ODONATOLOGICAL ABSTRACTS

1971

(3804) PEARLSTONE, P.S.M., 1971. *Observations on a natural population of damselfly larvae.* M. Sc. thesis, Univ. Brit. Columbia, Vancouver. V+54 pp., 9 figs, 3 tabs and Appendix incl. — (Dept Zool., Biol. Sci. Cent., Univ. Alberta, Edmonton, Alberta, T6G 2E9, CA).
This is the original work on which the paper listed in *OA* 2505 is based. (The Author's abstracts in the 2 publications are identic).

1973

(3805) RAFALSKI, J. & J. URBAŃSKI, 1973. *Wolin.* — [*The Wolin Island*]. Wiedza Powszechna, Warszawa. 184 pp., 1. fold. map. (Polish). — Price: *Zł.* 25.—. — (Authors' addresses not stated; second Author [odonatol.] deceased).
This is a general monograph on the natural history of the Wolin Island, Gulf of Stettin, Poland. References to Odon. appear on pp. 61, 115, 119 (not 118, as erroneously stated in the Index). The spp. listed (p. 115) are: Aeshna cyanea, A. mixta (Polish generic vernacular name: *"żagnica"*), and Orthetrum cancellatum (*"lecicha"*).

1976

(3806) KÜNZI, H. & H. WILDERMUTH, 1976. *Kleinseen und Riedlandschaften im Zürcher Oberland.* Verlag Druckerei Wetzikon AG, Wetzikon. II+126 pp. — (Second Author: Mythenweg 20, CH-8620 Wetzikon).
A brief general account of the natural history of the wetlands of the Zurich Highlands, Switzerland (by H.W.) is followed by pen drawings of 53 wetland objects in the region (contributed by H.K.). On p. 12, the following dragonfly folk names (Swiss German), used in the Zurich Highlands (Zürcher Oberland), are listed: *"Tüüfelsnaadle"*, *"Augenstächer"*, and *"Ooreschüüsser"*.

1977

(3807) DE MARMELS, J. & H. SCHIESS, 1977. Rindvieh im Hochmoor. *Die Tierwelt, Zofingen* 1977 (48): 2299. — (Second Author: Brüglenstr. 1, CH-8345 Adetswil).
The damage caused to [Swiss] peat bogs by grazing cattle is discussed. The suggestion, put forward in the same journal (1977, No. 43), that waterfilled footprints of cattle in the drying peat bogs could make a suitable alternative amphibian habitat is rejected, and it is stated that the authors have never encountered odon. larvae in such places.

(3808) MAITLAND, P.S., 1977. *A coded checklist of animals occurring in fresh water in the British* Isles. Inst. Terrest. Ecol., Edinburgh. 76 pp. — Price: £1.50. — (Inst. Terrest. Ecol., c/o Nat. Conserv. Council, 12 Hope Terr., Edinburgh EH9 2AS, UK).
The aim of this publication is to provide a comprehensive list of all free-living Metazoa which occur in, or in association with, freshwater systems in the British Isles. It is organised in such a way that each sp. can be represented by a unique 8-digit code, thus establishing a standard and relatively easy

basis for handling species lists, etc. numerically. The code number of Odon. is 32, that of e.g. Anax imperator is 32 07 03 01, where "32" stands for the Order, "07" for the family, "03" for the genus (in that family), and "01" indicates the sp. (in that genus).

(3809) MANI, C., 1977. *Pledari sutsilvan: rumàntsch--tudestg, tudestg-rumàntsch. — Sutselvisches Wörterbuch: romanisch-deutsch, deutsch-romanisch.* Leia Rumàntscha, Chur. XXX+182 +217 pp. — Price: sFr 25. —. (c/o Leia Rumantscha / Ligia Romontscha / Lia Rumantscha, Obere Plessurstr. 47, CH-7000 Chur).
The dictionary covers the Rhaeto-Romanic dialect spoken in the areas of Domleschg (Tumleastga), Heinzenberg (Mantogna) and Schams (Schons), canton Grisons, Switzerland, known as the Sutselva Pintga. In this area, and at variance with the other Rhaeto--Romanic dialects, the "dragonfly" is called *"guta"* or *"tgavagl"*, the former meaning literally also "nail" or "pin", and the latter a "horse" or a "saw horse". It is interesting that the term for the "tadpole" is "guta digl giavel".

(3810) MISHRA, S., 1977. Role of haemolymph proteins in the osmoregulation in damselfly larvae. *Biochem. exp. Biol.* 13(2): 217-218. (With Ital.s.). — (Dept. Zool., Univ. Saugar, Sagar, M.P., India).
In the "Caenoagrion" larvae [sic!] various proteins in the hemolymph, playing a role in diuretic and antidiuretic functions, were identified and the situation is compared with that recorded in Brachythemis contaminata.

(3811) PRITYKINA, L.N., 1977. Geologicheskaya istoriya i osnovnye momenty filogeneza strekoz (Odonata). [Geological history and the highlights of dragonfly phylogeny (Odonata)], *Tez. Dokl. XXIII Sess. vsesoyuz. paleontol. Obshch.* ("Zhizn" na drevnih kontinentah, ee stanovlenie i razvitie"), *Leningrad*, pp. 63-64. (Russ.). — (Palaeontol. Inst., USSR Acad. Sci., Profsoyuznaya 113, USSR-117321 Moscow).
The chronology of the appearance and extinction of dragonfly suborders and families is briefly traced. (1) The order appears in the Carboniferous (Meganisoptera: Erasipteridae). The Carboniferous and Permian faunas are characterized by Meganisoptera, Protanisoptera and Protozygoptera. — (2) Basically, the Triassic fauna still has a Permian character; the Triassolestidae is the only Triassic zygopteran family. The Jurassic fauna is closer to the Cretaceous than to the Triassic. The Protomyrmeleontidae, of the Palaeozoic Protozygoptera, is the sole family that has survived from Trias until Jurassic. The latter is characterized by the zygopterans and anisopterans, such as Aeschnidiidae, Aeshnidae, Petaluridae, Gomphidae, Karatawiidae and Tarsophlebiidae. — (3) The second essential change in the odon. fauna has occurred in the Middle Cretaceous. While the Early Cretaceous Odon. still have much in common with those of the Upper Jurassic, the Upper Cretaceous fauna appears almost completely Cenozoic. — (4) The Tertiary fauna generally resembles the present-day forms. It is characterized by the occurrence of all extant anisopteran and many zygopteran families. — (5) There are 2 phylogenetic lines in the Order, viz. Meganisoptera+Protanisoptera+Protozygoptera, and Anisoptera+Anisozygoptera+Zygoptera. — (6) The phylogeny of the Order is inevitably related to the evolution of flight. There are 2 modes of flight, corresponding to the 2 types of wings. The broad-base wing is considered primitive. — (7) The origin of the "meso-cenozoic" suborders is related to the transition of the larval development from the terrestrial to the aquatic environment. Further development of the taxa was conditioned by the adaptive capability of particular forms to particular larval habitats.

1978

(3812) AGASSIZ, D., 1978. Five introduced species, including one new to science, of China Mark Moths (Lepidoptera: Pyralidae) new to Britain. *Entomologist's Gaz.* 29(3): 117-127, pl. 7. — (The Vicarage, Highview Ave., Grays, Essex, UK).
Ischnura elegans and Sympetrum flaveolum are reported to feed on the pyralids in an

aquatic nursery in Enfield, United Kingdom. — *(Abstracter's Note:* As suggested in a recent paper by the Rev. D. Agassiz [cf. *OA* No. 3830], it is likely that the 2 spp. were misidentified; the specimens of "Sympetrum flaveolum" are probably referable to the oriental Rhodothemis rufa).

(3813) FUKUI, M., 1978. [Some notes on the Odonata of the Shizuoka Prefecture]. *Suruga no Konchu* 1978 (100): 2985-2987. (Jap.). — (2-1-21, Uchinodai, Hamakita, Shizuoka Pref., 434, JA).
84 spp. are listed (Japanese names only) as resident in the Shizuoka Pref., Japan. This includes Pantala flavescens, which is an immigrant, but does breed in summer in the prefecture (though it is unable to resist the winter). Anax guttatus and Tramea virginia are omitted from the list. Though specimens are often recorded from the region, and a case has even been reported of emergence of the latter sp., the 2 spp. are oceanic immigrants. Anax parthenope julius immigrates often, but it also breeds in the prefecture. — The contact zone between the ranges of Trigomphus melampus (East) and T. interruptus (West) lies between the Oigawa and Abekawa Rivers; in this area the 2 spp. are coexisting. (Cf. also *OA* No. 3587).

(3814) SOUTHWOOD, T.R.E., 1978. *Ecological methods, with particular reference to the study of insect populations.* Chapman & Hall, London. XXIV+524 pp. — (Author: Dept Zool. & Appl. Ent. Imperial Coll., Univ. London).
This is a handbook of ecological methods, with emphasis on those most relevant to work on insects and other non-microscopic invertebrates in terrestrial and aquatic environments. The Odon. are mentioned with reference to age-grouping, population estimation, and marking.

(3815) TSUI, P.T.P. & B.W. BREEDLOVE, 1978. Use of the multiple-plate sampler in biological monitoring of the aquatic environment. *Fla Sci.* 41(2): 110-116. — (First Author: Aquatic Environments Ltd, Calgary, Alberta, CA).
Field studies indicate that the diversity of macroinvertebrates collected by the multiple-plate sampler is time dependent. Pilot studies to determine optimum exposure period are recommended. Comparisons of macroinvertebrate samples collected by the multiple-plate sampler and the petite Ponar grab from both lentic (incl. Amphiagrion sp., "Agrion" sp.) and lotic (incl. Aphylla sp., Enallagma sp.) environments indicate significant differences.

1979

(3816) EIKAMP, H., 1979. Zur Wirbeltier- und Insektenfauna der Unteren Hydrobienschichten (Aquitan, Untermiozän) im Dyckerhoff-Steinbruch "Am Hambusch" in Wiesbaden-Amöneburg. *Aufschluss, Heidelberg* 30: 193-206. — (Brüder-Grimm-Str. 13, D-6053 Obertshausen, FRG).
It is reported that large numbers of fossils pertaining mostly to the anisopteran larvae, "most probably to the Libellulidae", were recovered from the Lower Hydrobia Beds, Aquitanian, Early Miocene, in the "Am Hambusch" querry, Wiesbaden-Amöneburg, Fed. Rep. Germany. The material mostly consists of fragments, but 5 complete specimens are also available. It has been neither identified nor described. The fossils originate from the same locality (though from a different horizon) as those described by F. Zeuner (1938, Palaeontol. Ztschr. 20: 104-159, pls 1-5). It is stated that Zeuner's material was destroyed during World War II.

