ODONATOLOGICAL ABSTRACTS

1972

(1425) PETR, T., 1972. Benthic fauna of a tropical man-made lake (Volta Lake, Ghana 1965-1968). Arch. Hydrobiol. 70 (4): 484-533. (With German s.). – (*Author's recent address unknown;* in the paper it is given as: *Dept. Zool., Makerere Univ., Kampala, Uganda*).

Quantitative and qualitative changes in the individual taxa of the bottom fauna were followed in the Volta man-made lake, Ghana (largest artificial lake in Africa; alt.: 84 m, length: 380 km, depth: 80 m, surface: 8000 km^2) over the filling period 1965-1968. The changes in the individual invertebrate taxa during this period are considered in relation to the changing environmental factors, such as oxygen content, substratum, degree of exposure to waves, and establishment of littoral aquatic macrophytes. While the ecology of chironomids and the ephemeropteran and chaoborid larvae is discussed in detail, the larval Odon. are but briefly considered. Anisoptera were more abundant than Zygoptera. In order of their abundance the following Zygoptera were found at the sampling station of Ampem: Pseudagrion massaicum, Pseudagrion sp., Ischnura senegalensis. P. massaicum was also collected at Dodi. The presence of the zygopteran larvae seems to be related to the abundance of aquatic plants, especially Ceratophyllum, as found during observations of the fauna of aquatic plants at Akosombo, another station on the lake (cf. T. Petr, 1968. Population changes in aquatic invertebrates living on two water plants in a tropical man-made lake. Hydrobiologia 32: 449-485). Anisopteran larvae usually appeared as single specimens, preferring the shallows down to 3 m depth, with a maximum at 10 m. The commonest sp. was Parazyxomma flavicans, collected at all stations except Akosombo. Brachythemis leucosticta and Trithemis sp. were found at Ampem in shallows rich in aquatic weeds. The latter was also present in shallows in the north of Yeji.

1974

(1426) BICKNESE, M.J. & R.M.M. ROIJACKERS, 1974. Vergelijkend hydrobiologisch onderzoek in de Kroonbeek en de Teelebeek, een schone en een verontreinigde laagland beek. [Comparative hydrobiological studies of the Kroonbeek and the Teelebeek, an unpolluted and a polluted lowland brook]. Publs Lab. Aquat. Ecol. Univ. Nijmegen 4, 122 pp. (Dutch, with Engl. s.). – (*Lab. Aquat. Ecol., Univ. Nijmegen, Toernooiveld, Nijmegen, NL*).

The 2 brooks belong to the Meuse (Maas) riversystem, Limburg, Netherlands. The report includes a few references to Odon. For the list of recorded spp. cf. *OA* No. 1444.

(1427) DEGRANGE, C., 1974. Sur la présence en Dauphiné de Potamopyrgus jenkinsi (Smith) (Gastéropode Prosobranche Hydrobiidae). Trav. Lab. Hydrobiol. Grenoble 64-65: 251-257. - (*Lab. Zool., Univ.*

Grenoble, B.P. 53, Centre de Tri, F-38041 Grenoble-Cedex).
The snail is reported for the first time in the Dauphiné, France. 8 odon. spp. are listed for the same locality (Le Ruisset rivulet, tributary of the Isère nr. Grenoble), viz. Calopteryx virgo meridionalis, Pyrrhosoma nymphula, Coenagrion mercuriale, C. puella, Aeshna cyanea, Anaciaeschna isosceles, Cordulegaster boltoni, Sympetrum striolatum.

(1428) ESCHER, K., 1974. Die Bedeutung der Kiesgruben als biologische Refugien. Vjschr. naturf. Ges. Zürich 119 (4): 345-348. – (*Hinterbergstr. 68, CH-8044 Zürich*).
In increasingly industrialized Central Europe empty gravel pits often become valuable wildlife preserves when the bottom fills with water. Many aquatic spp., incl. dragonflies, are found in these more often than in the natural basins. This situation should be carefully considered before a decision is made to fill the abandoned gravel pits with refuse and restore the natural continuity of the terrain. (Cf. also *OA* No. 1449).

