ODONATOLOGICAL ABSTRACTS

1971

(1675) HARWOOD, P.D., 1971. Synopsis of G. Needham's (Cornell University) unpublished manuscript "The dragonflies of West Virginia". Proc. W. Virg. Acad. Sci. 43: 72-74. – *(1423 Township Rd. No. 805, Ashland, Ohio 44805, USA)*.
64 spp. collected in the summer of 1930 by the late Prof. J.G. Needham and his students in West Virginia, USA, and recorded in an unpublished manuscript, are listed. Progomphus obscurus Ramb. and Tetragoneuria spinigera Sel. have not been so far reported from the state.

(1676) SPEED, D.C. & Y.J. McGAHA, 1971. A study of the macroscopic bottom fauna from selected streams in Northern Mississippi. J. Miss. Acad. Sci. 17: 80. [Abstract only]. – (Author's address given as *"Univ. Mississippi", USA*).
The macroscopic benthos from waters in Lafayette county, Mississippi, USA, was studied from Sept. 1969 through March, 1971 by sampling at random with dip nets and sampling plates. About 80% of identified organisms were insects; Diptera, Odon. and Ephemeroptera predominated, being well distributed ecologically. No specific names are stated.

1972

(1677) MINELLI, A. & F. PAVAN, 1972. Modificazioni dell' occhio composto degli Odonati in rapporto al passaggio dall' ambiente acqueo a quello subaereo. Boll. Zool. 39: 641. – *(Ist. Biol. Anim., Univ. Padova, Via Loredan 10, I-35100 Padova)*.
This is an Italian abstract of the paper listed in *OA* No. 793.

(1678) TOLLEY, J., II & E.H. BEHRE, 1972. A preliminary report on the winter feeding habits of Lepomis incisor in Laurel Lake, a high-altitude artificial pond in Blue Ridge Assembly Grounds, North Carolina. J. Elisha Mitchell sci. Soc. 88: 209. – *(Authors' address unknown)*.
The types of food consumed by adult Blue Gill, L. incisor, were studied. In natural environment the fish eat, among others, small flying insects near or on the water surface. In captivity zygopteran larvae, collected in the natural environment, were consumed. The specific names are not stated.

1973

(1679) BREMOND, J., 1973. Observations sur les Insectes des ravins de la région de Salses (Pyrénées-Orientales). Entomologiste 29 (3): 111-125. – *(Lab. Anat. comp., Mus. nat. Hist. natur., 45 rue de Buffon, F-75005 Paris)*.
The only odon. spp. recorded are Crocothemis erythraea and Sympetrum meridionale. It is stated explicitly that the odon. fauna of the region (Eastern Pyrenees, France) is poor.

(1680) FEDERLE, P.F. & W.C. COLLINS, 1973. Laboratory acute toxicity studies with

several insecticides on a damselfly (Lestidae), a backswimmer (Notonectidae), and a sprawling water beetle (Haliplidae). Proc. N. cent. Brch ent. Soc. Am. 28: 169. [Abstract only]. – *(Dept. Ent., Ohio St. Univ., Columbus, Ohio 43210, USA)*. Preliminary abstract of the paper listed in *OA* No. 1472.

(1681) GRIMM, J.K., 1973. A population study of Odonata. Va J. Sci. 24 (3): 131 [Abstract only]. – (Dept. Biol., Madison Coll., Harrisonburg, Virginia 22801, USA).
[Verbatim text]: A population study was made to determine the total number of dragonflies constituting a population in a small restricted habitat. Capturing-marking, releasing-recapturing techniques were used to obtain basic numbers for determining total population size. Both biotic and abiotic environmental factors were recorded. Statistical methods were used to identify the major controlling factors which determined the total population size. The study revealed that light intensity was probably the most important single abiotic factor which influenced the activities of the total population. Total numbers of individuals were recorded and identified to species.

(1682) HARWOOD, P.D., 1973. Notes on damselflies from West Virginia. Proc. W. Virg. Acad. Sci. 45 (2): 167-169. – *(1423 Township Rd. No. 805, Ashland, Ohio 44805, USA)*.
10 spp. are reported from various localities in W. Virginia, USA. Archilestes grandis, Lestes dryas, L. unguiculatus, L. vigilax, Enallagma boreale, E. cyathigerum, E. geminatum and Nehalennia gracilis are new records for the state. Lestes forcipatus and Ischnura prognatha are reported because of confusion surrounding knowledge of their distribution. (Author).

(1683) HIGASHI, K., 1973. Estimation of the food consumption for some species of dragonflies. I. Estimation by observation for the frequency of feeding flights of dragonflies. Reports Ebino Biol. Lab. Kyushu Univ. 1: 119-129. (Japanese, with extensive Engl. s.). – *(Dept. Biol., Fac. Sci., Kyushu Univ., Fukuoka, 812, JA)*
Observations on the daily activities (reproductive and feeding behaviour, etc.) were carried out on Calopteryx cornelia and Sympetrum frequens, at a mountain stream nr. Fukuoka City, Japan, and are described in detail. Frequency of feeding flights, capture efficiency, frequency of actual feedings, daily food consumption and food consumption/dragonfly body weight are stated. All values are considerably higher in S. frequens than in C. cornelia.

(1684) O'FARRELL, A.F., 1973. Odonata (dragonflies and damselflies). *In*: D.F. Waterhouse [Ed.], The insects of Australia. A textbook for students and research workers, pp. 241-261, pl. 1, (col.), cumulative references pp. 960-983. Melbourne Univ. Press, Melbourne. – *(Dept. Zool., Univ. New England, Armidale, N.S.W. 2351, AU)*.
This is a reprint of the first (1970) edition. The anatomy, biology and classification are dealt with to the extent possible in a general text- and handbook (XIII + 1029 pp., 8 pls). The scope of classification and keys (families and subfamilies) is limited to the Australian fauna. (For Supplement cf. *OA* No. 1232).

(1685) SAGE, B.L., 1973. Dragonflies in Wales, 1970-1972. Nature in Wales 13 (3): 174-178. – *(13 Dugdale Hill Lane, Potters Bar, Herts. EN6 2DP, UK)*.
New county records are given for 21 Welsh spp., United Kingdom. The current series of reports on the Welsh odon. fauna has been commenced in 1955, and it is intended to prepare an analysis of these data and to produce a set of distribution maps for each sp. in Wales.

1974

(1686) APOLLOVA, T.A., S.V. ZHERDEVA, T. V. ZHERDEVA, O.N. KUSHNER & S.A. FURSOVA, 1974. Nekotorye voprosy biologii uklei, plotvy i leshcha reki Seim. [Considerations on the biology of the bleak, roach and bream of the Seim River]. Nauch. Trudy Kursk. pedagog. Inst. 26: 134-141. (Russian). – *(Dept. Zool., Kursk Pedagog. Inst., 33 Radishchev Str., USSR-305416 Kursk)*.
Odon. larvae were found in 18% of the bleak stomachs examined.

(1687) BRADY, J., 1974. The physiology of insect circadian rhythms. Adv. Insect Physiol. 10: 1-115. – *(Dept. Zool. & Appl. Ent., Imp. Coll. Sci. Technol., London, UK)*.
In connection with the rhythmic organization of the cuticle (daily growth layers), on p. 20, a reference is made to the paper by A.C. Neville (1970. Cuticle ultrastructure in relation to the whole insect. Symp. R. ent. Soc. Lond. 5: 17-39) in which 2 odon. spp. are dealt with.