(3817) FORGE, P., 1979. Diversité et unité informationelle. *Ann. Univ. Abidjan* (Ecol.) 12: 115-118. — (Ecole Norm. Supér., 08 B.P. 10, Abidjan, Côte d'Ivoire).
The concept of diversity is discussed, and the concepts of "faunal diversity" and "ecological diversity" are defined. Among the examples, a case is given of Anax imperator (Ivory Coast; cf. E. Lamoot, 1977, Odonatologica 6: 21-26).

(3818) SHARMA, B.K., 1979. On some epizoic rotifers from West Bengal. *Bull. zool. Surv. India* 2(1): 109-110. — (Zool. Surv. India, 14 Madan Str., Calcutta-700072, India).

With reference to the paper listed in *OA* No. 2252, Brachionus rubens is reported from a number of cladoceran taxa, and B. caudatus from not further identified dragonfly larvae. — (*Abstracter's Note:* The generic name "Sepadella", mentioned in *OA* No. 2252, is a printing error for Lepadella).

1980

(3819) ANANTHAKRISHNAN, T.N., [Ed.], 1980. *Zoological Survey of India. State of Art Report: Zoology.* Zool. Surv. India, Calcutta. VI+302 pp. — Price: US $ 9.—. — (Orders to: Publ. Div., Zool. Surv. India, 34 A & B Sashibhushan Dey Str., Calcutta-700012, India).
The Odon. are dealt with on pp. 107-109 (taxonomy, faunistics), and 283 (cytotaxonomy). The history of odonatology in India is briefly traced, followed by an account of the present status, and by a brief outline of the perspectives for the future research. A list of (some) domestic and foreign workers on the Indian Odon. is also provided, though some of the addresses given are out-of-date. (Due to a printer's error, the title of the Odonata chapter is missing in the Contents table).

(3820) BAN, Y., 1980. Notes on the migration of Sympetrum frequens (Odonata) in Nishio, Aichi Prefecture and in Otsu, Shiga Prefecture. *Nature Study* 26(7): 78. (Jap.). — (Kaminawa 52-2, Heisaka-cho, Nishio, 444-03, Aichi Pref., JA).
A note on the migrations, with topographic maps, that had occurred in Oct., 1978 and 1979.

(3821) BAN, Y & K. KIRITANI, 1980. Seasonal prevalence of aquatic insects inhabiting paddy fields. *Jap. J. Ecol.* 30: 393-400. (Jap., with Engl. s., tabs and fig. captions). — (First author: Kaminawa 52-2, Heisaka-cho, Nishio, 444-03, Aichi Pref., JA; — Second Author: Div. Ent., Natn. Inst. Agric. Sci. Tsukuba, 305, JA).
The faunal composition and population density of aquatic insects and tadpoles in irrigated paddy fields in Kochi Pref., Japan were studied by using the plastic pan water trap, by direct observation, and by sweeping. The faunal inventory is presented in tabs. As far as the Odon. are concerned, S. frequens was collected in an earlier season, while Orthetrum albistylum and Pantala flavescens were abundant in a later season. As rice plants grew taller, the total number of insects per m^2 increased, but the egg colonizing spp. (viz. Ephemeroptera and Odon.) disappeared.

(3822) FUKUDA, K., 1980. [Some observations on Aeshna juncea]. *Insect* 31(2): 81. (Jap.). — (Seiwa-ryo, 251, Nakayasudo-machi, Kiyotaki, Nikko, Tochigi Pref., 321-14, JA).
A note on behaviour, with special reference to the maiden flight, as noticed Sept. 14, 1980 at the Goshikinuma Pond, Oku-nikko, Tochigi Pref., Japan.

(3823) GIUDICELLI, J., A. DIA & P. LEGIER. 1980. Étude hydrobiologique d'une rivière de région méditerranéenne, L'Argens (Var, France): habitats, hydrochimie, distribution de la faune benthique. *Bijdr. Dierk.* 50(2): 303-341. (With Engl. s.). — (Lab. Biol. Anim. -Ecol., Fac. Sci., Centre Saint-Jérôme, Univ. Aix--Marseille III, F-13013 Marseille).
This is the first almost complete account on the hydrobiology of a low-altitude water-course in the Mediterranean coastal drainage basin. The faunal inventory includes 10 odon. spp.

(3824) GIUDICELLI, J., Z. MOUBAYED & J.M. TOURENQ, 1980. Un biotope hydrobiologique remarquable: les laurons de La Crau (Bouches-du-Rhône, France). La communauté animale et ses relations avec peuplement des biotopes aquatiques voisins. *Annls Limnol.* 16(3): 271-297. (With Engl. s.). — (First Author: Lab. Biol. Anim. -Ecol., Fac. Sci., Centre Saint-Jérôme, Univ. Aix-Marseille III, F-13013 Marseille).
The thermal stability (12.6°C) and the constant renewal of water are considered responsible for the peculiar cold-stenothermous invertebrate fauna of the Crau wells in the Rhône R. mouth. It is said that 16 odon. spp. were recorded, but only Ceriagrion tenellum is mentioned.

(3825) ISVOREANU, V. & V. BOGHEAN, 1980. Noi specii de odonate pentru Delta Dunarii. — [New odonate species for the Danube Delta]. *St. Cerc. Biol.* (Biol. anim.) 32(2): 137-150. (Romanian, with Engl. s.). — (Inst. Ştiinţe Biol., Splaiul Independentei 296, Bucureşti, Romania).
A list is presented of 39 spp. recorded from the Delta of the Danube, Romania. Coenagrion ornatum, C. scitulum, Ischnura pumilio, Lestes macrostigma, L. virens, and Sympetrum fonscolombei are new to the local fauna. (Cf. also *OA* No. 3318).

(3826) KUMAZAWA, T., 1980. [Somatochlora clavata attempting to oviposit in a house]. *Insect* 31(2): 81. (Jap.). — (4872, Miyuki--honcho, Utsunomiya, Tochigi Pref., 321, JA).
A female came flying into the Author's home (Aug. 13, 1980), and attempted the ovipositon movements on "engawa" (Japanese style wooden verandah) and on "tatami" (Japanese style flooring mat made of dried rush grass). When caught, numerous eggs were noticed at the tip of its abdomen.

(3827) LOMBARDO, F., 1980. L'articolazione delle ali in Anax imperator Leach, 1815 (insetti, odonati, anisotteri). *Animalia* 7(1/3): 231-247. (With Engl. s). — (Ist. Policatt. Biol. Anim., Univ. Catania, Via Androne 81, I-95124 Catania).
The morphology of the wing articulation in A. imperator is analyzed. It is argued that the sclerites derived from the margins of the notum, and the sclerification derived from the bases of the wing venation do not coincide in Odon. with what is known on other Pterygota. The occurrence of an elastic cuticle (resilin) has also been detected.

(3828) PAPADOPOL, M. & V. POPESCU-MARINESCU, 1980. The study of the benthic fauna of Upper Mureş River. *Trav. Mus. Hist. nat. "Grigore Antipa"* 21: 145-150 (With Fr. & Roman. s's.). — (First Author: Fac. Biol., Splaiul Independentei 93-95, R-76201 Bucureşti-6, Romania).
The trophicity and water quality of the Mureş R. (between Răstoliţa and Sfînceni, Romania) were studied by means of qualitative and quantitative analysis of the benthic fauna. A reference is made to Odon., but no species list is provided.

(3829) TIETZE, F., 1980. Tierische Organismen als Bioindikatoren zur Erfassung ökologischer Veränderungen in immissionsbeeinflussten Ökosystemen. *Wiss. Z. Univ. Halle* 29(5): 83-93. — (W.B. Biol., Sekt. Biowiss., Martin-Luther Univ., Halle-Wittenberg, FRG).
The function of animals as bioindicators for ecological changes in ecosystems influenced by immissions is discussed. With reference to Odon., no definite correlation with the impact of immission, could be ascertained though it seems that the larvae of Enallagma cyathigerum are larger in the environment characterized by low immission impact.

1981

(3830) AGASSIZ, D., 1981. Further introduced China Mark Moths (Lepidoptera: Pyralidae) new to Britain. *Entomologist's Gaz.* 32(1): 21-26, pl. 3. — (The Vicarage, Highview Ave., Grays, Essex, UK).
In addition to a number of tropical pyralid spp. of oriental provenience found breeding in aquatic nurseries in Enfield, United Kingdom (cf. also *OA* No. 3812), the following Odon. were also recorded from the said nurseries: Crocothemis servilia, Rhodothemis rufa, Urothemis insignata bisignata, Tramea transmarina euryale, and a not further identified Ischnura sp. An "oriental subspecies" of Anax imperator has also occurred. — (*Abstracter's Note:* For a detailed account of Ictinogomphus decoratus melaenops found under similar circumstances in The Netherlands cf. *OA* No. 2311. — Only a few records are known of "involuntarily imported" tropical spp., found in nature in the Temperate Zone. For the occurrence of Crocothemis servilia in Florida cf. Notul. odonatol. 1 [1978]: 9-10, 29-30. No doubt the most amazing record of this kind is that of Mecistogaster, reported from Driesen on the Netze, E of Berlin, now Poland, by F. Rudow [1898, Soc. ent. 13: 83], and discussed by P.P. Calvert [1912, Ent. News 23: 483]).

(3831) BAN, Y., 1981. Some observations on the life cycle of the water scorpion, Ranatra unicolor Scott (Hemiptera: Nepidae) in Yamanoshita Bay, Lake Biwa. *Verh. int. Ver. Limnol.* 21: 1621-1625. — (Kaminawa 52-2, Heisaka-cho, Nishio, 444-03, Aichi Pref., JA).
The odon. larvae are among the prey of the larval R. unicolor. The species involved is/are not stated.

(3832) FORSYTH, D.J. & A.L. MacKENZIE. 1981. Limnology of Opal Lake. *N.Z.Jl Mar. Freshwat. Res.* 15: 279-283. — (First Author: Ecol. Div., Dept Sci. & Indust. Res., P.O. Box 415, Taupo, NZ; — Second Author: Cawthron Inst., P.O. Box 175, Nelson, NZ).
The Opal Lake is a cold, acid, highly eutrophic lake on the central volcanic plateau of the North Island, New Zealand. The biota is less diverse than in neighbouring near-neutral waters. Xanthocnemis zealandica, Hemicordulia australiae, and Procordulia grayi are the Odon. recorded.

