ODONATOLOGICAL ABSTRACTS

1972

(4226) JENSEN, C.F., 1972. Ephemeroptera og Odonata — [Ephemeroptera and Odonata]. *In:* Status over den Danske dyreverden, pp. 101-107. Zoologisk Mus., København. (Dan.). — (Zool. Mus., Universitetsparken 15, DK-2100 København-Ø).
A checklist of the Danish odon. spp. (48), with annotations on distributions, localities and habitats.

1978

(4227) MÜLLER, A.H., 1978 *Lehrbuch der Paläozoologie. Bd. II Invertebraten, Teil 3 Arthropoda 2 Hemichordata.* Fischer, Jena. 748 pp. – Price: M 75.-. — (Lehrstuhl Paläont., Bergakademie Freiburg, Sachsen, GDR).
The Odonatopteroida are dealt with on pp. 200-209, 286-291 (cumulative references), figs 229-241. A concise general review.

1980

(4228) CHENG, L. & D.S. HILL, 1980. Marine insects of Hong Kong. *In:* B.S. Morton & C.K. Tseng, [Eds]. The marine flora and fauna of Hong Kong and southern China, pp. 173-183. Hong Kong Univ. Press, Hong Kong. (With Chin. s.). (First Author: Scripps Inst. Oceanography, Univ. California, La Jolla, Calif. 92093, USA).
This is an introductory survey of the marine insect fauna of Hong Kong. The larvae of Pantala flavescens are recorded from permanent saline (brackish) intertidal rock pools, with a regular influx of fresh water. They feed on the insect larvae and other marine invertebrates.

(4229) TIMMS, B.V., 1980. The macrobenthos of Lakes Rotoroa and Rotoiti, South Island, New Zealand, with special reference to the influence of allochthonous organic detritus. *Arch. Hydrob.* 90 (2): 182-169. — (Dept Zool., Univ. Canterbury, Christchurch-1, NZ).
Xanthocnemis zealandica is mentioned as one of the spp. found in the weed beds of both lakes. Larvae of Procordulia grayi ara sparse in each lake (1.3 m^{-2} in Rotoroa, 1.2 m^{-2} in Rotoiti, maximum m^{-2} 22 in each lake in 11 m depth range).

1981

(4230) CANNINGS, D., 1981. Yukon refugium project. *Boreus* 1 (1): 10. - (Cowan Vert. Mus., Dept Zool., Univ. Brit. Columbia, Vancouver, B.C., V6T 2A9, CA).
Somatochlora minor from Klusha Creek and S. franklini from the Ogilvie River are reported for the first time from the Yukon, Canada.

(4231) CANNINGS, R., 1981. Brooks Peninsula report. *Boreus* 1 (2): 12-13. - (Ent. Div., Brit. Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C., V8V 1X4, CA).
The Brooks Peninsula lies 350 km NW of Vancouver, and no roads even approach the area. In the summer of 1981, 200 adult and 150

larval Odon. were collected there, representing 16 spp. The taxa mentioned are Aeshna sitchensis, A. interrupta, A. umbrosa, and Somatochlora albicincta. It is suggested that the recognized sspp. in A. interrupta and A. umbrosa are unvalid, and that S. a. massettensis from the Queen Charlottes simply represents a population of large dragonflies at the end of a size cline running up the coast.

(4232) [CANNINGS, R.A.], 1981. George Doerksen (1940-1981). *Boreus* 1 (2): 14. — (Ent. Div., Brit. Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C., V8V 1X4, CA).
Obituary for Dr G.P. Doerksen. — (For a more extensive biography and his odonatol. bibliography cf. Odonatologica 11 (1982): 59-62).

(4233) CANNINGS, S., 1981. Yukon insect survey. *Boreus* 1 (2): 14-15. — (Spencer Ent. Mus., Dept Zool., Univ. Brit. Columbia, Vancouver, B.C., V6T 2A9, CA).
A brief progress review of the project. The odon. spp. mentioned are Ischnura damula (Liard Riv. Hotsprings Prov. Park, B.C.), and Aeshna sitchensis, Somatochlora kennedyi and S. sahlbergi (all from Old Crow, Yukon).

(4234) GAGNÉ W.C., 1981. Insects and myriapods of Kīpahulu Valley below 2000 feet. *In:* C.W. Smith, [Ed.], Resources base inventory of Kīpahulu Valley below 2000 feet, Maui, Hawaii, 1980, pp. 119-175. Nature Conservancy, Honolulu. — (Dept Ent., P.B. Bishop Mus., 1355 Kalihi Str., P.O. Box 19000 A, Honolulu, Hawaii 96819, USA).
This is a catalog of the fauna recorded during July, 1980 at the lower segment of Kīpahulu Valley, Haleakala National Park, Hawaii. The Odon. are listed on p. 170 (9 spp., of which 7 endemic). The potentially endangered Megalagrion pacificum is discussed in some detail, and protective measures are recommended.

(4235) HALASY, K. & M. CSOKNYA, 1981. Morphological studies on the larval hindgut of some Anisoptera species. *Acta biol. szeged.* 27 (1-4): 195-201. (Dept Zool., Attila József Univ., P.O. Box 428, HU-6701 Szeged).
The histology of the rectal tracheal gills of Aeshna affinis, Libellula quadrimaculata and Leucorrhinia pectoralis is described and figured.

(4236) KARAMAN, B.S., 1981. Contribution à la connaissance de la faune des Odonates du lac de Doiran. *Godišen Zb. biol. Fak. Skopje* 34: 215-223. (With Maced. s.). — (Inst. Zool., Fac. Biol., Univ. Skopje, P.O. Box 107, YU-91001 Skopje).
37 spp. are recorded from Doiran Lake; Pyrrhosoma nymphula is new to the fauna of Macedonia, Yugoslavia. the zoogeographic composition of the fauna is analysed, and a brief ecological characterisation of the lake is presented. (Cf. also *OA* No. 2898).

(4237) McE. KEVAN, D.K., 1981. Utamaro's "Insect Book", 1788, with kyôka translations. *Notes Lyman ent Mus.* 9, 37 pp., 17 pls excl. (With Fr. s.). — (Lyman Ent. Mus. & Res. Lab., Dept. Ent., McGill Univ., Ste Anne de Bellevue, Que., H9X 1C0, CA).
This is a complete Engl. edition of the famous book by Kitagawa Utamaro "Ehon mushi erami" (= "Picture-book of selected beasties"), with Yadoya Meshimori's "Kyôka mushi erami" (= "Mad verses on selected beasties"). The prints and the kyôka are reproduced, and the latter are translated and annotated. Prints VII (No. 14) and XII (No. 23) are showing dragonflies, and the respective kyôka are authored by Ichifuji Nitaka (= Fujita Jinsuke) and Shuraku Sugae, resp.

(4238) TALWAR, N. & H.N. BAIJAL, 1981. Central nervous system of Bradinopyga geminata (Rambur) (Odonata: Libellulidae). *J. ent. Res.* 5 (1): 55-59. — (Zool. Dept, Agra Coll., Agra, India).
The topography and morphology of the central nervous system are presented and (schematically) figured.

(4239) UNNO, K., 1981. *Insects and their world.* Kyrotishu Shuppan, Tokyo. 102 pp. [0072-818290-1371, NDC 486, 748]. (Jap. & Engl.).
(Author: 2-14-37 Somechi, Chofu-shi,

Tokyo, 182, JA).
This is a photographic album, organised as follows: "Memorandum on camera work", "Photographic data", "Flying", "Eating", "Mating and laying eggs", "Insects as flying machines", "Epilogue". The book contains numerous odon. photographs, mostly in colour.

(4240) VEGA, A., L. HERRERA, A. BERGERANDI & R. ARLEGUI, 1981. Fauna entomologica de la Charca de Muniain (Navarra). *Munibe, San Sebastián* 33 (1/2): 101-105. (With Engl. s.). — (First Author: Dep. Zool., Fac. Cien., Univ. Navarra, Pamplona, Spain). Annotated checklist of the aquatic insect fauna of a pond at Muniain, Navarra, Spain, incl. 7 odon. spp.

1982

(4241) ARAI, Y., 1982. [*Dragonfly observations in Saitama Prefecture*]. Privately published by the Author. 142 pp., 12 col. pls incl. [No ISBN number]. (Jap.). — Price: ¥ 200.-. — (1233-2, Oaza Sueno, Yorii-machi, Osato-gun, Saitama Pref., 369-12 JA).
A beautiful, richly illustrated, pocket-size booklet, the contents of which is organized into 5 main chapters, viz. "Emergence, feeding and water bathing", "Reproductive behaviour", "Copulation refusing behaviour", "Oviposition in gomphids", and "Dragonflies of Saitama Prefecture: the existing fauna and its preservation".