(1688) COWAN, C.F., 1974. Aeshna grandis (L.) (Odonata): a new record for Furness, v.-c. 69. Ent. mon. Mag. 109 (1307-1309): 128. – *(Little Gaddesden House, Berkhamsted, Herts., UK)*.
The sp. is recorded from the NW shore of Walney Island, and from Black Moss, nr. Broughton-in-Furness, United Kingdom (Sept. 16 and 17, 1972 resp.).

(1689) HARWOOD, P.D., 1974. Dragonflies of Pendleton County, W. Va. Redstart 41: 81-84. – *(1423 Township Rd. No. 805, Ashland, Ohio 44805, USA)*.
51 spp. are reported, 5 of which have not been recorded earlier from West Virginia, USA. For all spp. local vernacular names are also listed.

(1690) KEVAN, D.K.McE., 1974. Ch'ien Hsuan, Thirteenth Century naturalist – the oldest known portrayal of predation by dragonflies. Insect World Digest 1 (6): 26-28. – *(Dept. Ent., McGill Univ., Macdonald Campus P.O., Ste-Anne de-Bellevue, Quebec HOA ICO, CA)*.
This is a detailed description of the dragonfly part of the famous water-colour and ink paper scroll (26 x 120 cm), referred to in *OA* No. 1294. A colour reproduction is also given. The spp. portrayed are identified as Rhyothemis fuliginosa and Gomphus sp.

(1691) LICK, M.C., M.A. ANDERSON & C.L. HAMRUM, 1974. Notes on the ecology of Minnesota damselflies (Odonata, Zygoptera). Proc. N. cent. Brch ent. Soc. Am. 26: 158. [Abstract only]. – *(Biol. Dept., Gustavus Adolphus Coll., St. Peter, Minn. 56082, USA)*.
[Verbatim text]: 34 spp. (10 genera, 3 families) were collected in Minnesota, USA. Several spp. tended to be restricted to either lotic or lentic environments according to family groupings. The Calopterygidae were taken along fast moving rocky streams, usually in wooded areas. The Lestidae were nearly all collected around impounded waters, particularly ponds and marshes. Several of the very abundant Coenagrionidae were found at every type of habitat collected. Nearly all adults vanished by mid-October. Some Coenagrionidae appear normally in early May. A seasonal succession of spp. is presented as well as a tabulated spp. list indicating general distribution within Minnesota.

(1692) LINZEN, B., 1974. The tryptophan ommochrome pathway in insects. Adv. Insect Physiol. 10: 117-246. – *(Zool. Inst., Univ. Munchen, D-8 München, GFR)*.
The acridiommatin II of the odon. integument (characterized by decomposition to xanthommatin?; precursors: 3-hydroxykynurenine and xanthommatin?) is referred to on p. 136. On p. 151 a critical review is given of the distribution of ommochromes as reported earlier in Anax imperator (eyes: xanthommatin; A. Butenandt et al., 1960. Hoppe-Seyler's Z. physiol. Chem. 319. 238-256), Aeshna

cyanea ("ommatin in eggs") and A. mixta ("ommatin" and "ommin" in eyes; both spp.: E. Becker, 1942. Z. VererbLehre 80: 157-204), A. juncea (ommin mixture in eyes; A. Butenandt et al., 1958. Hoppe-Seyler's Z. physiol. Chem. 313: 251-258), Sympetrum flaveolum (xanthommatin? in eyes), and S. sanguineum (xanthommatin in eyes; both spp.: A. Butenandt et al., 1960), S. vulgatum ("ommatin" and "ommin" in eyes; "ommatin" as hypodermal pigment in diaphragm and fat body; E. Becker, 1942; E. Becker, 1939. Biol. Zbl. 59: 597-627), and in "pooled Sympetrum species" (acridiommatin I as hypodermal pigment; previously unpublished). The brownish and reddish colouration of some odon. spp. and the adaptive colour change in larvae are also discussed. The latter with reference to F. Krieger, 1954. Z. vergl. Physiol. 36: 352-366.

(1693) MARSHALL, C.D. & C.W. RUTSCHKY, III, 1974. Single herbicide treatment of aquatic insects in Stone Valley Lake, Huntingdon Co., Pa. Proc. Pa. Acad. Sci. 48: 127-131. – (*Park Forest Junior High Sch., State College Area Schools, State College, Pa. 16801, USA*).
A multidisciplinary team studied the effects of control of watermilfoil and other aquatic weeds using 2,4-D. This report focuses on effects of this treatment on benthic and epiphytic macroinvertebrates during the summer of 1973. Samples were taken once prior to, and three times following, a single application of the herbicide. Insects, as well as other invertebrates, were sorted, identified and the data applied to a diversity index $\bar{d}$ from Patten and Cox. One season's results indicate that insect diversity was not greatly changed, but that there was an absolute decrease in total numbers of organisms and in the number of zygopteran larvae. Also noted was a relative increase in the numbers of midge larvae and aquatic "worms". (Authors).

(1694) PAPP, R.P., 1974. Recovery of Anax junius from a glacier in the Sierra Nevada (Odonata: Aeschnidae). Pan-Pac. Ent. 50 (1): 67. – (*Dept. Ent. Sci., Univ. California, Berkeley, California 94720, USA*).
Several specimens were recovered (frozen into ice) at the Lyell Glacier, Yosemite National Park, USA (alt. 12.200 ft), on Aug. 16, 1972. One of the females was teneral, hence it is concluded that she was probably trapped on the glacier on her maiden flight.

(1695) SAGE, B.L., 1974. Lestes sponsa (Hans.) (Odon., Lestidae) in Kincardineshire. Ent. mon. Mag. 110 (1313-1315): 255. – (*13 Dugdale Hill Lane, Potters Bar, Herts. EN6 2DP, UK*).
2 specimens from the Red Moss, nr. Netherley, Scotland, are brought on record. Earlier records of this sp. from Scotland are critically discussed.

(1696) WILDERMUTH, H., 1974. Naturschutz im Zürcher Oberland. Ein Beitrag zur Geschichte, Gegenwart und Zukunft der Natur im oberen Töss- und Glattal. 2. Aufl. Buchdruckerei Wetzikon & SBN Basel 212 pp. – Price: sFr. 25.–. – (Author's address: *Neubruch/Bertschikerstr. 111, CH-8620 Wetzikon*; Publisher's address: *Schweizerischer Bund für Naturschutz, Wartenbergstr. 22, CH-4052 Basel*).
An inventarization and brief ecological characterization of nature reserves and other territories of importance from the nature conservation point of view in the south-eastern part of the Canton Zürich, Switzerland, are presented. Topographic municipality maps, bibliographic references, and the addresses of local institutions related to nature conservation are added. A list of odon. spp. is given only for the Allenberg moor (Ambitzgi, alt. 536 m), Unterwetziker Wald nr. Wetzikon (p. 71), viz. Coenagrion puella, C. pulchellum, Enallagma cyathigerum, Nehalennia speciosa, Pyrrhosoma nymphula, Lestes virens, L. viridis, L. sponsa, Calopteryx virgo, Aeshna cyanea, A. grandis, A. juncea,

Anax imperator, Cordulia aenea, Somatochlora flavomaculata, Leucorrhinia pectoralis, Libellula quadrimaculata, Sympetrum danae (scoticum), S. sanguineum, S. striolatum, and S. vulgatum. In addition, the following localities are explicitly mentioned as important odon. breeding sites: Dürnten: Gravel pit nr. Wurstbrunnen (p. 154; alt. approx. 540 m), Grüningen: Feuerweiher S of Büel (p. 160. alt. approx. 470 m), Hittnau: Golfplatzteich Lohweid (p. 164; alt. approx. 800 m), and Oetwil am See: Schützenhausweiher (p. 170; alt. approx. 540 m). – (For notes on the odon. fauna of the Canton Zürich cf. also *OA* No. 1449).