(3833) FRANKE, U., 1981. Libellen im Naturschutzgebiet Etzwiler Ried (Kanton Thurgau, Schweiz). *Mitt. thurg. naturf. Ges.* 44: 105-119. — (Teggingerstr. 1, D-7760 Radolfzell, FRG).
The faunal composition, phaenology, and coenology of the Odon. (28 spp.) of the Nature Reserve "Etzwiler Ried" (alt. 430 m) nr Stein am Rhein, canton Thurgau, Switzerland is discussed.

(3834) FUKUDA, K., 1981. [The emergence of Somatochlora uchidai]. *Insect* 32(1): 44-45. (Jap.). — (Seiwa-ryo, 251, Nakayasudo-machi, Kiyotaki, Nikko, Tochigi Pref., 321-14, JA).
A female was observed emerging on July 13, 1980 at the Goshikinuma Pond, Oku-nikko, Tochigi Pref., Japan. A larva in posture was found at 12.30 hr (cloudy weather), the splitting occurred at 12.48, and the emergence was completed at 15.55. (For other notes on the Odon. of this locality cf. *OA* Nos 3600, 3822). — (*Abstracter's Note:* The journal "Insect" [Engl. and Jap. title] is published by "Konchu Aikokai" [="Insect Lovers Association"], c/o Lab. Ent., Fac. Agric., Utsunomiya Univ., Mine-machi, Utsunomiya, Tochigi Pref., Japan. It is written in Japanese, and contains regularly numerous odonatol. notes).

(3835) GLANCEY, B.M., 1981. Two additional dragonfly predators of queens of the red imported fire ant, Solenopsis invicta Buren. *Fla Ent.* 64(1): 194-195. — (Insects Affecting Man & Animals Res. Lab., Agric. Res., Sci. & Educ. Admin., USDA, P.O. Box 14565, Gainesville, Fla 32604, USA).
Epiaeschna heros and Libellula axilena are added to the list of odon. predators of S. invicta as given in the paper listed in *OA* No. 762.

(3836) HEYMER, A., 1981. Jurzitza (G.), 1978. — "Die Libellen Miteleuropas". *Bull. d'Ecol.* 12: 391. (Fr.). — (Lab. d'Ecol. gén., Mus. Natn. Hist. Nat., 4 av. Petit Château, F-91800 Brunoy).
A brief statement on the scope of the volume listed in *OA* No. 2121.

(3837) KRICHEVSKII, R.E., B.Ya. RYABKO & A. Yu. HARITONOV, 1981. Optimal key for taxons ordered in accordance with their frequencies. *Discrete Applied Mathematics* 3: 67-72. — (Third Author: Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).
Assume nothing is known about the probabilities of taxons except that the first taxon is more probable than the second one, the second is more probable than the third, and so on. Then to construct the optimal key, one can regard the *i*th taxon as having probability proportional to $(i-1)^{i-1}/i!$. The case is demonstrated on examples from the Odon. (For the original Russian paper on this subject cf. *OA* No. 2777).

(3838) KUKASHEV, D.Sh. & Yu.V. BELYAKOVA, 1981. Biologiya i dinamika chislennosty lichinok Prosthogonimus cuneatus (Rud., 1809) v vodoemah Kurgal'dzinskogo zapovednika. [Biology and population dynamics of the Prosthogonimus cuneatus (Rud., 1809) larvae in the waters of the Kurgal'dzhin Nature Reserve]. *In:* E.V. Gvozdev, [Ed.], Parazity — komponenty vodnyh i nazemnyh biocenozov

Kazahstana, pp. 84-89. Nauka, Alma-Ata. (Russ.). — (Inst. Zool., Kazakh SSR Acad. Sci., Akademgorodok, USSR-480032 Alma-Ata).
On the Sultan-Keldy Lake, eastern Kazakhstan, USSR, the Prosthogonimus metacercariae were reçorded in Coenagrion sp., Aeshna mixta, Aeshna sp., Libellula quadrimaculata (the main intermediate host), and Sympetrum flaveolum. The infection of larvae takes place between May and autumn; the frequency (in larvae and adults) being highest during the second half of June, coinciding with the abundance of L.quadrimaculata. — The mean odon. larvae density is 4.86 spec./m² (9.5 in the Nura R. mouth), yielding an estimate of 6 million dragonfly specimens for the whole lake. Among these, 4.9% are infected; the mean number of metacercariae per dragonfly is 6.4. Consequently, it is postulated that the total population of metacercariae on the lake exceeds 1 million specimens.

(3839) KUMAZAWA, T., 1981. [Polycanthagina melanictera taken at the Utsunomiya City]. *Insect* 32(1): 45. (Jap.). — (4872, Miyuki-honcho, Utsunomiya, Tochigi Pref., 321, JA).
A female flew into the Author's home, June 16, 1980 (15.00 hr).

(3840) REZNIKOVA, Zh.I. & N.M. SAMOSHILOVA, 1981. Rol' murav'ev kak hishchnikov v stepnyh biogeocenozah. [The role of ants as predators in steppe biogeocenoses]. *Ekologiya* 1981(1): 69-75. (Russ.). — (Inst. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 11, USSR-630091 Novosibirsk).
The effect of various ant spp. on invertebrate steppe populations was studied in the Baraba and Tuva Steppes (Russian SSR) and in those of eastern Kazakh SSR, USSR. The food spectra of various spp. in various biogeocenoses are given. Camponotus japonicus aterrimus is the only sp. in which the gathering of Odon. was recorded (2.5% of the total biomass foraged).

(3841) SCHEFFLER, W., 1981. Gerhard Jurzitza: Unsere Libellen. *Limnologica* 13(2): 515. (Germ.). — (Abt. Limnologie, Zentralinst. Mikrobiol. & exp. Therapie, Akad. Wiss. DDR, DDR-1431 Neuglobsow, GDR).
Book review of the volume listed in *OA* No. 2121.

(3842) VALTONEN, P., 1981. Suomen sudenkorentojen ruutukartoitus valmistunut. — Mapping of distribution of Finnish dragonflies completed. *Luonnon Tutkija* 85(1): 22-23. (Finn., with Engl. s.). — (Dept Electr. Eng., Tampere Univ. Technol., P.O. Box 527, SF-33101 Tampere-10, Finland).
A summary is given of the results of the Finnish odon. mapping scheme, and a brief comparison is made with similar surveys in 4 other countries. For the original atlas cf. *OA* No. 3143.

(3843) WASSCHER, M., 1981. Libellen op de hei. [Dragonflies in the heaths]. *Amoeba* 1981 (July): 4-5. (Dutch). — (I.B. Bakkerlaan 117-II, 3582 XP Utrecht, NL).
32 spp. are listed from the heaths of the southeastern Noord Brabant prov., The Netherlands, and the odon. fauna of the heaths is discussed in general terms.

(3844) WOLF, M., 1981. Libellenfaunistik in der Schweiz: Resultate und Aufgaben. *Mitt. dt. Ges. allg. angew. Ent.* 3: 163-166. (With Engl. s.). — (Altwiesenstr. 345, CH-8051 Zürich).
The objectives, preliminary results and the future perspectives of the computer data-bank inventarisation of the Swiss odon. fauna are briefly outlined and dicussed with special reference to the taxa at risk within the national territory. At present, the scheme is operated experimentally by the Odonatologische Arbeitsgemeinschaft "Zürcher Libellenforum", with emphasis on the fauna of the Zürich canton. A facsimile is given of the standardized Inventarisation Form, and it is emphasized that the completion of the project is expected to take many years; it could be achieved only by intense cooperation of resident and foreign workers.

1982

(3845) (Anonymous), 1982. Monster earwig! *Crown*

Agents Gaz., Sutten 11(2):2.
A note on the insect post stamp series (7p, 10p, 25p, 32p), released Jan. 4, 1982 by the St. Helene Government, and designed by C. Abbott. The 7p stamp shows the endemic Sympetrum dilatatum. It is said that during the past 20 yrs, only an occasional specimen has been sighted, the last in Aug., 1977. Its disappearance dates from around the time of introduction of the omnivorous Indian Mynah bird on the island.

(3846) BALESTRAZZI, E., I. BUCCIARELLI & P.A. GALLETTI, 1982. Sulla variabilità di Cordulegaster pictus (?) trinacriae Waterston, 1976, con descrizione della femmina e dell'exuvia ninfale (Odonata Cordulegasteridae). *G. ital. Ent., Cremona* 1(2): 63-71. (With Engl. & Germ. s's.). — (Third Author: Via Monte Generoso 2, I-20155 Milano).
The adult male, female and exuviae are described and illustrated from Sicilian material, Italy. It is suggested that trinacriae is affiliated to C. pictus rather than to C. boltonii.

(3847) BAUGH, T.M., M.A. NELSON & F. SIMPSON, 1982. A description of Timpie Springs, Utah, with a preliminary survey of the aquatic macrobiota. *Gt Basin Nat.* 42(1): 77-80. — (First Author: 1020 Custer Ave., Ogden, Utah 84404, USA).
A description is given of some physical, chemical, and biotic features of Timpie Springs, Tooele Co., Utah, USA. A reference is made to the general habitats and frequency of Zygoptera and Anisoptera, but no species list is provided.

(3848) BERRA, M., 1982. Velebit. I spedizione del Giornale italiano di Entomologia. *G. ital. Ent., Cremona* 1(2): 43-47. (With Engl. s.). — (c/o Editors, Via Valsesia 66, I-20152 Milano).
Between Karlobag and Gospić, Velebit Mts, Croatian Littoral, Yugoslavia the following Odon. were recorded (June, 1982): Pyrrhosoma nymphula, Onychogomphus forcipatus, Libellula depressa, Orthetrum brunneum, and O. ramburi. — (For some notes on the Odon. of the Velebit Range cf. B. Kiauta, 1954, *Proteus, Ljubljana* 17: 115-118).

(3849) BEUTLER, H., 1982. Zur Kenntnis der Pokal-Azurjungfer, Coenagrion lindeni (Selys) in der DDR. (Insecta, Odonata, Zygoptera) *Faun. Abh. Mus. Tierk. Dresden* 9(5): 87-94. (With Engl. s.). — (Frankfurter Str. 23 b, DDR-1230 Beeskow, GDR).
The distribution of C. lindeni in the German Democratic Republic and Westberlin is mapped; Mark Brandenburg represents the northeastern limit of the range of this sp. in Central Europe. The specimens from Brandenburg are distinctly larger than those from western and southwestern Europe. Some observations on biology and ecology are given, and biometric data of the GDR material are stated.