(4242) ARAI, Y., 1982. [Ecological observations on Anax n. nigrofasciatus]. *Yosegaki* 38: 431-434. (Jap.). — (1233-2, Oaza Sueno, Yorii-machi, Osato-gun, Saitama Pref., 369-12, JA).
[Abstract not available].

(4243) CANNINGS, R.A., 1982. Entomology Division. *In:* British Columbia Provincial Museum, Two-year review 1979-1980. Heritage Record No. 16, pp. 26-29. Victoria, B.C. [ISSN 0714-3346]. (Author: Ent. Div., Brit. Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C. V8V 1X4, CA).
This is the 1980 annual report of the Division, headed by the author. Various odonatol. activities are enumerated.

(4244) [CANNINGS, R.A.], 1982. [Profiles]. George P. Doerksen. *Boreus* 2 (1): 4-5. — (Ent. Div., Brit. Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C., V8V 1X4, CA).
A slightly modified version of the text published originally in Odonatologica 11 (1982): 59-62.

(4245) [CANNINGS, R.A.], 1982. 81st Annual Meeting of the Entomological Society of B.C. *Boreus* 2 (2): 8-9. — (Ent. Div., Brit. Columbia Prov. Mus., 601 Belleville Str., Victoria, B.C., V8V 1X4, CA).
The Meeting was held in Victoria, Sept. 23-24, 1982. The titles of the following odonatol. papers are listed: *Cannings, R.* (address above): Zoogeography of Pacific Northwest Odonata; — *Cannings, S.* (Spencer Ent. Mus., Dept Zool., Univ. Brit. Columbia, Vancouver, B.C., V6T 2A9, CA): The distribution and life history of Somatochlora sahlbergi (Odonata: Corduliidae) in North America; — *Pritchard, G.* (Dept Biol., Univ. Calgary, Calgary, Alberta T2N 1N4, CA): How a tropical dragonfly lives in British Columbia.

(4246) DARWIN, Ch., 1982 [reprint]. *The descent of man and selection in relation to sex.* Encyclop. Brit. Great Books of the Western World, Vol. 49, pp. 251-597, 611-659 (index). Benton, Chicago - London - Toronto - Geneva - Sydney - Tokyo - Manila.
This classical work, first published in 1871, contains references to the odon. caudal appendages, relative size of the sexes, difference in the sexes, and to the want of pugnacity by the male.

(4247) DARWIN, Ch., 1982 [reprint]. *The origin of species by means of natural selection.* Encyclop. Brit. Great Books of the Western World, Vol. 49, pp. 1-251, 601-610 (index), Benton, Chicago - London - Toronto - Geneva - Sydney - Tokyo - Manila.
This famous work, published originally in 1859, contains a brief reference to the dual

function of rectum of the odon. larvae.

(4248) DONATH, H. & G. GUNDELACH, 1982. Gefährdete Tierarten in der nordwestlichen Niederlausitz. II. Insekten. *Luckau Heimatkalender* 14/15: 80-85. — (First Author: Jahnstr. 6, DDR-7960 Luckau, GDR).
Protective measures are suggested for 17 odon. spp. in the area of Niederlausitz, German Democratic Republic.

(4249) EDA, S., 1982. Enallagma boreale circulatum. *Nature & Insects* 17 (7): cover photograph. — (3-4-25 Sawamura, Matsumoto, Nagano Pref., 390 JA).
A black-and-with photograph, male (Ushidomeike, Nagano Pref., Aug., 1979).

(4250) EDA, S., 1982. [Reports of the discovery of Epiophlebia superstes at Hakubamura, Nagano Prefecture]. *Nature & Insects* 17 (11): 32. (Jap.). — (3-4-25 Sawamura, Matsumoto, Nagano Pref., 390, JA).
2 females ware taken at Hakuba-mura (May 23, 1981, May 17, 1982). This was reported in the local newspapers.

(4251) FARRIS, J.L. & G.L. HARP, 1982. Aquatic macroinvertebrates of three acid bogs on Crowley's Ridge in Northeast Arkansas. *Proc. Ark. Acad. Sci.* 36: 23-27. — (Second Author: Dept Biol. Sci., Arkansas St. Univ., P.O. Box 599, State University, Ark. 72467-0599, USA).
Qualities and quantities of parameters defining 3 acidophilic forested bogs in Greene Co., Ark., USA are outlined, and the fauna of the bogs stated. The list includes 20 odon. spp.

(4252) FISCHER, H., 1982. Die Besiedlung der Stauden. *Ber. naturf. Ges. Augsburg* 37: 1-54. — (Vogelmauer 33, D-8900 Augsburg, FRG).
The Odon. are dealt with on pp. 47-50. Of particular interest is the discussion of the origin of German vernacular names, such as "*Wasserhexe*", "*Schlangentöter*", "*Teufelsnadel*", "*Höllenross*", "*Teufelshengst*", and "*Augenstecher*". The dragonfly is one of the standard attributes of the ancient Germanic goddess Freya. When, in 775 AD, the traditional devotion of the pre-Christian divinities was forbidden by Charlemagne, the official Church associated remnants of the Germanic religion with things evil. Consequently, Freya's day (= Friday) became a day of mishap, and dragonflies ever since spell misfortune.

(4253) GARRISON, R.W., 1982. Paltothemis cyanosoma, a new species of dragonfly from Mexico (Odonata: Libellulidae). *Pan-Pacif. Ent.* 58 (2): 135-138. — (1030 Fondale Str., Azusa, Calif. 91702, USA).
P. cyanosoma sp. n. (♂ holotype: 6 mi N of Guadalajara, Jalisco, Mexico; Aug. 13, 1970; deposited at Univ. California, Davis) is described and figured. Some information on its habitat is provided. This is the second known member of the genus.

(4254) HIROSE, M., 1982. [Butterflies and dragonflies in Ibaraki Prefecture]. *Nature & Insects* 17 (7): 16-20. (Jap.) — (3-4-7 Daiku-machi, Mito, 310, JA).
General account. Coenagrion tarue and Mortonagrion hirosei are among the spp. mentioned.

(4255) INOUE, H., 1982. [A record of Polycanthagina melanictera from the north of Ibaraki Pref.]. *Nature & Insects* 17 (1): 32. (Jap.). — (No. 4, Maeda Coop., 3318 Dairenji, Nagaoka, Ibaraki-machi, Higashi-ibaraki-gun, Ibaraki Pref., 311-31, JA).
A female, Aug. 15, 1980.

(4256) ISHIDA, M., 1982. [Observations of the emergence of Stylurus nagoyanus at Niigata]. *Nature & Insects* 17 (6): 28-29. (Jap.). — (5--759, Nishiborimae-dori, Niigata, 951, JA).
A detailed report on observations through 5 seasons (1977-1981). Exuviae were found from July 4 to Aug. 30 in 1977, but in 1980 there was a cool summer, and exuviae were recorded between July 24 and Oct. 17. The male emergence ratio was 29.2-44.6%, and females tended to emerge somewhat later in the season. Larvae came up from water and climbed the shore wall. Peculiar upward bending of the abd., as described earlier by K. Inoue in S. annulatus (cf. *OA* No. 2639) was frequently

observed. It is interesting that 294 exuviae were counted in 1980, but not a single mature adult has been ever seen in this area throughout the study.

(4257) ISHIDA, S., 1982. *Tombo.* — [*Dragonfly*]. Junior Iconographia, Hoiku-sha, Osaka. 90 pp., numerous, partly col. figs incl. [ISBN 4--586-37019-X C8645]. (Jap.). — Price: ¥ 800. — (Author: 2-8 Okinoshima-cho, Yokkaichi, Mie Pref., 510, JA).
A general account on the biology and behaviour of dragonflies, with colour plates for the identification of some of the common spp.

(4258) ISHIHARA, T., 1982. Some noteworthy insects and birds of Japan in the natural environment growing worse. *Mem. Coll. Agric. Ehime Univ.* 27 (3): 153-170. (With Jap. s.). — (Lab. Appl. Ent., Ehime Univ., Ehime, JA).
Libellula angelina is listed among the insect spp., threatened with extinction, caused by the deterioration of the natural habitats which has taken place in Japan after World War II.

(4259) ISHIKAWA, H., 1982. [Ictinogomphus pertinax and Sympetrum uniforme from Kagawa Pref.]. *Nature & Insects* 17 (2): 33. (Jap.). — (1--6-2 Higashigaoka, Meguro-ku, Tokyo, 152, JA).
I. pertinax (Furukawa-cho, Aug. 11, 1980) is new to Kagawa, S. uniforme (Onohara-cho, Aug. 12, 1980) is the first record from the western part of this prefecture.

(4260) ISHIKAWA, H., 1982. [Aberrant venation in Nihonogomphus viridis]. *Nature & Insects* 17 (3): 46-47. (Jap.). - (1-6-2 Higashigaoka, Meguro-ku, Tokyo, 152, JA).
In a male from Saitama, the number of cross veins is greatly reduced, the hw pterostigmas are extended proximally, and the wing length is relatively small (hw: 25 mm, abd. 37 mm, as to resp. 30-33 and 40-43 mm in the normal specimens).

