ODONATOLOGICAL ABSTRACTS

1971

(5597) OKEDI, K., 1971. The food and feeding habits of the small mormyrid fishes of Lake Victoria, East Africa. *Afr. J. trop. Hydrobiol. Fish.* 1(1): 1-12. — (Author's current address unknown).
The food and feeding habits of 5 small, predominantly insectivorous mormyrid spp. are described. Quantitative data are presented also for the Odon.

1975

(5598) HYNES, J.D., 1975. Annual cycles of macroinvertebrates of a river in southern Ghana. *Freshwat. Biol.* 5: 71-83. — (Author's current address unknown).
In a quantitative study of the benthic invertebrates of a riffle area in the upper reaches of the Pawmpawm R. the Odon. are suborder- or familywise considered.

1977

(5599) SUMMER, D.P., 1977. Systematic list of Odonata for 1969 to 1976. *Publ. Lancashire Cheshire Fauna Soc.* 71: 14-15. — (54 Blackshaw Lane, Royton, Oldham 0L2 6NR, UK).
Annotated list of records from Lancashire and Cheshire, England.

1978

(5600) SUMMER, D.P., 1978. Systematic list of Odonata recorded 1977. *Publ. Lancashire Cheshire Fauna Soc.* 73: 11-12. — (54 Blackshaw Lane, Royton, Oldham, 0L2 6NR, UK).
An annotated tabular review is presented of the 1977 records in Lancashire and Cheshire, England.

1979

(5601) SUMMER, D.P., 1979. Odonata report 1978. *Publ. Lancashire Cheshire Fauna Soc.* 75: 21-23. — (54 Blackshaw Lane, Royton, Oldham, 0L2 6NR, UK).
A detailed report on the Lancashire and Cheshire (England) records. The rediscovery of Erythromma najas in South Cheshire is of particular interest. This sp. has not been seen in Cheshire since 1932.

(5602) TATICCHI, M.I. & A. DELL'UOMO, 1979. Informazioni idrobiologiche sul sistema idrico del piano carsico inferiore di Monte Lago (Marche - Italia). *Riv. idrobiol.* 18(1): 45-73. (With Engl. s.). — (Ist. Idrobiol. & Pescicol., Univ. Perugia, Via Elce di sotto, I-06100 Perugia).
Reference is made to Libellula depressa and unidentified Zygoptera from the Montelago area (alt. 888 m), the Appenines, Marche, Italy.

1980

(5603) McCABE, T.L. & L.M. JOHNSON, 1980. Catalogue of the types in the New York State

Museum insect collection. *Bull. New York St. Mus.* 434: 1-38.
Cordulia lintneri Hag. (syntype) is the only odon. listed.

1981

(5604) SUMMER, D.P., 1981. Odonata report 1979. *Publ. Lancashire Cheshire Fauna Soc.* 78: 9--11. — (54 Blackshaw Lane, Royton, Oldham, OL2 6NR, UK).
Erythromma najas and Sympetrum sanguineum are among the locally most interesting spp. recorded from Lancashire and Cheshire, England.

1983

(5605) ARAI, Y., 1983. [Copulation and oviposition of Sympetrum croceolum]. *Nature & Insects* 18(14): 29-30. (Jap.). — (1233-2, Oaza Sueno, Torii-machi, Osato-gun, Saitama Pref., 369--12, JA).
Observations were carried out at some rock-pools on the Arakawa R., Saitama (Oct. 7, 1983; 9.30-11.30 h). Some males were perching on the rocks, others were hovering a long while at about 1 m height. Females were caught in flight. After sperm translocation the copulating pairs perched on rocks. The copula lasted 5 min and the tandem pairs commenced ovipositing, i.e. water tapping, or water and mud tapping on the shore of the pool. The pairs ovipositing in the middle of the pool had a tapping frequency of 1.4/s.

(5606) EDA, S., 1983. [Dragonflies on stamps in the world, sixth report, with an appendix on postcards]. *Nature & Insects* 18(14): 40-42. (Jap.). — (3-4-25 Sawamura, Matsumoto, Nagano 390, JA).
Description and reproductions of the 1982 dragonfly postal stamps of Grenada, Montserrat and Tovalu. A Japanese "summer postcard" with a dragonfly figure is added.

(5607) FUJISAWA, S., 1983. [Descending migration of Sympetrum frequens]. *Nature & Insects* 18(14): 29. (Jap.). — (1986, Iiyama, Iiyama, Nagano Pref., 389-22, JA).
14, 6 and 1 ♀ were observed resp. on Nov. 10, 11 and 27, 1983 at a pond in Iiyama (alt. 750 m); no males were noticed. It is likely, therefore, that the males descend to lower elevations earlier than females, thus not in tandem.

(5608) FUJISAWA, S., 1983. [A female Sympetrum frequens with light brown wing markings]. *Nature & Insects* 18(14): 33. (Jap.). — (1986, Iiyama, Iiyama, Nagano Pref., 389-22, JA).
Taken at Iiyama (Sept 10, 1983) and shown in fig.

(5609) ISHIKAWA, H., 1983. [Ictinogomphus pertinax tentatively established in the western Kagawa]. *Nature & Insects* 18(14): 12. (Jap.). — (6-2, Higashigaoka 1-chome, Meguro-ku, Tokyo, 152, JA).
Several males were taken at 2 ponds, Aug. 20-21, 1983. Several more individuals were noticed, therefore it is not unlikely that the sp. is autochthonous there.

(5610) KAGAYA, N., 1983. [Aeshna nigroflava at Sugiwatado, Kuroishi, Tochigi Pref.]. *Nature & Insects* 18(14): 19. (Jap.). — (Kotobuki-so, 5-47-10, Higashi-ikebukoro, Toshima-ku, Tokyo, 170, JA).
23 ♂ and 16 ♀ from 4 ponds (Aug. 2 -Sept. 25, 1983) were measured, and the ratio is discussed in the appearance of "blue" and "greenish-yellow" females.

(5611) KOBAYASHI, T., 1983. [New record of Somatochlora v. viridiaenea in Yamaguchi Pref.]. *Nature & Insects* 18(14): 12-13. (Jap.). — (Lion Co., Ninomiya-ryo, 457, Yamanishi, Nanomiya-machi, Naka-gun, Kanagawa Pref., 259-01, JA).
The first prefectural record: Nakayama, Aug. 8, 1983.

(5612) MATSUKI, K., 1983. [Oviposition behaviour of Orthetrum pruinosum neglectum]. *Nature & Insects* 18(14): (Jap.). — (5/F 1, Lane 83, Tienmou E. Rd, Taipei, Taiwan).
Observations were made at 2 localities in Taiwan (Apr. 8, 1971 and Aug. 15, 1972).

Copulation took place in the air and lasted 15, 18 and 12 s. The oviposition commenced soon after dragonflies got in the tandem position. Single females oviposit tapping water surface, attended by guarding males.

(5613) MITAMURA, T., 1983. [Record of Orthetrum triangulare melania from the Hachijo-jima Island]. *Nature & Insects* 18(14): 13. (Jap.). — (1-57, Hommachi, Nihonmatsu, Fukushima Pref., 964, JA).
A male from Mt Mihara (Aug. 27, 1977) represents the first record from this island in the Tokyo Pref.

(5614) NARAOKA, H., 1983. [Records of Anax guttatus in Aomori Pref.]. *Nature & Insects* 18(14): 11. (Jap.). — (36-71, Aza Motoizumi, Fukunoda, Itayanagi-machi, Kitagun, Aomori Pref., 038-36, JA).
2 males are recorded from Tsuruta-machi (Sept. 18, 1983); these being the first records of this southern sp. from Aomori.

(5615) SONEHARA, I., 1983. [Oviposition of Sympetrum s. speciosum at Yatsugatake]. *Nature & Insects* 18(14): 28-29. (Jap.). — (Tazawa 5035, Toyoshina-machi, Minami-azumi-gun, Nagano Pref., 399-82, JA).
At the Amaike Pond (alt. 2060 m) some 30 pairs and 5 solitary ♀ were seen ovipositing (Aug. 30, 1983) at 9.40 h, at 10.50 they started to leave the pond, and by 11.20 all were gone from this locality in NW direction. At the Futagoike Pond (alt. 2000 m), 2 km NW of Amaike, many ovipositing ♀ were seen at 13.00 h.