1975

(1697) BALESTRAZZI, E. & F. BARBIERI, 1975. La collezione odonatologica R. Pirotta presso l'Istituto di Zoologia "Lazzaro Spallanzani" di Pavia. Boll. Soc. ent. ital. 107 (9/10): 184-187. (With Engl. s.). – (*Via Lanfranco 26, I-27100 Pavia*).
The odon. collection of R. Pirotta (dated 1879, 23 spp., mostly from Lombardy, Italy), housed in the Inst. Zool. "Lazzaro Spallanzani", Pavia, Italy, is brought on record. Aeshna affinis is new to the fauna of Lombardy. As it turned out, most of Pirotta's original identifications were correct.

(1698) BRETTHAUER, R., 1975. Libellen im Naturschutzgebiet Mindelsee. Jber. Arb-Gem. Naturschutz Bodensee 1: 26-33. – (*Arbeitsgemeinschaft Naturschutz Bodensee, Am Wintersberg 2, D-7750 Konstanz-Dittingen, GFR*).
Prior to 1964 44 spp. were recorded in the area of the Nature Reserve Mindelsee, Bavaria, German Federal Republic. During the 1973-1975 inventarisation only 25 of these have turned up. They are listed in the present paper along with annotations on the localities, biotopes, and phenology. Brief considerations on the breeding ecology of some spp. are added.

(1699) FRILLI, F. & W. PIZZAGHI, 1975. Contributo alla conoszenza dell' entomofauna dell' appennino e della pianura attorno a Piacenza. Entomologica, Bari 11: 29-80. (With Engl. s.). – (*Ist. Ent., Fac. Agrar., Univ. Cattolica Sacro Cuore, Piacenza, Italy*).
The Odon., Heteroptera, Homoptera, Lepidoptera, Diptera and Hymenoptera (excluding Apocrita Terebrantia) collected from 1965 through 1974 in the plains, hills and mountains surrounding Piacenza, Italy, are listed. The spp. which did not appear in the first list (Roberti, Frilli & Pizzaghi, 1965. Entomologica 1: 1-118) referring to 1955-1964, and the spp. which were collected in new places or dates are presented. Each specimen is described and collection data given.

(1700) FURTADO, J.I., 1975. The reproductive behaviour of Prodasineura collaris (Selys) and P. verticalis (Selys) (Odonata, Protoneuridae). Malays. J. Sci. 3: 61-67. – (*Zool. Dept., Univ. Malaya, Lembah Pantai, Kuala Lumpur 22-11, Malaysia*).
The observations were carried out in the field. The adult ♂ established a circular or oval territory about a base perch. This territory is established by the chase display in P. collaris, and the chase and the elaborate confrontation-vacillation displays in P. verticalis. Courtship is simple and brief, occurring within the ♂'s territory. Copulation is of medium duration and occurs outside the territory. Oviposition is endophytic and in tandem, usually at the water's surface but occasionally underwater.

(1701) GOIDANICH, A., 1975. Uomini, storie e insetti italiani nella scienza del passato. I precursori minori. Parte Prima. Redia 57: 1-509. – (*Fac. Sci. Agrar., Univ. Torino, Torino, Italy*).
This is the first part of a monograph on the early Italian entomologists, dealing with minor authors. The descriptions of their works are arranged in alphabetical order, the present volume covering the al-

phabet from Acerbi to Jan. Among these are several odonatologists, incl. C. Ausserer (Bolzano 23.XI.1844 - 5.X.1920) and L. Erra (second part of 19th century). – (*Abstracter's note*: The work, when completed, will be indispensable to anyone interested in odonatological achievements of early Italian odonatologists).

(1702) HARWOOD, P.D., 1975. Dragonflies of Ritchie County, West Virginia. Redstart 42: 18-21. – (1423 Township Rd. No. 805, Ashland, Ohio 44805, USA)
44 spp. are listed for the county, USA, along with the local vernacular names.

(1703) STOBBE, H., 1975. Vorläufige Liste der gefährdeten und seltenen Libellenarten der BRD. Stand 10.1.1975. Nach Literaturangaben und aufgrund eigener Beobachtungen zusammengestellt von Hartwig Stobbe. Diskussionspapier ArbGruppe Natur- u. Landschaftschutz Distrikt Hamburg DJN, 2 pp. – (*Ahrensburger Platz 4, D-2000 Hamburg-67, GFR*).
Out of 80 odon. spp. known to occur in the German Federal Republic, 34 are considered rare, and 29 of them (incl. all Gomphidae) are listed (along with their biotope characterization) in the present discussion paper. (Cf. also *OA* Nos. 1646, 1672, and Odonatologica 6 [1977]:

(1704) VERDONK, M., 1975. Libellenverspreiding Winterswijk. [Dragonfly fauna of the Winterswijk area]. Debakel 7 (4): 4-7. (Dutch). – (*Verhulstlaan 8, Bussum, NL*).
An account is given of the odon. fauna of the Winterswijk area, Gelderland prov., the Netherlands (17 Zygoptera, 19 Anisoptera). Among the more interesting spp. for the Dutch fauna are: Calopteryx splendens, C. virgo, Platycnemis pennipes, Ceriagrion tenellum, Nehalennia speciosa, Gomphus flavipes (uncertain), G. pulchellus, and Cordulegaster boltoni.

1976

(1705) (Anonymous), 1976. Dodaars maakt jacht op waterjuffers. [The little grebe hunting dragonflies]. Vogeljaar 24 (4): 215. (Dutch).
A detailed description is given of the technique employed by the bird in catching adult zygopterans, and of the subsequent passing on of the insects to its young.

(1706) ANDERSEN, S.O., 1976. Torkel Weis-Fogh (25. marts 1922 - 17. november 1975). Vidensk. Meddr dansk naturh. Foren. 139: 403-415, portrait. (Danish). – (*c/o Dansk naturhistorisk Forening, Universitetsparken 15, DK-2100 Copenhagen-Ø*).
This is an extensive obituary of the late Danish physiologist, including a comprehensive evaluation of his work and the complete list of his technical papers (1948-1976). Among these are several titles on odon. physiology and ultrastructure.

(1707) ASAHINA, S., 1976. Descriptions of one new genus and two new species of Caliphaeinae (Odonata, Calopterygidae) from Thailand, with taxonomic notes of the subfamily. Kontyû 44 (4): 387-402. – (*Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA*).
The new taxa described and illustrated are: Caliphaea thailandica sp. n. (♂ holotype, 2 ♂ paratypes: Doi Suthep, 1000 m, Northern Thailand, 18.VI.1965), and Noguchiphaea yoshikoae gen. n., sp. n. (♂ holotype, ♂ paratype: Doi Inthanon, 1200 m, Northern Thailand, 17.XI.1975). The material is in the author's collection. In addition, an outline of the previous work on the taxonomy of the subfamily, and a review of the hitherto known Caliphaea spp. are given. The taxonomic position of the subfamily is discussed in detail. It is concluded that the subfamily represents a structurally well defined, primitive group within the family. It has a relic character, and remained preserved in the Himalaya-West Chinese region, without having participated in the main evolution of the modern Calopterygidae.