(4261) ISHIKAWA, H., 1982. [Aciagrion migratum recorded in Tokyo]. *Nature & Insects* 17 (7): 21. (Jap.). — (1-6-2 Higashigaoka, Meguro--ku, Tokyo, 152, JA).
2 ♀, 1 ♂, taken resp. Jan. 30, 1949, Apr. 15, 1956, and Aug. 8, 1967.

(4262) ITOH, S., 1982. [Anax n. nigrofasciatus taken in September]. *Nature & Insects* 17 (2): 33. (Jap.). — (3-15-3, Sentoku, Miyako, Iwate Pref., 027, JA).
This is a spring and early summer sp., therefore the record of Sept. 14, 1980 (Miyako, Iwate, Japan) is of some interest.

(4263) IWASAKI, I., 1982. [Platycnemis foliacea sasakii recorded in Miyazaki Prefecture]. *Nature & Insects* 17 (7): 38-39. (Jap.). — (c/o Nakato Primary Sch., Shiiba-son, Higashi--usuki-gun, Miyazaki Pref., 883-16, JA).
A good series of both sexes was taken May 11, 1980 at Kitagawa-cho. This is the first prefectural record of this rare sp., and represents its southernmost known locality. A comparison between the habitats of Copera annulata and this sp. is also made.

(4264) KOBAYASHI, T., 1982. [Anaciaeschna martini new to the Yamanashi prefectural fauna]. *Nature & Insects* 17 (3): 45. (Jap.) - (4-3 Kitayama-cho, Fuchu, Tokyo, 183, JA).
A female, taken at Nirasaki, Aug. 25, 1981.

(4265) KUBO, H., 1982. *Akatombo.* - [*Sympetrum frequens*]. Colour-Nature Series, No. 43. Kaisei-sha, Tokyo. 32 pp. ISBN4-03-333430-0 C8745. (Jap.). — Price ¥ 980. (Author's address not stated; — Publishers: Kaisei-sha, Ichigaya, Tokyo, 162, JA).
The book is directed at children, giving an outline of biology and life history of the most popular Japanese dragonfly.

(4266) MORI, K., 1982. [Butterflies, dragonflies and beetles in Tohoku District]. *Nature & Insects* 17 (7): 4-7. (Jap.). - (21-1, Namiki-higashi, Towada, Aomori Pref., 034, JA).
General account on the odon. fauna. Epiophlebia superstes, Cercion plagiosum and Nehalennia speciosa are among the spp. mentioned.

(4267) NARAOKA, H., 1982. [Insecticide spraying caused dragonfly death]. *Nature & Insects* 17 (1): 32. (Jap.). — (36-71, Aza Motoizumi, Fukunoda, Itayanagi-machi, Kita-gun, Aomori Pref., 038-36, JA).
The effects of "Sumithion" on a dragonfly population of a rice field and a nearby pond are described. Immediately after spraying, the insects had shown a peculiar behaviour (violent abdomen bending, "standing on head"), after 24 hr, the zygopterans have completely disappeared, and some libellulids were found dead. Anax parthenope julius and Epophthalmia elegans appeared to be little affected.

(4268) ONO, M., 1982. [Butterflies, dragonflies and beetles in Yamagata Pref.]. *Nature & Insects* 17 (7): 8-11. (Jap.). — (Yarai 2-chome, Kaminoyama, Yamagata Pref., 994-31, JA).
General account on the odon. fauna. Platycnemis echigoana, Stylurus nagoyanus, Sympetrum maculatum, S. depressiusculum and S. cordulegaster are among the spp. mentioned.

(4269) PATIL, B.V., M.C. DEVAIAH & T.S. THONTADARYA, 1982. Studies on the attraction of predatory insects to mercury bulb light-trap. *Indian J. Ecol.* 9 (1): 108-112. — (Dept Agric. Ent., Dharwad-5, India).
"Anax guttata Barm" and Pantala sp. are reported, of which resp. 18 and 36 specimens were trapped between Feb. 1, 1976 and Jan. 31, 1977. The trap was operated daily from dusk to dawn, but the locality is not stated.

(4270) TAKETO, A., 1982. [Butterflies, dragonflies and beetles in Hokuriku District]. *Nature & Insects* 17 (7): 12-15. (Jap.). — (3-22, Ishibiki 2-chome, Kanazawa, 920, JA).
A general account on the odon. fauna, mentioning 81 spp. in Fukui Pref., 82 spp. in Ishikawa Pref., and 75 spp. in Toyama Pref.

(4271) TAKITA, S., 1982. [Dragonfly records from Yamagata Pref.]. *Nature & Insects* 17 (2): 32. (Jap.). — (8-311, Tsukuba Univ. Hirasuna Gakusei Shokusha, 2-1-1, Amakubo, Sakura-mura, Niihari-gun, Ibaraki Pref., 305, JA).
Records from 2 localities are presented. Enallagma boreale circulatum is probably the first record from this prefecture. — (*Abstracter's Note:* In the paper listed in *OA* No. 3942, S. Asahina expressed the opinion that the Japanese Enallagma hitherto referred to as deserti actually is E. boreale).

(4272) TIMMS, B.V., 1982. A study of the benthic communities of twenty lakes in the South Island, New Zealand. *Freshw. Biol.* 12: 123-138. — (Dept Zool., Univ. Canterbury, Christchurch-1, NZ).
Odon. were recorded in 10 lakes, Procordulia grayi in 6, and Xanthocnemis zealandica in 6, both spp. being recorded in Lakes Pearson and Hawdon. The poor representation of many groups, incl. Odon., is a common feature in New Zealand lakes.

(4273) UDONO, K., 1982. [Oviposition in Lanthus fujiacus]. *Nature & Insects* 17 (9): 35. (Jap.) — (A-25, Hozo-shataku, Toho Gas Co., 2-26 Hozo-cho, Nakagawa-ku, Nagoya, 454, JA).
This is the second record of sitting oviposition in this sp. (Mt Fujiwara, Mie Pref., June 3, 1978). The female was perched on the shore and dipped the abd. into the stream, its tip reaching the bottom. Because of the strong current, the eggs were not actually seen, but the author is sure the insect was ovipositing. A close-up photograph is provided.

(4274) WIGHTON, D.C., 1982. Middle Paleocene insect fossils from south-central Alberta. *Proc. N. Am. paleont. Conv.* 2: 577-578. — (Lab. Vert. Paleont., Dept Geol. & Zool., Univ. Alberta, Biol. Sci. Centre, Edmonton, Alberta, T6G 2E9, CA).
5 localities have yielded 320 fossil insect spec. (adults and larvae), representing 10 orders, many of which were associated with aquatic environment. The undescribed Odon. resemble the genus Gomphaeschna and the family Chlorolestidae. (Cf. also *OA*. No. 2570).

(4275) YAMASAKI, Y., 1982. [A case of a triple connection in Davidius nanus]. *Nature & Insects* 17 (9): 34-35. (Jap.) — (2-12 Marunouchi, Matsumoto, Nagano Pref., 390 JA).

It is described (type A) and photographed (Lake Nakatsuna, Nagano, June 13, 1976).

(4276) YODOE, K., 1982. [Butterflies, dragonflies and beetles in the San-in District]. *Nature & Insects* 17 (7): 22-26. (Jap.) — (1-7, Hitsugaoka 2-chome, Matsue, Shimane Pref., 690, JA).
General account. Trigomphus melampus and Oligoaeschna pryeri are among the spp. mentioned.

(4277) ZHU, Hui-qian, 1982. The protection of natural enemy insects. [sic!]. *Shanxi Univ. J.* (nat. Sci.) 2 (16): 82-86. (Chin., with Engl. s.). — (Dept Biol., Univ. Shanxi, Taiyuan, Shanxi Prov., P.R. China).
The Odon. are among the 11 orders briefly discussed.

1983

(4278) ARAI, Y., 1983. [Hibernating dragonfly larvae in dried up swamps]. *Gekkan-Mushi* 146: 15-19 (Jap.) — (1233-2, Oaza Sueno, Yorii-machi, Osato-gun, Saitama Pref., 369--12, JA).
A detailed account on Lyriothemis pachygastra, as mentioned briefly in the paper listed in *OA* No. 4091.

(4279) ARCHER-LOCK, A., 1983. A year of Odonata. *Ent. Rec. J. Var.* 95 (7/8): 129-132. — (4 Glenwood Rd, Mannamead, Plymouth, UK).
An account on the 37 spp., photographed by the Author at numerous British localities, during 1982. The list includes a number of locally interesting taxa and records from odonatologically little explored areas.