(5616) SONEHARA, I., 1983. [Aeshna mixta listed as a "natural monument" at Komoro, Nagano Pref.]. *Nature & Insects* 18(14): 37. (Jap.). — (Tazawa 5035, Toyoshima-machi, Minami-azumi-gun, Nagano Pref., 399-82, JA).
This is a rare an local sp. in Japan. The Komoro City School Board entered it on the local "natural monuments" list (Sept., 1982) in order to facilitate the preservation of its local habitat.

(5617) TAKEUCHI, Y., 1983. [Tramea virginia taken in the eastern part of Yamaguchi Pref.]. *Nature & Insects* 18(14): 11-12. (Jap.). — (4--6-2, Tateishi-cho, Iwakuni, 740, JA).
A male taken at Katsura-machi, Iwakuni, July 30, 1983.

(5618) TREAGUST, A., 1983. Gebietsaufnahme Banriet, Spitzmäder, 1983. Libellen-Odonata. *In:* J. Zoller, Biologisches Gutachten Banriet, Altstätten und Spitzmäder, Oberriet. Naturschutzverein Altstätten. — (Author: Kirchstr. 57a, CH-5202 Gossau; — Verein: c/o I. Hugentobler, Tannerstr. 725, CH-9437 Marbach).
A single-page appendix to a conservation report, (no pagination), intended for local circulation only. 19 spp. are listed from the Altstätten moorland, Rhine Valley, St Gallen, Switzerland. Orthetrum brunneum is of some local interest. (Cf. also *OA* 5582 [Bannriet =Banriet], 5661).

1984

(5619) BRÁZDA, J. & J. TEREK, 1984. Zooplankton a zoobentos jazera a pritokov Izry. — Das Zooplankton und Zoobentos des Sees Izra und seiner Zuflüsse. *Zbor. východoslov. Múz. Košice* (Prir.) 25: 117-123. (Slovak, with Russ. & Germ. s's). — (First Author: Inst. Exp. Biol. & Ecol., SAV, Kukorelliho 10, CZ--040 00 Košice).

(5620) JACQUEMIN, G., 1984. Nouvelles données sur la répartition des odonates dans le nord du Maroc. *Bull. Inst. sci. Rabat* 1984(8): 135-138. (With Arab. & Engl. s's). — (Biol. d. Insectes, Univ. Nancy I, B.P. 239, F-54506 Vandoeuvre-les-Nancy).
New distribution records in the Rif Mts are presented for Calopteryx virgo, C. exul, Lestes dryas, Pyrrhosoma nymphula, Onychogomphus costae, Mesogomphus genei, Libellula quadrimaculata, Sympetrum sanguineum, Trithemis annulata, and T. kirbyi ardens. C. virgo and S. sanguineum had not been reported earlier from Morocco.

(5621) RAJAGOPAL, D., 1984. Observations on the natural enemies of Odontotermes wallonensis

(Wasmann) (Isoptera: Termitidae) in South India. *J. Soil Biol. Ecol.* 4(2): 102-107. — (Dept Ent., Univ. Agr. Sci., Hebbal, Bangalore-560024, India).
Pantala flavescens is listed among 57 predators and parasites of this termite.

1985

(5622) ANDO, H., K. MIYAKAWA & S. SHIMIZU, 1985. External features of Sialis mitsuhashii embryo through development (Megaloptera, Sialidae). *In:* H. Ando & K. Miya, [Eds], Recent advances in insect embryology in Japan, pp. 191-201, ISEBU Co., Tsukuba. — (First Author: Sugadaira Montane Res. Cent., Univ. Tsukuba, Sanada, Nagano, 386-22, JA).
One of the conspicuous features of megalopteran embryology at about the beginning of tracheal invagination is the appearance of 2 or 3 swellings on either side of the abdominal segments, the most lateral of which gives rise to the tracheal gill or abdominal filament. A similar situation occurs in some other lower insect orders, viz. Thysanura, Odon. and Dermaptera.

(5623) DUFFY, W.G. & C.R. LISTON, 1985. Survival following exposure to subzero temperatures and respiration in cold acclimatized larvae of Enallagma boreale (Odonata: Zygoptera). *Freshw. Invertebr. Biol.* 4(1): 1-7. — (Natn. Wetlands Res. Cent., US Fish & Wildlife Serv., 1010 Gause Blvd, Slidell, LA 70458, USA).
Larvae survived exposure to -1.0° C (53%) and -4.0° C (10%). Ability to survive was not related to rate of cooling or duration of exposure. Respiration rates ranged from 0.10 ml O_2/g/h at - 1.0° C to 0.92 ml O_2/g/h at 30.0° C. At -1.0° C the respiratory quotient of larvae was 0.72, indicating lipids were being metabolized. Calculated metabolic costs for the overwintering period were 40.5% of total body calories. It is suggested that overwintering frozen into ice at moderately cold temperatures may be energetically advantageous.

(5624) FARAGALLA, A.A., M.E. MOUSSA, A.I. BADAWI, M.A. IBRAHIM & A.I. DABBOURI, 1985. A partial list of beneficial insect species of two localities in the central region of Saudi Arabia. *Trop. Pest Manag.* 31(2): 139-143. — (Plant Prot. Dept, Coll. Agric., King Saud Univ., Riyadh-11451, Saudi Arabia).
Hemianax ephippiger, Lindenia tetraphylla, Crocothemis erythraea, Trithemis arteriosa and Orthetrum chrysostigma (mostly identified by Dr S. Brooks, BMNH) are listed from the irrigation canals of the Riyadh-College farm (Ilaisha).

(5625) HAGA, K., 1985. Oogenesis and embryogenesis of the idolothripine thrips, Bactothrips brevitubus (Thysanoptera, Phlaeothripidae). *In:* H. Ando & K. Miya, [Eds], Recent advances in insect embryology in Japan, pp. 45-106, ISEBU Co., Tsukuba. — (Inst. Biol. Sci., Univ. Tsukuba, Sakura-mura, Ibaraki, 305, JA).
The previtellogenic stage in Bactrothrips is compared to that in Epiophlebia superstes, the (invaginated type) pleuropodia are similar to those in Odon., and the mid-gut epithelium is formed mainly by yolk cells, as in Collembola and Odon.

(5626) KESSLER, E., 1985. Allgemeine Tätigkeit und Vollzug des Reusstalgesetzes. *Jber. Stift. Reusstal* 1985: 7-12. — (Busslingerstr. 10, CH-5452 Oberrohrdorf).
On pp. 10-11, reference is made to an autochthonous population of Orthetrum albistylum on the Stille Reuss, canton Aargau, Switzerland. (Cf. also *OA* 5593).

(5627) KONDĚLKA, D., 1985. Poznámky k výskytu vážek (Odonata) v severevýchodní části Severomoravského kraja. — Notes on the occurrence of dragon-flies in the north-eastern part of the North-Moravian region. *Acta Fac. paedagog. ostraviensis* (E-15): 57-62. (Czech, with Russ. & Engl. s's). — (Pedagog. Fac., Bráfeva 7, CZ-70103 Ostrava-1).
Annoted list of 32 spp. from 6 districts of Northern Moravia, Czechoslovakia. Among these, Orthetrum albistylum is considered of particular interest.

(5628) KÖNIGSTEDT, D., 1985. Nachweise der Gebänderten Heidelibelle (Sympetrum pedemontanum (All.) an der Ostseeküste der DDR (Insecta, Odonata, Libellulidae). *Faun. Abh. Mus. Tierk. Dresden* 13(1): 111-112. — (E.-Weinert-Str. 9, DDR-2200 Greifswald, GDR).
Since 1906, when S. pedemontanum was for the first time recorded from the territory of the present GDR, the sp. is expanding its range northwards, and it is now reported from the whole area of that state, save for 2 districts. The literature is reviewed and 2 new records are presented.

(5629) MARSTALLER, R., 1985. Odonata Libellen. *In:* H.J. Müller, [Ed.], [Bestimmung wirbelloser Tiere im Gelände. Bildtafeln für zoologische Bestimmungsübungen und Exkursionen, pls 34-36. Fischer, Stuttgart. — [ISBN 3-437-20334-7]. — Price: DM 26.-. — (Author: Sekt. Biol., Friedrich-Schiller-Univ., Jena, GDR).
Pictorial key for the common German spp.