(1429) MAIRE, A., 1974. Analyse de quelques milieux aquatiques de la vallée de Kathmandu en période de mousson: Août-Septembre 1971. Trav. Lab. Hydrobiol. Grenoble 64-65: 99-108. – (*Lab. Biol. végét., Centre Univ. Savoie, F-73 Jacob-Bellecombette*).
The physical-chemical analyses conducted on water samples taken from the various aquatic environments in the Valley of Kathmandu, Nepal, illustrate the characteristics of the tropical biotopes during the August-September monsoon period. The muddy rainy season did not permit taking faunistic samples. Only adults of Odonata and some Coleoptera were captured. The Drinking Water Supply Office, in collaboration with U.N.O. is undertaking the sampling of running waters upstreams of the principal basins of the valley, used for supplying drinking water to Kathmandu and Patan, the 2 largest population centers in the valley. The river water is low in mineral salts. NO_3, NO_2, PO_4 and SO_4 are presumed to be rapidly absorbed by rice paddies and associated plants, especially algae. The biotope of the rice fields is a temporary aquatic environment; the water is stagnant for a time, but moves during the rainy period. – (*Abstracter's note*: No list of odon. spp. is given in the paper, but a separate publication, dealing with the Odon. only, is in preparation).

(1430) SHIRGUR, G.A. & H.G. KEWALRAMANI, 1974. Observations on salinity and temperature tolerance of some of the freshwater insects. J. biol. Sci. 16/17 [1973/1974] (1-2): 42-52. – (*Taraporevala Marine Biol. Res. Stn, Bombay-2, Maharashtra, India*).
The material used included several insect orders, incl. the following odon. spp.: Bradynopyga geminata, Tramea virginia, Sympetrum sp., Hemianax ephippiger and Ictinogomphus rapax. Thermal tolerance studies showed that the temperature for instantaneous mortality up to 24 hrs tolerance limit, lay in the range of 52-53°C, for different groups. Of larval stages, those of Odon. were the most tolerant and those of Cybister, the least. Eradication of insects from fish-nurseries can be brought about by hot water spray sufficient to maintain the water surface at 55°C, so as to kill air-breathing aquatic insects. Tolerance studies showed that insects survived in seawater and its dilutions up to 60% for 360 h, indicating these concentrations to be deterrent. Among the major constituents of seawater KCl is apparently the most deterrent factor. Odon. larvae were the least and Coleoptera the most tolerant to seawater of 3.5% solutions of the major constituents of seawater. Experiments with KCl suggest that residual Cl may be used for the eradication of different insects, particularly odon. larvae, which are the most sensitive to chemical changes in the medium.

1975

(1431) (Anonymous) [probably K. Tani], 1975. [Echoes of our publication, "Dragonfly fauna of the Kinki District, Central Japan"]. Gracile 18: 20. (Japanese). – (For the address of K. Tani cf. *OA* No. 1154).
From the point of view of "public relations" the publications listed in *OA* Nos. 768 and 1178 appeared particularly successful. They have drawn the readers' attention to the existence and work of the Kansai Research Group of Odonatology, consequently, several of its members received invitations to give radio and television talks on dragonflies and dragonfly conservation and to prepare articles on these subjects for the commercial press. A considerable increase in the membership in 1974 was also due to this popularization.

(1432) AA, A.J.M. van der & J.G.M. CUPPEN, 1975. Een onderzoek naar de macrofauna in nymphaeide vegetaties in de Oude Waal bij Nijmegen. [Investigation into the macrofauna of the nymphaeide vegetation of the Oude Waal River near Nijmegen]. Publs Lab. Aquat. Ecol. Univ. Nijmegen 8, 43 pp. (Dutch, with Engl. s.). – (*Lab. Aquat. Ecol., Univ. Nijmegen, Toernooiveld, Nijmegen, NL*).
In the Nymphaeion vegetation (consisting mostly of Nuphar luteum, Nymphaea alba and Nymphoides peltata) of the Oude Waal River (a part of the Rhine) nr. Nijmegen, Netherlands, the larvae of Ischnura elegans, Aeshna mixta, Libellula quadrimaculata and Sympetrum cf. vulgatum were recorded.

(1433) ANAZE, N., 1975. [Dragonfly observations at Ao Marsh (Wakayama Prefecture)]. Gracile 18: 11-12. (Japanese). – (*529, Takara, Yukawa-cho, Gobo, Wakayama pref., 644, JA*).
22 spp. were collected on July 13, 1975. Among these, Somatochlora clavata (larvae, exuvia, imago) represents the first, and Aeschnophlebia longistigma the second record for the prefecture.