(4280) ASAHINA, S., 1983. A list of the Odonata recorded from Thailand. Part II. Protoneuridae. *Kontyû* 51 (1): 90-99. — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
6 spp. are enumerated, described, figured and discussed in detail. Prodasineura auricolor is the new status of Fraser's 1927 Coconeura dorsalis auricolor. (For Pt I cf. *OA* No. 3937).

(4281) ASAHINA, S., 1983. Further contributions to the knowledge of a dragonfly, Anax nigrofasciatus from eastern Asia. *New Entomol.* 32 (1): 1-6. (Jap., with Engl. s.). — (Takadanobaba 4--4-24, Shinjuku-ku, Tokyo, 160, JA).
A. nigrofasciatus Oguma from Japan and A. nigrolineatus Fraser from Darjeeling were classified as 2 geogr. races of the former (cf. S. Asahina, 1962, Jap. J. Zool. 13: 249-255). The subsequently acquired rich material from the intermediate areas still permits the separation of the 2 races (mainly in terms of the head characters). Since no material is available from Szechuan, Yunnan and northern Burma, the possibility that the 2 forms represent but clines of a single taxon remains open. The latter hypothesis would be supported also by the evidence that the progenies from the summer generation of nigrofasciatus show considerable affinities to the western nigrolineatus.

(4282) ASAHINA, S., 1983. Further contributions to the knowledge of Nepalese Cephalaeschna and their allies (Odonata, Aeschnidae). *Bull. natn. Sci. Mus., Tokyo* (A) 9 (2): 51-67. — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
With reference to the papers listed in *OA* Nos 3208, 3289, additional morphological and other details are presented for C. orbifrons, C. masoni, C. viridifrons, C. acutifrons, a possible hybrid C. acutifrons x viridifrons, C. klapperichi, and for Gynacanthaeschna sikkima. In addition, a comparison of the male accessory genitalia in the Cephalaeschna--group (Cephalaeschna, Gynacanthaeschna, Periaeschna, Caliaeschna, Planaeschna) is given.

(4283) ASAHINA, S., 1983. [Odonatological works published in 1982]. *Gekkan-Mushi* 144 (Feb.): 2-6. (Jap.) — (Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
A narrative review of the main odonatol. papers and periodicals published in 1982.

(4284) ASAHINA, S., Y. WADA & T. YAMASAKI, 1983. [Revisiting Northern Borneo, pts 1-3]. *Gekkan-Mushi* 147 (May): 9-16; 148 (June): 19-26; 149 (July): 23-29. (Jap.) (First

Author: Takadanobaba 4-4-24, Shinjuku-ku, Tokyo, 160, JA).
An account of the trip, with considerations on various insect orders. Among the numerous photographs, those of the wings of Euphaea impar, tricolor, subnodalis, subcostalis and basalis (all ♂) are of particular interest.

(4285) BALESTRAZZI, E., I. BUCCIARELLI & P.A. GALLETTI, 1983. Gli odonati della torbiera di Pian di Gembro, Trivigno (Sondrio). *G. it. Ent.* 1: 211-224. (With Engl. s.). — (First Author: Via Cremona 77/C, I--27100 Pavia).
An annotated list is given of the Odon. recorded in a sphagnum bog at the Pian di Gembro, Trivigno, Lombardy, northern Italy, alt. 1350 m (14 spp.). Coenagrion hastulatum and Leucorrhinia dubia were not previously reported from Lombardy. The occurrence of Somatochlora arctica and Sympetrum flaveolum is of particular interest.

(4286) BATTIN, T., 1983. Eine Einführung in die Lebensweise der Libellen (Odonata). *Paiperlek, Luxembourg* 5 (2): 3-10. — (21, rue de l'Hôpital, L-4137 Esch-sur-Alzette).
A general narrative on the biology of Odon.

(4287) BATTIN, T., 1983. Aufzählung der Libellenarten aus drei Feuchtgebieten im Süden Luxemburgs. *Paiperlek, Luxembourg* 5 (2): 11-14. — (21, rue de l'Hôpital, L-4137 Esch--sur-Alzette).
Inventory of the odon. fauna of 3 ponds in the Grand Duchy of Luxembourg.

(4288) BAUSCHMANN, G., 1983. Neunachweise in der Odonatenfauna des Vogelsberges. *Hess. faun. Briefe* 3 (2): 31-35. — (Author's address not stated).
Gomphus pulchellus, Cordulegaster boltonii and Sympetrum pedemontanum are recorded from the Vogelsberg, Hessen, Fed. Rep. Germany. Their autecology and sociology are discussed in some detail.

(4289) BELLE, J., 1983. Macrothemis brevidens, a new species from Surinam (Odonata: Libellulidae). *Ent. Ber., Amst.* 43 (10): 156-159. — (Onder de Beumkes 35, 6883 HC Velp, NL).
M. brevidens sp.n. is described and illustrated on the basis of 2 ♂, 1 ♀ (holotype ♂: Stondansi, 22-IX-1962). It belongs to the tessellata group. All specimens are in the author's collection. The validity of the genus Gynothemis Calvert is briefly discussed.

(4290) BICK, G.H., 1983. Odonata at risk in conterminious United States and Canada. *Rep. Odon. Specialist Group Int. Un. Conserv. Nat.* 4, 2 pp. — (1928 SW 48th Avenue, Gainesville, Fla 32608, USA).
Abridged version of the paper in Odonatologica, 1983, 12 (3): 209-226.

(4291) CARCHINI, G., 1983. *Odonati (Odonata).* Guide per riconoscimento delle specie animali delle acque interne italiane, No. 21. Cons. Naz. Ricerche, Roma. VI+80 pp. — (Author: Ist. Zool., Univ. Roma, Viale dell'Università 32, I--00100 Roma).
This is the Italian version of the booklet listed in *OA* No. 4025. In addition to the keys and illustrations, it includes some general chapters on odon. larvae, and detailed descriptions of each sp. The typographic quality is superb.

(4292) CARLSON, R.W., 1983. Instar, stadium, and stage: definitions to fit usage. *Ann. ent. Soc. Am.* 76 (3): 319. — (Agric. Res. Serv., US Dept Agric., Internat. Activities, Asian Parasite Lab., Seoul, Korea).
Instar is defined as the arthropod between two successive molts embracing a portion of the somatic growing phase. The term is thus restricted to forms of the stages larva and nymph. Although that restriction may agree with the usual usage, few published definitions of instar actually exclude the stages pupa and adult. Stadium is defined as the duration of an instar. (Author). — (For different opinions cf. *OA* Nos 4304, 4315).

(4293) CHHOTANI, G., A.R. LAHIRI & T.R. MITRA, 1983. Contribution to the odonate (Insecta) fauna of the Andaman and Nicobar Islands with description of two new species. *Rec. zool. Surv. India* 80: 467-494, 2 maps excl. — (Third Author: 60 Shyam Nagar Rd,

Calcutta-700053, India).
The odon. fauna (34 spp.) of the Andaman and Nicobar Islands (India) is reviewed. As new are described and figured Gomphidia ganeshi sp. n. (holotype ♂: Rajatgarh, South Andamans, 22-III-1964; Type No 5149/H8), and Oligoaeschna andamani sp. n. (holotype ♀: Cowriaghat, South Andamans, 11-VI-1964; Type No. 8275/48). The types are in the (Indian) National Zoological Collection). A description is also provided of the hitherto unknown females of Libellago lineata andamanensis (Fr.) and Prodasineura verticalis andamanensis (Fr.).

(4294) *CONTACTBLAD NEDERLANDSE LIBELLENONDERZOEKERS* - [*Newsletter of the Dutch Dragonfly Workers*]. No. 6 (Oct., 1983). Issued by the Werkgroep Nederlandse Libellenonderzoekers — [Association of the Dutch Dragonfly Workers], Bussum. (Dutch). — Subscription for 1983: Hfl. 11. - (2 issues). — (c/o M. Verdonk, Floralialaan 47, 1402 NJ Bussum, NL; — for order conditions cf. *OA* No. 3214).
The issue contains a personal account of the impressions of the Seventh Int. Symp. Odonatol. (*L. Beukeboom*, pp. 1-2), a list of interesting odon. records in the Netherlands during 1982 and 1983 (*Anonymous*, pp. 3-5), various book reviews (*M. Verdonk, M. Wasscher*; pp. 6-8); and a note on the University of Utrecht Student Award to M. Wasscher, for his work on the cytology of the Sudanese Odon., and for his synecological research on the Netherlands odon. fauna (*B. Kiauta & J.M. van Brink*, p. 8).

(4295) COOK, C.D.K. & K. URMI-KÖNIG, 1983. A revision of the genus Stratiotes (Hydrocharitaceae). *Aquatic Botany* 16: 213-249. — (Inst. Syst. Bot., Univ. Zürich, Zollikerstr. 107, CH-8008 Zürich).
On p. 234, the association between Stratiotes aloides and Aeshna viridis is discussed. It is emphasized that the dragonfly occupies only a part of the geographical range of Stratiotes.