(5630) MATSUKI, K., S. OBANA & Y. MIKI, 1985. The larvae of the genus Hemicordulia of Japan (Odonata: Corduliidae). *Gekkan Mushi* 177: 13-15. (Jap., with Engl. title). — (Second Author: Kinryô-chô 3-4-10, Sakai-shi, Osaka, 590, JA).
The exuviae of H. okinawana, H. mindana nipponica and H. ogasawarensis are described and illustrated.

(5631) OCHARAN, F.J., 1985. Sympetrum vulgatum ibericum n. ssp. (Odonata: Libellulidae) nueva subspecie de libellula del norte de España. *Bol. Cien. Naturaleza I.D.E.A.* 36: 75-85, 2 pls excl. (With Engl. s.). — (Depto Zool. y Ecol., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
S. v. ibericum ssp. n. (♂ holotype: Villaquejida, León, Spain) is described, figured and compared with the nominate ssp. and with S. meridionale.

(5632) OCHARAN, F.J., 1985. Odonatos de Extremadura y Salamanca de la coleccion del Departamento de Zoologia de la Universidad de Oviedo. *Bol. Cien. Naturaleza I.D.E.A.* 36: 109-125. (With Engl. s.). — (Depto Zool. y Ecol., Fac. Biol., Univ. Oviedo, Oviedo, Spain).
Annotated list of 40 spp. from the provinces of Badajoz, Cáceres and Salamanca, Spain, 21 of which are reported for the first time from this area.

(5633) PETERS, H.P.J., P.M.J. CLERX & L.G.J. HUIJS, 1985. *Libellen in de Overasseltse- en Hatertse vennen: een landschapsecologische analyse. — [Dragonflies in the Overasselt and Hatert fens: a synecological analysis]*. Staatsbosbeheer, Nijmegen. 98 pp. (A4, soft cover). (Dutch). — Available from the SIO Central Office, P.O. Box 256, Bilthoven, The Netherlands, at Hfl. 23.- net.
Elaborate analysis of synecological composition of the odon. fauna of a fen area in the eastern Netherlands, based on the "grid-typology" concept, and with reference to the situation in the 1960-ies, when the odon. fauna of the same localities has been thoroughly recorded in a number of M. Sc. theses of the Univ. of Nijmegen.

(5634) PIECHOCKI, R., 1985. *Makroskopische Präparationstechnik. Leitfaden für das Sammeln, Präparieren und Konservieren. Teil II. Wirbellose.* Gustav Fischer, Stuttgart. 308 pp. — Price: DM 44.-. — (Authors address not stated).
The Odon. are dealt with on pp. 231-238. Various modes of specimen transportation, their preparation for cabinet, colour conservation and restauration, and storage are described in some detail. The account is based almost entirely on German literature, without a single reference to the modern techniques and methods used in e.g. Japan and North America, therefore the odon. chapter is but little more than an excellent evidence of the almost incredibly low standard in this field in Germany and generally in Europe. Only a few examples should be given here. The method of preparing living specimens for transportation (described originally in the paper listed in *OA* 5009) is nonsensical. Arresting the wings is possible with relatively little damage only in large specimens, in the field this is elaborate and useless if the legs are left free. Putting the

insect in a triangle, or better, in an envelope, is much faster and prevents every damage, therefore it is practised by all experienced collectors. The obsolete and entirely ineffective boric acid method of Tümpel (1908) has never been used anywhere to any extent. The aceton technique is outlined from early German literature, without any reference to the modern Japanese improvements, aimed at preventing the fragility of specimens. The freeze-drying technique was *discovered* by Prof. D.A.L. Davies, since 1954 it has been developed considerably and at present the equipment is commercially available. All references to the availability of equipment and to the standardisation of collections are omitted. In Europe hardly any adequate equipment (not even modern nets) is available, but there are numerous addresses of excellent and reliable suppliers in Japan and North America that should be given. Incomprehensible is also the paragraph on the storage in transparent envelopes. This is presented as a "suggestion"by Kormann (1965), though all significant modern collections are kept in this way, incl. all private and institutional collections in North America, where the envelope size is standardized, and also the corresponding cabinets, storage and mail boxes, etc. are readily commercially available.

(5635) RUDNICK, K., 1985. Entomologische Artenlisten ausgewählter Insektenordnungen aus den Naturschutzgebieten "Grosses Ribnitzer Moor" (A 16) und "Dierhäger Moor" (A 17). *Arch. Freunde Naturg. Mecklb.* 25: 95-116. — (Taklerring 23/4.7 DDR-2500 Rostock-27, GDR).
10 odon spp. are listed from the Ribnitzer Moor, NE of Rostock, GDR.

(5636) TSUBAKI, Y. & T. ONO, 1985. The adaptive significance of non-contact mate guarding by males of the dragonfly, Nannophya pygmaea Rambur (Odonata: Libellulidae). *J. Ethol.* 3: 135-141. — (First Author: Lab. Appl. Ent. & Nematol., Fac. Agric., Nagoya Univ., Chikusa, Nagoya, 464, JA).
Ovipositing females were frequently disturbed by conspecific males. Disturbed females often copulated with one of these males or flew away from the pool. Females which flew away from the pool due to male disturbance often returned later the same day and mated with different males. A territorial male would guard his ovipositing mate by hovering above her, presumably trying to prevent her from moving out of his territory. A non-territorial male would also guard his mate in a similar way, both at a vacant water area which was not occupied by any territorial males, or within the territory of a resident male. In addition, both territorial and non-territorial males chased intruding males in an attempt to prevent their mates from being stolen. Territorial males defended their mates better than non-territorial males. Both males and females often mated more than once in the course of a single day. Some territorial males copulated with a new female while another mate oviposited in their territories. This observations supports the "multiple mating hypothesis" proposed by J. Alcock (1979, *J. nat. Hist.* 13: 439-446) and T. Uéda (1979, *Res. Popul. Ecol.* 21: 135-152), but other evidence suggests that this is an inadequate explanation for non-contact guarding in N. pygmaea. — (Authors).

(5637) WISE, K.A.J., 1985. Lacewings and aquatic insects of New Zealand. 3. Fauna of Poor Knights Islands. *Rec. Auckland Inst. Mus.* 22: 97-103. — (Auckland Inst. & Mus., Private Bag, C.P.O., Auckland, NZ).
Ischnura aurora (1 ♀) is recorded from Tawhiti Rahi Is., and it is suggested this may be an occasional visitor from the mainland only. No autochtonous Odon. seem to occur on the northern offshore islands of New Zealand either (cf. *OA* 4456).

(5638) YUKAWA, J. & S. YAMANE, 1985. Odonata and Hemiptera collected from the Krakataus and surrounding islands, Indonesia. *Kontyû* 53(4): 690-698. — (First Author: Ent. Lab., Fac. Agric., Kagoshima Univ., Kagoshima, 890, JA).
The odon. fauna of the Krakatau Isls was surveyed in 1982, almost 100 yrs after the large, world-famous eruption in 1883. 7 spp. were collected, all the earlier records (1908, 1919-21, 1932-34) are listed, changes in the fauna are

discussed and a complete bibliography on the subject is provided.

1986

(5639) ÅBRO, A., 1986. On the phoretic phase of Arrenurus larvae (Acari, Hydrachnellae) associated with zygopteran nymphs. *Acarologia* 27(3): 251-254. (With Fr. s.). — (Inst. Anat., Univ. Bergen, Årstadveien 19, N-5000 Bergen).
Larval hydrachnellae, ectoparasitic on Enallagma cyathigerum imagines, contact the zygopteran larva and cling to it, awaiting its emergence. Thus, the phoretic association of the water mite with the dragonfly larva is established prior to the parasitic phase. Ultrastructural evidence indicates that the phoretic larva sticks to its potential host by means of an adhesive substance, secreted by the arrenurid larva, and deposited between its pedipalps and cuticle of the zygopteran host.

(5640) ALEXANDER, D.E., 1986. Wind tunnel studies of turns by flying dragonflies. *J. exp. Biol.* 122: 81-98. — (Dept Biol., Bellarmine Coll., Newburg Rd, Louisville, KY 40205, USA).
High-speed movies of dragonflies turning in flight on flexible tethers show that there are 2 distinct modes of turning. In the "conventional" mode, dragonflies use left-right asymmetries in the wing stroke amplitude, and occasionally in the angle of attack, to produce more lift and thrust on one side than the other. This causes the animal to roll into a bank, so that the lift vector has a sideward component; this sideward component produces the turn, much as in an aeroplane. This type of turn is probably most useful during fast forward flight. The second mode of turning is the "yaw turn". Yaw turns are accomplished without banking, and the dragonfly's long axis may turn more than 90° in the period of two wing strokes. The kinematics of this turn could not be as closely analysed, but is appears that dragonflies use drag on the inner wing upstroke and the outer wing downstroke to turn, much like pivoting a rowing boat. This turn may be hampered by drag on the abdomen during fast forward flight and would be most useful at low speeds or during hovering.

