ODONATOLOGICAL ABSTRACTS

1971

(362) BIBER, O., 1971. Contribution à la biologie de reproduction et l'alimentation du Guêpier d'Europe Merops apiaster en Camargue. Alauda 39 (3): 209-212. (*Stat. biol. Tour de Valat, F-13 Le Sambuc*).
A tabular analysis is given of insect debris found in 176 pellets of the Bee-Eater, Merops apiaster, collected in Camargue, France, from 1969 through 1970. In May, in 109 pellets, 1 odon. specimen was encountered, in June 0.3 in 10 pellets, and in July 2 specimens in 57 pellets. The odon. spp. were not further identified. The figures do not seem to differ significantly from those for Diptera, while they seem lower than those for Coleoptera, and higher than those given for Lepidoptera. A comparison of the composition of adult pellets with food offered to young birds shows that Odon. and, in general, larger preys occur more often in the latter than in former.

(363) CAMPANELLA, P.J. & L.L. WOLF, 1971. A temporal lek as a mating system in a temperate zone dragonfly. Am. Zool. 11 (4): 627. (Abstract only). - (*Dept. Biol., Univ. Syracuse, Syracuse, N.Y., USA*).
The behavioral ecology of Plathemis lydia (Drury) as studied at several ponds in upstate New York, USA. Animals were captured, marked and released. The population exhibited a daily peak in mating and territoriality. Males actively competed for territorial sites over or near water and showed site specificity with turnover in territorial residents during the day. These defended sites served only as mating stations, not as feeding areas. The dominance of a male, defined by its ability to hold a territory at times of predictable daily peaks of mating attempts, appeared to be an age- related phenomenon. The organization of the mating system was similar to a lek, but with temporally rather than spatially related dominance of individual males. (Verbatim).

(364) CASSAGNE-MEJEAN, F., 1971. Sur un hydrachnelle du Massif du Carouw Arrenurus leuckarti Piersig, 1894. Acarologia 13 (1): 152-155. - (*Lab. Zool., Fac. Sci., Univ. Montpellier, Place E. Bataillon, F-34 Montpellier*).
Both sexes of the mite are described in detail. Larvae were collected from the metasternum of the zygopteran Pyrrhosoma nymphula (Sulz.), captured in the Haut-Languedoc Natural Park, Massif du Caroux, France (alt. 780 m, July 1967), and reared to adulthood in the laboratory on Daphnia sp. and Cypris sp. This is the first record of the mite for the higher elevations and central France.

(365) CHUTTER, F.M., 1971. Hydrobiological studies in the catchment of Vaal Dam, South Africa. Part 2. The effects of stream contamination on the fauna of stones-in-current and marginal vegetation biotopes. Int. Revue ges. Hydrobiol. 56 (2): 227-240. - (*Natal Regional Lab., National Inst. Water Res., P.O.B. 1, Congella, Natal, ZA*).
The fauna of stones-in-current and marginal vegetation biotopes in streams and rivers in

the Vaal Dam catchment affected by effluents is compared to that of the same biotopes in natural streams and rivers in the same area. The only odon. referred to are not further identified Pseudagrion spp. Their mean seasonal density in marginal vegetation of contaminated and uncontaminated sampling points was higher in biotopes sheltered from the current than in those exposed to it.

(366) COSTA, J.M., 1971. Contribuição ao conhecimento da fauna odonatológica do Município de Santa Maria, Rio Grande do Sul. (Contribution to the odonate fauna of the Municipality of Santa Maria, Rio Grande do Sul). Atas Soc. biol. Rio de Janeiro 14 (5-6): 193-194. (Portuguese). - (*Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil*).
A brief geographic description of the municipality (3462 km^2), situated in the State of Rio Grande do Sul, Brazil, is followed by an annotated faunistic list of 29 spp., 3 of which are identified to the genus only.

(367) EDGAR, W.D., 1971. Aspects of ecological energetics of the wolf spider, Pardosa (Lycosa) lugubris (Walckenaer). Oecologia, Berl. 7: 136-154. - (*Dept. Zool., Univ. Glasgow, Glasgow W 2, UK*).
Feeding experiments were carried out on various stages of the wolf spider Pardosa lugubris in order to construct an energy budget for the spider. Under the rearing conditions the spiders developed at a similar rate to those in the field. The spider's annual population energy budget is compared with that of the odon. Pyrrhosoma nymphula, since the latter has a similar life cycle as the former. Although the magnitudes of the various components of the energy budget are larger in the dragonfly, there are similarities between the 2 spp. Thus the amount of energy "killed" per unit of predator biomass is similar and a similar proportion of this energy is returned to the ecosystem, although proportionally more goes into decomposers in the case of the spider.

(368) HEATH, J., 1971. Insect distribution maps scheme progress report 1971. Entomologist 104 (1302-1303): 305-310. - (*Biological Records Centre, Nature Conservancy, Monks Wood Expl Stn, Abbots Ripton, Huntingdon, PE17 2LS, UK*).
The odon. scheme started in early 1968 and now has some 200 participants, 64 of whom have sent in records. These are from 500 ten km squares. The scheme applies to Great Britain, but the data are now being made available to the European Invertebrate Survey. All collectors, both from the United Kingdom and from other European countries, who would like to take part in the scheme, are invited to contact the author, from whom full details together with record cards and instructions are available. (Cf. also *OA* No. 392).

(369) INGRAM, B.R., 1971. The effects of photoperiod and temperature on nymphs of two species of damselflies (Odonata: Zygoptera). Am. Zool. 11 (4): 702. (Abstract only). - (*Dept. Biol., Clemson Univ., Clemson, S.C., USA*).
This is a brief abstract of the University of North Carolina thesis listed in *OA* No. 155. Verbatim text: Field studies in small ponds near Highlands in western North Carolina, USA, revealed that the life cycle of Enallagma hageni was completely univoltine, while populations of E. aspersum, although primarily univoltine, consisted of a few individuals that were able to complete their development and emerge in approximately five months (bivoltine). Nymphs of both species were collected in various instars at intervals from August to March and subjected to 11- and 14-hour photoperiods at 16° and 21° C. Development (days to emergence) was generally completed more rapidly upon exposure to long daylengths. Developmental times descreased from a maximum in August to an minimum in March in all regimes. Growth rates under long photoperiods were similar for both species at the higher temperature; short photoperiods, however, were more inhibitory to E. hageni. The photoperiodic responses of E. hageni were similar at both temperatures, being only slightly slower for each experimental condition at the lower temperature. In contrast, no photoperiodic response by nymphs of E. aspersum occurred

at the lower temperature. Supernumerary molts usually accompanied reduced rates of development in both species regardless of photoperiod. Abnormal wing-pad development was frequently associated with the supernumerary molts in the later nymphal instars. Abnormal wingpads were found only in nymphs exposed to the higher temperature, primarily under short daylengths where extra molts were more numerous and growth rates were lower than under long daylengths. The responses of the 2 spp. in the laboratory relate to their different life cycles in nature.