(1434) BRAAKHEKKE-ILSINK, E.I. & W.G. BRAAKHEKKE, 1975. Onderzoek naar de benthische macrofauna van het Wylermeer en enkele omliggende wateren. [Enquiry into the benthic macrofauna of the Wylermeer Lake and some neighbouring water basins]. Publs Lab. Aquat. Ecol., Univ. Nijmegen 7, 72 pp., (Dutch, with Engl. s.). – (*Lab. Aquat. Ecol. Univ. Nijmegen, Toernooiveld, Nijmegen, NL*).
The ecological conditions in the polluted Wylermeer lake nr. Nijmegen, Netherlands, were studied in 1970-1971. Since 1973 the lake receives only unpolluted water, therefore an attempt has been made to examine (May-Oct. 1974) to which degree the water quality improved and whether or not changes in fauna and flora have taken place. The only odon. sp. recorded is Enallagma cyathigerum, whereas in 1970-1971 Coenagrion puella also occurred.

(1435) CAMPANELLA, P.J., 1975. The evolution of mating systems in temperate zone dragonflies (Odonata: Anisoptera): II. Libellula luctosa (Burmeister). Behaviour 54 (3-4): 278-310. (With German s.). – (*Gorgas Mem. Lab., P.O.B. 2016, Balboa Heights, Canal Zone, [Panama], USA*).
The behavioural ecology of L. luctuosa was studied at several ponds in northern New York State, USA. The ♂♂ maintained territories which were slightly overlapping on each pond. As many as 6 ♂♂ utilized each territorial sector of the pond concurrently. Conspecifics showing submissive behaviour were allowed on the mating site, and all ♂♂ on the territory recognized and maintained the boundaries. These communal sites were primarily mating/ovipositing areas. Aggressive interactions among co-occurring ♂♂ resulted in the establishment of a dominance hierarchy on each territory. The dominance hierarchy increased the reproductive efficiency of the dominant ♂ probably by reducing interference with mating. Subordinate ♂♂ occasionally mated. The relative advantage of dominance in mating attempts is quantified. The average number of ♂♂ at the pond changed little during the

day and ♂♂ did not localize their behaviour to specific parts of the pond. An individual ♂ returned to the pond an average of 5 different days. While at the water ♂♂ either flew over a territory or perched adjacent to the pond. Individuals frequently left the pond and returned during the day. The amount of time spent in each activity depended on the time of day and number of conspecific competitors. Site attachment was low and ♂♂ commonly flew to different territorial sectors. The dominance status of individual ♂♂ often changed quite rapidly, especially when changing sectors or upon returning to the pond. ♀♀ occurred at low average daily density and showed no preference for specific areas of the pond or for certain times of day. Time budgets and analyses of mating behaviour of L. luctuosa are considered with regard to the ♂ response to the availibility and predictability of ♀♀ and mating/ovipositing sites. The behavioural patterns are analyzed with reference to a time-energy-maturational-experiential hypothesis for the evolution of the behaviour. Extensive comparisons are made between L. luctuosa and Plathemis lydia. (For Pt. I of this series cf. *OA* No. 1103).

(1436) CASPERS, N., 1975. Kalorische Werte der dominierenden Invertebraten zweier Waldbäche des Naturparkes Kottenforst Ville. Arch. Hydrobiol. 75 (4): 484-489. (With Engl. s.). – (*Inst. Landwirtschaftl. Zool. u. Bienenkd., Univ. Bonn, Melbweg 42, D-5300 Bonn, GFR*).
Caloric values of 18 abundant invertebrates of 2 woodland brooklets near Bonn, German Federal Republic, were determined on a dry weight basis and on an ash-free dry weight basis. The only odon. sp. studied is Aeshna cyanea for which the respective values are 5432 cal/g and 5837 cal/g. (For a faunistic survey and ecological conditions of the invertebrate fauna of the woodland streams in the Kottenforst Ville Nature Park cf. *OA* No. 619).

(1437) CLADY, M., 1975. An unusual association of damselfly naiads with fish carcasses. Can. Field-Nat. 89 (1): 65. – (*Dept. Nat. Resour., New York State Coll. Agricult. & Life Sci., Cornell Univ., Fernow Hall, Ithaca, N.Y. 14853, USA*).
On June 27, 1974 numerous Ischnura and Enallagma larvae were seen clinging to floating carcasses of the cisco (Coregonus artedii) in Oneida Lake, New York, USA. Thousands of these fish die each summer, probably as a result of stresses from heavy parasitism by sea lampreys (Petromyzon marinus) and the annual cycle of increasing temperatures and decreasing levels of dissolved O_2. Since windrows of floating vegetation are common offshore in Oneida Lake, it appears that the larvae, along with the uprooted plants to which they are clinging, are transported by water currents to the surface of deeper areas.