(1708) ASAHINA, S., 1976. An illustrated key to the dragonflies found in the paddy fields of Thailand. I[nt.] A[ssoc.] B[iol.] C[ontrol]. R[ice-Stem-Borers] News, Bangalore 1976 (4): 3-10. – *(Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).*
22 spp. known from the Thai rice fields are keyed and illustrated. These can be classified into paddy fields breeders and the adjacent stagnant water dwellers, save for Libellago lineata, which inhabits slowly running waters. (Cf. also *OA* No. 1725).

(1709) BORROR, D.J., D.M. DeLONG & C.A. TRIPLEHORN, 1976. An introduction to the study of insects. Holt, Rinehart & Winston, New York - Chicago - San Francisco - Atlanta - Dallas - Montreal - Toronto - London - Sydney. XII + 852 pp. – *(Dept. Zool. & Ent., Ohio St. Univ., Columbus, Ohio 43210, USA).*
The first author is a well-known odonatologist. The Odon. are dealt with on pp. 169-184. A brief general characterization is followed by a chapter on classification, incl. key to the families and their brief descriptions. A chapter on collecting and preserving is added. Throughout the text (key incl.) only the N. American taxa are considered.

(1710) CHINERY, M., 1976. Insekten Mitteleuropas. Parey, Hamburg-Berlin. IV + 389 pp., 1580 figs. (924 col.).
This is a German edition, enlarged to include central Europe, of the volume listed in *OA* No. 738. The translation and revision have been taken care of by Drs. I. Jung and D. Jung (Inst. allg. Zool. & exper. Morphol., Freie Univ., D-1 Berlin, GFR).

(1711) GLITZ, D., 1976. Zur Odonatenfauna Nordwestdeutschlands – Anisoptera. Bombus 2 (58): 229-231. – *(Ringstr. 149, D-2 Hamburg-73, GFR).*
New records are presented for 15 spp. from the northwestern German Federal Republic.

(1712) GRACILE. (Newsletter of Odonatology). Published by the Kansai Research Group of Odonatology, Osaka, No. 20 (15th Anniversary Number) (Dec., 1976). (Japanese). – *(c/o K. Tani, 129 Jizocho, Nara. 630, JA).*
*Inoue, K.** (5-9, Fuminosato 4 chome, Abeno-ku, Osaka, 545, JA): Preliminary experiments on copulation in Mnais; – *Miyakawa, K.* (1024, Imafuku, Kawagoe, Saitama Pref., 356, JA): Migrations of Sympetrum frequens observed in autumn at Kawagoe; – *Irikawa, F.* (6-11, Yasunaka-cho 3 chome, Yao, Osaka Pref., 581, JA): Crepuscular flight of the male Anaciaeschna martini; – *Obana, S.* (3-4-10, Kinryo-cho, Sakai, Osaka Pref., 590, JA): Breeding dragonfly larvae, particularly those of Anaciaeschna jaspidea; – *Iwamoto, M.* (17-21, Eiwa 3 chome, Higashiosaka, Osaka Pref., JA): Breeding larvae of Anax parthenope julius; – *Shimura, S.* (8-25, Nishikura-cho, Ashiya, Hyogo Pref., 569, JA): Breeding adult aeshnids: – *Yamashita, Y.* (Hozenji Temple, 1-3, Hannan-cho 4 chome, Abeno-ku, Osaka, 545, JA): Oviposition of Ceriagrion nipponicum observed in Nagai Botanical Garden; – *Matsuda, I.* (A2-309, 22, Yamade-nishi 1 chome, Suita, Osaka Pref., 565, JA): Aeshnids cuaght or observed at Sanri Heights; – (Wada, Y. (7-23, Yoshino-cho 2 chome, Fukushima-ku, Osaka, 535, JA): Dragonflies collected in Hokkaido; – *Takeuchi, T.* (1-18, Shimohozumi 2 chome, Ibaragi, Osaka Pref., 567 JA): Three rare dragonfly species from Kinki District; – *Morimitsu, S.* (4-2, Harumidai 1 chome, Sakai, Osaka Pref., 590-01, JA): On the dragonflies of Wakayama Prefecture; – *Morita, Y.* (298-1, Uenoshiba-cho 1 chome, Sakai, Osaka Pref., 593, JA): Aeshnophlebia anisoptera and Tholymis tillarga from Sakai; – *Hirake, T.* (2-4-11, Jonan, Ikeda, Osaka, 563, JA): Odonate fauna of the Arima Senior High School Farm; – *Takamatsu, T.* (11, Higashi-nakama-cho 1 chome, Wakayama, 640, JA): Distribution of Sympetrum gracile in Wakayama Prefecture; – *Yabu,*

S. (69, Kokubu-cho, Tennoji-ku, Osaka, 543, JA): Occurrence of Trigomphus melampus confirmed in Shimane Prefecture; – *Tominaga, O.* (1395, Takahata-fukui-cho, Nara, 630, JA): Odonate fauna of the Oki Island (Dohgo); – *Yabu, S.* (69, Kokubu-cho, Tennoji-ku, Osaka, 543, JA): Sympetrum kunckeli attracted by light; – *Yabu, S.*: Dragonflies of Ikeda Lake and Unagi Pond, Southern Kyushu; – *Muraki, A. & Y. Tanimura* (2-51, Ohmiya-nishinocho, Asahi-ku, Osaka, 535, JA): Four species of the genus Chlorogomphus; – *Kuwahara, H.* (16-17, Fuminosato 4 chome, Abeno-ku, Osaka, 545, JA): Notes from a dragonfly collecting trip to the Ryukyu Archipelago, Part II (For Pt. I cf. *OA* No. 322); – *Oka, S.* (2-4, Seiryodai 7 chome, Tarumi-ku, Kobe, 655, JA): Oviposition in Sympetrum frequens; – *Kataguchi, T.* (7-9, Tanabe-higashinocho, Higashisumiyoshi-ku, Osaka, 546, JA): Dragonflies visiting a swimming pool; – *Yamashita, Y.* (Hozenji Temple, 1-3, Hannan-cho 4 chome, Abeno-ku, Osaka, 545, JA): My 30 years with dragonflies; – *Inoue, K.* (5-9, Fuminosato, Abeno-ku, Osaka, 545, JA): Dragonfly specimens presented to the "Osaka Prefectural Mt. Kongo Nature School"; – *Tani, K.* (129 Juzocho, Nara, 630, JA): Editor's note. – (*Abstracter's notes*: (1) English abstracts of all papers are available from the Editors of Odonatologica; – (2) *An unabridged English translation of Mr. K. Inoue's Mnais paper, furnished by the author, is available from the Editors of Odonatologica).

(1713) HARWOOD, P.D., 1976. Dragonflies of Raleigh County, West Virginia, Redstart 43: 49-53. – (*1423 Township Rd. No. 805, Ashland, Ohio 44805, USA*).
52 spp. are listed for the county, USA, along with the local vernacular names.

(1714) HARWOOD, P.D., 1976. Dragonflies (Odonata) observed in Hawaii in 1973 and 1974. Proc. Hawaii. ent. Soc. 22 (2): 251-254. – (*Township Rd. No. 805, Ashland, Ohio 44805, USA*).
15 spp. and 1 Megalagrion larva, collected in Hawaii during Febr.-March 1973 and 1974, are brought on record. Ischnura ramburii has not been reported previously from the Hawaiian Islands. Megalagrion deceptor (McLachlan) is considered as a good sp.