(370) MARTINI, E., 1971. Neue Insektenfunde aus dem Unter-Oligozän von Sieblos/Rhön. Senckenberg. leth. 52 (4): 359-369; Taf. 1-2. - *(Geol.-Paläontol. Inst., Univ. Frankfurt a. Main, D-6 Frankfurt a. Main, GFR).*

29 incomplete larval specimens of a Lestes sp., recovered from the Lower Oligocene beds of Sieblos, Rhön, German Federal Republic are tentatively ascribed to Lestes vicina Hagen. The latter is the only Lestes sp. hitherto described in the adult stage from the same beds. A detailed description of the larval material is accompanied by 5 photographs. Considerations on the facies and a comparison of the latter with the ecological features of the living Lestes spp. are added. The plesiotypes are deposited in the Forschungs-Institut und Natur-Museum Senckenberg, Senckenberg Anlage 25, D-6 Frankfurt/Main, GFR (Catalogue Nos. SMF VI 205-211).

(371) MATSUZAKI, M., 1971. Electron microscopic studies on the oogenesis of dragonfly and cricket, with special reference to the panoistic ovaries. Dev. Growth and Differ. 13: 379-398. - *(Lab. Biol., Fac. Educ., Univ. Fukushima, Fukushima, 960, JA).*

The successive ultrastructural changes during oogenesis of Sympetrum frequens (Odon., Libellulidae) and Gryllus yemma (Orth., Gryllidae) were studied. The structures of the terminal filament and boundary between the terminal filament and the germarium differed from each other in the 2 spp.; in S. frequens the boundary between the terminal filament and the germarium was a special acellular transverse septum, whereas in G. yemma it was composed of several flattened cells which seemed to be similar to the pre-follicular cells in the germarium. Nucleolar extrusions and emissions of the outer nuclear envelope were observed frequently during previtellogenesis in young oocytes. Electron dense masses were observed in the oocyte cytoplasm of S. frequens which seemed to be "yolk nuclei" or "Balbiani bodies" and were composed of aggregated small particles (ca 200 A in diameter). They were gradually dispersed in the cytoplasm until the onset of vitellogenesis. In both S. frequens and G. yemma yolk precursors seemed to be incorporated into oocytes by micropinocytosis as observed in various animals. The egg membranes, viz., the vitelline membrane and the chorion, seemed to be formed by secretion products from follicle cells which developed rough ER and Golgi bodies. Thus, both were assumed to be secondary egg membranes.

(372) NELSON, J.M., 1971. The invertebrates of an area of Pennine Moorland within the Moor House Nature Reserve in northern England. Trans. Soc. Br. Ent. 19 (2): 173-235. - *(Nature Conservancy, 12 Hope Terrace, Edinburgh-9, UK).*

Among 156, 264 invertebrate specimens systematically collected in the area from 1963 through 1967 only 3 odon. spp. were recorded. Aeshna juncea is the only one resident; its larvae were found in 2 peat pools examined, while they were lacking in the alluvial pools.

(373) OPLER, P.A., 1971. Mass movement of Tarnetrum corruptum (Odonata: Libellulidae). Pan-Pacif. Ent. 47 (3): 223. - *(Dept. Biol., Univ. California, Berkeley, Cal. 94720, USA).*

On September 25, 1970, between 17.30 and 18.00 hrs. a unidirectional mass movement of T. corruptum was observed at Albany, California, USA. No individuals were noted on the days before or after. Similar migration has been observed on September 24-26, 1963 at nearby Kensington. The hour and flight direction were the same in both observations. It is suggested that these observations reflect an event of at least periodic recurrence or

are highly coincidental.

(374) PILON, J.-G. & L. FERNET, 1971. Données sur l'émergence de certaines espèces d'Odonates à émergence printanière ou estivale. Ann. Soc. ent. Que. 16 (3): 133. - (*Dépt. Sci. biol., Fac. Arts Sci., Univ. Montréal, C.P. 6128, Montréal-101, P.Q., CA*).
A note stating that Enallagma vernale and E. boreale are spring species, while Lestes disjunctus and Sympetrum danae have a summer species life history pattern. The observations were carried out at Saguenay, Canada. (Cf. *OA* No. 72).

(375) POPCHENKO, V.I., 1971. Potreblenie maloshchetinkovych chervei rybami i bespozvonochnymi. (Consumption of oligochaete worms by fish and invertebrates). Vop. ihtiol. 11 (1): 96-102. (Russian). - (*Konchezerskaya Biol. Stn, Petrozavodsk State Univ., Petrozavodsk, USSR*).
The larvae of Aeshna sp. and Cordulia aenea are listed as consumers of the oligochaete Chaetogaster diastrophus, C. diaphanus and Pristina sp.

(376) PRENTICE, M.A. & G.E. EALDEN, 1971. A suction dredge for collecting Biomphalaria and other molluscs from deep water. Bull. Wld Hlth Org. 45 (2): 257-259. - (*Vector Control Div., Ministry of Health, Kampala, Uganda*).
A detailed technical description is given of a suction dredge, constructed for collecting samples of lake-bottom fauna. It can be used continuously over any type of bottom and the collected material is presented as a well-washed, silt-free sample. The generous working clearances of the pump and the flexible diaphragm result in a minimal damage to live material. Odon. larvae are delivered unharmed. The instrument is at least 120 times as efficient as an Eckman grab.

(377) SANTOS, N.D. dos, 1971. Contribuição ao conhecimento da fauna do Estado da Guanabara. 76. Descrição da ninfa de Perithemis electra Ris, 1930 e notas sobre o macho (Odonata: Libellulidae). (Contribution to the knowledge of the fauna of the State of Guanabara. 76. Description of the nymph of Perithemis electra Ris, 1930 and notes on the male [Odonata: Libellulidae]). Atas Soc. biol. Rio de Janeiro 14 (3-4): 49-50. (Portuguese). (Date of publication January 27, 1971, and not 1970 as printed on the reprints). - (*Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil*).
The ultimate instar larva is described and illustrated on the basis of material from Columbia and from various Brazilian localities. The chronological sequence of the process of ecdysis, as observed under laboratory conditions, is briefly outlined. Measurements of exuviae and notes on wing venation in the male are added.