(4296) COOTER, J., 1983. A few insects from Montserrat, West Indies. *Ent. Rec. J. Var.* 95 (9/10): 185-186. — (20 Burdon Drive, Bartestree, Hereford, UK).
Montserrat is a small island, about 30 mi SW of Antigua, Leeward Archipelago. Lepthemis vesiculosa, Orthemis ferruginea, Triacanthagyna trifida and Erythrodiplax umbrata are recorded.

(4297) CORBET, P.S., 1983. [reprint]. *A biology of dragonflies*. Classey, Faringdon, Oxon. XVI+ 247 pp., col. frontispiece excl. ISBN 0 86096 019 6. — Price: £ 15.-. — (Publishers: P.O. Box 93, Faringdon, Oxon SN7 7DR, UK; — Author: Dept Biol., Univ. Dundee, Dundee DD1 4HN, UK).
In the 4 centuries of the history of scientific odonatology there are numerous prolific workers who have very significantly contributed towards the development of this discipline, and without whose works odonatology could never hope to reah the level at which it is at present. The odonatological bibliography, however, includes but a few works that could be classified as absolute, single "milestones" in the development of science about dragonflies. Kirby's "Catalogue", Tillyard's "Biology" and Fraser's "Reclassification" are perhaps among these, and the present volume by Corbet certainly is the most remarkable milestone in modern odonatology. Its original publication, in 1962, has triggered an avalanche of concerted research in areas many of which were previously known from scarcely more than anecdotal accounts and incidental observations, while Professor Corbet's subsequent publications and, above all, the "Corbet Seminars", held traditionally in the framework of the biennial International Symposia of Odonatology, continue to impregnate and stimulate the research as defined and outlined for the first time systematically and with an unprecedented vision in this book. — Since, upon the publication of the first edition, numerous and adequate reviews have appeared in the press (e.g. Ecology 45: 422; 1964), a list of the chapter titles should suffice here, viz. "Habitat selection and oviposition", "The egg stage", "The larval stage: general", "Growth, metamorphosis and emergence", "Adult life: general", "Adult feeding behaviour", "Repro-

ductive behaviour", "Dispersal", and "Evolutionary perspective". — Last but not least, it should be emphasized that no serious odonatologist of any specialisation can afford to miss this work in his/her library, and the book will be absolutely indispensable to the readers of Corbet's forthcoming volume on this subject, which is to appear shortly. It should be also noticed that the first edition of this work, published simultaneously in Britain and in the States, became out-of-print within hardly a decade. It is to be expected that the fate of the present reprint will not be different, the less so in view of the enormous increase of interest in dragonflies during the past few years.

(4298) CORBET, P.S., 1983. Odonata in phytotelmata. *In:* J.H. Frank & L.P. Lounibos, [Eds.], Phytotelmata: terrestrial plants as hosts for aquatic insect communities, pp. 29-54. Plexus, Medford, NJ. — Price of the book (VII+293 pp.): US $ 26.95. — (Author: Dept Biol., Univ. Dundee, Dundee, DD1 4HN, UK; — Publishers: Plexus Publishing, 143 Old Marlton Pike, Medford, NJ 08055, USA).
(1) About 17 genera and perhaps up to 47 spp. have been recorded from phytotelmata. With one exception, their distribution is tropical and embraces all the major biogeographical regions except the Indian subcontinent. — (2) Phytotelmata occupied by Odon. are predominantly epiphytic or terricolous bromeliads, terrestrial plants such as Astelia Freycinetia and Pandanus, bamboo stumps and treeholes. — (3) For Zygoptera, phytotelmata provide a significant larval habitat: at least 10 genera and perhaps up to 36 spp. are apparently closely associated with phytotelmata on a regular basis; they are found (commonly in living plants) in the neotropical, Oriental and Pacific regions, and (rarely, and in treeholes) in the afrotropical and Australasian regions. — (4) For Anisoptera, phytotelmata are insignificant as larval habitats: perhaps only 2 spp. of 1 genus regularly use phytotelmata (in the Oriental region) although spp. of 4 other genera (in the afrotropical and Oriental regions) may do so occasionally. The weakness of this association may reflect constraints imposed by the size and oviposition behaviour of Anisoptera. — (5) The occurrence of Odon. in phytotelmata has biological implications of interest, and suggests fruitful avenues for research. (Author).

(4299) DAVIDSON, S., 1983. Nymphs in the rainforest. *Ecos* 37 (Spring): 32. — (c/o Editor, P.O. Box 225, Dickson, A.C.T. 2602, AU).
With reference to the paper listed in *OA* No. 4086, a narrative, directed at the general reader, is given on the discovery and habits of the terrestrial larvae of Antipodophlebia asthenes and Pseudocordulia sp.

(4300) DEL TANAGO, M.G. & M.G. DE VIEDMA, 1983. Consideracione acerca de los Ephemeroptera, Odonata y Plecoptera del coto nacional de las Sierras de Cazorla y Segura. *Misc. zool., Barcelona* 7 [1981]: 53-66. (With Engl. s.). — (Cát. Zool. & Ent., Escuela Técnica Superior Ingenieros de Montes, Univ. Politécnica, Ciudad Universitaria, Madrid-3, Spain).
The odon. fauna (15 spp.) of the National Game Reserve of the Cazorla and Segura Mts, Jaén prov., Spain is listed and discussed with reference to habitat ecology and altitudinal distribution.

(4301) DONATH, H., 1983. Vier Kleingewässer unter Schutz gestellt. *Biol. Stud. Luckau* 12: 71-73. — (Jahnstr. 6, DDR-7960 Luckau, GDR).
Brief considerations are given on 4 ponds in the area of Luckau, Germ. Dem. Rep., which were recently brought under legal protection. These are of local significance either because of their rich odon. fauna, or as habitats of locally rare spp. Coenagrion lunulatum, Leucorrhinia pectoralis).

(4302) DONATH, H., 1983. Zweiter Nachweis der Arktischen Smaragdlibelle (Somatochlora arctica (Zetterstedt, 1840) in der DDR. *Ent. Nachr. Ber.* 27 (1): 39-40. — (Jahnstr. 6, DDR–7960 Luckau, GDR).
With reference to the paper listed in *OA* No. 3850, a population of S. arctica is reported from the marshes in the Schlaubetal, District Frankfurt/Oder, Germ. Dem. Rep. The

record is evidenced by numerous exuviae and adults though, for the sake of locality protection, the exact location is not stated.

(4303) FINGER, M & [E.R. TINKHAM], 1983. An adventure filled with dragonflies, scientists. *Indio Daily News*, issue of Sept. 22, p. 22. — (Copies from: Dr E.R. Tinkham, 81-441 Date Palm Ave., Indo, CA 92201, USA).
An account of an interview with Dr Tinkham, on his personal experiences on the way to, and during the Seventh Int. Symp. Odonatol., Calgary, Alberta, Canada (Aug. 14-21, 1983).

(4304) FINK, T.J., 1983. A further note on the use of the terms instar, stadium, and stage. *Ann. ent. Soc. Am.* 76 (3): 316-318. — (Dept Ent., Florida A & M Univ., Tallahassee, Fla 32307, USA).
The instar, stadium, stage termonology is not an improvement to the original terminology because it ignores historical precedence and widely used standardized definitions. It is inconsistent and promotes the use of stage (as well as stadium) to mean the time period between successive ecdyses. A viable alternative to this terminology is to use instar and stadium in reference to either ecdysis or apolysis although those using apolysis should clearly state or imply such usage. Stage should be restricted to refer to major and minor divisions of an arthropod's life cycle which are not strictly delimited by ecdyses or apolyses. (Author). — (For different opinions cf. *OA* No. 4292, 4315).

(4305) FRANCHINI, J. & J.-G. PILON, 1983. Action de la température sur le développement embryonnaire d'Ischnura verticalis (Say) (Odonata: Coenagrionidae). *Ann. Soc. ent. Québec* 28 (1): 13-18. (With Engl. s.). – (Dép. Sci. biol., Univ. Montréal, C.P. 6128, Montréal, Qué., H3C 3J7, CA).
In the laboratory, hatching took place at temperatures between 15 and 33° C. Mean time from oviposition to hatching is 42 days at 15° C, and 6.30 days at 35° C. The optimal temperatures for the development are 22.5--32.5° C. Development hatching threshold is at 12.4° C, and it is estimated that 141.34 day--degrees are necessary for completion of the embryonic development. (Authors).