(5641) ASAHINA, S., 1986. A new Oligoaeschna (Odonata, Aeschnidae) from Thailand. *Proc. Jap. Soc. syst. Zool.* 343: 29-31. (With Jap. s.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
O. minuta sp. n. is described and figured from a single male (Phu Kra Dung, Loei Prov., 25--III-1986). This is an extremely small sp., characterized by open venation and by sharply pointed male caudal appendages.

(5642) ASAHINA, S., 1986. Descriptions of two Asiagomphus species from Assam-Burma and Burma-Thailand areas (Odonata, Gomphidae). *Gekkan Mushi* 186: 9-14. (Almost bilingual: Jap. & Engl.). — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
Asiagomphus personatus (Sel.) and A. xanthenatus (Wllmsn) are redescribed and figured.

(5643) BAKER, R.L., 1986. Food limitation of larval dragonflies: a field test of spacing behaviour. *Can. J. Fish. aquat. Sci.* 43(9): 1720-1725. (With Fr. s.). — (Dept Zool., Erindale Campus, Univ. Toronto, Mississauga, Ont., L5L 1C6, CA).
Density-dependent growth and survival of larval odon. may result from some larvae excluding others from profitable hunting sites. This hypothesis predicts that both degree and variation in food limitation should increase with population density; it also suggests that large larvae should show less food limitation than small larvae.
By analyzing food limitation, determined by mass of fecal pellets, and population density of Ischnura verticalis and Enallagma ebrium from a pond in southern Ontario, Canada, these predictions were tested. When data from all sampling days were combined, population densities of both spp. were negatively correlated with gut fullness but there was no correspondence between population density and gut fullness measured at different sites on any given day. Also, there was no correlation between population density and variation in food limitation and there was no evidence that

small larvae suffered a greater degree of food limitation than larger larvae. A lack of discrete and persistent prey patches and/or low larval population densities may account for the lack of evidence that larvae are excluded from patches of prey.

(5644) BARNARD, P.C., 1986. [Obituary]. Douglas Eric Kimmins. *Ent. mon. Mag.* 122(1464/67): 165-175. — (Dept Ent., Brit. Mus. Nat. Hist., Cromwell Rd, London SW7, 5BD, UK).
Detailed biography and complete bibliography (born: Aug. 4, 1905, deceased: Aug. 30, 1985; associated with BMNH during 1925--1973; — 259 published papers, incl. descriptions of 39 new genera and 648 new spp.). A portrait (dated 1935) is also provided. — "Kim's" speciality were the "Kimminsoidea", as the "neuropteroid" orders under his care in the BMNH were affectionately known to entomologists. He was among the most prolific entomologists of this century and his formal and informal contribution to odonatology remains unparalleled in our times. It is not only his published work, but particularly also his assistance to generations of odonatologists that triggered the advancement of taxonomic odonatology more than the achievements of any other single worker.

(5645) BEUTLER, H., 1986. Zur Schlupfrate und zum Geschlechterverhältnis einheimischer Grosslibellen (Anisoptera) (Odonata). *Ent. Abh. Dresden* 49(10): 201-209. (With Engl. s.). — (Frankfurter Str. 23b, DDR-1230 Beeskow, GDR).
Over 13 thousand exuviae of 16 spp., collected at 24 localities in the "Mark Brandenburg", GDR, are analysed with reference to the emergence rate and sex ratio. The emergence rates show annual and local differences. Save for a few exceptions, they are generally low. With the exception of Aeshna cyanea and A. mixta, there is a clear dominance of the female larvae. It is argued that the variation in recombination potentials between the sexes (XO/XX sex determination, the male being the heterogametic sex) is responsible for the lower fitness and survival rate of the males.

(5646) *BULLETIN OF HOKKAIDO ODONATOLOGICAL SOCIETY*, Vol. 1, No. 1 (Sept., 1986). Edited by Dr H. Ubukata). (Jap., with Engl. title; all papers have also Engl. title translations). — (c/o Dr H. Ubukata, Dept Sci. Educ., Kushiro Coll., Hokkaido Univ. Educ., Shiroyama 1-15, Kushiro, 085, JA).
The Hokkaido Odonatological Society (H.O.S.) was established on June 21, 1986, in Sapporo, Japan. Its principal aims are the study of the local fauna, and the promoting of communication both among the local members, and with other odonatol. groups. Prof. T. Koyama serves as the first President, and Dr H. Ubukata (Kushiro) was entrusted with the secretarial and editorial duties. The first issue of the journal appeared on Sept. 16, 1986. — Contents: *Koyama, T.:* Inaugural address (2): — *Asahina, S.:* Congratulations for the establishment of H.O.S. (3); — *Takahashi, T.:* The first record of Boyeria maclachlani from Hokkaido (4); — *Yamaguchi, H.:* A record of Leucorrhinia intermedia ijimai from Tokachi (5); — *Hiratsuka, K.:* Territorial behavior of Sympetrum eroticum (6); — The report of dragonfly watching at Nishioka Reservoir (7); — *Ubukata, H.:* The present state and future direction of the faunistic survey of the Odonata in Hokkaido (8-10); — The distribution table of the Odonata of Hokkaido (11-14); — Six dragonfly species collected from Shizunai (Hidaka) (15); — On the change of scientific names of dragonflies occurring in Hokkaido (16); — Book review (17-19); — Review of articles on dragonflies of Hokkaido (19-22) ; — A course for the beginners of dragonfly study (1) (23-25); — The directory of the H.O.S. members (p. 28) and the Constitution of the Society (p. 29) conclude the issue, which also contains 10 miscellaneous editorial motes, on various pages. — The journal has an attractive appearance (size 18 x 25 cm), it is adequately produced (dry offset), and nicely bound.

(5647) CARCHINI, G., E. ROTA, M. BOLLINO & C. UTZERI, 1986. Odonati della riserva naturale "Le Cesine" (Puglia). *Fragm. ent.* 18(2): 253-276. (With Engl. s.). — (First Author: Dip. Biol., Seconda Univ. Roma "Tor Vergata", Via O. Raimondo, I-00173 Roma).

27 spp. are reported, for 13 of these the phenology and larval growth data are presented. Coenagrion pulchellum and Somatochlora flavomaculata are new for Puglia. Dragonfly occurrence in lentic, lotic and brackish waters is discussed. In the latter, only Aeshna mixta, Brachytron pratense and Orthetrum cancellatum were found to breed (where the salinity was below 16°/$_{00}$). The local fauna is compared with that of the similar Castelporziano, Rome, using the $^{S}_{J}$ (Jaccard) and the $^{S}_{BUB}$ (Baroni-Urani & Buser) indices.

(5648) CLOUPEAU, R., M. LEVASSEUR & F. BOUDIER, 1986. Contribution à la détermination des exuvies des Gomphus Leach, 1815 en Europe occidentale (Odonata: Gomphidae). *Cah. Claise* 3: 1-11, 1 fol. pl. excl. — [ISSN 0766-4702]. — (Second Author: 11 rue de la Mauberdière St-Avertin, F-37170 Chambray-les-Tours).
Key, figs and comments for identification of the exuviae of Gomphus flavipes, pulchellus, simillimus, graslini and vulgatissimus.

(5649) *CONTACTBLAD NEDERLANDSE LIBELLENONDERZOEKERS* — [Newsletter of the Dutch Dragonfly Workers], No. 12 (Nov., 1986). (Dutch). — (c/o Miss K. Verspui, Westerkade 27 bis, NL-3511 HC Utrecht).
In addition to the usual news items, the issue contains a detailed analysis of suggestions received from the membership, relative to the functioning of the association and the editorial policy of the newsletter (*L. Beukeboom*, pp. 1-7). The traditional section of the noteworthy records (*M. Verdonk*, pp. 8-13) is expanded by a review of the occurrence of Coenagrion hastulatum and C. lunulatum in the Netherlands (*M. Wasscher*, pp. 13-16). Of interest are also the report of the 11th Colloquium of Dutch Dragonfly Workers (Leiden, Apr. 26; *L. Beukeboom*, pp. 16-17), and a brief book reiew of A. McGeeney's book (cf. *OA* 5566), by *K. Verspui* (pp. 18-19). — The 12th Colloquium of Dutch Dragonfly workers will be convened in Nijmegen, March 28, 1987 (organiser: L. Huys, Jan Luikenstr. 38b, NL-6531 AR Nijmegen).