(1438) DALTON, S., 1975. Borne on the wind. The extraordinary world of insects in flight. Chatto & Windus, London. 160 pp., 2 black-and-white, 74 col. pls. excl. – Price £5,–. – (*Author's address unknown*).
This is an album of unique large-size photographs of insects in flight, accompanied by extensive popular comments and explanatory notes. One chapter (pp. 28-31, 83-85) is devoted to Odon. The spp. illustrated in flight are: Coenagrion puella, Lestes sponsa, Aeshna sp., Libellula flavida, Perithemis seminole and Sympetrum striolatum.

(1439) DEONIER, D.L., 1975. Protecting instructional insect specimens with vinyl acetate spray. Ent. News 86 (5-6): 114. – (*Dept. Zool., Miami Univ., Oxford, Ohio 45056, USA*).
A thin flexible film over appendicular joints prevents or reduces detachment of legs, wings etc. during student handling. A clear acrylic spray, clear latex and a clear vinyl acetate spray were tested on zygopterans, mayflies, dipterans (incl. mosquitoes) and moths. The film from the vinyl spray (Quelspray) retained the greatest elasticity and flexibility after 12 hrs of drying.

(1440) DIGGELEN, R. van, 1975. Libellen.

[Dragonflies]. *In*: R. van Diggelen & P. Bremer, Inventarisatie verslag Staartreservaat. Biol. Uitg. Afd. CNNOP 4, pp. 51-52. (Dutch). – (*Scandinaviëlaan 100, Emmeloord, NL*).
An annotated list of 12 spp. is given for a small area nr. the village of Urk, Overijssel province, Netherlands. (*Abstracter's note*: The series is being published by the Noordoostpolder Department of the Dutch Christian Youth Federation of Nature Friends, and can be ordered from Mr. J. Lakerveld, Fjord 51, Emmeloord, NL).

(1441) GALLUP, D.N., M. HICKMAN & J. RASMUSSEN, 1975. Effects of thermal effluent and macrophyte harvesting of the benthos of an Alberta lake. Verh. int. Ver. Limnol. 19: 552-561. – (*Dept. Zool., Univ. Alberta, Edmonton, Alberta, CA*).
The existence of 2 power stations on the shore of Lake Wabamun, Alberta, Canada, that discharge heated water into the lake, has resulted in changes in the spp. composition and in the distribution and growth rates of the submerged vegetation in the eastern region of the lake. These plants produce extensive beds that eventually break loose and drift onto beaches in large quantities. A management program, designed to alleviate this problem, involved among others, cutting and removal of the plants from the lake. While in the uncut area 48 zygopteran and 24 anisopteran specimens occurred per m^2, in the cut area the values were 16 and 40 specimens/m^2, respectively. The spp. composition is not stated.

(1442) HARITONOV, A. YU., 1975. Usloviya obitaniya lichinochnyh faz strekoz v Zapolyar'e. [Ecological conditions of larval phases of dragonflies in the Arctic region]. Ekologiya 6 (3): 96-99. (Russian). – (*Inst. Biol., Siberian Sect. Acad. Sci. USSR, Ul. Frunse 11, USSR-630091 Novosibirsk*).
The ecology of larval stages has been studied in 95 bodies of water in the lower reaches of the Ob River, USSR. Larvae of Coenagrion concinnum, C. hylas, Aeshna juncea, A. squamata, Somatochlora sahlbergi and Leucorrhinia rubicunda were found in only 15 of the investigated water bodies, which indicates high selectivity of ecological conditions. Coenagrion lunulatum, Aeshna subarctica, Leucorrhinia dubia and L. orientalis were noticed as single specimens in the imaginal stage only.