(4306) FREDEEN F.J.H., 1983. Trends in numbers of aquatic invertebrates in a large Canadian river during four years of black fly larviciding with methoxychlor (Diptera: Simulidae). *Quaest. ent.* 19: 53-92. (With Fr. s.). — (Agriculture Canada Res. Stn, 107 Science Crescent, Saskatoon, Saskatchewan, S7N 0X2, CA).
The study of trends in quantities and qualities of invertebrate taxa (incl. Odon.) inhabiting 3 branches of the Saskatchewan River throughout 4 yrs of injections of methoxychlor larvicide indicates that Simulium luggeri may be successfully controlled in a limited portion of the river, without permanently harming major non-simuliid taxa. Ophiogomphus severus and Ischnura sp. are the only Odon. taxa specifically mentioned.

(4307) FRIED, C.S. & M.L. MAY, 1983. Energy expenditure and food intake of territorial male Pachydiplax longipennis (Odonata: Libellulidae). *Ecol. Ent.* 8 (3): 283-292. — (First Author: Ecol. & Evol. Biol., Dept Ent., Cornell Univ., Ithaca, N.Y., USA).
Field observations of males were used to determine how individuals of this sp. allocate energy to different activities during territory occupancy. The effects of biological and physical factors on the species' daily activity pattern were examined. The proportion of time spent in flight was independent of temperature but increased asymptotically with increasing population density. Measurements of assimilation efficiency and the quantity of faeces produced per day were used to calculate daily intake of food. An independent estimate of food consumption was derived from data on gut contents and clearance rate. Food intake appears to exceed only slightly the energy required to maintain a territory, with little available for other activities. The activity pattern may be determined in part by the amount of energy available to individuals. (Authors).

(4308) GAGEL, K., 1983. Libellen an Fliessgewäs-

sem. *Umwelt-Natur-Nationalpark* 2-83 (39): 43-46. — (Göritzenstr. 28, D-8626 Michelau, FRG).
The article is directed at the general reader, characterising the odon. fauna of central European streams in general, and the families Calopterygidae, Gomphidae and Aeshnidae in some detail. Special reference is made to the conservation problematics in Germany, and col. phot. of Ophiogomphus serpentinus and Cordulegaster bidentatus are provided. — (*Abstracter's Note:* No reprints are available from the Author. The journal issue can be ordered, at DM 7.-, from the Publishers, Verlag Morsak, D-8352 Grafenau, FRG).

(4309) GERKEN, B., 1983. *Moore und Sümpfe bedrohte Reste der Urlandschaft.* Rombach, Freiburg. 107 pp., figs incl. [ISBN 3-7930--0295-0]. — Price: DM 39.-. — (Univ. Paderborn-Höxter, An der Wilhelmshöhe 44, D-3470 Höxter-1, FRG).
The book is directed at the general reader, giving a rounded-off account of ecology and conservation problematics of the German moors and bogs. The Odon. are dealt with on pp. 76-83. — (*Abstracter's Note:* It is considered unfortunate and unpractical that the taxonomic names are replaced by vernacular terms. This makes e.g. the graph on pp. 80-81 hardly comprehensible without a beforehand "translation" of the specific names. The general trend of replacing the binomial nomenclature by artificially constructed "vernacular" names is apparent in the contemporary literature throughout the world. At the same time, the role of systematics in the university curricula is being often drastically reduced. In the long term, these developments are not likely to contribute to nature conservation efforts).

(4310) GRIFFIN, G.F., 1983. Rhyothemis graphiptera (Rambur) (Odonata: Libellulidae), a new record from central Australia. *Aust. ent. Mag.* 10 (2, 3): 38. - (12 Cummings St., Alice Springs, N.T. 5750, AU).
A female is reported from Alice Springs, Northern Territory, Feb. 9, 1982.

(4311) HAMMOND, C.O. & R. MERRITT, 1983. *The dragonflies of Great Britain and Ireland. With enlarged illustrations of the British species in colour by the late C.O. Hammond and an illustrated key to the aquatic larval stages by the late A.E. Gardner.* (Second edition). Harley Books, Colchester, Essex. 116 pp., 23 textfigs, 20 col. pls, 45 maps incl. [ISBN 0 946589 00 3]. — Price: £ 16.95. — (Publishers: Martins, Great Horkesley, Colchester, Essex CO6 4AH, UK; — Second Author: 48 Somersby Ave., Walton, Chesterfield, Derbyshire S42 7LY, UK).
This is a substantially revised and updated edition of the volume listed in *OA* No. 2062. The revisor, R. Merritt (Secretary of the British Dragonfly Society, affiliated to SIO), has included additional identification details for a number of spp. and clarified the information given on a few others, described Coenagrion lunulatum (incl. col. figs), first discovered in the British Isles in 1981 (cf. *OA* No. 4156), updated the information on the status and distribution of spp. and included the latest distribution maps (7500 new records), amended the flight periods and various habitat details, and, above all, made several nomenclatural changes to conform to international usage. Several other minor alterations and additions are also made, and a chapter (by N.W. Moore) on dragonfly conservation is included (cf. *OA* No 4328).

(4312) HARDER, J., F. VAN KLAVEREN, H. VAN DE POL & A. VERMEULE, 1983. *Vogelstudie, zoogdieren- en libellenonderzoek in de Mariapeel — [Observations on the birds, mammals and dragonflies in the Mariapeel].* Uitgave Vogelwerkgroep Het Gooi, No. 39, 11+9 pp., map excl. (Dutch). — (Third Author: Calvijnhof 7, Hilversum, NL).
12 odon. spp. are listed from the Mariapeel marshes, Zuid Limburg Prov., The Netherlands. Some field notes on these are also provided.

(4313) HEATH, J. & J. MASSON, 1983. The wildlife of the Bovey Basin. *Nature in Devon* 1983 (4): 33-47. (First Author: 18 High St., Ide, Exeter UK).
The Bovey Basin is a lowland area in Devon,

United Kingdom. The paper is giving a brief account of the general ecology of 19 ponds, with special emphasis on their odon. fauna. Of the 37 spp. which are currently known to breed in Britain, 24 occur in the Bovey Basin, and 6 of these are particularly important because of their national and local rarity.

(4314) HUGGINS, D.G., 1983. The nymph of Somatochlora ensigera (Odonata: Corduliidae). *J. Kansas ent. Soc.* 56 (3): 415-419. — (St. Biol. Surv. Kansas, 2045 Ave. A, Campus West, Lawrence, Kansas 66044, USA).
The ultimate instar (♂, ♀) is decribed and illustrated. The larva is morphologically similar to that of S. filosa, and to a lesser extent to S. linearis. It is apparently a stream inhabitant. A key for the separation of the ultimate instars of the 3 spp. is provided.

(4315) JONES, J.C., 1983. A note on the life history of insects. *Ann. ent. Soc. Am.* 76 (3): 320-321. — (Dept. Ent., Univ. Maryland, College Park, Maryland 20742, USA).
Using the term instar implies one knows when the epidermis retracted from the old cuticle prior to the secretion of a new one. This moment is usually hidden or obscure. The 1st instar forms with dorsal closure at the end of embryonic life within the egg stage: it hatches to enter the 1st juvenile stage. Each succeeding instar forms a pharate individual within the preceding stage. The egg stage includes a pre-zygotic, yolk-filled, chorionated oöcyte which passes through a pre-embryonic period and an embryonic period before becoming an unhatched 1st instar. With the exception of the adult stadium, the duration of a life-history stage is the period either from eclosion to ecdysis, from one ecdysis to the next, or from one ecdysis to the formation of a puparium. The duration of the adult stadium is from emergence of the imago to its death. The term instar cannot exclude either the pupal or adult stages of development. (Author). (For different opinions cf. *OA* Nos 4292, 4304).

(4316) *JOURNAL OF THE BRITISH DRAGONFLY SOCIETY*. Vol. 1, No. 1. Dated April, 1983. Edited by R. Merritt (48 Somersby Ave., Walton, Chesterfield, Derbyshire S42 7LY, UK). Available from the same address.
The first issue of the new periodical contains the papers that were published earlier in the Newsl. Br. Dragonfly Soc. (cf. *OA* No. 4108). the journal is to appear semiannually (Apr., Nov.), and will contain technical papers only. The organisational news will appear in the Newsletter (cf. *OA* No. 4330), which is to be issued annually.

(4317) KAUFMANN, J.H., 1983. On the definitions and functions of dominance and territoriality. *Biol. Rev.* 58: 1-20. — (Dept Zool., Univ. Florida, Gainesville, Fla 32611, USA).
A useful general review of territoriality, incl. references to Odon.

(4318) KELM, H.-J., 1983. Neue Funde von Coenagrion armatum Charpentier 1840 in Schleswig-Holstein. *Drosera* 83 (1): 13-14. (With Engl. s.). — (Bockhorner Allee 1, D-2160 Stade, FRG).
C. armatum is reported from a locality NE of Husum and from the Amrum island (both 1982). These are the first records of this sp. in Schleswig-Holstein (FRG) after the unusually hot summers of 1975 and 1976.