(1715) HIGASHI, K., 1976. Ecological studies on the population of Mnais pruinosa Selys (Odonata: Calopterygidae). I Population density, survival rate and daily activities in the adult damselfly. Physiol. Ecol. Japan 17: 109-116. (Japanese, with Engl. s.). – (*Dept. Biol., Fac. Sci., Kyushu Univ. Fukuoka, 812, JA*).
The territorial and breeding behaviours were studied in a mountain stream. In the area, there are 2 forms of ♂ in wing colour, orange- and hyaline-winged, and only one ♀ form with hyaline wings. Territorial behaviour between hyaline- and orange-winged ♂♂ is initiated only by the latter, and usually leads to displacement of hyaline-winged ♂♂. A territorial ♂ has several perching sites and oviposition sites within his territory. When a ♀ appears in the territory, the ♂ approaches quickly toward the ♀ and courts in front of the perching ♀. After copulation the ♂ guards her from the approach of other ♂♂ while she is ovipositing. Estimates of population denstiy and survival rates were made using the capture-recapture method. The maximum population density observed in the suitable habitat was app. 10 individuals per 10 m length along the mountain stream. This value was four times as large as the estimated average number per 10 m length along the mountain stream. An average survival rate of adult males was estimated by the sequential change in the number of marked individuals, and was 0.943 per day. Using this value, the average expectation of life was calculated as 17 days. (Author).

(1716) IMBODEN, C., 1976. Leben am Wasser. Kleine Einführung in die Lebensgemein-

schaften der Feuchtgebiete. Schweizerischer Bund für Naturschutz, Basel. 240 pp., 189 col. ill. incl. – (Publishers' address: *Postfach 73, CH-4020 Basel*).
The booklet gives a good introduction into biology and ecology of wetland habitats. The following Odon. are illustrated and briefly characterized (unfortunately, approximately half of them are erroneously identified): Fig. 26: Calopteryx virgo ♂; – Fig. 27: C. splendens ♀ (as C. virgo); – Fig. 35: zygopteran larva (presumably Coenagrion puella); – Fig. 67: white waterlily with a perched Ischnura elegans (as C. puella); – Fig. 69: Libellula depressa, old blue pruinescent ♀ (as a ♂); – Fig. 70: Pyrrhosoma nymphula; – Fig. 71: Sympetrum striolatum, copula; – Fig. 72: Platycnemis pennipes, teneral, with exuvia (as Coenagrion puella).

(1717) KLAUSNITZER, B., 1976. Verzeichnis der Spezialisten für entomologische Systematik in der DDR. Ent. Ber., Berlin 1976 (1): 23-26. – (*Lannerstr. 5, DDR-8020 Dresden, GDR*).
The list includes 56 addresses of insect taxonomists in the German Democratic Republic. As odonatologists are listed Prof. Dr. G. Peters (Mus. Naturk., Invalidenstr. 43, DDR-104 Berlin), and Mr. W. Zimmermann (Museum d. Natur, Parkallee 15, DDR-58 Gotha).

(1718) KUMAR, A. & D.P. JUNEJA, 1976. The Odonata of Renuka Lake (Western Himalaya: Himachal Pradesh). Newsl. zool. Surv. India 2 (3): 95-96. – (*Northern Reg. Stn., Zool. Surv. India, 13 Subhas Rd., Dehra Dun-248001, U.P., India*).
A list is given of 30 spp. collected during 2 extensive surveys (pre-monsoon: Apr.-May, post-monsoon: Sept.) in the area of the lake (alt. 650 m), Renuka Wild Life Sanctuary, India.

(1719) KUMAR, A. & M. PRASAD, 1976. On the occurrence of Orthetrum garhwalicum Singh and Baijal, 1954 (Odonata: Libellulidae) in Kinnaur (Western Himalaya: Himachal Pradesh). Newsl. zool. Surv. India 2 (3): 1 p. (repr.) – (*Northern Reg. Stn., Zool. Surv. India, 13 Subhas Rd., Dehra Dun-248001, U.P., India*).
The sp. has been described from the Chakrata Range, Jamna River Ravine (alt. 2600 m), India (cf. Singh & Baijal, 1954).

(1720) LAUGHLIN, S.B., 1976: The sensitivities of dragonfly photoreceptors and the voltage gain of transduction. J. comp. Physiol. 111 (3): 221-247. – (*Dept. Neurobiol., Res. Sch. Biol. Sci., Austral. Natl Univ., P.O.B. 475, Canberra, ACT 2601, AU*).
The spectral, polarisation and absolute sensitivities of dark-adapted retinula cells of the ventral retina of Hemicordulia tau were measured by making intracellular recordings of receptor potential. (1) On the basis of their spectral sensitivities the retinula cells fall into 2 distinct classes. The 'single pigment' cells have narrow spectral sensitivity functions corresponding to the absorption spectrum of either a u.v. (360 nm) or a blue (440 nm) or a green (510 nm) rhodopsin photopigment. The 'linked pigment' cells have broadened spectral sensitivity functions which suggest that at least 3 rhodopsins contribute to their response. – (2) The 'single pigment' u.v. cell has a high PS of 7.1 whereas the 'linked pigment' cells are insensitive to polarised light. The PS (λ) functions of 'linked pigment' cells (plots of PS against stimulus wavelength) show that the u.v. cell acts as a dichroic filter placed in front of the 'linked pigment' cells and that self-screening plays no role in downgrading 'linked pigment' cell PS. – (3) The absolute sensitivity of all cell types is precisely calibrated using monochromatic parallel rays of light of the most effective (peak) wavelength directed along the optical axis of the ommatidium. The PAQ_{50} (Peak Axial corneal Quantal irradiance required to give a transient response of 50% maximum) was measured and its reciprocal defines the APS_{50} (Axial Peak Sensitivity as determined at

the 50% level). – (4) When the spectral and angular sensitivities of units APS_{50} are known, measurements are comparable from cell to cell and organism to organism. In Odon. ventral retina the 'linked pigment' cells and 'single pigment' green cells have almost identical absolute sensitivities ($APS_{50} = 1.5 \times 10^{-12}$, S.D. = 1.2×10^{-12}), whereas the 'single pigment' u.v. cell is 12 times more sensitive ($APS_{50} = 1.8 \times 10^{-11}$, S.D. = $2,2 \times 10^{-11}$). – (5) The u.v. cell has a peak-to-peak voltage noise level 7 times greater than that of the 'linked pigment' cells. The analysis of noise in terms of equivalent intensity shows that this voltage noise is generated by the random absorption of photons (photon shot noise) and/or intrinsic noise that is statistically identical. – (6) The high voltage noise levels of the u.v. cell result from its transducer having a voltage gain greater than that of the other cells. Thus higher gain gives the u.v. cell a greater absolute sensitivity which compensates for the relative scarcity of u.v. photons and enables the u.v. cell to operate in sunlight with a voltage output similar to that of 'linked pigment' cells. It is concluded that the retinula cells of the ventral retina show a division of labour into colour, PS and contrast-coding types but absolute sensitivities are carefully matched so that all the cell types described can operate simultaneously with almost identical dynamic response ranges.

(1721) MAY, M.L., 1976. Warming rates as a function of body size in periodic endotherms. J. comp. Physiol. 111: 55-70. – *(Dept. Physiol. & Biophysics, Univ. Illinois, Urbana, Illinois 61801, USA).*
Warm-up rates and cooling constants were measured in 58 spp. of Odon. (18), Lepidoptera (18), Hymenoptera (11), Diptera (9), and Neuroptera (2) over a wide range of thoracic weights. Vertebrate heterotherms show an inverse dependence of warm-up rate on body weight, but in insects warm-up rate increases with increasing size over the range studied. Equations are derived, based on known or estimated relations of heat loss and production to body weight, that predict warm-up rates in insects and mammals with reasonable accuracy. Both weight-specific heat production and loss increase with decreasing body size, but heat loss increases more rapidly. At the size range of insects, loss is so rapid that metabolism cannot fully compensate. Then warm-up rate is constant or decreases with diminishing size. (Author).