(1443) HARRISON, A.D. & J.J. RANKIN, 1975. Forest litter and stream fauna on a tropical island, St. Vincent, West Indies. Verh. int. Ver. Limnol. 19: 1736-1745. – (*Dept. Biol., Univ. Waterloo, Waterloo, Ontario N2L 3GI, CA*).
In the Island of St. Vincent, Lesser Antilles, forest litter is the major factor in both the distribution and density of stream benthos, creating a zonation which superficially might be attributed solely to altitude and temperatures. Argia sp. is the only dragonfly referred to (in a table), but its distribution in the streams studied does not seem to show any clear pattern. (*Abstracter's note*: As often in this kind of paper, little attempt is made to correlate the faunal quantitative and qualitative data with the extensive material on chemical and other abiotic analyses of water, and hardly any organisms are identified down to the sp. level).

(1444) HEMELAAR, A., 1975. Vergelijkend hydrobiologisch onderzoek in de Kroonbeek en de Teelebeek, een schone en een verontreinigde laagland beek. [Comparative hydrobiological studies of the Kroonbeek and the Teelbeek, an unpolluted and a polluted lowland brook]. Publs Lab. Aquat. Ecol. Univ. Nijmegen 13, 112 pp., 14 tabs excl. (Dutch, with Engl. s.). – (*Lab. Aquat. Ecol., Univ. Nijmegen, Toernooiveld, Nijmegen, NL*).
The paper deals with the macrobenthos recorded between July 1974 and Febr. 1975, and represents the second part of the work, reported in the publication listed in *OA* No. 1426. Coenagrion puella, Ischnura elegans and Libellula quadrimaculata were taken at the Kroonbeek, and Enallagma

cyathigerum, C. puella, Anax imperator, L. fulva and L. quadrimaculata in the Teelebeek.

(1445) INOUE, K., 1975. [Dragonfly observations at Kizugawa River and the surroundings]. Gracile 18: 12-13. (Japanese). – (*5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA*).
14 and 11 spp. were observed on Aug. 24, 1975 at the Kizugawa River and at the Kutsuwaike Pond respectively. During the day hours small tanks in the tea fields were often frequented by ovipositing ♀♀ and patrolling ♂♂ of Polycanthagyna melanictera, though the latter is well known for its crepuscular habits.

(1446) JUNK, W.J., 1975. The bottom fauna and its distribution in Bung Borapet, a reservoir in Central Thailand, Verh. int. Ver. Limnol. 19: 1935-1946. – (*Max Planck-Inst. Limnol., Postfach 165, D-2320 Plön, GFR*).
The biomass of the benthic fauna of the littoral of the lake (surface: 208 km^2, depth: 2-4, max. 5.5 m) is largely made up by molluscs (94.36%), whereas insects of various orders account for 3.68% (Trichoptera alone for 2.74%). Larval Odon. occur in large numbers (39 specimens/m^2), but represent only 0.19% (0.0048 g/m^2 dry weight) of the total biomass. Specific names are not mentioned.

(1447) KALLAPUR, V.L., 1975. Fuel economy during flight of the dragonfly Pantala flavescens (F.). Indian J. exp. Biol. 13 (2): 200-202. – (*Dept. Zool., Karnatak Univ., Hubli-Dharwar, Mysore, India*).
P. flavescens remains air-borne for many hours. It could be expected therefore that fat should be the predominant fuel during flight. Experimental results revealed that during initial flight of 45 min, flight muscles seem to derive their metabolic energy from glycogen breakdown. In subsequent flight, however, fat becomes the principal fuel. Glycogen breakdown in flight muscles during initial flight is to raise thoracic temperature, enabling the insect to indulge in sustained flight activity.

(1448) KITAGAWA, M., 1975. [Mnais strigata of the Ikuchi-jima Island]. Gracile 18: 18. (Japanese). – (*1152, Hara-cho, Innoshima, Hiroshima Pref., 722-25, JA*).
A population with orange winged ♂♂ was observed at Myoga, Ikuchi-jima Island, Hiroshima pref., Japan, from the end of April to the beginning of June, 1975. Oviposition (without ♂) into rotten plant tissue was observed on May 10.

(1449) KREBS, A. & H. WILDERMUTH, 1975. Kiesgruben als schützenswerte Lebensräume seltener Pflanzen und Tiere. Mitt. naturwiss. Ges. Winterthur 35 1973-1975: 19-73. – (*Ankerstr. 3, CH-8406 Winterthur*).
A review is given of flora and fauna of the abandoned gravel pits in the region between the Rhine River and the Zürichsee (lake), Switzerland, and it is concluded that in many cases these represent valuable habitats, which biological value should be carefully considered before a decision is made to fill them with refuse and to restore the natural continuity of the terrain. In the Zürich area 18 odon. spp. were recorded from the abandoned gravel pits filled with water; in a table these are listed in the sequence of their frequency in such habitats. Enallagma cyathigerum, Ischnura elegans, Libellula depressa, Anax imperator, Orthetrum cancellatum, O. brunneum, Sympetrum danae and Platycnemis pennipes are the most common spp. Some of these, notably L. depressa, can be considered as true gravel pits spp. ("Kiesgrubentypen") and are in such man-made habitats often more abundant than in natural bodies of water. (Cf. also *OA* No. 1428).