(4319) KUHN, J., 1983. Naturschutzgebiet "Schmiechener See": Zustand und Veränderungen, Probleme und Hilfsprogramm. *Mitt. Ver. Naturw. Math. Ulm* 32: 1-21. — (Marktstr. 26, D-7902 Blaubeuren, FRG).
5 odon. spp. are listed from his Nature Reserve, Württemberg, FRG.

(4320) KUKALOVA-PECK, J., 1983. Origin of the insect wing and wing articulation from the arthropodan leg. *Can. J. Zool.* 61 (7): 1618-1669. (With Fr. s.). — (Dept. Geol., Carleton Univ., Ottawa, Ont. K1S 5B6, CA).
The most primitive known pterygote terga, wing articulation, wings, and upper leg segments with exites, occur in gigantic Upper Carboniferous Paleodictyoptera. Homoiopteridae. Fossil features are used as clues for reinterpreting some structures connected with flight in modern Pterygota. Brief comparisons with Paleozoic Diaphanopterodea, Permo-

themistida, Ephemeroptera, Protodonata, and with living Ephemeroptera. Odonata, and Neoptera are given. The wing articulation of all Pterygota is derived from a common ancestral ground plan based upon features present in fossils. The ancestral wings were articulated by a closely packed band of multiple sclerites which were hinged to eight lateral tergal lobes, and aligned with eight pairs of wing veins. The axillaria of Neoptera and axillary plates of Paleoptera are composite sclerites, which originated by fusion of several sclerites of the original band. Articular patterns of Paleoptera and Neoptera evolved differently and show (1) the presence or absence of a gap at the cubital level, (2) the presence or absence of a turning-pivoting composite third axillary sclerite (3Ax), and (3) a different composition of all composite sclerites. Gliding and wing folding adaptations within the articular band are discussed. A new fossil-based interpretation of veinal stems, veinal sectors, and of their fluting near the wing base is offered. An underlying symmetry of thoracic tergal sulci, articular sclerites, and wing venation seems to point to a nearly symmetrical, nonflying pro-wing engaged in up-and-down movement. Evidence of articulation in Paleozoic nymphal wings and evolution of metamorphic instars are examined. Pitfalls of paleoentomological work are discussed. Criteria for major divisions of Pterygota are reassessed. It is hypothesized that the wing originated from the first segment (epicoxa) of the euarthropodan upper leg and its exite. An epicoxal podomere became incorporated into the body wall and broke up into an articular ring of dorsal and ventral sclerites, and an epicoxal exite flattened and became a pro-wing. The pro-wing originally operated on a row of pivots from the epicoxa and subcoxa (pleuron) and became mobilized by epicoxal leg musculature. (Author).

(4321) MADRID, F., 1983. Odonatos: plaga en las fases iniciales del cultivo intensivo de la "cachama" Colossoma macropamus. *Resum. VIII Congr. venez. Ent., Barquisimeto*, p. 29. — (Estación Piscicult., Esc. Agron., Univ. Centro Occidental, Barquisimeto, Edo. Lara, Venezuela).
Indicative abstract, relative to life history and ecology of some locally abundant Anisoptera. The locality name and the species list are not provided.

(4322) MAQUET, B., 1983. Caractéristiques chimiques et biologiques des eaux de la Vallée du Samson. *Annls Soc. r. zool. Belg.* 113(1): 3-18. (With Engl. s.). — (UNECED, 61 rue de Bruxelles, B-5000 Namur).
Calopteryx virgo and Cordulegaster bidentatus are reported from the Samson Riv., Namur Prov., Belgium.

(4323) MARTIN, F.J., 1983. Contribución al estudio de los zigópteros (Odon.) de la provincia de Madrid. *Boln Asoc. esp. Ent.* 6 (2): 159-172. (With Engl. s.). — (Cát. Zool. Artróp., Fac. Biol., Univ. Complutense Madrid, Ciudad Universitaria, Madrid-3, Spain).
A detailed account of a collection (1427 spec., 24 spp.), brought together (1979) in the province of Madrid, Spain. Erythromma viridulum, I. elegans, I. pumilio and Lestes sponsa were not previously reported from this region. Data on biology and local distribution are also provided.

(4324) MATSUKI, K., 1983. Description of the larvae of three Chlorogomphus species of Taiwan (Cordulegasteridae; Odonata). *Nature & Insects* 18 (9): 8-12. (Jap., with Engl. title). — (3-23-5-103, Mihara, Asaka, Saitama Pref., 351, JA).
The ultimate instars of V.b. brevistigma, C. risi, and C. suzukii are described, figured and keyed.

(4325) MERRITT, R., 1983. An introduction to the study of dragonflies in Devon. *Nature in Devon* 1983 (4): 7-28. — (48 Somersby Ave., Walton, Chesterfield, Derbyshire S42 7LY, UK).
The paper gives a general introduction to the Order, aiming at local, non-professional naturalists. The general chapters are dealing with the habitats of the adults and larvae, population assesment, life history, and dispersal. Of particular importance is the summary

of the results of the author's 6-yr survey of the distribution of the Devon dragonflies (26 spp.), documented by maps. The annotations on habitats and phenology, given for each sp., will also be of more than local interest.

(4326) MIYAKAWA, K., 1983. On the types of mating behaviour and oviposition in the genus Calopteryx (Odonata). *Nature & Insects* 18 (9): 2-7. (Jap., with Engl. title). — (Imafuku 1024, Kawagoe, Saitama Pref., 356, JA).
8 modes are defined.

(4327) MIYAKAWA, K., 1983. Status of Calopteryx japonica Selys of c. virgo-group (Odonata, Zygoptera). *Kontyû* 51 (2): 192-202. — (Imafuku 1024, Kawagoe, Saitama, 356, JA).
Based on detailed morphological and morphometrical considerations of various taxa of the C. virgo complex, the species status for the East Asiatic C. japonica is proposed.

(4328) [MOORE, N.W.], 1983. The conservation of dragonflies. *In:* C.O. Hammond & R. Merritt, The dragonflies of Great Britain and Ireland, pp. 16-18. Harley Books, Colchester, Essex. — (The Farm House, Swavesey, Cambridge CB4 5RA, UK).
The principal threat to the British dragonfly fauna is the loss or destruction of suitable habitats; 4 of the 41 spp. which bred regularly in the British Isles have almost certainly become extinct. [One of these, Lestes dryas, has been recently found at 2 localities in Essex, as mentioned in a Postscript on p. 10 of the same volume]. Conservancy problematics and measures are briefly described, and reference is made to the Odonata Specialist Group of the IUCN Species Survival Commission, constituted and headed by the Author, and publishing, jointly with SIO, a periodical series of Reports (cf. *OA* No. 3683). — (Cf. also *OA* No. 4311).

(4329) MORATORIO, M. & J. DE MARMELS, 1983. Aspectos de la ecologia de la fauna de insectos de los Llanos Occidentales de Venezuela. 2. Variacion estacional, abundancia diversidad y biomasa de los Odonata del modulo "F. Corrales" de la Unellez. *Resum. VIII Congr. venez. Ent., Barquisimeto*, pp. 28-29. — (First Author: Vicerectorado Producción Agrícola, Univ. Nac. Experimental Llanos Occidentales, Mesa de Cavacas, Guanare 3323, Edo. Portuguesa, Venezuela).
Indicative abstract on the results of the 1981-1982 sampling in Municipio Mantecal, Edo. Apure, Venezuela.

(4330) *NEWSLETTER [of the] BRITISH DRAGONFLY SOCIETY*, No. 2 (Sept., 1983). — (c/o R. Merritt, 48 Somersby Ave., Walton, Chesterfield, Derbyshire S42 7LY, UK).
The lay-out and scope of the periodical, as listed in *OA* 4108, were drastically changed. The broadsheet Newsletter will contain only the organisational news, while technical papers are to appear in a separate periodical, "Journal of the British Dragonfly Society" (cf. *OA* No. 4316).
The present issue contains information on the constitution of the Committee of the Society, on finances, publication program, meetings, and on photographic activities. In addition, there is a section on the SIO news.

(4331) np, 1983. Auf der Suche nach Lebensraum. Die Blauflügel-Prachtlibelle braucht unverbaute Bäche. *Badische Neuste Nachrichten, Karlsruhe* 1983 (215), issue of Sept. 17.
An appeal for the conservation of dragonfly habitats, published in a local daily.

(4332) *ODONATA RECORDING SCHEME NEWSLETTER*, No. 7 [issue number not stated]. (Sept., 1983). — (c/o National Organiser, R. Merritt, 48 Somersby Ave., Walton, Chesterfield, Derbyshire S42 7LY, UK).
The issue contains a brief report of the 1983 British and Irish records. Of particular interest are Lestes dryas, Coenagrion lunulatum, and C. mercuriale. The workers are requested to continue sending the United Kingdom odonate records to the National Organiser (cf. address above), but those from Ireland (Eire) should be henceforth sent to Mr C. Ronayne, 33 Dublin Rd, Skerries, Co. Dublin, Eire.