(1722) MIDTTUN, B., 1976. The morphology of the spermatheca, bursa copulatrix and vagina of Somatochlora arctica (Zetterstedt) (Odonata: Corduliidae). Norw. J. Zool. 24 (3): 175-183. – *(Zool. Lab., Univ. Bergen, Lars Hillesgt. 20 A, N-5000 Bergen).*
The median oviduct opens into the vagina by a slitlike gonopore, situated on a prominent cuticular ridge, arising from the floor of the vagina. A ductus bursae maintains contact with the vagina ventrally. In juveniles, the muscle cells, epithelial cells, and intima are poorly developed. Particular attention is paid to the muscles and their probable function. Anterodorsally the vagina communicates with a roundish bursa copulatrix. Posterolaterally the bursa copulatrix is connected to the 2 spermathecae via long ducts. Secretory cells, each with a separate canal, discharge into the spermathecal ducts. (Author).

(1723) MOLITOR, A.M.M., 1976. Analys hydrobiologique des cours d'eau du Grand-Duché de Luxembourg. Bull. Soc. natural. Luxemb. 79 (1974): 53-78. – *(Administration des Eaux et Fôrets, B.P. 411, Luxembourg-Ville, Luxembourg).*
Odon. are not considered, but reference is made to the faunistic survey of the order by Prof. J. Hoffmann (address: 116 Rue de Rollingergrund, Luxembourg Ville, Luxemburg), viz. 1960. Les Odonates du Grand-Duché de Luxembourg. Archs Inst. gr.-duc. Luxemb. (NS) 27: 210-238).

(1724) MULLA, M.S. & H.A. DARWAZEH, 1976. Field evaluation of new mosquito

larvicides and their impact on some non-target insects. Mosquito News 36 (3): 251-256. – *(Dept. Ent., Univ. California, Riverside, Calif. 92502, USA).*

2 synthetic pyrethroids and 5 new organophosphate larvicides were evaluated in the field against stagnant and floodwater mosquitoes. The acute effects of some of these larvicides on some nontarget aquatic were also assessed. The synthetic pyrethroid FMC-33297 [3-Phenoxybenzyl (±) cis-trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate] was the most effective, yielding complete control of larvae and pupae of Culiseta inornata Williston at the rate of 0.025 lb/acre. At this rate, it also yielded almost complete control of Psorophora confinnis (L-A) in an irrigated hay field. At lower rates (0.005-0.01), this material was as toxic to mayfly naiads and dragonfly naiads as it was to the target mosquitoes. Among the OP [organophosphorus] larvicides, CGA-15324 [0-(4bromo-2-chlorophenyl) 0 ethyl S propyl phosphorothioate] was most effective. At 0.05 lb/acre, it produced complete control of Culex tarsalis Coquillett larvae and pupae. At this rate, it also yielded complete control of P. confinnis in irrigated hay pasture. At larvicidal rate (0.05 lb/acre) this material produced complete mortality of mayfly larvae, but had no marked effect on odon. larvae. The other synthetic pyrethroid and some of the OP larvicides studied, showed good to low activity against the target mosquito spp., producing good control at the rates of 0.025-0.1 lb/acre. Most of these possessed a high level of toxicity to mayfly larvae, but showed lower toxicity to odon. larvae.

(1725) NAKAO, S., S. ASAHINA, T. MIURA, T. WONGSIRI, G.S. PANGGA, L.H.Y. LEE & K. YANO, 1976. The paddy field Odonata collected in Thailand, the Phillippines and Hong Kong. Karume Univ. J. 25 (2): 145-159. – *(Zool. Lab., Premedical Course, Sch. Med., Kurume Univ., Kurume, JA).*

A brief (incomplete) survey of the literature on the odon. fauna of the rice fields is followed by an annotated list of 68 spp. An analysis and discussion of the collected data are also presented, and a list is appended of the spp. collected in the soybean fields in Thailand and the Philippines. (Cf. also *OA* Nos. 277, 493, 494, 1708).

(1726) NAYAR, K.K., T.N. ANANTHAKRISHNAN & B.V. DAVID, 1976. General and applied entomology. Tata McGraw-Hill, New Delhi. XII + 589 pp., brief authors' biographies on the wrapper. – (First author deceased, address second author: *Ent. Res. Unit, Dept. Zool., Loyola Coll., Univ. Madras, Madras, India).*

The book is intended for Indian postgraduate students, applied entomologists and research workers, and is divided into 3 main sections, viz. (1) Morphology, physiology, ethology, ecology; (2) Systematic account of the orders; (3) Insect control. Odon. are dealt with on pp. 132-134. The systematic review of the higher taxa is incomplete and partly erroneous, and the scope of the treatment of the Order is, considering the purpose of the book, too limited.

(1727) PRASAD, M., 1976. On the occurrence of Urothemis signata signata (Rambur) (Odonata: Macrodiplactidae) from Eastern Uttar Pradesh, India. Newsl. zool. Surv. India 2 (4): 142. – *(Northern Reg. Stn., Zool. Surv. India, 13 Subhas Rd., Dehra Dun-248001, U.P., Undia).*

5 spec. from the Districts Ballia and Gorakhpur are brought on record, extending the known range of this sp. westwards to eastern Uttar Pradesh, India. The specimens agree fairly well with Fraser's description in the Fauna of British India (1936), save for a slight difference in coloration and in the nodal index.

(1728) PRASAD, M., 1976. On the collection of Odonata (Insecta) from District Hoshiarpur (Punjab). Newsl. zool. Surv. India, 2

(5): 190-191. – (*Northern Reg. Stn, Zool. Surv. India, 13 Subhas Rd., Dehra Dun-248001, U.P., India*).
A list is given of 26 spp. collected in the District, India.

(1729) [RIESS, W., H.M. ROTH & G. NITSCHE], 1976. Rote Liste bedrohter Tiere in Bayern (Wirbeltiere und Insekten). 1. Fassung. SchrReihe Naturschutz Landschaftspfl., München, Faltbl. 3: 12 pp. – (*Bayerisches Landesamt für Umweltschutz, Rosenkavallierplatz 3, D-8000 München-45, GFR*).
The same text as in the publication listed in *OA* No. 1646.

(1730) SINGH, A., & M. PRASAD, 1976. On the identity of Rhinocypha trifasciata and R. bifasciata (Odonata: Zygoptera: Chlorocyphidae). Oriental Insects 10 (4): 553-556. – (*Northern Reg. Stn, Zool. Surv. India, 13 Subhas Rd., Dehra Dun-248001, India*).
R. bifasciata Sel. is shown to be a synonym of R. trifasciata Sel.

(1731) WILLIAMS, C.E. & S.W. DUNKLE, 1976. The larva of Neurocordulia xanthostoma (Odonata: Corduliidae). Fla Ent. 59 (4): 429-433. – (*704 Foster Str., Marlin, Texas 76661, USA*).
The larva of N. xanthosoma (Williamson) is most similar to the larvae of N. obsoleta (Say) and N. virginiensis Davis. The most prominent differences from both of these other spp. are the larger size, 7 or more palpal setae, lower dorsal abdominal hooks, and a more elongate abdomen. The larvae of N. xanthosoma live in the crevices of logs in slow streams and lakes and crawl 0.1 to 4.0 m above the water line on any available support to emerge as adults just before dawn. N. obsoleta is deleted from the Oklahoma fauna, USA. (Authors).