(3850) BEUTLER, H., 1982. Nachweis der Arktischen Smaragdlibelle, Somatochlora arctica (Zetterstedt, 1840) im Schlaubetal — eine für die DDR neue Grosslibelle (Insecta, Odonata, Corduliidae). *Faun. Abh. Mus. Tierk. Dresden* 9(19): 205-209. (With. Engl. s.). — (Frankfurter Str. 23b, DDR-1230 Beeskow, GDR).
First record of S. arctica from the German Democratic Republic. Its larval stage is described and figured.

(3851) BINKOWSKI, R., 1982. Beitrag zur Libellenfauna der Naturschutzgebiete Vallenmoor und Feldungelsee. *Wasser+Leben, Osnabrück* 5: 114-119. — (Lindenstr. 32, D-4504 GM Hütte, FRG).
The status (1978) of the odon. fauna (16 spp.) of the Nature Reserves Vallenmoor and Feldungelsee, Osnabrück area, Fed. Rep. Germany is discussed, and field observations are presented for each sp.

(3852) BOGENRIEDER, A., G. FUCHS, D. HAVLIK, O. HOFFRICHTER, E. LIEHL, E. OBERDORFER, G. OSCHE, H.E. PAULUS & W. WIMMENAUER, 1982. *Der Feldberg im Schwarzwald, subalpine Insel im Mittelgebirge.* Landesanstalt für Umweltschutz, Karlsruhe. 526 pp., pls incl. Price: DM 60.—. — (Publishers: Bannewaldallee 32, D-7500 Karlsruhe, FRG).

This is a regional monograph (Black Forest, F.R. Germany), the text on Odon. (pp. 380, 396-397, 491) was contributed by G. Osche. Aeshna coerulea, A. subarctica elisabethae, Somatochlora alpestris, and S. arctica are discussed in some detail. A col. photograph (pl. 23, p. 491) of A.s. elisabethae is also included.

(3853) BUTLER, S., 1982. Dragonflies of Shropshire and their distribution. *Occ. Pap. Cardac & Severn Valley Fld Club* 6, 21 pp. — Price: £ 1.50. — (Author: Red Willow, All Stretton, Shrop. SY6 6HN, UK; — Publishers: Cardac & Severn Valley Field Club, c/o M.C. Tate, Bear Steps, Shrewsbury, UK).
The hitherto known Shropshire, United Kingdom odon. spp. (28) are described, their local habitats are stated, and the county distribution of 26 spp. is mapped. — (*Abstracter's Note:* According to the Author's personal communication, breeding populations of 2 additional spp., Aeshna mixta and Sympetrum sanguineum, were discovered after the publication of the booklet).

(3854) CHELMICK, D.G., 1982. *A survey of the Odonata of Sussex (1965-1978).* Sussex Trust Nat. Conserv. II+27 pp., 35 maps excl. — (Author: "Bredon", High Beech Lane, Haywards Heath, Sussex UK).
This well balanced volume is the result of the survey work carried out by the Sussex Trust for Nature Conservation, which commenced in 1965, and the organisation of which was under the Author's responsibility from Nov., 1971 onwards. The aims of the booklet are to summarize historical data on the distribution of Sussex Odon., and to produce distribution maps on a tetrad basis (2 X 2 km squares), indicating the current status of the spp. — A brief outline of the history of odonatology in Sussex (from 1853 onwards) is followed by an account of the regional topography and geology, with special reference to the odon. habitats. The third chapter is dealing with the technical data of the survey. The systematic account contains detailed information on the past and present occurrence of each of the 32 resident spp., 29 of which are still known to breed in Sussex. The topographic distribution and the habitat preferences are outlined, though the locality names are not listed, save for special cases. While Sussex is poor in spp. generally associated with acid pools and bogs (as this habitat is locally scarce), it is one of the richest areas in Britain for such local taxa as Coenagrion pulchellum, Brachytron pratense and Sympetrum sanguineum. The occurrence of Gomphus vulgatissimus and Libellula fulva on the River Arun, which rates as one of the finest dragonfly rivers in Britain, is also notable. In the concluding chapter it is emphasized that, with the notable exception of Lestes dryas, no species appears to have declined dramatically. It goes without saying, as elsewhere, that the future of the Sussex Odonata is inexorably linked with the fate of the County wetlands. One of the main factors leading to the apparent extinction of Lestes dryas are the intensive pump-drainage schemes which have taken place on the lowland levels in the extreme East. Such schemes have been proposed (and partially implemented) also in 2 of the remaining key areas (Amberley Wild Brooks and Pevensey Levels). It is feared that these will have a profound effect on the fauna, particularly on Coenagrion pulchellum and Brachytron pratense, both of which are already declining nationally. — In the maps, separate for each sp., a graphic distinction is made between the records referring to probable breeding sites, those concerning the non-breeding individual specimens, and the pre-1965 records.

(3855) CLAUSEN, W., 1982. Beobachtungen zum Verhalten der Moorlibellen Torf-Mosaikjungfer (Aeshna juncea L.) und Hochmoor--Mosaikjungfer (Aeshna subarctica Wlk.) (Odonata). *Natur & Heimat, Münster* 42(3): 94-96. — (Oppenwehe 459, D-4995 Stemwede--3, FRG).
In inter- and intraspecific clashes of the males of Aeshna juncea and A. subarctica, the attacking individual always approaches the other male from below. Systematic observations revealed that intraspecific clashes are always heavier than those between individuals of 2 different spp. Specific

recognition, thus, must be made possible by some features visible to the approaching insect, e.g. on the ventral side of the target male. It is suggested that the yellow spots on the ventral side of the thorax are serving this purpose. These are relatively large in A. subarctica, and are smaller, or even lacking, in A. juncea. A fig. showing this detail in the 2 spp. is also provided.

(3856) COENEN, L. & G. BOTMAN, 1982. *The effect, the parasitic water mites Arrenurus americanus and Arrenurus major (Acari: Arrenuridae), have on their host Ischnura posita (Odonata: Coenagrionidae) and the effect they have on each other during their parasitic larval stage.* M.Sc.thesis, Univ, Utrecht. 89 pp. — (Xerox copies available, at Hfl. 10.—, from the Editors of Odonatologica). The work has been carried out at the Univ. of Florida, Gainesville, USA, under the supervision of Prof. C.A. Lanciani (Acari) and Prof. C. Johnson (Odon.). The 2 Acari spp. have different, non-overlapping attachment sites on the host. Although mite-induced mortality does occur in the host, its magnitude and mechanisms are still unknown. Intraspecific competition was ascertained in A. americanus larvae, but inter-specific competition between the 2 spp. does not seem to occur. Various aspects of the parasite-host relationships are discussed in some detail.

(3857) *CONTACTBLAD NEDERLANDSE LIBELLENONDERZOEKERS [Newsletter of the Dutch Dragonfly Workers]*, No. 4 (Sept., 1982). Issued by the Werkgroep Nederlandse Libellenonderzoekers [Association of the Dutch Dragonfly Workers], Bussum; edited by M. Verdonk & J.W. Schoorl. — (Dutch). — Subscription for 1982: Hfl. 11.—. — (c/o M. Verdonk, Floralialaan 47, 1402 NJ Bussum, NL; — for order conditions cf. *OA* No. 3214).
The news items include notes on the Dragonfly Study Group of the Netherlands Youth Federations (*M. Wasscher*, I.B. Bakkerlaan 117-II, 3582 XP Utrecht, NL), a report on the Seventh Colloquium of Dutch Dragonfly Workers, Leiden, May 8, 1982 (*M. Verdonk*, cf. above), and a note on the Third Meeting of German Odonatologists, Bonn, Sept. 3-4, 1982 (*M. Wasscher*). Of particular interest is an exhaustive list of significant faunistic records in The Netherlands, covering the period 1977--1982, based on the documented data supplied by a number of workers. A special section also deals with exceptionally late seasonal records (the latest among these is a Sympetrum striolatum, Nov. 10, 1977, nr the village of Beuven). A tentative migration of Libellula quadrimaculata (May 31-June 1, 1977, Vlieland Island), and an interspecific copula Sympetrum striolatum X S. vulgatum are also brought on record. Notes on recent odonatol. literature, and the mutations in the membership/subscription list are concluding the issue.

(3858) DE MARMELS, J., 1982. Dos náyades nuevas de la familia Megapodagrionidae (Odonata: Zygoptera). *Boln Ent. venezol.* (NS)2(10): 89-93. (With Engl. s.). — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
The exuviae of Megapodagrion venale and Philogenia cassandra are described, figured, and discussed.

(3859) DE MARMELS, J., 1982. Cuatro náyades nuevas de la familia Libellulidae (Odonata: Anisoptera). *Boln Ent. venezol.* (NS)2(11): 94--101. (With Engl. s.). — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
The exuviae of Brechmorhoga rapax, B. vivax, Dythemis multipunctata, and Libellula herculea, from the El Avila National Park, Venezuela, are described and illustrated.

(3860) DE MARMELS, J., 1982. Dos náyades nuevas de la familia Aeshnidae (Odonata: Anisoptera). *Boln Ent. venezol.* (NS)2(12): 102--106. (With Engl. s.). — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
The ultimate instars of Aeshna cornigera and A. rufipes are described and illustrated.

(3861) DE MARMELS, J., 1982. La náyade de Cora

cyane Selys, 1853 (Odonata: Polythoridae). *Boln Ent. venezol.* (NS)2(13): 107-110. (With Engl. s.). — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
The exuviae of C. cyane are described, figured, and compared with C. chirripa. These are the only 2 polythorid spp. of which the immature stage has hitherto become known.

(3862) DE MARMELS, J., 1982. Archilestes guayaraca, nuevo Zygoptera de Venezuela (Odonata: Lestidae). *Boln Ent. venezol.* (NS)2(14): 111--113. (With Engl. s.). — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
A. guayaraca sp.n. (♂ holotype: Guayaraca--Auyantepuy, Bolívar, Venezuela, alt. 1020 m, 25-IV-1956; deposited under No. 6478 in Inst. Zool. Agric., Maracay) is described, figured, and compared with A. tuberalatus Wilmsn.

