEEUWEN, R., 1993. *Basiskartering libellen en dagvlinders 1992: natuurterreinen complexen Odoorn, Odobrnerdennen, Exloo.* – *[Basis mapping dragonflies and butterflies 1992: nature reserves Odoorn, Odoorner-*

dennen, Exloo]. Staatsbosbeheer, Pesse. 32 pp. + 2 appendices (8+80 pp.). (Dutch). – (Publisher: SBB Drenthe-zuid, Oosterring 22, NL-7933 TM Pesse).
A survey is presented of 16 odon. spp., recorded in the 3 nature reserves, southern Drenthe prov., the Netherlands. – Missing is the record of Aeshna subarctica elisabethae (1 ♂, Sleen, Boswachterij Sleenerzand, 19-VIII-1992, deposited in RMNH, Leiden).

(9181) VERNEAUX, J., V. VERNEAUX & A. GUYARD, 1993. Classification biologique des lacs jurassiens à l'aide d'une nouvelle méthode d'analyse des peuplements benthiques. I. Variété et densité de la faune. *Annls Limnol.* 29(1): 59-77. (With Engl.s.). – (Lab. Hydrobiol., Inst. Sci. & Techn. Environ., Univ. Franche-Comté, Place Leclerc, F-25030 Besançon).
A biological classification of 9 lakes in the French Jura, incl. the information on quantitative occurrence of 5 odon. genera.

(9182) *WALKERIA*. Newsletter of the Canadian National Office of the international Odonatological Society, Vol. 8, No. 1 (June, 1993). – (c/o Ms N.L. House, 116 Irving Avenue, Ottawa, Ont. K1Y 1Z4, CA).
Pilon, J.-G.: L'odonatologie au Québec (pp. 1-4); – [*House, N.L.*]: [Obituary for Dr J.M. van Brink] (p. 5).

(9183) WASSCHER, M., 1993. Libellen: status van de in de Natuurbeschermingswet opgenomen soorten. – [Dragonflies: status of the species listed in the (Netherlands) Nature Conservation Act]. *Jaarb. natuur. Wageningen* 1993: 70-77. (Dutch). – (Reprints not available; copies of the book are to be ordered, at Hfl. 20.- net, from the Vlinderstichting, P.O. Box 506, NL-6700 AM Wageningen).
The information is presented on the status in the Netherlands of Sympecma braueri, Aeshna viridis, Gomphus flavipes, Ophiogomphus cecilia, Oxygastra curtisii, Leucorrhinia albifrons, L. caudalis and L. pectoralis.

(9184) WASSCHER, M.T. & J. VAN TOL, 1993. Veranderingen in het voorkomen van libellen (Odonata) in relatie tot de geselecteerde milieuparameters. – [Alterations in the odonate occurrence, relative to the selected milieu parameters]. *Achtergrondreeks "Flora en Fauna 2030", EIS, Leiden* 3: iii+40 pp. (Dutch). – (Copies from the Second Author: Natn. Natuurh. Mus., P.O. Box 9517, NL-2300 RA Leiden).
In the Netherlands, the odon. fauna has significantly impoverished since mid of the 19th cent. With the conservancy policy unchanged, it is expected that during 1990-2010 another 10 out of the current 51 spp. will disappear. On the other hand, the increase of mean annual temperature could result in the return of 3 presently "extinct" spp., while it is likely that 6 other ubiquistic southern spp. will become autochthonous.

(9185) WATANABE, M. & T. HIGASHI, 1993. Egg release and egg load in the Japanese skimmer Orthetrum japonicum (Odonata, Libellulidae) with special reference to artificial oviposition. *Jap. J. Ent.* 61(2): 191-196. – (Dept Biol., Fac. Educ., Mie Univ., Tsu, 514, JA).
Egg release rates were examined by dipping the ♀ abdomen in vials of water. The duration of egg release was 100 s approx. and the egg number amounted to about 200-300 in both paddy fields (oviposition sites) and forests (roosting and feeding sites). Some eggs were unfertilized. The number of eggs released correlated with the number of mature eggs loaded in the abdomens. The release rate also increased linearly with the number of mature eggs loaded. Egg release was thus primarily determined by the number of mature eggs in ovaries.

(9186) WHITELEY, D., 1993. Common Hawker dragonflies in North East Derbyshire. *J. Derbyshire ent. Soc.* 1993 (Summer): 23. – (Author's address not stated).
6 spp. are recorded from various localities; UK.

(9187) WILSON, E.O., 1993. Dedication: Frank Morton Carpenter. *Psyche* 99(2/3) [1992]: 241-244. – Dept Ent., Mus. Comp. Zool., Harvard Univ., Cambridge, MA 021138, USA).
A brief biography and evaluation of work (born: Boston, MA, 6-IX-1902; Emer. Prof. Zool. & Nat. Hist., Harvard Univ.), with a portrait. – Cf. also e.g. *OA* 8942.

(9188) YOSHITANI, A., 1993. *The life of dragonfly*. Fukuinkan-Shoten, Tokyo. 28 pp. – ISBN none. – Price in Japan: ¥ 350.- net. (Jap., with Engl. title). – (Author's address unknown).
A nicely illustrated children book, dealing with the dragonfly life history, presenting the instructions for home breeding, and water colour illustrations of some of the common Japanese spp. – Technical advice in the preparation was rendered by the well known Japanese specialist on odon. larvae, *K. Matsuki*.

(9189) ZLOTY, J., G. PRITCHARD & C. ESQUIVEL, 1993. Larvae of Costa Rican Hetaerina (Odonata: Calopterygidae) with comments on distribution. *Syst. Ent.* 18(3): 253-265. – (Second Author: Div. Ecol., Dept Biol. Sci., Univ. Calgary, Calgary, Alberta, T2N 1N4, CA).
The larvae of 7 of the 11 Costa Rican spp., viz. H. capitalis, H. cruentata, H. fuscoguttata, H. majuscula, H. miniata, H. occisa and H. titia, were identified by matching their Cellulose Acetate Gel Electrophoresis (CAGE) patterns with those of adults. CAGE allows larval descriptions to be processed at a much faster rate than through traditional rearing techniques and, provided that refrigeration and power supply are available, is relatively portable and robust. Adults of H. capitalis, H. cruentata and H. miniata were also reared from final instar larvae. Larvae of H. caja and H. sempronia were identified by site association with adults and unique suites of morphological characters. Characters on the head, antennae, labium, pronotum, legs, abdomen, and caudal appendages are described and illustrated, and a key to final instar larvae of all nine species is presented. The distribution of Hetaerina in Costa Rica is influenced primarily by the Cordillera.