(378) SANTOS, N.D. dos, 1971. Contribuição ao conhecimento da fauna do Estado da Guanabara e arredores. 77. Descrição de Hetaerina hebe Selys, 1853 (Odonata-Agrionidae). (Contribution to the knowledge of the fauna of the State of Guanabara and its vicinity. 77. Description of Hetaerina hebe Selys, 1853 [Odonata-Agrionidae]). Atas Soc. biol. Rio de Janeiro 14 (3-4): 89-90. (Portuguese). (Date of publication January 27, 1971 and not 1970 as printed on the reprints). - (*Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil*).
The ultimate instar larva is described and illustrated on the basis of material from the State of Rio de Janeiro, Brazil. Measurements of the exuviae and notes on ecdysis are added.

(379) SINGH, P. & B.P. PANDE, 1971. Experimental prosthogonimiasis in 4-6-month-old pullets and laying hens with special reference to pathological lesions. Indian J. Anim. Sci. 41 (2): 122-136. - (*Veterinary Hospital,Maharajganj, Raebareli, U.P., India*).
Infection experiments with varying doses of metacercariae of Prosthogonimus ovatus, collected from numerous specimens of Brachythemis contaminata, Orthetrum sabina, Pantala flavescens and Trithemis pallidinervis, were conducted in 11 clean pullets of 4-6 months age and in 2 clean laying hens; 6 were kept as uninfected controls. The symptoms observed were quantitative and qualitative effects on the egg production; The autopsical observations on the lesions, including their

histopathology, are described in detail. The experiments have brought to light several hitherto unknown aspects relating to the behaviour of the parasite, viz. its migration out of the oviduct and development of etopic foci. (Authors).

1972

(380) ANDERSON, D.T., 1972. The development of hemimetabolous insects. In: S.J. Counce & C.H. Waddington (Eds.), Developmental Systems: Insects. Vol. I, pp. 95-163. Academic Press, London-New York. - (*School Biol. Sci., Univ. Sydney, AU*).
This is a comparative survey of the embryology of the hemimetabolous insects, divided into chapters on the eggs, cleavage and blastoderm formation, the differentiated blastoderm, elongation and segmentation of the germ band, gastrulation, extraembryonic membranes, somites and ganglia, rupture of the embryonic membranes (katatrepsis), further development of the embryonic ectoderm, the gut, and the mesoderm and gonads, and the composition of the head in hemimetabolous insects. A section on the phylogenetic relationship of the Hemimetabola, based on comparative embryology is added. Odon. are extensively referred to on appropriate places.

(381) ANDRIÈS, J.-C., 1972. Genèse intraépithéliale des microvillosités de l'epithélium mésentérique de la larve d'Aeschna cyanea. J. Microscopie 15 (2): 181-204, pls. I-VIII. - *(Lab. Biol. anim., Univ. Sci. Techn. Lille-I, B.P. 36. F-59650 Villeneuve d'Ascq).*
The differentiation of the brush border of the midgut cells was studied in Aeschna cyanea during the larval intermolt and during metamorphosis. The microvilli are situated in a cap of dense extracellular material which contains polysaccharides (glycocalyx). Small dense vesicles from the Golgi region fuse to fashion vesicules, reaching 0.2μ of diameter. These fuse with the intracellular space at the top of the cell during differentiation, forming a cap. The membrane which limits the vesicles probably provides the membrane for the future microvilli. A number of electron micrographs (up to 175.00 x) is added. (Author).

(382) BAYLY, I.A.E., 1972. Salinity tolerance and osmotic behavior of animals in athalassic saline and marine hypersaline waters. Ann. Rev. Ecol. Syst. 3: 233-268. - (*Dept. Zool., Monash Univ., Clayton, Victoria, AU*).
On the basis of their ecology, Ischnura aurora and Erythrodiplax berenice are considered to belong probably to a group of insects whose larvae are capable of a slight degree of hypo-osmotic regulation and can survive in media with a considerable concentration. Their osmotic behaviour, however, has not yet been investigated. The organisms of this group are characterized by a rather low concentration of inorganic ions in the body fluid and by the fact that about half the observed O.P. of the blood is due to an unidentified organic compound or compounds. Water loss by osmotic extraction is replenished by drinking the medium and then excreting the salt in a hyperosmotic rectal fluid. The permeability of the body wall to water is fairly high, but to ions it is low and most of the salt exchange occurs through the gut. It seems that the mechanism of osmoregulation is essentially similar to that in dipteran larvae occurring in athalassic saline waters, but the effects of the higher permeability of the body wall are reduced by a high concentration in the haemolymph of some organic compound which reduces the osmotic gradient.

(383) BELYSHEV, B.F., 1972. Dependence of dragonflies distribution on ecological factor-humidity in Northern Eurasia [sic!]. Izv. sib. Otdel. Akad. Nauk SSSR, ser. biol., 15 (1): 131-133. (Russian, with Engl. s.). - (*Biol. Inst., Siberian Branch USSR Akad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR*).
On the basis of a comparison of the odon. faunas of the humid Southern Primorye and the rather dry Transbaikalia, both USSR, the conclusion is drawn that the climatic factor, humidity, does not exercise any influence on the composition of the odon. faunas in the Temperate Region. On the other hand, there are pronounced differences between the faunas of Indochina and Hindustan and between those of the Congo basin and

the savannas of E. Africa. It is suggested that the latter are due to the chorogeographic conditions rather than to the climate.

(384) BELYSHEV, B.F., 1972. Odonatofauna ostrovov mirovogo okeana. (Odonate fauna of the oceanic islands). In: Ostrovnye fauny mirovogo okeana. (Abstr. Pap. Symp. Faunas of Oceanic Islands), pp. 57-61. Univ. Moscow Publ. House. (Russian). - *(Biol. Inst., Siberian Branch USSR Acad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR).*
General features of the odon. fauna of the oceanic islands are considered. Two types are distinguished, viz. oceanic spp. (wide island distribution, usually absent on Continents, no infraspeciation), and island spp. (distribution limited to a single island or archipelago, related to the Continental fauna, young endemites). The origin of the faunas is briefly discussed.