(4333) PAULSON, D.R., 1983. *Working list of the*

Odonata of South America. Stencil, published by the Author. 21 pp. — (Washington St. Mus., Univ. Washington, Seattle, Wash. 98195, USA).
All hitherto known South American spp. are listed, and their distribution is country-wise indicated.

(4334) PAULSON, D.R. & S.W. DUNKLE, 1983. *English names proposed for North American Odonata.* Stencil, published by the Authors, for the Odon. Specialist Group Int. Un. Conserv. Nat., 8 pp. — (First Author: Washington St. Mus., Univ. Washington, Seattle, Wash. 98195, USA).
A list of artificial family-, genus- and species group names. Some, mostly generic, names are traditional in North American general literature, the others are based on the taxonomic names and/or on the biological features of the taxa concerned. The choice of the latter is in most cases excellent, bearing witness of the Author's great field knowledge of the North American fauna.

(4335) PITTAWAY, A.R., 1983. In de stilte van de oaze. *Panda* 19 (7/8): 102-103. (Dutch). — (Author's address not stated).
Dutch version of the paper listed in *OA* No. 4212.

(4336) SATO, Y., 1983. [*Marvelous life of Calopteryx cornelia*]. Comprehensive Science No. 6. Sacra Shobo, Tokyo. 64 pp., 35 col. & 15 monochr. figs incl. [ISBN4-378-03806-4 NDC486]. (Jap.). — Price: ¥ 980. — (Author: 3-17-16, Narita-nishi, Suginami-ku, Tokyo, 162, JA).
The book is directed at middle and top primary-school children (aged 9-12), and it is dealing with reproductive behaviour of C. cornelia and Mnais pruinosa costalis. The author is an excellent dragonfly photographer, and the beautiful col. photographs will certainly help to comprehend dragonfly behaviour under natural and experimental conditions (plastic dummies). The chapter titles are: "An expert diver Calopteryx cornelia", "C. cornelia and its allies", "Various poses of C. cornelia", "Tombo-tsuri [= dragonfly fishing] with artificial models", "Plastic dragonfly models", and "Numerous problems left". — (*Abstracter's Note*: an Engl. translation of the fig. captions is available from the Editors of Odonatologica).

(4337) SCHNEIDER, W., 1983 Zur Eiablage von Erythromma viridulum orientale Schmidt 1960. (Odonata: Zygoptera: Coenagrionidae). *Ent. Ztschr. Frankfurt/Main* 93 (16): 225-229. — (Inst. Zool., Univ. Mainz, Saarstr. 21, D-6500 Mainz, FRG).
The oviposition behaviour (Orontes Riv., nr Asarna, Syria) is described (in Myriophyllum spicatum, ♂ attendance, ♀ submerging the abd. up to the 4th segm. only).

(4338) *SELYSIA. A newsletter of odonatology.* Vol. 12, No. 2 (Sept. 1, 1983). Compiled by M.J. Westfall & M.S. Westfall, Dept Zool., Univ. Florida, Gainesville, Fla. — (c/o Dr M.J. Westfall, Jr, Dept Zool., Univ. Florida, Gainesville, Fla 32611, USA).
Westfall, M.J. (address above): Montgomery research materials in Gainesville (20-23); — [*Arai, Y.*] (1233-2, Oaza Sueno, Yorii-machi, Osato-gun, Saitama Pref., 369-12, JA): First meeting of Kanto odonatologists (23); — *Mathavan, S.* (Sch. Biol. Sci., Madurai Kamaraj Univ., Madurai-625021, India): First Indian Symposium of Odonatology (24); — *Mill, P.* (Dept Pure & Appl. Zool., Univ. Leeds, Leeds LS2 9JT, UK): British dragonfly Society (24); — [*Westfall, M.J.*] (address above): British Dragonfly Society Newsletter (24); — *Council of Europe/Conseil de l'Europe:* Protection of dragonflies and their biotopes (25); — [*Westfall, M.J.*] (address above): Reprint available of Philip Corbet's "A biology of dragonflies" (25-26); — De Libellen van Nederland [Engl.] (26-27); — *May, M.L.* (Dept Ent.& Econ. Zool., Ruthers Univ., New Brunswick, NJ 08903, USA): New Jersey Odonata (26); — *Additions* and changes to list of S.I.O. members (26-28); — [Abstracts of doctoral dissertations]: *Carle, F.L.* (146 Mountain View Rd, Warren, NJ 07060, USA): A contribution to the knowledge of the Odonata 28-30); *Nicholls, S.P.* (Physics Lab., Univ. Bristol, Tyndall Ave., Bristol BS8

ITL, UK): Ion balance and excretion in Libellula quadrimaculata (Odonata: Libellulidae) (30); — *Dillon, P.M.* (Div. Biol. Sci., Univ. Michigan, Ann Arbor, Mich. 48109, USA): Community dynamics in odonates: interactions within and between life stages (30--31); — (*Anonymous*): Contactblad No. 5 [Engl.] (31); — *Kiauta, B.* (Dept Anim. Cytogen., Univ. Utrecht, Padualaan 8, Utrecht, NL): Eighth International Symposium of Odonatology to be held in Paris, 1985 (31-32); — *Davies, D.A.L.* (2 Edendale Close, Hills Ave., Cambridge CB1 4XD, UK): B.B.C. to air program on dragonflies? (32); — (*Anonymous*): Arbeitskreis Libellen im Kanton Bern [Engl.] (32); — Gesellschaft deutschsprachiger Odonatologen [Engl.] (32).

(4339) STOLTZE, M. & P. NIELSEN, 1983. *Truede insekter.* — [Threatened insects]. Provinsbanken, København. 4 pp. (Dan.). — (Dept. Ent., Zool. Mus., Universitetsparken 15, DK-2100 København-Ø).
A small pamphlet on threatened Danish butterflies and dragonflies, showing water paintings of 3 spp. of each order, and giving their brief ecological characterisations. It was published by a local bank, and distributed to Danish primary schools.

(4340) TENNESSEN, K.J., 1983. A new species of Gomphus from Tennessee (Odonata: Gomphidae). *Ann. ent. Soc. Am.* 76 (4): 743-746. — (1949 Hickory Ave., Florence, Alabama 35630, USA).
G. (G.) sandrius sp. n. (holotype ♂, allotype ♀; Fall Creek, Shelbyville, Bedford Co., June 11, 1980; deposited in Florida St. Coll. Arthropods, Gainesville) is described and illustrated. It is structurally similar to G. graslinellus Walsh.

(4341) WAKANA, I. & Y. WAKANA, 1983. Odonata fauna of Yamanashi Prefecture, 2nd report. *Nature & Insects* 18 (9): 13-21. (Jap., with Engl. title).
62 spp. are listed and annotated. Japanese names are used only.

(4342) WATT, J.C., 1983. Hexapoda, Myriapoda and Arachnida. *In:* P.J. Brownsey & A.N. Baker, [Eds], The new Zealand biota — what do we know after 200 years? Misc. Ser. natn. Mus. N.Z. 7: 62-67. — (Ent. Div., DSIR, Auckland, NZ).
The Author gives 12 as the number of spp. of Odon. in New Zealand. Endemism in New Zealand groups is very high, over 90% in most orders. With the exception of very dispersible groups like some Lepidoptera, aphids, spiders, Odon., and locusts, most non-endemic spp. have been artificially introduced.

(4343) WINSTANLEY, W.J., 1983. Notes on Hemicordulia australiae (Odonata: Corduliidae) from the New Zealand region. *N.Z. Entomologist* 7 (4): 457-460. — (Zool. Dept, Victoria Univ., Private Bag, Wellington, NZ).
H. australiae is recorded for the first time from Mayor Island. The specimens are identical with the form from the Kermadec Islands and Norfolk Islands, but differ from the form established on the New Zealand mainland. It is not certain whether or not the 2 forms represent separate species; both of them occur in eastern Australia.

(4344) WINSTANLEY, W.J. & R.L. BROCK, 1983. Some Odonata from Norfolk Island. *N.Z. Entomologist* 7 (4): 455-456. — (Zool. Dept, Victoria Univ., Private Bag, Wellington, NZ).
Records of a small collection (4 spp.) are presented. Differences between exuviae of Hemicordulia australiae from Norfolk Island and New Zealand are figured and briefly discussed.

(4345) YAMAMOTO, Y., 1983. On the habitat and behavior of Platycnemis foliacea sasakii Asahina (Zygoptera, Platycnemididae). *New Entomol.* 32 (1): 7-12. (Jap., with Engl. title). — (1-2, Inafune Bldg, Inafune-dori, Chikusa--ku, Nagoya, 464, JA).
A detailed study on the subject.