(3863) DE MARMELS, J., 1982. Hallazgo de Odonata nuevos para Venezuela o poco conocidos. 2. *Boln Ent. venezol.* (NS)2(15): 114-116. — (Dept. & Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Apdo 4579, Maracay-2101-A, Venezuela).
This is the continuation of the series commenced by the paper listed in *OA* No. 3521. Records are listed for 6 spp., 4 of which are new to the fauna of Venezuela, viz. Perilestes attenuatus, P. kahli, Hetaerina amazonica, and Progomphus geijskesi. A fig. showing the difference in the male sup. app. of P. kahli specimens from Mato Grosso (Brazil) and Venezuela, is also provided.

(3864) DONATH, H., 1982. Eine interessante Libellengesellschaft am Stadtrand von Luckau. *Biol. Stud. Luckau* 11: 37-47. — (Jahnstr. 6, DDR-7960 Luckau, GDR).
The odon. fauna (18 spp., of which 7 with certainty resident) on the NW outskirts of the city of Luckow, GDR, is discussed, with special reference to its ecological composition.

(3865) DONATH, H. & W. JORGA, 1982. Liste der im Bezirk Cottbus bestandsbedrohten Insekten (Wirbellose Teil I). Libellen (Odonata). *In:* W. Jorga et al. [Eds], Liste der gefährdeten Pflanzen- und Tierarten im Bezirk Cottbus, pp. 21-24. Rat Bez. Cottbus. — (First Author: Jahnstr. 6, DDR-7960 Luckau, GDR).
56 odon. spp. were so far recorded from the Cottbus Disstr., German Democratic Republic. 28 of these are considered locally at risk. Classified checklists of taxa and habitats are given.

(3866) DUMONT, H.J., 1982. Relict distribution pattterns of aquatic animals: another tool in evaluating Late Pleistocene climate changes in the Sahara and Sahel. *In:* J.A. Coetzee & E.M. van Zinderen Bakker, [Eds], Palaeoecology of Africa and the surrounding islands, Vol. 14, pp. 1-24, 1 col. pl. excl., Balkema, Rotterdam. — (Inst. Zool., Univ. Gent, Ledeganckstr. 35, B-9000 Gent).
Although many kinds of adaptive strategies have evolved, it is generally true that higher aquatic animals can only disperse through water. A study of the relict distribution of selected groups of aquatic animals in a desert like the Sahara can therefore produce valuable new insights into the past climatic fluctuations of this area. The biogeography of the regional Odon. has been studied in considerable detail. The non-migrant Odon. of African origin in the Mediterranean Basin are of 2 types: spp. with relicts on the central Mediterranean islands but not on the Iberian Peninsula and the coastal plain of NW Morocco, and spp. with relicts on the Iberian Peninsula but not on the Mediterranean islands. It is argued that the first category corresponds to a migration wave around 20,000 BP, and the second to a much more important migration wave (embracing also many spp. of fish, amphibia, and the Nile crocodile), between 12,000-8,000 BP. Relictisation of these spp. in the Central Sahara occurred as early as 7,000 BP, while in the southern Sahara and Sahel all relicts were wiped out by a severe drought around 5,000--4,000 BP. The Tibesti, Ennedi, and Adrar of Mauretania were recolonized by African spp. thanks to transgressions of Lake Chad and the River Senegal, but the Adrar-des-Iforhas and the Aïr still have a very deficient fauna, indicating that no surface water link with the

Sudan has ever been re-established (Author). (Cf. also *OA* Nos 2212, 2629).

(3867) DUNKLE, S.W. & M.J. WESTFALL, 1982. Order Odonata. Dragonflies and damselflies. *In:* R. Franz, [Ed.], Rare and endangered biota of Florida. Vol. 6. Invertebrates, pp. 32-45. Univ. Press Florida, Gainesville. — (First Author: Ent. Dept, Div. Plant Industry, Box 1269, Gainesville, Fla 32602, USA; — Second Author: Dept Zool., Univ. Florida, Gainesville, Fla 32611, USA).
The Florida fauna consists of 155 resident odon. spp., 33 (21%) of which are classified in this paper as "threatened", "rare", "sp. of special concern", or as sp. of "undetermined status". The list is conservative, for 14 other spp. are confined to the southern tip of the state, and 10 more spp. are peripheral in northern Florida, but are common further north. The south Florida spp. are not listed, except for Argiallagma pallidulum, since all of them are pond or canal spp., that can be expected to persist in Florida as long as the construction of new ponds equals the destruction of old ones. — For each of the 33 spp. the distribution in the state is outlined and mapped, the habitats are stated, and reference is made tot the larval ecology. In the concluding section some conservancy measures are recommended.

(3868) ENTING, B. & L. MALLOY, 1982. *The ancient islands. New Zealand natural environments.* Port Nicholson Press, Wellington. 162 pp. — Price: NZ $ 32.—. — (Authors' addresses not stated).
A photograph (by B.E.) of a dragonfly on p. 80 has the caption (by L.M.): "Diplacodes bipunctata photographed at Kai Iwi lakes in Northland. Elsewhere on the west coast of New Zealand they have been observed in swarms, perhaps indicating that they regularly cross the Tasman from Australia".

(3869) ERIKSEN, C.H., 1982. How to put up with a pond: the physiological ecology of larval Lestes disjunctus. *Abstr. Pap. 1982 ann. Meet. North Am. benthol. Soc., Ann Arbor,* p. 1. — (Joint Sci. Dept., Claremont Coll., Claremont, Ca. 91711, USA).
[Verbatim]: L. disjunctus lives in small, well vegetated temporary ponds such as the Rocky Mountain "bog pond" studied. Hatch occurs at ice melt, growth is rapid and emergence is in late July. DO and temperature vary considerably during this time. An average late July day exhibits minimum temperatures and DOs at dawn of 12° and 3.1 ppm (lowest 1.8 ppm) and maxima at 1700 hours of 22° (highest 25.5°) and 7.6 ppm. One mode of adaptation to such conditions is low Q_{10}. Few such examples are known and Lestes' Q_{10}s of 2.4-3.6 suggest it is typical of most aquatic poikilotherms and unique thermal adaptation is not its mode of competitional advantage. Another dogma suggests that in the face of varying DO, respiratory regulation would be competitively advantageous. L. disjunctus is not a good regulator either. It's oxygen intake decreases a temperature dependent 15-27% from a normal environmental high DO to its low-oxygen critical point. However, daytime DO variation only causes a 10% metabolic rate variation at 18.7° (sunny day). Most metabolic rate depression occurs at night due to lowering DO. Evidence suggests Lestes is a visual predator. Given its physiological abilities and the environmental conditions, a relatively stable high metabolic rate and associated activities result during the time it can see to feed. At night, lowering DO reduces metabolic rate (analogous to bats and hummingbirds) with the energy "saved" from not regulating probably accounting for its competitively advantageous rapid growth rate.

(3870) ewa, 1982. Abschiedsfeier an der Kantonsschule Zürcher Oberland. Für 168 Maturanden: "Guten Flug in die Freiheit!". *Zürcher Oberländer,* issue of Sept. 27, p. 13.
A local daily's report on the festivities that have marked the closing of the scholastic year of the Cantonal Highschool, Wetzikon, Switzerland. A considerable portion of the article dwells on the address "Odonata — encounter of life science and aesthetics", delivered by the well-known Swiss odonatologist, Dr H. Wildermuth. For the contents of the talk cf. *OA* No. 3907.

(3871) FERRERAS ROMERO, M., 1982. Odonatos de Sierra Morena Central (Córdoba): aspectos faunísticos. *Bol. Asoc. esp. Ent.* 5 [1981]: 13-23. (With Engl. s.). — (Dept. Zool., Fac. Cien., Univ. Córdoba, Avda. Medina Azahara S/N, Córdoba, Spain).
An annotated list is given of 41 spp., recorded during 1977-1979 at 22 localities in Sierra Morena, Spain. For most spp. some field notes are also provided.

(3872) FINCKE, O.M., 1982. Lifetime mating success in a natural population of the damselfly, Enallagma hageni (Walsh) (Odonata: Coenagrionidae). *Behav. Ecol. Sociobiol.* 10(4): 293-302. — (Dept Zool., Univ. Iowa, Iowa City, Iowa 52242, USA).
Variance in lifetime mating success was measured for individuals of a population of E. hageni, a non-territorial zygopteran in northern Michigan. The sp. is an explosive breeder with scramble competition for mates. Highly skewed operational sex ratios resulted in intense male-male competition which took the form of interference with tandem pairs. 41% of the males failed to mate in their lifetime as opposed to only 3.6% mating failure in females. The effect on mating success of size, age, longevity, and time spent at the breeding site were investigated. Intermediate sized males obtained the most matings, and male lifetime mating success was highly correlated with longevity. (Author).

(3873) FOLSOM, T.C. & N.C. COLLINS, 1982. An index of food limitation in the field for the larval dragonfly Anax junius (Odonata: Aeshnidae). *Freshwat. Invertebr. Biol.* 1(3): 25-32. — (First Author: Environ. Lab., Duke Power Co., Route 4, Box 531. Huntersville, N.C. 28078, USA).
The fecal pellet mass of larval A. junius of a given size is closely correlated with food intake. The fecal pellet mass under ad libitum feeding can be predicted from a knowledge of larval size, and the accuracy of the predictions is not sensitive to wide variation in the diurnal schedule of feeding, water temperature between 15 and 25°C, and dietary composition. Comparisons of masses of fecal pellets produced by field collected larvae with predicted masses for ad libitum feeding should, therefore, be a measure of the degree of food limitation in the field. (Authors).

(3874) FOLSOM, T.C. & N.C. COLLINS, 1982. Food availability in nature for the larval dragonfly Anax junius (Odonata: Ashnidae) *Freshwat. Invertebr. Biol.* 1(3): 33-40. — (First Author: Environ. Lab., Duke Power Co., Route 4, Box 531, Huntersville, N.C. 28078, USA).
A previously-developed Food Limitation Index (FLI) (cf. *OA* No. 3270) for larvae of A. junius was used to measure the food consumption of these animals in four water bodies in southern Ontario. Most mean FLI values from the dragonfly samples did not indicate strong food limitation, but at all sites the degree of limitation tended to increase late in the summer. The FLI could discriminate differences in food limitation among water bodies and seasons through analysis of variance. Food consumption of individual larvae was positively correlated with prey density in their immediate vicinity over the lower part of the natural range of prey densities. Five of 12 measurements of average prey densities in ponds were above the level at which larval food intake stopped responding to increasing prey density. The degree of food limitation tended to increase at unusually high Anax densities. An auxiliary measure of food limitation, percent of larvae with empty guts, did not correlate well with the FLI. The FLI appears to be a useful tool for measuring food limitation and for studying some factors that affect the level of limitation in the field. (Authors).