(385) CHARLET, M., 1972. Étude histologique de la pars intercerebralis de la larve d'Aeshna cyanea Müll. (Insecte, Odonate). C.R. Acad. Sc. Paris, Sér. D, 275: 1047-1050, 1 pl. - *(Lab. Biol. Gén., Univ. Louis Pasteur, 12 r. de l'Université, F-67 Strasbourg).*
In ultimate and penultimate instar larvae of A. cyanea, 4 different cell types can be distinguished (A, B and C cells, and giant neurons). In addition, small unidentified neuroblasts, located in the centre of the pars intercerebralis, ensure continuous growth of the pars intercerebralis during larval development.

(386) CHARLET, M., 1972. Évolution du système neurosécréteur de la pars intercerebralis d'Aeschna cyanea Müll. (Insecte, Odonate) au cours du développement post-embryonnaire. C.R. Acad. Sc. Paris, Sér. D, 275: 2255-2258, 2 pls. - *(Lab. Biol. Gén., Univ. Louis Pasteur, 12 r. de l'Université, F-67 Strasbourg).*
The secretory activity of the A cells of the pars intercerebralis can be followed from the 4th larval instar onwards through approximately 12 instars. It increases with age and attains a maximum at the end of metamorphosis and in the imago. The C cells, on the other hand, become active at a much later stage. (Translation of Author's French abstract).

(387) CHUTTER, F.M., 1972. An empirical biotic index of the quality of water in South African streams and rivers. Water Res. 6: 19-30. - *(Natal Regional Lab., National Inst. Water Res., P.O.B. 1, Congella, Natal, ZA).*
A method of reducing data on stones-in-current faunal communities to a linear scale of water quality in terms of organic pollution is presented. In 2 tables, serving as example for the calculation of the biotic index, Aeshna sp. (a clean stream, the Klein Vaal River, S. Transvaal, stones-in-current, June 1960), and Paragomphus sp. (a polluted part of the Vaal River, S. Transvaal, stones-in-current, July 1959) are listed.

(388) COSTA, J.M., 1972. Descrição da fêmea de Telagrion cornicauda (Calvert, 1909) Santos, 1965 (Odonata-Coenagriidae). (Description of the female of Teleagrion cornicauda [Calvert, 1909] Santos, 1965 [Odonata-Coenagriidae]). Atas Soc. biol. Rio de Janeiro 15 (2): 79-82. (Portuguese). - *(Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil).*
A detailed description and illustrations are given of the ♀ of T. cornicauda, based on material from various localities at Espirito Santo, Brazil. A tabular comparison of the ♀ structural characters is made between T. cornicauda and T macilenta. A few descriptive notes on the ♂ of the former sp. are appended.

(389) DUMONT, H., 1972. Bescherming van de libellenfauna. (On the conservation of the dragonfly fauna). Schakel, Antwerpen 10 (2): 33-34. (Dutch). - *(Inst. Zool., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).*
Detailed report on the First European Symposium on Odonatology, held at Ghent, Belgium, October 22-23, 1971, with enumeration of its most important conclusions, viz. foundation of the Societas Internationalis Odonatologica, foundation of the quarterly Odonatologica, and organization of International odonatological symposia at the intervals of two years. The Symposium's concern for protection of some west European dra-

gonfly biotopes is stressed.

(390) GYSELS, H., 1972. On conservation of the creeks and pools along the Scheldt. Meded. Hydrob. Ver. Amsterdam 6 (4): 196-203. (Dutch, with Engl. s.). - *(Inst. Zool., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).*
It is argued that if measures would be taken to stop the proceeding pollution of the Scheldt R., Belgium, the river may be recolonized by organisms from the creeks and pools in the surroundings. The macroinvertebrate fauna of 4 such water bodies is tabulated, but Ischnura elegans, listed for one of them, is the only odon. sp. recorded. (Cf. also *OA* Nos. 71 and 391).

(391) GYSELS, H., 1972. Influence of some physical and chemical factors on the faunistic importance of the creeks in the North of the province of East Flanders. Meded. Hydrob. Ver. Amsterdam 6 (4): 172-195. (Dutch with Engl. s.). - *(Inst. Zool., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).*
This is a preliminary report on the physicochemical conditions and the macroinvertebrate fauna of 17 inland water bodies ("creeks"), situated from appr. 30 km NW of Ghent to NW of Antwerp and along the river Scheldt, Belgium. In general the water is slightly brackish, well-buffered and very productive of planctonic and other life. In the faunistic lists 8 odon. spp. are listed for 9 creeks. While Ischnura elegans was recorded in 8 of them, each of the others was observed in one creek only. (Cf. also *OA* Nos. 71 and 390).

(392) HEATH, J. & D. SCOTT, 1972. Instructions for recorders. Biological Records Centre, Abbots Ripton, 28 pp.; excl. leaflet "Schemes in operation - December 1972". - *(Biological Records Centre, Monks Wood Expl Stn, Abbots Ripton, Huntington, PE17 2LS, UK).*
Detailed instructions for collectors wishing to participate in the Distribution Maps Schemes as carried out for the United Kingdom by the Biological Records Centre. An account is given of various types of record cards and grid references (incl. Ireland), while a list of vice-counties and their corresponding code numbers (incl. Ireland) and a number of card and map examples are added. In the Schemes in Operation sheat addresses are stated of the organizers of the projects. The inventarization of Odon. is being carried out under the direction of the Biological Records Centre at Abbots Ripton (Cf. also *OA* No. 368).

(393) HILSENHOF, W.L., 1972. New records of Odonata from Wisconsin. Great Lakes Ent. 5 (3): 79. - *(Dept. Ent., Univ. Wisconsin, Madison, Wisc. 53706, USA).*
Progompus obscurus (Ramb.), Ophiogomphus anomalus Harvey, Nasiaeschna pentacantha (Ramb.), Neurocordulia yamaskanensis (Prov.), and Williamsonia fletcheri Williamson are reported from Wisconsin, USA, for the first time.

(394) HILSENHOF, W.L., 1972. Aquatic insects of the Pina-Popple River, Wisconsin. Odonata (Dragonflies and Damselflies). Wisc. Dept. Nat. Res. Techn. Bull. 54: 17-20. - *(Dept. Ent., Univ. Wisconsin, Madison, Wisc. 53706, USA).*
Ophiogomphus carolus Needh., Lanthus albistylus (Hag.), Somatochlora minor Calv. and Somatochlora williamsoni Walker are reported from Wisconsin, USA, for the first time. Notes on habitat and seasonal occurrence are included for 39 spp. collected in the river system.