(1732) ZAKHAROV, V.M., 1976. A study of intraspecific variability of insects as a method of revealing the population structures (Sympetrum flaveolum taken as an example). Zool. Zh. 55 (12): 1816-1823). (Russian, with Engl. s.). – (*Inst. Develop. Biol., USSR Acad. Sci., Moscow, USSR*).
The isolation of elementary panmictic units within the species is possible by means of comparison of different territorial groups by a wide range of morphological characters. The utilization of definite characters for such a comparison suggests a preliminary study of their variability: sexual, age, chronographic, etc. It was shown, the wing characters in S. flaveolum taken as an example, that the study of intraspecific variability allowed to establish a series of quantitative and qualitative characters by which definite intraspecific groups, that is panmictic units, can be isolated. (Author).

1977

(1733) AESCHLIMANN, A., [Ed.], 1977. Rapport de la Commission pour l'étude scientifique du Parc National Suisse pour l'année 1975. Verh. schweiz. naturf. Ges. (Administr.) 1975: 126-137. – (*Inst. Zool., Univ. Neuchâtel, rue Emile-Argaut 11, CH-2000 Neuchâtel-7*).
This is the 1975 annual report of the Chairman of the Commission for the Scientific Research in the Swiss National Park (Engadine, Canton Grisons). The reports on different Sections were prepared by the Section Chairmen. The author of the Zoology Section (pp. 135-137) is Prof. Dr. P. Bovey (Breitloostr. 6, CH-8802 Kilchberg). On p. 136 reference is made to the odonatological work in the Park. (*Abstracter's note*: The present Chairman of the Zoology Section is Prof. Dr. W. Matthey, Inst. Zool., Univ. Neuchâtel, rue Emile-Argaut 11, CH-2000 Neuchâtel-7).

(1734) BINKOWSKI, R., 1977. Zur Libellenfauna der oberen und mittleren Hase. Osnabrück. naturw. Mitt. 4: 269-275. – (*Lindenstr. 32, D-4504 Georgsmarienhütte-Holzhausen, GFR*).

A tabular review is given of observations on the occurrence, oviposition, pairing, and on some ecological features of 10 spp. from the Hase river, Osnabrück, German Federal Republic, gathered from 1966 through 1968.

(1735) CARNELUTTI, J., 1977. Razstava žuželk slovenskih entomologov-ljubiteljev. [Insect exhibition of the Slovene amateur entomologists]. Proteus, Ljubljana 39 (7): 263-264. (Slovene). – *(Inst. Biol. "Jovan Hadži", Slovene Acad. Sci. Arts, Novi trg 3, YU-61000).*
The exhibition took place in the Prešeren Hall of the Slovene Academy of Sciences and Arts, Ljubljana, Yugoslavia (Oct. 23 - Nov. 13, 1976), and has been organized at the occasion of the 50th anniversary of the Slovene Entomological Society. 45 society members have participated. The exhibits included also some odon. collections. – *(Abstracter's note*: For the addresses of the Slovene odon. collectors contact the author).

(1736) CORDULIA. Cahier d'amateurs. Published by the Collège Bourget, Rigaud, Quebec, Canada; edited by R. Hutchinson & A. Larochelle, Collège Bourget. Vol. 3, No. 1 (March, 1977). (French and Engl., most larger papers with s's in Engl.). – Annual subscription for 1977 (4 issues): Can.$ 3.– (Canada, USA), Can.$ 4.– (others). – *(c/o R. Hutchinson, Collège Bourget, C.P. 1000, Rigaud, JOP 1PO, Que., CA).*
Hutchinson, R.: Catalogue des Odonates du Québec (Deuxième Partie: Anisoptères) (Fin); – *Hutchinson, R.*: Transport de larves de libellules vivantes de l'habitat naturel à l'aquarium; – *Cagnon, P.* (Collège de Lévis, 9 Mgr Gosselin, Lévis, Qué., CA): Extension de l'aire de répartition géographique chez Somatochlora tenebrosa Say (Odonata: Corduliidae) au Québec; – *(Anonymous)*: Feuillets du Club sur les Libellules; – *Hutchinson, R.*: Observations on populations of Epitheca princeps Hagen and E. cynosura simulans Muttkowski (Odonata: Corduliidae) in Rigaud, with distributional notes; – *Hutchinson, R.*: Présence de Pantala flavescens Fabricius dans plusiers localités de la rive Nord du Comté Charlevoix; – *Larochelle, A.* (Collège Bourget, C.P. 1000, Rigaud, JOP 1PO, Qué., CA): Publications odonatologiques dans le Naturaliste Canadien (1869-1975).

(1737) DUTMER, S.G., 1977. Neuropteroidea uit het stroomdal van de Drentsche Aa. [Neuropteroidea of the valley of the Drentsche Aa rivulet]. Ent. Ber., Amst. 37 (6): 81-85. (Dutch, with Engl. s.). – *(Beukweg 2[I], Hengelo, Ov., NL).*
The paper contains an annotated list of 23 odon. spp., collected during 1969-1975 in the valley of the Drentsche Aa rivulet, Drenthe prov., The Netherlands. Some of the recorded spp. occur in the Netherlands only locally.

(1738) KIAUTA, B., 1977. Notes on new or little known dragonfly karyotypes. V. The male germ cell chromosomes of Macromia moorei Selys from Nepal (Anisoptera: Corduliidae, Epophthalmiinae). Genen Phaenen 19 (2/3): 49-51. – *(Dept. Anim. Cytogenet. & Cytotaxon., Univ. Utrecht, Padualaan 8, Utrecht, NL).*
Spermatogonial and primary spermatocyte chromosomes of a specimen from the Kathmandu Valley are described and figured ($2n = 25$, $n \doteq 13$; m). This is the second member of the genus and the fourth sp. of the subfamily examined cytologically. In M. magnifica (cf. R.W. Cruden, 1968, Can. J. Genet. Cytol. 10: 206, 211, fig. 53) the occurrence of the m-chromosomes is not obligatory to all populations, and the TCL is essentially smaller than in M. moorei. The main cytotaxonomic features of Epophthalmiinae and Corduliinae are briefly stated. (Author). – *(Abstracter's note*: This is the last paper in the series; for pts. I-IV cf. *OA* Nos. 192, 256, 481, 526).

(1739) KIAUTA, B. & A.W.M. MOL, 1977. Behaviour of the spermatocyte chromosomes

of the mayfly, Cloeon dipterum (Linnaeus, 1761) s.l. (Ephemeroptera: Baetidae), with a note on the cytology of the order. Genen Phaenen 19 (2/3): 31-39. – *(Dept. Anim. Cytogenet. & Cytotaxon., Univ. Utrecht, Padualaan 8, Utrecht, NL)*. Structurally, the mayflies are hardly related to any pterygote order. They show certain phylogenetic affinities solely with dragonflies – the only other palaeopteran group. The available cytogenetic and cytotaxonomic evidence on the 2 orders is compared, and it is demonstrated that any cytogenetic affinities between them are completely lacking.

(1740) RUDOLPH, R., 1977. Die Flugtechnik der Gebänderten Prachtlibelle. Beitr. math.-naturw. Unterricht 1977 (32/33): 5-21. – *(Fliednerstr. 21, D-4400 Münster, GFR)*. The flight technique of Calopteryx splendens is described. This is a didactic paper, intended for experimental work of high school teachers and students.