(5650) D'AGUILAR, J., J.L. DOMMANGET & R. PRÉCHAC, 1986. *A field guide to the dragonflies of Britain, Europe and North Africa.* Collins, London. 336 pp., col. pls & maps incl. [ISBN 0-00-219436-8]. — Price: £ 15.95,- (Available from the SIO Central Office, Bilthoven, The Netherlands).
This is a revised (S. Brooks) and edited Engl. translation (by N. Brooks & T.S. Robertson) of the volume listed in *OA* 5041. The first part of the book has been rearranged and some sections have been rewritten. It includes sections on dragonflies and man, origins and geographic distributions, adult and larval biology and behaviour, predators and parasites, habitats (incl. ecological impact and conservation), studying dragonflies (incl.handling and photography), and [some] societies and periodicals.

(5651) DIERSCHKE, V., 1986. Erster Fund von Sympetrum pedemontanum (Allioni) in Schleswig-Holstein. *Drosera* 86(1): 13-14. — (Gottlieb-A.-Richter-Weg 5, D-3400 Göttingen, FRG).
2 (probably migrant) specimens are recorded from Oehe-Schleimünde, representing the northernmost record of this spp. in Germany.

(5652) DOPAGNE, C. & J.-P. THOME, 1986. Impact de l'altération des eaux et de la pollution par les PCB sur les biocénoses d'arthropodes aquatiques des bassins de la Haine et de la Scarpe (frontière franco-belge). *Mitt. schweiz. ent. Ges.* 59(1): 1-14. (With Engl. s.). — (Lab. Morphol., Syst. & Ecol. Anim., Inst. Zool., Univ. Liège, B-4020 Liège).
8 odon. spp. are listed from 3 sampling stations in the area studied.

(5653) FRANKOVIĆ, M. & J. JUREČIĆ, 1986. Prilog citogenetičkim i citotaksonomskim istraživanjima vrste Libellula depressa L. (Odonata, Libellulidae). [Contribution to the cytogenetics and cytotaxonomy of Libellula depressa L. (Odonata, Libellulidae]. *Plenarni Referati VII Kongr. Biol. Jugoslavije*, Budva, p. 341. (Croatian). — (Lab. Cytogen., Dept Bot., Fac. Sci., Univ. Zagreb, Rooseveltov trg 6, P.O. Box 933, YU-41001 Zagreb, Croatia).

In material from Zagreb, Croatia, Yugoslavia, the occurrence of karyotypic variation within one and the same individual is recorded, viz. n ♂ = 11+X, 11+X+*m*. and 11+X+*m*+*m*. The variation in recombination potential of this sp. is briefly discussed, and further research is suggested.

(5654) GOCKING, C., 1986. Helft den Libellen überdauern. *Jb. Westfalen* (N.F.) 41: 58-63. — (Author's address not stated).
General narrative on dragonfly biology, in a somewhat "poetical" style.

(5655) HÄMÄLÄINEN, M. & P. VALTONEN, 1986. Suomen sudenkorentojen maakuntaluettelo. — Biogeographical province list of Finnish dragonflies. *Notul. entomol.* 66: 89-90. — (Finn., with Engl. s.). — (First Author: Tullilaboratorio, Tekniikantie 13, SF-02150 Espoo).
Updated and classified checklist, showing the spp. occurrence in the 19 Finnish biogeographic provinces.

(5656) HAWKING, J.H., 1986. *Dragonfly larvae of the River Murray system. A preliminary guide to the identification of known final instar odonata larvae of south-eastern Australia.* Albury-Wodonga Development Corporation (Techn. Rep. No. 6), Wodonga. — IV+65 pp., col. frontispiece. — [ISBN: book: 0-642--51734-7; — microfiche: 0-642-51742-8]. — (Author: Peter Till, Environ. Lab., Albury--Wodonga Develop. Corp., McKoy St., Wodonga, 3690, AU). — Book available from the SIO Central Office, P.O. Box 256, Bilthoven, The Netherlands.
This is an attractive guide (size A4) to larval Odon. of the Murray R., Victoria, Australia. It is based on material derived from routine surveys and special collections. Larvae were maintained in laboratory culture and the adults which emerged were identified by Dr J.A.L. Watson. This permitted the positive naming of the larvae previously recognised. The work is not intended as a taxonomic treatise, but rather as an aid to regional field workers. It is organised in 4 parts, viz (1) a checklist of all spp. known to occur as adults in SE Australia, (2) a guide to terminology, (3) a comparative text/picture key to final instar larvae, and (4) supplementary information on larval habitats, head and metafemur measurements, and maps of collection sites. The frontispiece shows the exuviae of Apocordulia macrops. — The book represents a very welcome addition to the Australian, commercially available odonatological literature. The participation of Dr Watson in this project makes the work particularly reliable and valuable.

(5657) JÖDICKE, R. & G. SENNERT, 1986. Die Libellen Erythromma viridulum im Rheinland — vom Aussterben bedroht oder übersehen? *Rhein. Heimatpflege* (N.F.) 23(3): 179-184. — (Happelter 15, D-4054 Nettetal-1, FRG).
A review of the known Rhineland records is given, notes on behaviour and ecology are presented, and it is emphasized that the occurrence and the abundance of this sp. in the marginal areas of its range are conditioned by the incidental weather conditions prevailing in different years. The breeding populations there are not stationary. It is suggested that in the Rhineland the sp. should be removed from the list of taxa "threatened with extinction" and should be placed in the category of "seriously endangered" spp.

(5658) JONES, R.A., 1986. A spider-eating dragonfly. *Ent. Rec. J. Var.* 98(11/12): 255-256. — (Garden Falt, 131 Chadwick Rd, Peckham, London, SE15 4PY, UK).
Detailed description of the behaviour of an "Aeshna-like" sp., snatching a spider off its web (Samos Is., Greece).

(5659) JURZITZA, G., 1986. Libellen — Flugartisten ohne Zukunft. *InfBl. dt. Umwelthilfe* 9: 1-4. [ISSN 0930-1623]. — (Bot. Inst., Univ. Karlsruhe, Kaiserstr. 2, D-7500 Karlsruhe-1, FRG).
Arguments are put forward for odon. habitat conservation, and the "pamphlet" (21 x 29 cm) is illustrated with a number of dragonfly portraits. The photograph of Coenagrion ornatum on the frontispiece is among the best coenagrionid photographs ever published. — (Orders to: Deutsche Umwelthilfe, Schlosserstr. 12, D-7763 Öhningen/Bodensee, FRG;

Price: up to 5 copies: DM 6.-, each extra copy: DM 0.60).

(5660) KIAUTA, B., 1986. [Book review]. Duym, Frans & Gerard Dutmer, 1985. Libellentabel [...]. *Ent. Ber., Amst.* 46(11): 171-172. (Dutch). — (S.I.O. Central Office, P.O. Box 256, NL-3720 AG Bilthoven).
Book review of the publication listed in *OA* 5234.

(5661) KIAUTA, B. & M. KIAUTA, 1986. Beitrag zur Kenntnis der Libellenfauna des St. Galler Rheintales zwischen Altenrhein (Bodensee) und Bad Ragaz, Schweiz (Odonata). *Ber. bot.-zool. Ges. Liechtenstein-Sargans-Werdenberg* 15: 127-136. (With Engl. s.). — (c/o SIO Central Office, P.O. Box 256, NL-3720 AG Bilthoven).
A checklist of the hitherto known records, referable to 30 spp., from 13 localities in the St Gallen Rhine R. Valley, eastern Switzerland (alt. 397-503 m). Of particular interest is the discovery of a strong (probably the easternmost breeding) population of Gomphus pulchellus. It is emphasized that due to the embankment of the Rhine R. and its tributaries, the rheophilous odon. spp. (e.g. the Calopterygidae) have largely disappeared from the region. An annotated bibliography on the odon. fauna of the Swiss canton St Gallen is appended.