(395) JOHNSON, C., 1972. An analysis of geographical variation in the damselfly, Argia apicalis (Zygoptera: Coenagrionidae). Can. Ent. 104: 1515-1527. - *(Dept. Zool., Univ. Florida, Gainesville, Florida 32601, USA).*
The paper describes and maps stripe pattern variability in A. apicalis along the periphery of its southeastern distribution. 2 major variations exist. One, the broad-striped form, has a wide, full-length humeral stripe and in ♀♀ a well-developed middorsal thoracic stripe. Broad-striped specimens also possess larger areas of black pattern on the dorsum of the head and in ♂♂, on the 8th and 9th abdominal segments. The second typical form has a reduced pattern characterizing populations W and N of SE Georgia and northern Florida, USA. The southeastern margin of distribution consists of broad-striped popu-

lations representing four groups of isolated populations. Isolation results from low interchange between colonies of different river systems and, within the southeast, lack of colonies on lakes, ponds, smaller streams, and headwaters. One intergradation area between typical and broad-striped populations is known. A discussion follows relating origin of the variability to Pleistocene habitat changes. (Author).

(396) KIAUTA, B., 1972. Scientific results of the Yugoslav 1969 Himalaya Expedition. Odonata. Biol. vest. 20: 109-119. - (*Inst. Genet, Univ. Utrecht, Opaalweg 20, Utrecht, NL*).
An annotated list is given of 15 spp. collected in the surroundings of Phewa Lake, nr. Pokhara, Nepal. Ischnura annandalei Laidlaw, Agriocnemis pigmaea (Ramb.) and Diplacodes nebulosa (Fabr.) are new to the Nepalese fauna. A list of all papers (45) known to the author and related to the odon. fauna of Nepal and the adjacent Himalayan territories, as far as published after the appearance of the first odon. volume in the Fauna of British India (Fraser, 1933), is appended (1933-1971).

(397) MACY, R.W. & P.F. BASCH, 1972. Orthetrotrema monostomum gen. et sp. n., (a progenetic trematode (Dicrocoeliidae) from dragonflies in Malaysia. J. Parasitol. 58: 515-518. - (*Dept. Biol., State Univ., P.O.B. 751, Portland, Oregon 97207, USA*).
O. monostomum gen. n., sp. n. is described and illustrated from Orthetrum sabina sabina (Libellulidae) in W. Malaysia. It is characterized by opposite testes in the anterior position, absence of an acetabulum, lateral vitellaria extending from the level of the intestinal fork to near the terminal end of the caeca and a deeply lobed ovary in the posterior half of the body. The mature condition suggests that an obligate definitive host may not be required. Relationship between the new trematode and other plagiorchoids is discussed.

(398) OLESEN, J., 1972. Odonatologica - et nyt tidsskrift om guldsmede. (Odonatologica - a new journal on dragonflies). Ent. Meddr. 40: 140. (Danish). - (*Ndr. Strandvej 26, DK-3000 Helsinger*).
A brief report on the First European Symposium on Odonatology (Ghent, Belgium, 1971), on the foundation of the Societas Internationalis Odonatologica and on its quarterly journal, Odonatologica, with an outline of the publication program of the latter. A brief review of some papers published in the first issue is added, and the subscription address is stated.

(399) PETERS, G., 1972. Chorologische und phylogenetische Aspekte in der Variabilität des Flügelgeäders einiger Arten der Sympetrum-Gruppe. Dt. Ent. Ztg., N.F., 19 (4-5): 263-286. - (*Mus. f. Naturk., Humboldt Univ., Invalidenstr. 43, DDR-104 Berlin, GDR*).
Chorogeographic aspects of the variation in wing venation of S. danae, flaveolum, pedemontanum, vulgatum and striolatum, originating from W Mongolia, SW Mongolia (Dzungeria) and Europe, were studied. (1) The Mongolian populations of danae are identic, but those from Central Europe deviate from them apomorphically. Consequently, a Central Asiatic centre of the sp. origin seems likely. (2) W Mongolian populations of flaveolum and pedemontanum deviate from the Dzungerian series. S. flaveolum from Central Europe is identic with that from Dzungeria, but distinct from W Mongolian material. In both spp. the W. Mongolian populations are apomorphically distinct from those from Dzungeria and Central Europe. It is suggested that flaveolum spread from Central Asiatic pleistocene refugia, while the chorogeography of pedemontanum is unclear. (3) The Central European vulgatum is nearly identic with that from W Mongolia. The latter, however, is clearly distinct from the plesiomorphic E Mongolian material. In W Mongolia a secondary infragradation of the two forms took place. (4) The Mediterranean populations of striolatum are plesiomorphically distinct from the Central European series. The latter are identic with the Mongolian specimens. The Mediterranean area represents at least the distributional centre of this sp., if not even its centre of primary origin.

(400) PINHEY, E., 1972. Contribution à l'étude biologique du Senegal septentrional. XV. Odonata. Bull. Inst. fr. Afr. noire 34, A (1): 26-34. (Text in Engl.). - (*National Mus., P.O.B. 240, Bulawayo, Rhodesia*).
An annotated list of 28 spp. from North Senegal, with brief morphological descriptions of some of them, and with notes on their general distribution. The most interesting points brought forward are: (1): the variations in Lestes pallidus (Ramb.), (2) the discovery of Parazyxomma flavicans (Martin) in Senegal, and (3) the record of Enallagma vansomereni Pinhey from Senegal. The latter greatly extends the distribution of this little known sp.

(401) PINHEY, E., 1972. The genus Aciagrion Selys (Odonata). Occ. Pap. natn Mus. Rhod., (B), 5 (1): 1-59. - (*National Mus., P.O.B. 240, Bulawayo, Rhodesia*).
The 10 Ethiopian spp. of the genus are described in detail and keyed. 2 of these are new, viz. macrootithenae (♂ holotype: Isombo River, ♀ allotype: Zambezi Source) and zambiense (♂ holotype and ♀ allotype: Mwinilunga). A new ssp., A. heterosticta karamoja, is also included (♂ holotype: Karamoja, N Uganda). Attempts are made at clearing up some unnamed spp. recorded in literature, and comparisons are made of structural features and markings. It is noted that black areas develop in two ways. Ischnuragrion Longfield is placed into synonymy of Mombagrion Sjöstedt, by virtue of characters of the type sp. (M. gracile Sjöstedt). The latter is a subgenus in Aciagrion Selys. Descriptions of 3 Oriental spp., including the type sp., are appended and brief notes are given on the other Asiatic spp.