(3875) FUKUI, M., 1982. [Dragonflies of the Miyakoda River, Shizuoka Prefecture]. *Suruga no Konchu* 1982 (116): 3401-2312. (Jap.). — (2-1-21, Uchinodai, Hamakita, Shizuoka Pref., 434, JA).
20 spp. are recorded from the river, Japan, based mainly on larval evidence. Of particular interest are Platycnemis foliacea sasakii and Macromia daimoji. Based on the data on the shift of larval body size distribution, estimates

are given of the duration of larval development for 9 spp.

(3876) FUKUI, M., 1982. [Larvae of Somatochlora clavata from the Hamakita City, Shizuoka Prefecture]. *Suruga no Konchu* 1982 (116): 3412. (Jap.). — (2-1-21, Uchinodai, Hamakita, Shizuoka Pref., 434, JA).
Close to a dozen of larvae were collected at a small pool, June 8, 1980. 2 of these yielded adults on June 10 (♀) and July 8 (♂).

(3877) GARDINER, K., 1982. To Libellula. *Bull. amat. Ent. Soc.* 41 (336): 152. — (c/o Amateur Entomologist's Soc., 355 Hounslow Rd, Hanworth, Feltham, Middlesex, UK).
A poem.

(3878) HARITONOV, A.Ju. [=Yu.]. & I.N. HARITONOVA, 1982. Lichinka Gomphus epophthalmus Selys (Odonata, Insecta) — Larva Gomphus epophthalmus Selys (Odonata, Insecta). *New little-known Spec. sib. Fauna* 16: 20-22. (Russ., with Engl. s.). — (Ist. Biol., Siberian Sect. USSR Acad. Sci., Ul. Frunse 21, USSR-630091 Novosibirsk).
The hitherto unknown larval stage of G. epophthalmus (from the Novosibirsk Distr., USSR) is described and illustrated, and a key is provided to the larvae of the West Siberian members of the genus.

(3879) HOFFMEISTER, M. & W. HOFFMEISTER, 1982. Orientierende limnologische Untersuchungen im Naturschutszgebiet "Lechtegor", Kreis Emsland 1978 und 1979. *Wasser+ Leben, Osnabrück* 5: 120-137. — (Hubertusring 51, D-4512 Wallenhorst/Lechtegor, FRG).
The faunal inventory includes 2 odon. spp. (Erythromma najas, Ischnura elegans).

(3880) hu, 1982, Libellen und Naturschutz als Ausstellungsthemen. *Tages-Anzeiger, Zürich,* issue of Oct. 1, 1 p.
A local daily's article on the Dragonfly Exhibit in the Museum of Zoology, University of Zürich, Switzerland (Oct.-Dec., 1982), mentioned in *OA* No. 3515. (Cf. also *OA* No. 3893). For references to other notes on the same exhibit cf. *OA* No. 3537.

(3881) KOMATSU, A. & R. KUSACHI, 1982. Ascending respiratory interneurons controlling motor discharges in dragonfly larvae. *J. Physiol. Soc. Japan* 44: 502 [Abstract only]. — (Dept Physiol., Tokyo Women's Med. Coll., 10 Kawada-cho, Shinjuku-ku, Tokyo, 162, JA).
[Verbatim]: intracellular recordings revealed interneurons involved in ventilation control of dragonfly larvae, that is, ascending expiratory interneurons (AE neurons). The AE neurons exerted burst of spikes during expiration. Their burst evoked by current injection increased the spike number and duration of the expiratory motor discharges and suppressed the discharges of an inspiratory motoneuron. Stimulation of a sensory nerve of the terminal ganglion which reset the respiratory rhythm of the motor discharges also reset the burst rhythm of the AE neuron. But their burst evoked by current injection did not reset the rhythm. Intracellular stainings revealed that the AE neurons have their cell body in the terminal ganglion, send an axon anteriorly to the ipsilateral connective and extend branches bilaterally in each abdominal ganglion. These results suggest that the AE neurons are the coordinating interneurons which convey the expiratory signal from the main oscillator located in the terminal ganglion to the motoneurons in each abdominal ganglion.

(3882) LAWRENCE, V.M., 1982. Odonata. *In:* Current and selected bibliographies on benthic biology, 1981, p. 27. North Am. Benthol. Soc. — (Author: Dept Biol., Washington & Jefferson Coll., Washington, Penn. 15301, USA).
42 titles.

(3883) LEGRAND, J., 1982. Une nouvelle corduline du Sénégal, Macromia royi, n.sp. (Odonata, Corduliidae). *Revue fr. Ent.* (N.S.)4(3): 120--122. (With Engl. s.). — (Lab. Ent., Mus. Natn. Hist. Nat., 45 rue de Buffon, F-75005 Paris).
M. royi sp. n. is described and illustrated from a single male (Fumela, Senegal, 1-XI-1965; deposited in Mus. Natn. Hist. Nat., Paris). It is

compared with the closely allied M. nigeriensis Gambles.

(3884) LEHMANN, G., 1982. Libellenbeobachtungen. *Jber. Bundesgymn. Kufstein* 75: 25-26. — (Stimmerfeldstr.17, A-6330 Kufstein).
A general narrative on the fascinations of dragonfly field work, published in a local secondary school annual report. Calopteryx virgo is recorded from the stream between Längsee and Hechtsee, and from the Dreibrunnenjoch, both localities in the Kufstein area, Austria.

(3885) LISTON, A.D. & A.D. LESLIE, 1982. Insects from high-altitude summer snow in Austria, 1981. *Mitt. ent. Ges. Basel* (NF) 32(2): 42-47. — (First Author: 99 Clermiston Rd, Edinburgh EH12 6UU, UK; — Second Author: 15 Old Church Lane, Edinburgh EH 15, UK).
On Sept. 2, 1981, a dead specimen of Sympetrum sanguineum was recovered from the fresh snow lying on firn, at Johannisberg (alt. 3100 m), Glockner Range, Carinthia, Austria. — (*Abstracter's Note:* Though not often, odon. do appear occasionally among "summit-seeking" insects in the Alps [terminology of M.S. Mani; cf. *OA* No. 789], and are from time to time found dead on glaciers at considerable elevations. In the SIO Archives there is a record of a not identified sp., a dead specimen of which was found Aug. 6, 1981 in the snow close under a ridge in the summit area of the Oestliche Feuerstein, alt. 3250 m, Stubaier Alps, Austria. The first such record is probably that of an unidentified sp., reported from Breithorn, Switzerland by C.U. von Salis [1807, Alpina, Winterthur 2: 63]. E. Handschin [1919, Beiträge zur Kenntnis der wirbellosen terrestrischen Nivalfauna der Schweiz, Lüdin, Liestal] reported S. meridionale from the ice of the Aletsch-gletscher, alt. 2800 m, from the Grünhornlücke, alt. 3305 m, and from the Oberaargletscher, alt. 2350 m. F. Ris [1922, Schweiz. ent. Anz. 1: 28-30] brought on record a S. striolatum from the snows of Piz Corvatsch in the Engadine, alt. 2910 m, while J. Timmer [cf. *OA* No. 1060] found a dead S. sanguineum in the snow of Sonnenblick nr. Salzburg, alt. 2800 m. It is interesting that all alpine records are referable to various Sympetrum spp. R.P. Papp [cf *OA* No. 1694], has recorded Anax junius specimens frozen into the ice on the Lyell Glacier, Yosemite National Park, Sierra Nevada, USA, alt. 12.000 ft, and considered them to have remained in this condition "for uncounted years").

(3886) MARSI, R., 1982. On the dragonfly trail. *Evening Press, Binghamton, N.Y.*, issue of July 15, pp. 1C, 5C. — (c/o Dr T.W. Donnelly, Dept Geol. Sci., St. Univ. New York, Binghamton, N.Y. 13901, USA).
A local newspaper's report on the "Northeastern Odonata Meeting", organized by Dr T.W. Donnelly at the State University of New York at Binghamton, June 30-July 2, 1982. — For a more "technical" report cf. the account by S.W. Dunkle in *OA* No. 3895.

(3887) MATSUBARA, I., 1982. [Trigomphus melampus recorded at Daisenji, Tottori Prefecture]. *Sukashiba* 1982 (17): 13. (Jap.). — (1739-38, Kawasaki, Yonago, Tottori Pref., 683, JA).
A female was taken on July 9, 1977.

(3888) MATSUBARA, I & T. MISHIMA, 1982. [Dragonflies of the Tottori and Shimane Prefectures, recorded mainly in July, 1981]. *Sukashiba* 1982 (16): 5-9. (Jap.). — (First Author: 1739-38, Kawasaki. Yonago, Tottori Pref., 683, JA; — Second Author: 18 Higashi-honcho, Sakaiminato, Tottori Pref., 684, JA).
From the 2 prefectures, Japan, 48 spp. and sspp. are recorded; 26 of these inhabit the lowland ponds, while 33 were encountered at streams and in the fields situated at elevations of 300-700 m. Aeschnophlebia anisoptera, Aeshna juncea, A. nigroflava and Macromia daimoji are noteworthy.

(3889) MIOTK, P., 1982. Zur Fauna des Naturschutzgebietes "Hainholz". *Ber. naturh. Ges. Hannover* 124: 113-154. (With Engl. s.). — (Abt. Naturschutz, Niedersächsisches Landesverwaltungsamt, Postfach 107, D-3000 Hannover-1, FRG).
On p. 133, 7 common odon. spp. are listed for

the Nature Reserve "Hainholz", Lower Saxony, F.R. Germany.

(3890) MITTAL, O.P & V. GANDHI, 1982. Meiotic chromosomes of two species of dragonflies (Odonata: Anisoptera). *Chrom. Inf. Serv., Tokyo* 32: 15-17. — (Dept Zool, Punjab Univ., Chandigarh-160014, India).
The spermatogonial and primary spematocyte complements (2n=25, n=13,*m*) of the Indian Crocothemis servilia (from Chandigarh) and Brachythemis contaminata (from Delhi) are briefly described and illustrated. The observations are said to agree with those of the earlier workers cited [while other papers were apparently not consulted]. — (*Abstracter's Note:* Peculiar are such statements as e.g. "the dragonflies form a very interesting and useful cytological material because of the still unsettled position of the centromere of their chromosomes", or [referring to the spermatogonial metaphase of the 2 spp. examined]: "the various chromosomes also exhibit little separation of their chromatids... thereby suggesting a diffused [sic!] type of centromere". Quite incomprehensible is also the arguing that "the presence of chiasmata in the bivalents during meiosis-I points towards the changed activity of the kinetochore from the diffused condition [sic!] to the localized one...". The camera lucida drawing and the micrographs are poor, their magnification is not indicated, and the editorial reasons for publication of this note are not clear).