(1741) SCHMIDT, E., 1977. Analyse der Libellenverbreitung in Schleswig-Holstein (Norddeutschland, BRD) am Beispiel der Aeshniden (Odonata). Verh. VI. Int. Symp. Entomofaunistik Mitteleuropa (1975), Junk, The Hague, pp. 27-42. (With Engl. s.). – *(Biol. Seminar, Pädagogische Hochschule, Mürwikerstr. 77, D-239 Flensburg, GFR)*.
An analysis of the dragonfly records from the countries Schleswig-Holstein and Hamburg is given, exemplified by the family Aeshnidae. The intensity of collecting activities is shown by the map with the sum of all dragonfly records of the 3 common summer spp. Aeshna grandis, A. mixta and A. cyanea, and of the rather inconspicuous spring species Brachytron pratense respectively. The region is rather well investigated, fewer data are available only for the marshes of the W coast and for the SW parts. The distribution of spp. with preference for special habitats corresponds with the distribution of these habitats: Aeshna viridis needs ponds or lakes with Stratiotes aloides and is therefore now heavily reduced by pollution and fishery activities; A. juncea and A. subarctica prefer bogs and Sphagnum bogs, respectively. Spp. of southern origin (A. isosceles, Brachytron pratense) are more or less restricted to the S and SE where the highest summer temperatures occur. Some spp. are periodical (Anax imperator) or even rare immigrants (A. parthenope, Hemianax ephippiger). A clear decrease of the number of spp. from S to N is evident in Odon. of mediterranean and eastern eurosibirian origin. (Author).

(1742) SANDHALL, A., U. NORLING & B.W. SVENSSON, 1977. Sländor, Naturguide i färg om sländornas utseende, utveckling, levnadssätt och beteenden. ICA Bokförlag, Västeras. 95 pp., 141 coll. ill. incl. (Swedish). – *(Bygglovsgränden 9, S-222 47-Lund, Sweden)*.
The booklet deals with the "sländor", a Swedish cumulative name for the orders Odonata, Ephemeroptera, Plecoptera, Mecoptera, Neuoptera and Trichoptera. The stress is on the 141 colour photographs by A. Sandhall. The author of the odon. section is Dr. U. Norling (Dept. Syst., Inst. Zool., Univ. Lund, Helgonavägan 3, S-223 62 Lund, Sweden). The booklet gives a very nice profile of the richness of the forms in the treated orders, and is based on the European fauna.

(1743) SELYSIA. A Newsletter of Odonatology. Vol 7, No. 2 (March 15, 1977). Compiled by M.J. Westfall Jr. & C. Johnson. – *(c/o Prof. M.J. Westfall Jr., Dept. Zool., Univ. Florida, Gainesville, Fla 32611, USA)*. [*Westfall, M.J.*]: Fourth International Symposium of Odonatology; – *Harwood, P.D.* (1423 Township Road 805, Ashland, Ohio 44805, USA): Some collection notes on the Odonata of Raleigh County, West Virginia; – *Westfall, M.J.*: Records of Odonata from Arkansas; – *Knopf, K.W.*, (Dept. Ent., Univ. Florida, 3103 McCarty Hall, Gainesville, Fla 32611, USA): Dragonfly collecting in Trinidad. – In

addition, the issue contains a number of *notifications* and *requests for cooperation* in various fields of Odonatology. – (*Abstracter's note*: The Newsletter will be sent, free of charge, to anybody expressing to the Editors his/her desire to receive it).

(1744) STECHMANN, D.-H., 1977. Zur Phänologie und zum Wirtsspektrum einiger an Zygopteren (Odonata) und Nematoceren (Diptera) ektoparasitisch auftretenden Arrenurus-Arten (Hydrachnellae, Acari). Z. ang. Ent. 82 (4): 349-355. (With Engl. s.). – (*Inst. Getreide-, Ölfrucht- u. Futterpflanzenkrankheiten, D-2305 Heikendorf-Kitzberg, GFR*).
The occurrence of 9 Arrenurus larvae in Nematocera and Coenagrionidae emerging from a lake in Schleswig-Holstein, German Federal Republic, has been studied.

(1745) SWAIN, W.R., R.M. WILSON, R.P. NERI & G.S. PORTER, 1977. A new technique for remote monitoring of activity of freshwater invertebrates with special reference to oxygen consumption by naiads of Anax sp. and Somatochlora sp. (Odonata). Can. Ent. 109 (1): 1-8. – (*Large Lakes Res. Lab., US Environm. Protect. Agency, 9311 Groh Rd., Grosse Ile, Mich. 48138, USA*).
A new technique is described for remote monitoring of aquatic invertebrate populations which was specifically designed to eliminate effects on organism behavior attendant with other surveillance systems. Specifically, the system described overcomes the necessity for surgical implantation, restrictive weight, and the generation of unnatural activity. Activities of a wide variety of aquatic invertebrates have been monitored using this system ranging in size from crustaceans of 300-600 μ long to dragonfly larvae of 3-5 cm long. – Immature Anax sp. and Somatochlora sp. were monitored for respiratory activity in relationship to decreasing oxygen tensions. An inverse relationship was observed between respiratory frequency and amplitude of respiration. (Authors).

(1746) TENNESSEN, K.J., 1977. Rediscovery of Epitheca costalis (Odonata: Corduliidae). Ann. ent. Soc. Am. 70 (2): 267-273. – (*1949 Hickory Av., Florence, Alabama 35630, USA*).
Evidence from Florida, USA, populations indicated that E. costalis (Sel.) is distinct from E. cynosura (Say), with which it was synonymized. Compared to cynosura, the abdominal appendages of costalis are longer in both sexes with no overlap and are differently shaped in males; its flight season begins earlier, and copulation occurs away from water. The spp. apparently exclude each other from reproductive sites, since no mixed pairs were found. ♀♀ of costalis are polymorphic in wing marking. The previously unknown ♂♂ and larvae of costalis are described. E. costalis appears to be most closely related to spinigera (Sel.). The distribution of costalis is poorly known because of insufficient early-season collecting in southeastern states other than Florida and a probably northward cline of decreasing female appendage length. (Author).

(1747) TEYROVSKÝ, V., 1977. Ethologische Aspekte in der Lokalfaunistik der Odonaten. Verh. VI. Int. Symp. Entomofaunistik Mitteleuropa (1975), Junk, The Hague, pp. 43-46. (With Engl. s.). – (*Zool. Dept., Moravské Mus., Nám.-25-února 8, Brno, Czechoslovakia*).
Ethological aspects in the local odon. faunistics are discussed. Adult Odon. may be mainly found in localities which are not necessarily the biotypes of the immature stages. The optical aspect of the surrounding vegetation of ponds seems to be the releasing factor for territorial behaviour. This is demonstrated with Ischnura pumilio and I. elegans.

(1748) VERDONK, M., 1977. European Invertebrate Survey en de resultaten van de Libellenstudiegroep. [European Invertebrate Survey and the results of the Dragonfly Study Group]. Trias 1977 (2): 20-24. (Dutch). – (*Verhulstlaan 8, Bussum, NL*).

The organization, scope and operation of theEuropean Invertebrate Survey are briefly described with special reference to work on the Durch dragonflies. The Dutch central office of the E.I.S. is in the Nat. Hist. Mus. Leyden (Raamsteeg 2, Leiden, NL); the author is responsible for the odon. section.

(1749) VERDONK, M., 1977. Voorzoka 1976. Libellenverslag. [Early-summer-workshop 1976. Dragonfly report]. Debakel (NS) 1 (1): 13-18. (Dutch). – (*Verhulstlaan 8, Bussum, NL*).

A list is given of 20 spp. collected in June 1976 in various biotopes of the regions Achterhoek and Twente (Gelderland and Overijssel prov. respectively), the Netherlands. A topographic sketch of the localities is added.