(402) SANTOS, N.D. dos, 1972. Descrição da ninfa de Peristicta aeneoviridis Calvert, 1909 (Odonata: Protoneuridae). (Description of the nymph of Peristicta aeneoviridis Calvert, 1909 [Odonata: Protoneuridae]). Atas Soc. biol. Rio de Janeiro 15 (3): 149-150. (Portuguese). - (*Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil*).
The exuvia from Paraná, Brazil, is described and illustrated.

(403) SANTOS, N.D. dos, 1972. Contribuição ao conhecimento da fauna do Estado da Guanabara. 78 - Descrição da ninfa de Hetaerina brightwelli (Kirby, 1823) Selys, 1953 [sic!] (Odonata: Agrionidae). (Contribution to the knowledge of the fauna of the State of Guanabara. 78 - Description of the nymph of Hetaerina brightwelli [Kirby, 1823] Selys, 1953 [Odonata: Agrionidae]). Atas Soc. biol. Rio de Janeiro 15 (2): 75-76. (Portuguese). - (*Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil*).
The ultimate instar larva is described and illustrated on the basis of material from various localities in the State of Guanabara, Brazil. A note on a field observation of ecdysis is added.

(404) SANTOS, N.D. dos, 1972. Contribuição ao conhecimento da fauna do Estado da Guanabara. 79 - Descrição da ninfa de Lestes pictus Selys, 1862 (Odonata: Lestidae). (Contribution to the knowledge of the fauna of the State of Guanabara. 79 - Description of the nymph of Lestes pictus Selys, 1862 [Odonata: Lestidae]). Atas Soc. biol. Rio de Janeiro 15 (2): 77-78. (Portuguese). - (*Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil*).
The ultimate instar larva is described and illustrated on the basis of material from Espirito Santo, and the State of Rio de Janeiro, Brazil. Notes on habitats are added.

(405) SANTOS, N.D. dos, 1972. Contribuição ao conhecimento da fauna do Estado da Guanabara e arredores. 80 - Descrição da ninfa de Micrathyria artemis (Selys ms.) Ris, 1911 (Odonata: Libellulidae). (Contribution to the knowledge of the fauna of the State of Guanabara and its vicinity. 80 - Description of the nymph of Micrathyria artemis (Selys ms.) Ris, 1911 [Odonata: Libellulidae]). Atas Soc. biol. Rio de Janeiro 15 (3): 141-143. (Portuguese). - (*Museu Nacional, Universidade do Brasil, Quinta da Boa Vista, Rio de Janeiro, Brazil*).
The ultimate instar larva is described and illustrated on the basis of material from the State of Rio de Janeiro, Brazil. Observations on the ecdysis are added.

(406) SCHUMANN, H., 1972. Insektenflüge zum Grossen Knechtsand. Libellen, Geradflügler, Netzflügler, Käfer, Hautflügler, Schmetterlinge. Natur Kult. Jagd 25 (4): 98-101. - (*Podbielskistr. 64, D-3 Hannover, GFR*).
The Grosse Knechtsand is a dune island in the Northsea, some 14-18 km from the coastal town of Bremerhaven, German Federal Republic. It is some 300 m long and has a surface of 7.5 ha. Fresh water is lacking. A list is given of 8 odon. spp. recorded on the island, all originating from the Continent (Lestes sponsa, Aeshna mixta, Libellula quadrimaculata, Sympetrum danae, S. flaveolum, S. sanguineum, S. striolatum, S. vulgatum).

(407) THEISCHINGER, G., 1972. Erstnachweis für Oberösterreich Orthetrum coerulescens (Fabricius) in Linz. Naturk. Jb. Linz 1972: 79-81. - (*St. Margarethen 45, A-4020 Linz*).
3 specimens of O. coerulescens were captured in July-August, 1971, at the brook Haselbach, nr. the town of Linz. This is the first record of this sp. for the Oberösterreich province, Austria. A list of 7 other spp. observed at the same spot is added.

(408) THEISCHINGER, G., 1972. Libellen des Linzer Gebietes und aus Oberösterreich. II. Zygoptera. Naturk. Jb. Linz 1972: 71-78. - (*St. Margarethen 45, A 4020 Linz*).
A review is given of the hitherto known records of Zygoptera (18 spp.) in the Oberösterreich province, Austria. It is based mainly on the collections of the Provincial Museum of Linz and on the author's own material. The District of Linz is odonatologically by far the best explored area of the Province; all 18 spp. occur there, 16 of them at a single locality at Pleschinger Au nr. the village of Furth.

1973

(409) ARAI, Y., 1973. Reproductive behaviour of Orthetrum albistylum speciosum and O. triangulare melania (Libellulidae). Tombo 15 (1-4): 13-17. (Japanese, with Engl. s.). - (*Saitama Sericultural Station, 3-72, Ishikawa, Kuma-gaya, JA*).
By the marking method the behaviour in the "breeding territory" was studied in 2 common Japanese Orthetrum spp. A ♂ of O. t.m. was observed occupying the same site throughout 11 days.

(410) ASAHINA, S., 1973. Additional notes to the knowledge of the odonate fauna of Taiwan and the Ryukyus. Tombo 15 (1-4): 2-9. - (*Totsuka III-123, Shinjuku-ku, Tokyo, 160, JA*).
13 Taiwanese and 7 Ryukyu spp. are treated, a part of the former from the collection of the late Dr. Erich Schmidt. The material includes 2 new sspp., viz. Stylogomphus rykyuanus asatoi ssp. n. (♂ holotype: Yonagawa. Okinawa, June 26, 1967; ♂ paratype: Aka Island, July 14, 1969, both Japan) and Chlorogomphus brunneus keramensis ssp. n. (♀ holotype: Onnagawa, Tokashiki Island, Kerama Group, Okinawa, July 24, 1969; ♂ allotype: Aka Island, Kerama Group, Okinawa, July 14, 1969; ♂ paratype: the same as ♂ allotype, all Japan. Sieboldius deflexus (Chao) represents the first record from Taiwan. In addition, a description is given of the ♀ of Planaeschna ishigakiana Asahina, while Oligoaeschna kunigamiensis Ishida is redescribed.