(3891) RAABE, M., 1982. *Insect neurohormones.* Plenum, New York-London. XIV+352 pp. — (Natn. Cent. Sci. Res., P. & M. Curie Univ., Paris, France).
A comprehensive survey of the field is given; neurohormones and their source sites, release modes, and physiological roles are examined in great length. An in-depth analysis of recent developments in our understanding of their mode of action and biochemistry is also provided. Numerous references to the Odon. are made on pp. 23-24, 30, 141-155-156, 261.

(3892) RAHM, E., 1982. *Die Aroser Seen.* Buchdruckerei AG, Arosa. 11+14 pp. — Price: sFr 4.70. — (Heimat Mus., CH-7050 Arosa).
This is a small pamphlet, directed at the general reader, describing briefly the topography and natural history of 21 lakes and other wetland biotopes in the Arosa area, canton Grisons, Switzerland. It is emphasized that the Schwarzsee (alt. 1725 m, depth 3.6 m) is an "ideal" dragonfly habitat, and a brief characterisation of the order is presented.

(3893) rhu, 1982. Neu im Zoologischen Museum der Universität: Libellen und ein Wunschkonzert der Vogelstimmen. *Zürcher Oberländer,* issue of Oct. 4, 1 p.
A local daily's note on the same subject as that listed in *OA* No. 3880.

(3894) SATO, Y., 1982. [Diving as a courtship display in Calopteryx cornelia]. *Utan — Family Science, Gakken, Tokyo* 1(2): 88-95. (Jap.). — (3-17-16 Narita-nishi, Suginami-ku, Tokyo, 166, JA).
A richly illustrated article (18 col. photogr.) on the mating behaviour of C. cornelia, directed at the general reader. The topics covered are feeding, territory formation, courtship display (termed here as "diving"), grasping the female, copulation, oviposition, female refuse posture, take-over by the intruder, and territory defense by the territorial male. In addition, a photograph is given, showing sexual dimorphism in wing pattern as revealed by UV illumination. (For the latter cf. also *OA* No. 3790).

(3895) *SELYSIA. A newsletter of odonatology.* Compiled by M.J. Westfall & M.S. Westfall, Dept Zool., Univ. Florida, Gainesville, Fla, Vol. 11, no. 2 (Sept. 1, 1982). — Sent free of charge to all members of the International Odonatological Society and to anybody else expressing to the Editors the desire to receive it. — (c/o Dr M.J. Westfall, Jr, Dept Zool., Univ. Florida, Gainesville, Fla 32611, USA).
Dunkle, S.W. (Ent. Dept, Div. Plant Industry, Box 1269, Gainesville, Fla 32602, USA): Northeastern Odonata meeting (22-23; cf. also *OA* No. 3886); — *Anonymous*: Call for nominations for S.I.O. Council (23-24); — Tentative host country for 1985 Symposium

(24; Taiwan); — Abstracts of doctoral dissertations by S.I.O.members (24-25; P. Carlson, U. Norling, J.A. Louton); — *Kiauta, B.* (Dept Anim. Cytogen. & Cytotaxon., Univ. Utrecht, Padualaan 8, Utrecht, NL): Notes from Executive Editor of Odonatologica: 1. A note on the exchange of reprints with the Soviet authors, — 2. New regulations suggested for the operation of the SIO Library Xerox Service (25-27); — Publications currently available: *Kiauta, B.* (cf. above): Reprint edition of a rare Russian dragonfly publicaton (27; A.M. Dyakonov, 1928, Our dragonflies), — *Cannings, A.R.* (Dept Ent., British Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C., V8V 1X4, CA): Dr E.M. Walker's paper on Western Canada (27; 1927, The Odonata of the Canadian Cordillera), — *Anonymous:* Entomological bibliography of the Californian islands (27-28); *Kiauta, B.* (cf. above): Remarkable sales success of Professor Jurzitza's picture book on European dragonflies (28; 1978, Unsere Libellen); — *Mitra, T.R.* (398 Dum Dum Park, Calcutta-700055, India): Epiophlebia laidlawi Tillyard in Schedule I (28-29); — [*Westfall, M.J.*] (cf. above): National newsletters printed (29; Fraseria, Contactblad, Libellula); — New SIO publication (29-30; Rep. Odon. Specialist Group Int. Un. Conserv. Nat.); — *Bick, G.H.* (1928 S.W. 48th Ave., Gainesville, Fla 32608, USA): Odonata Specialist Group (IUCN) (30); — [*Westfall, M.J.*] (cf. above): Odonata Recording Scheme (30; British, Newsletter); — *De Marmels, J.* (Inst. Zool. Agric., Fac. Agron., Univ. Central Venezuela, Aptdo 4579, Maracay 2101-A, Venezuela): Ischnura (Ceratura) capreola — or capreolus ? (30-31); — *Dunkle, S.W.* (cf. above): Taxonomic titles (31); — *Belle, J.* (Onder de Beumkes 35, 6883 HC Velp, NL): Suggestions for the correct use of the term exuviae (31); — [*Van Brink, J.M.*] (Dept Anim. Cytogen. & Cytotaxon., Univ. Utrecht, Padualaan 8, Utrecht, NL): Proceedings of the Sixth International Symposium of Odonatology, Chur: Advances in Odonatology, Vol. 1 (31-32); — [*Westfall, M.J.*] (cf. above): Obituaries (32; M. Csiby, O.-P. Wenger, C.O. Hammond); — Additions and changes to list of SIO members (33-35; cf. *OA* No. 3687).

(3896) SHERK, T.E., 1982. The implications of eye size, shape, and patterning on the habitat selection and predation abilities of dragonfly larvae. *Abstr. Pap. 1982 ann. Meet. North Am. benthol. Soc., Ann Arbor,* p. 1. — (Dept Ophthalmol. & Visual Sci., Sch. Med., Yale Univ., 310 Cedar Str., P.O. Box 3333, New Haven, Conn. 06510, USA).
[Verbatim]: The size, shape, and patterning of the eyes of dragonfly larvae are closely related to the predation abilities and microhabitat selection of each species. Conspicuous differences in eye morphology, especially between closely related species, can be used to indicate differences in behavior. Visual predators have considerably larger eyes than tactile predators because many ommatidia with wide diameter lenses are required to detect small distant prey that is moving rapidly. Active visual predators have slightly larger eyes than sedentary visual predators because of the increased need for peripheral vision. Visual predators have rounded or streamlined eyes to detect small prey at a distance, especially in front of the larva, while tactile predators often have horn shaped eyes that are widely separated on the top of the head to help locate the direction of nearby prey that is detected by the sensory hairs. Active larvae have more dorsal than ventral eye pigmentation to provide camouflage while swimming while sedentary larvae that cling tightly to perches have more equal pigmentation. This cryptic coloration often occurs in a pattern of alternating light and dark bands for developmental reasons. The size, shape and position of the black pseudopupil that is seen to move across the surface of the eye as the larva is rotated, or as the observer moves around the stationary larva, can be used to quickly obtain information about how well the larva can see in different directions.

(3897) STEWART, W.E., 1982. An analysis of geographic variation of the adults of the Australian genus Diphlebia Selys (Odonata: Amphipterygidae). *Aust. J. Zool.* 30(3): 435-460. — (Pesticides Div., Plant Products &

Quarantine Directorate, Agriculture Canada, :awa, Ont. K1A 0C6, CA).
Geographic variation of metric characters was studied in both sexes of all taxa of the genus (except D. hybridoides). Analyses indicated that: variation was greater between localities than between years for 3 years' data for D. lestoides tillyardi; geographic trends for most characters were similar for both sexes of a taxon; size increased with altitude for most taxa. In two taxa, a few characters showed a decrease in size towards cooler latitudes, but in other taxa, apparent trends with latitude could be associated with discontinuities in distribution or with changes in altitude. The taxa were subjectively divided into groups of similar--looking animals and comparisons were made within each major group. Data for D. lestoides lestoides and D.l. tillyardi were analysed by means of a clustering program using both metric and non-metric characters. The resulting dendrograms showed clustering of males into four but females into fewer distinct groups. (Author).

(3898) STUBBS, A., 1982. Wildlife and Countryside Act 1981. *Bull. amat. Ent. Soc.* 41 (336): 130--138. — (Chief Scientist's Team, Nature Conservancy Council, 19/20 Belgrave Sq., London SW1X 8PY, UK).
These are explanatory notes on the [British] "Wildlife and Countryside Act 1981", which is bearing on the interests of odonatologists. Earlier legislation affecting invertebrate spp. was embodied in the "Wild Creatures and Wild Plants Act, 1975", which, together with various other previous legislation, has become absorbed within the new Act. In Schedule 5 of the Act ("Animals which are protected") Aeshna isosceles appears as the only legally protected dragonfly in United Kingdom. In Section 9 it is stipulated that any person would be guilty of an offence if killing, injuring or taking it (§ 1), having in possession or control any live or dead specimens, or any part of, or anything derived from it (§ 2), damaging, destroying, or obstructing access to its habitats, or disturbing it in its habitat (§ 4), selling or buying it (§ 5). Consequently, this sp. is subject to complete prohibition against collecting, with fines up to £ 1000 per specimen. Though it is illegal to take a specimen from its immediate location, it is possible to capture it for the purpose of identification, if necessary. The author is suggesting in case someone would unwittingly take a specimen without realising the identification, this should be reported to the Nature Conservancy Council (through the author), since otherwise there may be the embarrassment of having an important new locality and being afraid to come out with the fact. — Under this Act it is also unlawful to release into Britain any animal not resident there, or a foreign stock of a British sp. — (The official text of the Act, published by Her Majesty's Stationary Office, London [128 pp., ISBN 0 10 546981 5] is available through the bookshop, at £ 7.05 net).