(5662) KIAUTA, M., 1986. Libellen, of van duivelshengst tot godspaard. *Vuursteen* 6(3): 81-90. (Dutch). — (c/o SIO Central Office, P.O. BOX 256, NL-3720 AG Bilthoven).
A narrative on dragonfly folklore and biology (in the journal of the Dutch Haiku Society); most aspects are "illustrated" with appropriate *haiku,* related to the particular subject/feature discussed. All haiku are in Dutch (translation); the poets represented are: Chisoku, Chiyo-ni, Eiboku, L.E. Harr, M. Kiauta, Kikaku, W. Reumer, Soseki, J. van Toren, and K. Yasuda.

(5663) KORI, S.S. & S.D. AMOJI, 1986. On an actinocephalid gregarine (Apicomplexa: Sporozoa) Odonaticola diplacodi sp. nov., from odonate insect, Diplacodes trivialis (Rambur). *Arch. Protistenk.* 131(1/2): 165-169. — (First Author: Coll. Pharmacy, Mahadevappa Rampure Med. Coll., Gulbarga-585106, India).
The morphology and life history of the new gregarine, from the gut of D. trivialis (Gulbarga, Karnataka, India) are described. Structural features of the gregarine are compared with those in the allied spp., particularly also with O. longicollara, which was described from the same dragonfly sp. (Cf. *OA* 3651).

(5664) LANDI, F., 1986. Contributo alla conoscenza della odonatofauna delle Marche (Odonata). *Bol. Soc. ent. ital.* 118(1/3): 17-19. (With Engl. s.). — (Via G. Mameli 14, D-62100 Macerata).
This is the first thorough report on the Odon. of the Marche region, Italy. Out of the 38 spp. listed, 30 are recorded here from the Marche for the first time.

(5665) LIESS, M., 1986. Die Libellen (Odonata) der Fliessgewässer des Ostbraunschweiger Hügellandes und des Ostbraunschweiger Flachlandes (Niedersachsen). *Braunschw. naturk. Schr.* 2(3): 499-505. (With Engl. s.). — (Zool. Inst., Techn. Univ. Braunschweig, Pockelsstr. 10a, D-3300 Braunschweig, FRG).
22 odon. spp. occur on the streams of eastern Braunschweig, Lower Saxony, FRG. Their occurrence is discussed in terms of (agro) chemical water pollution, and in relation to aquatic vegetation and to the mode of bank vegetation management. Due to the pesticide and fertilizer pollution, only 20% of sampling stations on the small currents rendered any dragonflies. The submerged and reed vegetation exercise a favourable influence on the diversity and abundance of the Odon., while the increase of chlorophycean vegetation and the mowing of the banks have a negative impact.

(5666) LORENZI, K. & C. UTZERI, 1986. Povere libellule! (Odonata). *Boll. Zool* 53 (Suppl.): 77. [Abstract only]. — (Dip. Biol. anim. & Uomo, Univ. Roma, Viale dell'Università 32, I-00185 Roma).
Abstract of a photographic poster paper, showing predation on Odon. by spiders, robberflies and dragonflies, and the teratolo-

gical malformations caused by natural injuries and accidents.

(5667) *MARTINIA. Bulletin de liaison des Odonatologues de France.* No. 4 (Oct., 1986). — (c/o J.-L. Dommanget, 7 rue Lamartine, F-78390 Bois d'Arcy).
Editorial: La vie du bulletin (1); — *Geneve, M.-P.:* La libellule (2; a poem); — *Legrand, J. & P. Machet:* Quelques éléments utiles à l'identification de Coenagrion ornatum (Sélys, 1850) (3-7); — *Stallin, P.:* Coenagrion scitulum dans le Calvados (8); — *Machet, P. & J. Legrand.:* A propos de la présence en France de Coenagrion ornatum (Sélys, 1850) (9-14); — *Stallin, P.:* Migration d'odonates dans le Parc naturel régional de Bière (14); — *Papazian, M.:* Introduction à l'étude des libellules fossiles (15-17); — *Dommanget, J.-L.:* Opération "Lac de Grand-Lieu" (18); — Nouveau retard dans la parution de l'Etude Faunistique et Bibliographique des Odonates de France (18); — *Manach, J. & A. Manach:* Odonates du Finistère (19-23); — [Analyses d'ouvrages]: *Anonymous:* Chasser et collectionner les insectes, par M. Martinez (23); — *Legrand, J.:* The dragonflies of Japan in colour, par K. Hamada & K. Inoue (24-25); — *Machet, P.:* The dragonflies of Great Britain and Ireland, par C.O. Hammond & R. Merritt (26-27); — *Machet, P.:* Nouvelles philatéliques (27-28). — (*Abstracter's Note:* This is not an SIO periodical, but it is becoming an increasingly important source on the odon. faunistics of France. The SIO is recommending, therefore, to all members visiting France to submit their records to the Editor of *Martinia.* Non-French texts will be translated).

(5668) MATCHACHEEP, S., 1986. [?; date not stated]. *Malang Khong Thai - [Thai insects].* Prae Pitaya Printing Press, Bangkok. 24 pp., 44 col. phot. incl. (Thai). — Price: Bath 20.-. (Publishers: 716-718 Wang Burapa, Bangkok-10200, Thailand).
Attractive slim booklet (17 x 24 cm), containing 4 dragonfly field photographs, with brief captions, but no names. The typographic reproduction is excellent, and the portrait of Orthetrum sabina is in all details the best ever published of this common sp.

(5669) MOORE, N.W., 1986. News from Specialist Groups. Odonata. *Species* 1986 (August): 25-26. — (Farm House, Swavesey, Cambridge, CB4 5RA, UK).
Contents largely identic to the report listed in *OA* 5442.

(5670) MÜLLER, K., 1986. Die Insektenfauna des Bottnischen Meerbusens. *Kurzfassungen Entomologentagung Wuppertal,* pp. 12-13. [Abstract only]. — (Author's address not stated: Umeå, Sweden).
Observations in an estuary on the Gulf of Bothnia, Baltic Sea, between Sweden and Finland, show that larvae of Erythromma najas, Cordulegaster boltoni and Somatochlora metallica are able to adapt themselves from the usual environment pH 4.6-6.4, conductivity ca 40 μS) to water characterised by pH 8.0 and a conductivity of 8000 μS.

(5671) NACHTIGALL, W., 1986. [Insecta]. Bewegungsphysiologie: Laufen-Schwimmen-Fliegen. *Handb. Zool.* 4(29): 1-68. — (Zool. Inst., Univ. Saarland, D-6600 Saarbrücken, FRG).
Review of insect locomotion, with references to the Odon., and with a rather imcomplete bibliography on the subject.

(5672) NEL, A., 1986. Sur la présence du genre Aeschna Fabricius, 1775 dans les calcaires stampiens de Cereste (Odonata Aeschnidae). *Entomologiste* 42(4): 195-198. — (8 av. Gassion, F-13600 La Ciotat).
Aeshna ollivieri sp. n. is described and figured from the Stampien (Lower Oligocene) of Céreste, Provence, France. The holotype is in the author's collection.

(5673) ONO, Y., 1986. A study of Sympetrum frequens in Yamagata. *Nature & Insects* 21(10): 15-18. (Jap., with Engl. title). — (Author's address not known.
[Abstract not available].

(5674) OTTOLENGHI, C., 1986. Le libellule (Odonata) dell'anfiteatro morenico gardesano orientale (comuni di Garda, Bardolino e

Lazise). *In:* Il Garda — l'ambiente, l'uomo, Vol. 2, pp. 35-40. Centro Studi per il territorio benacense, Vago di Lavagno, Verona. — (Via Mure 5, I-37011 Bardolino, Verona).
21 common spp. are listed. (Cf. also *OA* 2612).

(5675) PAPAZIAN, M., 1986. Nouvelles observations et éléments pour la répartition en France de Sympetrum pedemontanum (Allioni, 1766) (Odonata, Libellulidae). *Entomologiste* 42(5): 263-269. — (23 bd de Roux prolongé, F-13004 Marseille).
The known distribution of S. pedemontanum in France is reviewed and mapped, and new data are presented.