(411) ASAHINA, S., 1973. Discovery of Aeschna subarctica Walker in Japan. Tombo 15 (1-4): 9-10. (Japanese, with Engl. s.). - (*Totsuka III-123, Shinjuku-ku, Tokyo, 160, JA*).
The capture of several specimens of A. subarctica at Kushiro, Hokkaido, Japan is brought on record. The subspecific status will have to be settled by future studies.

(412) ASAHINA, S., 1973. (Further activities of S.I.O. and the 2nd International Symposium of Odonatology). Tombo 15 (1-4): 33. (Japanese). - (*Totsuka III-123, Shinjuku-ku, Tokyo, 160, JA*).
A brief statistical summary of the first volume (1972) of Odonatologica, with a note on the Second International Symposium of Odonatology (September 20-23, 1973; Karlsruhe, German Federal Republic).

(413) ASAHINA, S., 1973. (Visits of foreign odonatologists to Japan). Tombo 15 (1-4): 33. (Japanese). - (*Totsuka III-123, Shinjuku-ku, Tokyo, 160. JA*).
A brief chronic for 1972. The odonatologists listed are P.S. Corbet, J.I. Furtado, J. Peterson and G. von Rosen.

(414) BEATTY, G.H., A.F. BEATTY & C.N. SHIFFER, 1973. A survey of the Odonata of Eastern Pennsylvania. Proc. Pa. Acad. Sci. 44 (1970): 141-152. - (*P.O.B. 281, State College, Penn. 16801, USA*).
A total of 654 county records of 143 Odon. spp. were tabulated for the 13 eastern Pennsylvania counties, USA, comprising the watershed of the Delaware River. In this area, 6,854 square miles, Odon. have been collected at 213 locations from 1886 to 1968, with less-precise records going back to Rambur's publication of 1842. P.P. Calvert's fieldwork forms the nucleus of this survey, with subsequent work by J. Gillespie and G.H. Beatty, III, greatly augmenting his results. Further sources of data are enumerated and documented and noteworthy species discussed. (Authors).

(415) BELYSHEV, B.F., 1973. Odonatofauna doliny reki Nordy v zapolarnoi Sibiri. (Odonate fauna of the Nordy R. Valley in the Polar Siberia). Fauna Sibiri (The Fauna from Siberia, [*sic!*] 2 (= Trudy Biol. Inst. sibir. Otdel. Akad. Nauk SSSR - Proc. Biol. Inst. Siber. Branch Acad. Sci. USSR 16): 24-31. (Russian). - (*Biol. Inst., Siberian Branch USSR Acad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR*).
Annotated list and morphological notes are given for 14 spp. collected during June and July, 1963 at the Nordy R., tributary of Lena, USSR, at an approximate latitude of 70° N. A general discussion on the odon. fauna of the northernmost latitudes in Eurasia is added.

(416) BELYSHEV, B.F., 1973. Zoogeograficheskoe raionirovanie Sibiri na osnovanii rasprostranenia strekoz (Odonata, Insecta). (Zoogeographic division of Siberia based on the dragonfly distribution [Odonata, Insecta]). Fauna Sibiri (The Fauna from Siberia [*sic!*]) 2 (= Trudy Biol. Inst. sibir. Otdel. Akad. Nauk SSSR) - Proc. Biol. Inst. siber, Branch Acad. Sci. USSR 16): 32-51. (Russian). - (*Biol. Inst., Siberian Branch USSR Acad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR*).
This is a brief compilation of a number of the author's earlier papers on the odon. geography of Siberia. General considerations are followed by a comprehensive table, listing the complete Siberian odon. fauna and stating the distribution of single spp. over the various zoogeographic units.

(417) CUMMINS, K.W., 1973. Trophic relations of aquatic insects. Ann. Rev. Ent. 18: 183-206. - (*Kellogg Biol. Stat., Michigan State Univ., Hickory Corners, Mich., USA*).
This is a review paper on the subject. Odon. are classified as predators-swallowers. In the tabular analysis of food habits Pyrrhosoma nymphula and Lestes sponsa are listed.

(418) EDA, S., Odonata of Mt. Tsukuba and its vicinity, Ibaraki Prefecture. Tombo 15 (1-4): 28-32. (Japanese, with Engl. s.). - (*2-7-5-208 Sodegaura, Narashino-shi, Chiba Pref., 275, JA*).
An annotated list of 65 spp. recorded at Mt. Tsukuba (alt. 876 m), N. of Tokyo, Japan, is presented. It is based on the author's collections from 1953 through 1966 and on literature records.

(419) [HOBBY, B.M.], 1973. Abstracting service of odonatological literature. Ent. Mo. Mag. 108: 122. - (*7 Thorncliffe Rd, Oxford UK*).
Announcement of the foundation of S.I.O. and the quarterly Odonatologica, with its section Odonatological Abstracts. An appeal is made for reprints of current odonatol. papers to be sent to the Editors in order to help the production of this abstracting service.

(420) JOHNSON, C., 1973. Dr. Philip Garman (1891-1972) in Memoriam. Tombo 15 (1-4): 32. - (*Dept. Zool., Univ. Florida, Gainesville, Florida 32601, USA*).
Obituary for the late Dr. P. Garman (born in Lexington, Kentucky, USA, September 25, 1891; deceased at Hamden, Connecticut, USA, January 22, 1972). There is no biblio-

graphy, but a portrait is appended to his short biography.

(421) KUWADA, K., 1973. On a mass appearance and the swarm of Pantala flavescens observed in Matsuyama. Tombo 15 (1-4): 10-12. (Japanese, with Engl. s.). - (*597-1, Higashiishii-cho, Matsuyama, JA*).
In August, 1972 a mass appearance and swarm of this migratory sp. were observed at Matsuyama, Shikoku, Japan, In all, some 500 specimens have emerged at the spot; they disappeared by August 20. The swarming insects were all in teneral condition.

(422) LIEFTINCK, M.A., 1973. Chlorocypha pavonis spec. nov., a new chlorocyphid dragonfly from West Africa (Odonata). Ent. Ber., Amsterdam 33 (2): 32-37. - (*Nwe Veenendaalseweg 224, Rhenen, NL*).
Descriptions and illustrations are given of 2 allied spp. of Chlorocypha Fraser, viz. C. glauca (Selys) and C. pavonis sp. n., based on ♂♂ in the Berlin Mus., from Cameroon and Togo, respectively, supported by a colour photograph of a live specimen of the new sp., recently taken in Ghana. (Author).