(3899) TAMM, J.C., 1982. Beobachtungen zur Ökologie und Ethologie von Sympetrum pedemontanum Allioni (Insecta, Odonata) anlässlich seiner Widerentdeckung in Hessen. *Hessische faun. Briefe* 2(2): 20-29. — (Author's address not stated).
S. pedemontanum has not been recorded from Hessen, F.R. Germany since 1913. In 1981, 3 localities were discovered in the vicinity of the city of Marburg/Lahn. The sp. appears to be associated with young reeds of anthropogene origin that fall dry from time to time. It is a pioneer sp., adapted to life in dense marsh vegetation.

(3900) THEISCHINGER, G., 1982. A revision of the Australian genera Austroaeschna Selys and Notoaeschna Tillyard (Odonata: Aeshnidae: Brachytroninae). *Aust. J. Zool.* (Suppl.) 87: 1--67. — (20 Leawarra Str., Engadine, N.S.W. 2233, AU).
Austroaeschna Selys and Notoaeschna Tillyard are briefly redefined and the species of both genera are reviewed. A new genus, Spinaeschna, is erected, with the species previously known as Austroaeschna tripunctata (Martin) as type-species. Six new species, Austroaeschna muelleri, sp. nov., A. obscura, sp. nov., A. sigma, sp. nov., A. subapicalis, sp. nov., Notoaeschna geminata, sp. nov., and

Spinaeschna watsoni, sp. nov., are described from imagines and larvae. It is established that Austroaeschna longissima (Martin) and Austroaeschna speciosa Sjöstedt are junior synonyms of Austroaeschna unicornis (Martin), and that the correct name of A. unicornis sensu Martin (1909) and all later authors is A. pulchra Tillyard. A. speciosa is a northern subspecies of A. unicornis. The hitherto undescribed females of Austroaeschna flavomaculata Tillyard, A. multipunctata (Martin) and A. unicornis speciosa Sjöstedt, as well as the previously unknown larvae of Austroaeschna atrata Martin, A. flavomaculata Tillyard, A. forcipata (Tillyard), A. multipunctata (Martin), A. unicornis speciosa Sjöstedt, A. weiskei (Förster) and Notoaeschna sagittata (Martin) are described and figured, and further details are given for other species. The infraspecific structure of some species is discussed briefly and illustrated. Lectotypes are designated for Austroaeschna aspersa Martin, A. atrata Martin, Dromaeschna weiskei Förster, Planaeschna longissima Martin, P. multipunctata Martin, P. sagittata Martin and P. tripunctata Martin. The adults and larvae of species of Austroaeschna are keyed, and those of Notoaeschna and Spinaeschna are compared. (Author).

(3901) TYAGI, B.K., 1982. Cytotaxomy of the Indian dragonflies. *Indian Rev. Life Sci.* 2: 149-161. — (Malaria Res. Cent., Ukai-394680, India).
A brief outline is given of the cytotaxonomic features of the order, and a table is presented of the main cytotaxonomic data of the 76 hitherto studied Indian spp. and sspp. A complete bibliography on the Indian odon. cytotaxonomy is also provided.

(3902) VON ALLMEN, P., [Ed.], 1982. *Ville de Neuchâtel: bibliothèques et musées, 81.* Conseil comm. Neuchâtel, Neuchâtel. 140 pp. — (c/o Mus. Hist. Nat., Passage Max.-Meuron 10, CH-2000 Neuchâtel).
The annual report (1981) of the Neuchâtel Mus. Nat. Hist., Switzerland, appears on pp. 91-105. It includes a note on the odonatol. activities of the late P.-A. Robert, whose collection of odon. exuviae had been donated to the Museum. Black-and-white reproductions of Robert's unpublished water-colour paintings of the larvae of Platycnemis acutipennis, Onychogomphus uncatus, Cordulegaster boltoni and Macromia splendens are also provided.

(3903) VON JANKO, P., 1982. Frostfest mit Salz im Blut: Libellen. *Welt am Sonntag, Hamburg* 1982 (41): 52 (issue of Oct. 10). — (Author's address not stated).
Weekly's article, emphasizing dragonflies' ability to survive the autumnal night temperature drop to -8°C. A photograph of a Sympetrum, with dew frozen on the wings, is included.

(3904) WATSON, J.A.L., A.H. ARTHINGTON & D.L. CONRICK, 1982. Effect of sewage effluent on dragonflies (Odonata) of Bulimba Creek, Brisbane. *Aust. J. Mar. Freshw. Res.* 33: 517-528. — (First Author: Div. Ent., C.S.I.R.O., P.O. Box 1700, Canberra City, A.C.T. 2601, AU).
The adult and the larval odon. fauna and abundance decrease markedly immediately downstream of the outfall from the Mimosa Sewage Treatment Plant into Bulimba Creek, Queensland, Australia. The adult fauna is substantially restored further downstream, but the larval fauna and abundance are not. Of the 36 spp. observed at Bulimba Creek, the 10 abundant, essentially stream-dwelling spp. were most affected by the sewage effluent. Adults on only 1 of these were found at the most contaminated site, and then only in very low numbers; those of 2 others were not observed downstream of the outfall. The diversities of both adult and larval odon. faunas give a qualitative indication of water quality. Parallels between the distribution or abundance of Odon. and the concentrations of contaminants indicate that chlorine may be the most important toxicant immediately downstream of the sewage outfall in Bulimba Creek. (Authors).

(3905) WESTFALL, M.J. Jr., 1982. Collection and rearing of South American dragonflies and

damselflies (Odonata). *Grant. Rep. Am. phil. Soc.* 1981: 49-50. — (Dept Zool., Univ, Florida, Gainesville, Fla 32611, USA).
On Sept. 1, 1980 the Author flew to Maracay, Aragua, Venezuela, where he made numerous field trips and conducted laboratory research. Subsequently he traveled to the Univ. Centre Occidental at Barquisimeto, Lara, where he made profitable field trips, identified Odon. in the Univ. collection, and gave 2 lectures to the staff and graduate students on curating odon. specimens and on the odon. taxonomy. — The visit to Ecuador included 2 environments: collecting in the area of Quito, Tinalandia, Banos Puyo, Tena and Baeza (Oct. 16-31), and in the jungle of Limoncocha (Nov. 1-Dec. 4). Several thousand adults of 10 fam. were collected (incl. several undescribed spp.), and about 50 spp. were reared from larvae. All material is in the Florida State Collection of Arthropods, Gainesville.

(3906) WILDERMUTH, H., 1982. Die Bedeutung anthropogener Kleingewässer für die Erhaltung der aquatischen Fauna. Eine Untersuchung zum Artenschutz aus dem schweizerischen Mittelland. *Natur & Landschaft, Stuttgart* 57(9): 297-306. — (Mythenweg 20, CH-8620 Wetzikon).
The odon. fauna was studied in 4 types of artificial (secondary) stagnant water biotopes in Canton Zürich, Switzerland, and lists are given of the resident/sighted spp. for each type as follows: gravel-pits 31/8, conservancy and garden ponds 18/6, reservoirs 8/14, and peat-holes 23/14. The biogeographic and autecological aspects of the inventories are discussed, and tentative conservancy measures are suggested.

(3907) WILDERMUTH, H., 1982. *Odonata — Begegnung zwischen Naturwissenschaft und Aesthetik*. Kantonsschule Zürcher Oberland, Wetzikon. III+16pp. — (Author: Mythenweg 20, CH-8620 Wetzikon).
This is the verbatim text of the public address. "Odonata — encounter of life science and esthetics", given Sept. 24, 1982, for the graduates of the Cantonal Highschool Zürcher Oberland, Wetzikon, Switzerland. For an audience of some 650 persons of all walks of life, the main biological features of dragonflies were outlined, and a review was given of some highlights of the role dragonflies play in literature, figurative arts, and in folklore and superstition in various historical periods, in different cultures, and in various geographic regions. (Cf. also *OA* No. 3870).

(3908) WILDERMUTH, H., R. HANTKE & J. BURNAND, 1982. Die Drumlinlandschaft des Zürcher Oberlandes. *Vjschr. naturf. Ges. Zürich* 127(1): 19-28. (With Engl. s.). — (First Author: Mythenweg 20, CH-8620 Wetzikon).
Ischnura pumilio and Orthetrum brunneum are listed for the Langfur gravel-pit, nr Gossau, Canton Zurich, Switzerland. (For a detailed account on the odon. fauna of the area cf. *OA* No. 3147).

(3909) YODOE, K., 1982. [The odonate bibliography of Shimane Prefecture]. *Sukashiba* 1982 (17): 1-10. (Jap.). — (1-7, Hitsugaoka 2-chome, Matsue, Shimane Pref., 690, JA).
The bibliography contains 106 titles, and covers the period 1929-1982. A checlist (80 spp. and sspp.) of the odon. fauna of Shimane Pref., Japan is also provided.

(3910) YOUNG, A.M., 1982. *Population biology of tropical insects*. Plenum, New York-London. XIV+512 pp. — Price US $ 57.50. — (Sect. Invert. Zool., Milwaukee Public Mus., 800 West Wells Str., Milwaukee, Wisc. 53233, USA).
The basic mission of this book is to bring together various concepts and studies related to the issue explaining the spatial and temporal patterns of insect diversity in the tropics, considering the breeding population of a sp. to be the major ecological unit beyond the individual within the population. Although the author's personal research experience is limited to the neotropics, the research relative to the Old World is also summarized. References to Odon. appear in all relevant chapters. — The following are the titles of the chapters: "The faunistic richness of insects in the tropics: a brief overview", "Individual and population responses to environments",

"Machinery of environmental response mechnisms in insects: key to evolutionary and ecological diversification", "Ecological aspects of plant defenses against insects", "Distribution patterns of insects in tropical habitats", "Population responses to the environment in tropical insects", "Effects of seasonality on insect populations in the tropics", "Dynamics of organization of insect communities in tropical ecosystems", "Insect species in agricultural habitats in the tropics", and "Biogeographical and regional evolutionary-ecological effects on the maintenance of tropical insect faunas: a brief perspective". A very extensive bibliography and index are also provided.

(3911) ZHOU, Wenbao, 1982. A new species of the genus Anisopleura from Zhejiang. *Entomotaxonomia* 4(1/2): 65-66. (Chin., with Engl. s.). — (Zhejiang Mus., Hang Zhou, Zhejiang, P.R. China).

A. qingyuanensis sp.n. is described and illustrated from southeastern China (holotype ♂, allotype ♀: Zhejiang, Qingyuan, 20-VIII--1980; paratypes of both sexes from various localities). The types are deposited in the Zhejiang Mus., Hang Zhou.