(5676) PARR, M.J., 1986. *Charles Darwin: a biologist for everyman.* Inaugural Lecture, Univ. Bophuthatswana, Mafikeng. IV+13 pp., author's portrait incl. — (Orders to: Press & Information Office, Univ. Bophuthatswana, P.O.B. X-2046, Mafikeng-8670, Bophuthatswana).
The author's concise, but detailed biography is followed by the text of his Inaugural Address (delivered May 21, 1986). The latter contains no references to the Odon., but represents a masterpiece of style, opening up the "difficult" avenues of evolutionary theory virtually "for everyman". Professor Parr is among the foremost odon. population biologists and behaviour students, therefore it is inevitable that this slim volume will be of interest to many odonatologists.

(5677) PFAU, H.K., 1986. Untersuchungen zur Konstruktion, Funktion und Evolution des Flugapparates der Libellen (Insecta, Odonata). *Tijdschr. Ent.* 129(3): 35-123. (With Engl. s.). — (Inst. Zool., Univ. Mainz, Saarstr. 21, D-6500 Mainz, FRG).
The skeletal morphology and mechanics of the flight apparatus of the Odon. are described. The different types of muscle systems are functionally interpreted, taking into account various aspects of aerodynamics. — Electrophysiological experiments reveal a functional relationship between several mechanoreceptors located at the wing base (a chordonotal organ and two rows of campaniform sensilla) and the pronation-supination movements of the wing. — A comparison of the flight apparatus of Odon. with those of Ephemeroptera and Neoptera leads to the reconstruction of an ancient flight system in Pterygota. It may thus be concluded that flight ability has evolved only once, supporting the hypothesis of a monophyletic origin of the Pterygota. Within the Pterygota independent lineages have led to highly autapomorphous characters in the flight apparatus of extant Odon., Ephemeroptera and Neoptera. — The results of earlier research on functional morphology and evolution are discussed.

(5678) [*PROGRAMME AND ABSTRACTS OF PAPERS PRESENTED AT THE*] *SECOND INDIAN SYMPOSIUM OF ODONATOLOGY,* 8-10 October 1986, Department of Zoology, D.A.V. College, Dehra Dun. Edited by Dr S.K. Sangal. IV+35 pp. — (Orders from countries of the Indian Subcontinent to the SIO National Office in India, Dr B.K. Tyagi, Vector Control Research Centre, ICMR, Medical Complex, Indira Nagar, Pondicherry-605006, India; — all others: SIO Central Office, P.O. Box 256, NL-3720 AG Bilthoven).
This is an attractive booklet, soft cover (2-colour print), 16x24.5 cm, organized into 6 main sections, viz. "Organising Committee", "Programme", "Symposium" (incl. the topics for general discussion on the development of odonatology in India), "Our College and Department" (incl. an account of odonatol. reserarch carried out at present in the D.A.V. College), "List of contributors/participants" and "Abstracts of research papers". The latter section occupies most of the booklet: *Wassem Khan, M.:* Midgut in the larva of the dragonfly Pantala flavescens (Fabr.): histological and histochemical studies in the cells in the post-feeding phase (13); — *Tembhare, D.B. & R.J. Andrew:* Post-ovarian genital complex in Odonata (14); — *Mathavan, S.:* Bio-energetics of dragonfly nymph (15); — *Palavesam, A., M. Senthamizhselvan & S. Beena:* Kinetic properties of phosphatases of dragonfly nymph Mesogomphus lineatus (16); — *Kallapur, V.L.:* Lipolytic activity and its possible significance in the lipid metabolism of the dragonfly

Pantala flavescens (17); — *Srivastava, V.K. & B.K. Srivastava:* Internal genital organs of female Copera marginipes (Ramb.) (18); — External genital organs of female Copera marginipes (Ramb.) (19); — *Narasubhai, A.V.:* Fibre specialization and flight performance of two species of dragonflies (20); — *Andrew, R.J. & D.B. Tembhare:* Cephalic neuroendocrine system of the dragonfly Tramea virginia (Rambur) (Anisoptera: Odonata) (21); — *Prasad, M. & S.K. Ghosh:* Contribution to the knowledge of estuarine Odonata of North East India (22); — *Kumar, A.:* Studies on the life history of Indian dragonflies: Orthetrum sabina sabina (Drury) (Libellulidae: Odonata) (23); — *Baskaran, P., M. Ramakrishnan, S. Palanichamy & M.P. Balaburamanian:* Toxic and sublethal effects of metacid on survival and body composition in the dragonfly Brachythemis contaminata (24); — *Sarkar, N.K. & D.P. Haldar:* The Odonata of West Bengal as hosts of cephaline gregarines (Apicomplexa: Eugregarinida) (25); — *Bhargava, R.N.:* On a collecion of Odonata from West Kameng District, Arunachal Pradesh (26); — *M. Mahato:* Dragonflies of Kathmandu Nepal (27); — *Kumar Kulshrestha:* Damselflies recorded for the first time from different districts of Uttar Pradesh (27); — *Basalingappa, S., S.B. Mathpathi, S.V. Modse, K.S. Muralifhar & M.R. Gandhi:* Probe studies on the enumeration of Pantala flavescens (Libellulidae: Odonata) and their probable role in biological control of insect pests (28); — *Dwivedi, M.M., V.K. Jindal & S.K. Sangal:* Preliminary studies on the distributional pattern of dragonflies in paddy fields in Dehra Dun Valley (29); — *Mathai, M.T.:* Dragonflies of Madras Christian College Campus (30); — *Mathukrishnan, J., A. Palawasam & M. Senthamizhselvan:* Satiation time and predatory behaviour of the damselfly nymph Lestes elata (31); — *Balasubramanian, M.P., M. Rana Krishnan, P. Baskaran, S. Arunachalam & S. Palanichamy:* Sublethal effects of metacid on phosphatases and esterases in the dragonfly Brachythemis contaminata (32); — *Vidyasagar, P.S.P.V. & M.A. Quayyum:* Neurosecretory system in Ictinus rapax (Rambur) (33); — *Ram, R.:* A new species of the genus Disparoneura (Zygoptera: Disparoneurinae) from India (34); D. krishnakantai sp. n., distinct from D. quadrimaculata (Ramb.) in the length of Cuii and in having hyaline wings, holotype not stated, range: Maharashtra); — *Jindal, V.K., M.M. Dwivedi & S.K. Sangal:* Reproductive behaviour in Orthetrum triangulare triangulare (Selys) (Anisoptera: Libellulidae) (35); — *Dwivedi M.M. & S.K. Sangal:* Reproductive behaviour of Libellago lineata lineata (Burmeister) (Zygoptera: Agriidae) (35; printing error: the sp. concerned is Anisopleura lestoides, Euphaeidae).

(5679) RENARD, A.-C., 1986. Étude écofaunistique des points d'eau de la région neuchâteloise: faune aquatique de la gravière de la Paulière. Présentation du milieu et liste faunistique. *Bull. Soc. neuchâtel. Sci. nat.* 109: 89-100. (With Germ. & Engl. s's). — (Inst. Zool., Univ. Neuchâtel, 22 chemin de Chantemerle, CH-2000 Neuchâtel-7).
Includes a list of 18 common odon. spp. from the gravel pit La Paulière (alt. 785 m), canton Neuchâtel, Switzerland.

(5680) SPURIS, Z.D., 1986. Pervyy Vsesoyuznyy Odonatologichesky Simpozium. — The 1st Allunion Symposium on Odonatology. *Latv. Ent.* 29: 144-147. — (Russ., with Latvian & Engl. titles). — (Hortus Botanicus, Latvian Acad. Sci., Miera iela 19-6, USSR-229021 Salaspils, Latvia).
This is the formal report on the First [USSR] All-Union Symp. Odonatol. (Novosibirsk, July 1-3, 1986), convened upon the initiative of the Latvian Section of the All-Union Ent. Soc. 15 workers were present and 19 papers were presented, related mainly to the faunistic exploration in the European USSR, Soviet Central Asia, Siberia and the Far East, to odon. paleontology and evolution, and to their ecology and behaviour. Dr B.F. Belyshev and Mr A.Yu. Haritonov were speaking on the objectives and activities of the SIO. In the framework of the Symposium, an "Odonatological Committee" was constituted (Chairman: A.Yu. Haritonov, members: Dr B.F. Belyshev, Mr S.N. Borisov, Dr Z. Spuris), and a motion was issued, in the preamble of which the

current achievements of Soviet odonatology are stated and the cooperation with the SIO is emphasized. Subsequently, in 12 paragraphs, the current tasks and objectives of Soviet odonatology are briefly outlined. It is suggested to convene symposia at regular, 3-yr intervals. — [A more exhaustive account of the Symposium and of the objectives of Soviet odonatology appears in *Selysia* 16(1), 1987].