(423) MIYAZAKI, T., 1973. A hybrid dragonfly from the egg laid by Sympetrum pedemontanum elatum Selys. Tombo 15 (1-4): 26-27. (Japanese, with Engl. s.). - (*1-128, Seki-machi, Nerima-ku, Tokyo, 177, JA*).
From an egg laid by a ♀ of S.p. e., taken in the fall, 1971 at Ome, Tokyo, Japan, and reared in captivity, an adult developed that is supposed to be a hybrid between the former sp. and S. eroticum eroticum. A photograph of the adult specimen and a drawing of the ventral side of the posterior part of its abdomen are added.

(424) NARAOKA, H., 1973. Newly recorded dragonflies from Amami-oshima. Tombo 15 (1-4): 27. - (*2 Murakami-apart, 252 Hiraoka-Shinjo, Aomori-shi, Aomori Pref., JA*).
The 3 spp. new to the fauna of Amami-oshima, Japan, are Ischnura asiatica (Brauer), Anax panybeus Hag., and Anaciaeschna jaspidea (Burm.). In all, 31 odon. spp. are now known from the area.

(425) OBANA, S., 1973. Stylurus annulatus (Djakonov) in Korea. Tombo 15 (1-4): 21. (Japanese, with Engl. s.). - (*3-4-10 Kinryo-cho, Sakai, Osaka Pref., JA*).
A ♀ specimen of S. annulatus from Pusan, S. Korea, is brought on record and briefly described. The black pattern on the thorax is developed as in specimens from Ussuri, Manchuria and China. In Japanese material, on the other hand, the thorax is darker. This is the first record of this sp. from Korea.

(426) OBANA, S. & K. INOUE, 1973. From oviposition to emergence of Anax panybeus. Tombo 15 (1-4): 18-21. (Japanese, with Engl. s.). - (*3-4-10 Kinryo-cho, Sakai, Osaka Pref., JA*).
2 ♀ were brought from Okinawa to Osaka (both Japan). Their eggs, laid into filter-paper, were reared to the adult stage. The development lasted 70-80 days and there were 12 larval instars. The bryophyte Riccia fluitans appeared very useful for keeping the breeding water in favourable condition.

(427) OBANA, S., K. INOUE & H. ICHII, 1973. On the new habitat of Mortonagrion hirosei. Tombo 15 (1-4): 22. (Japanese with Engl. s.). - (*3-4-10 Kinryo-cho, Sakai, Osaka Pref., JA*).
A brief description of the newly discovered locality in Aritaki-cho, Ise-City, Mie Prefecture, Central Japan, with a map and photograph of the site. (Cf. *OA* No. 428).

(428) OBANA, S., S. SHIMURA & K. WAKISAKA, 1973. A new distribution record of Mortonagrion hirosei. Tombo 15 (1-4): 22. (Japanese, with Engl. s). - (*3-4-10 Kinryo-cho, Sakai, Osaka Pref., JA*).
The new locality is a seaside marsh in Aritaki-cho, Ise-City, Mie Prefecture, Japan; it is the first known habitat of M. hirosei in Central Japan. (Cf. also *OA* No. 427).

(429) SONEHARA, I., 1973. The larval period of Epitheca marginata (Selys) (Corduliidae). Tombo 15 (1-4): 23-25. (Japanese with Engl. s.). - (*Tazawa 5035, Toyoshima-machi, Minami-azumi, Nagano Pref., JA*).

A freshly laid egg-string of E. marginata, collected at Asashina-mura, Kita-saku, Japan (ca. 650 m above sea level), was divided in 2 portions. These were reared in tanks at Nakajo (alt. 435 m) and Tazawa (alt. 558 m). The larval development (12 instars) took approximately 315 days at the former locality and approximately 325 days at the latter, passing a single winter season only. Photographs of all instars are added.

(430) TOMBO. ACTA ODONATOLOGICA. Published by the Society of Odonatology, Tokyo. Vol. 15, Nos. 1-4 (dated December 31, 1972; issued February, 1973. - (*c/o Dr. S. Asahina, Totsuka III-123, Shinjuku-ku, Tokyo, 160, JA*).

Asahina, S.: Additional notes on the knowledge of the odonate fauna of Taiwan and the Ryukyus; - *Asahina, S.:* Discovery of Aeschna subarctica Walker in Japan; - *Kuwada, K.:* On a mass appearance and the swarm of Pantala flavescens observed in Matsuyama; - *Asahina, S.:* [Book notice] Selysia vol. 5, No. 2; - *Arai, Y.:* Reproductive behaviour of Orthetrum albistylum speciosum and O. triangulare melania (Libellulidae); - *Obana, S. & K. Inoue:* From oviposition to emergence of Anax panybeus; - *Obana, S.:* Stylurus annulatus (Djakonov) in Korea; - *Obana, S., S. Shimura & K. Wakisaka:* A new distribution record of Mortonagrion hirosei; - *Obana, S., K. Inoue & H. Ichii:* On the new habitat of Mortonagrion hirosei; - *Sonehara, I.:* The larval period of Epitheca marginata (Selys) (Corduliidae); - *Watanabe, K.:* Sperm-transfer of Cercion calamorum; - *Miyazaki, T.:* A hybrid dragonfly bred from the egg laid by Sympetrum pedemontanum elatum Selys; - *Naraoka, H.:* Newly recorded dragonflies from Amami-oshima; - *Eda, S.:* Odonata of Mt. Tsukuba and its vicinity, Ibaraki Prefecture; - *Johnson, C.:* Dr. Philip Garman (1891-1972) in Memoriam; - *Asahina, S.:* [Book notice] A. Heymer, Verhaltensstudien an Prachtlibellen; - *Asahina, S.:* Further activities of S.I.O. and the 2nd International Symposium of Odonatology; - *Asahina, S.:* Visits of foreign odonatologists to Japan; - *Asahina, [S.]*: The 17th Annual Meeting of the Odonatological Society of Japan; - [*Asahina, S.*]: [Announcement] The 18th Annual Meeting of the Odonatological Society of Japan; - *Asahina, [S.]*: Editor's note. (For abstracts of papers and addresses of the authors cf. *OA* Nos. 409-413, 418, 420-429, 431).

(431) WATANABE, K., 1973. Sperm transfer of Cercion calamorum. Tombo 15 (1-4): 25. (Japanese, with Engl. translation of the title). - (*3-10-2 Tsubaki-mori, Chiba-shi, Chiba Pref., JA*).

A short note with a photograph.