(5681) SRIVASTAVA, V.K. & B.K. SRIVASTAVA, 1986. Morphology of the male reproductive organs of Enallagma parvum Selys (Zygoptera: Odonata). *Proc. natn. Acad. Sci. India* (B) 56(1): 14-19, 2 pls excl. — (First Author: Dept Zool., C.M.P. Coll., George Town, Allahabad-211002, India).
The internal and the external genital organs are described and illustrated.

(5682) TSUBAKI, Y. & T. ONO, 1986. Competition for territorial sites and alternative mating tactics in the dragonfly, Nannophya pygmaea Rambur (Odonata: Libellulidae). *Behaviour* 97(3/4): 234-252. — (Second Author: Lab. Biol., Kinjo Gakuin Univ., Moriyama, Nagoya, 463, JA).
(1) The males defend small territories on or nr small bodies of water. Sexually receptive females arrive at these sites to oviposit, and are usually intercepted by these territorial males. — (2) Not all males are territorial; some try to "sneak" copulations with females attracted to established territories. — (3) Males are both residents and sneakers at some stage of their life. — (4) Number of sneakers increases at an accelerating rate with male density at the reproductive area. — (5) Some territorial sites are occupied more consistently than others, and there is considerable turnover in territory ownership at some sites during the course of the reproductive season. — (6) Some changes in ownership occur because an intruder defeats the resident in an aerial contest. — (7) Highly contended territorial sites attract more females than others, and daily mating frequency is highest in males occupying these territories. — (8) However, "sneakers" appear to be as successful in gaining copulations as males who occupy less contended territories — (Authors).

(5683) TYAGI, B.K., A. TYAGI & S.K. SANGAL, 1986. An up-to-date catalogue and bibliography of dragonfly fauna of the Dehradun Valley (India). *Occ. Publs SIO natn. Office India* 2: 1-14. — (First Author: Vector Control Res. Cent., I.C.M.R., Medical Complex, Indira Nagar, Pondicherry-605006, India).
The bibliography (80 titles) and the checklist (rather than a "catalogue"; 79 spp. and sspp.) represent a welcome source of information on what has been published on the Dehra Dun dragonflies. The paper will certainly facilitate the pending revisional work on this important fauna. It has been issued on the occasion of the 2nd Indian Symp. Odonatol. (Dehra Dun, Oct. 8-10, 1986), and it is dedicated to the memory of F.C. Fraser, on the 50th anniversary of the appearance of his first odon. volume in the *Fauna of British India.*

(5684) *UHANALAISTEN ELÄINTEN JA KASVIEN SUOJELUTIMIKUNNAN MIETINTÖ [REPORT OF THE CONSERVATION COMMITTEE ON THREATENED ANIMALS AND PLANTS]*. Vol. 1: *Yleinen osa [General]*, pp. 1-111 [ISBN 951-46-7834-6]; — Vol. 2: *Suomen uhanalaiset wläimet [Threatened Finnish animals]*, pp. 1-466 [ISBN 951-46-7835-4]; — Vol. 3: *Suomen uhalanaiset kasvit [Threatened Finnish plants]*, pp. 1-431 [ISBN 951-46-7836-2]. Komiteanmietintö 1985: 43 [Committee Report 1985: 43]. Valtion painatuskeskus, Helsinki, 1986. (Finnish). — Price: FM 302.-.
This is the official Finnish Red Book. The Odon. are dealt with in Vol. 1, p. 49, and Vol. 2, pp. 225-230. Coenagrion puella and Aeshna viridis are classified as "vulnerable", while Aeshna crenata, Somatochlora sahlbergi, and Libellula fulva are in the category of "animals requiring attention". This is a category peculiar to the Scandinavian status classification. — (*Abstracter's Note:* The book was prepared in consultation with the respective specialists, though not all the opinions are necessarily those of the latter).

(5685) URABE, K., T. IKEMOTO & C. AIDA, 1986. Studies on Sympetrum frequens (Odonata: Libellulidae) nymph as a natural

enemy of the mosquito larvae, Anopheles sinensis, in rice fields. 2. Evaluation of predatory capacity and efficiency in the laboratory. *Jap. J. sanit. Zool.* 37(3): 213-220. (Jap., with Engl. s.). — (First Author: Saitama Inst. Public Health, 639-1, Kamiokubo, Urawa, 338, JA).
The predatory capacity of dragonfly larvae is stated for various instars of predator and prey, and for diverse laboratory conditions under which they were kept. The 10th instar dragonfly larva kept wandering 24 h a day, covering daily a distance of 5 m approx. Its prey consumption, however, was higher at night.

(5686) UTZERI, C., 1986. Termoregulazione posturale in Crocothemis erythraea (Brullé) e Trithemis annulata (Pal. de Beauv.) (Anisoptera: Libellulidae). *Boll. Zool.* 53 (Suppl.): 81. [Abstract only]. — (Dip. Biol. anim. & Uomo, Univ. Roma, Viale dell'Università 32, I-00185 Roma).
Both spp. adopt the "obelisk position" to lower the exposure to the sun, but lower the body below the horizontale if facing the sun. T. annulata assumes the same positions to expose a large body surface to the sun at low temperatures.

(5687) UTZERI, C. & K. LORENZI, 1986. Alcuni dati di demografia di Crocothemis erythraea (Brullé) (Anisoptera: Libellulidae). *Boll. Zool.* 53 (Suppl.) 81. [Abstract only]. — (Dip. Biol. anim. & Uomo, Univ. Roma, Viale dell'Università 32, I-00185 Roma).
Females emerged prior to males, and in significantly larger numbers than the latter. Sexual maturation averaged 14 and 15 days in males and females, respectively. The former reached the full adult coloration in an average of 20 days. The maximum longevity in the field amounted to 47 days in males, and 35 days in females.

(5688) VAN DEN NIEUWENHUIZEN, A., 1986. Mörder mit Feenflügeln. *Aquar. Terrar. Ztschr.* 39(7): 315-318. — (Author's address not stated).
An outline of dragonfly biology, with some "technical" hints concerning keeping the larvae in a "living-room decorative aquarium" [expression by the abstracter].

(5689) WEGMÜLLER, R., 1986. Die Libellenfauna des Lobsigensees. *Mitt. naturf. Ges. Bern* (N.F.) 43: 139-153. — (Zool. Inst., Univ. Bern, Baltzerstr. 3, CH-3012 Bern).
The odon. fauna of the Lobsigensee (lake), canton Bern, Switzerland (alt. 514 m) is analysed (43 spp.), and its development is traced from 1881 (35 spp.), through 1967 (24 spp.) to 1984/1985 (19 spp.). The possible reasons responsible for the spp. decline are discussed, and it is stated that the recent management measures (partial removal of the shore vegetation) appear to exercise a positive influence on the recolonisation by a number of (pioneer) spp.

(5690) WEHREN, H.L., 1986. Libellenspiele. *Jb. Westfalen* (N.F.) 41: 61.
A poem.

(5691) WIGHTON, D.C. & M.V.H. WILSON, 1986. The Gomphaeschninae (Odonata: Aeshnidae): new fossil genus, reconstructed phylogeny, and geographical history. *Syst. Entomol.* 11(4): 505-522. — (Lab. Vert. Paleontol., Univ. Alberta, Edmonton, Alberta, T6G 2E9, CA).
Alloaeschna paskapooensis gen. n., sp. n., A. marklae sp. n. and A. quadrata sp. n. are described from the Tiffanian (Late Paleocene) of the Paskapoo Formation, nr Red Deer, Alberta, Canada. Phylogenetic analysis of Gomphaeschninae suggests that the subfamily is paraphyletic, with derived gomphaeschnines such as Boyeria and Linaeschna more closely related to Brachytroninae and Aeshninae than are other gomphaeschnines. The Jurassic Morbaeschna is the oldest known and among the most primitive forms. Parallelism, convergence and reversal in the evolution of wing venation are common. Alloaeschna is at about the same evolutionary grade as Oligoaeschna and Gomphaeschna, and is one of the more primitive members of the subfamily. The new spp. are the first recorded Palaeocene gomphaeschnines and the oldest known gomphaeschnines from the Americas.