(1450) MACAN, T.T., 1975. Structure of the community in the vegetation of a moorland fishpond. Verh. int. Ver. Limnol. 19: 2298-2304. – (*Freshwater Biol. Assoc., Ferry House, Far Sawrey, Ambleside, Westmorland LA22 OLP, UK*).

Observations were carried out at a Westmorland artificial fishpond, United Kingdom, created early in the present century. The most abundant carnivores in the tarn are the zygopteran larvae, lurking within the vegetation cover. The spp. considered are Enallagma cyathigerum and Pyrrhosoma nymphula. The numbers of both at the end of a generation remained steady from 1955 to 1965 and then dropped. Only in 1974 they were beginning to approach the old level. The introduction of Salmo trutta into the tarn in 1961 affected the numbers of zygopteran larvae but slightly since, sheltering in vegetation, these are inaccessible to the fish. It was with the disappearance of vegetation that the drop in their numbers was associated. The numbers of Gammarus pulex increased suddenly in 1967, and have remained high since. The data suggest a correlation with the decline in vegetation, probably an indirect one, through the decrease in number of large zygopteran larvae, which, in the laboratory, eat very small Gammarus readily. It is concluded that the numbers of zygopteran larvae appear to be limited by the number of vantage points suitable for feeding. (Cf. also the paper by the same author in Odonatologica 3 [1974]: 107-119).

(1451) MATHAVAN, S., 1975. Ecophysiological studies in chosen insects.(Odonata: Anisoptera). Thesis, Madurai Univ., Palni (India). VI + 115 pp., figs, tabs., appendix excl. – (*Central Sericult. Res. & Training Inst., Vidyaranyapuram, Mysore-570008, India*).
The thesis deals with Brachythemis contaminata and Orthetrum sabina, and is divided into the following 6 main chapters: (1) "Introduction", (2) "Reproductive stage", (3) "Egg stage", (Embryonic development, Yolk utilization), (4) "Nymph stage". (5) "The emergence" (Patterns of emergence, Sex ratio, Mortality at emergence, Preference of emergence zone, Biomass of B. contaminata eggs oviposited in Pond Idumban, Mortality of B. contaminata, Energy flow via emergence, Egg energy import and nymphal energy export in the Pond Idumban, GPP exported via emergence), (6) "Discussion". The studies were carried out from 1972 through 1975 in and around Palni, Tamilnadu, India. – (*Abstracter's note*: The book has been issued in a limited number of typescript copies for internal University use only. For information on availability and costs of a xerox copy/ microfilm contact the author or the Registrar of Madurai University, Madurai-625021, India. Since by the date of publication of this abstract the PhD formalities have not yet been completed, the Editors of Odonatologica do not feel to be in the position to furnish photocopies without an advance authorisation by the author).

(1452) MATSUMOTO, K., 1975. [Dragonfly survey in Ohmi in May]. Gracile 18: 7-8. (Japanese). – (*2-5, Hanayama-cho, Nagata-ku, Kobe, 653, JA*).
15 spp., incl. larvae of Epiophlebia superstes and exuviae of Oligoaescha pryeri are recorded for 3 localities in Shiga prefecture, Japan (May 12, 1974).

(1453) MORIMITSU, S. & H. MORIMITSU, 1975. [Anax guttatus at Sakai City]. Gracile 18: 17. (Japanese). – (*4-2, Harumidai 1-cho, Sakai, 590, JA*).
A ♂ was captured and many more were seen at a pond in the Sempoku suburbs, Japan, on Aug. 25, 1973. Due to reconstruction works commenced a day later, the vegetation was removed and the sp. seems to have disappeared completely.

(1454) MULLA, M.S., G. MAJORI & H.A. DARWAZEH, 1975. Effects of the insect growth regulator Dimilin or TH-6040 on mosquitoes and some nontarget organisms. Mosquito News 35 (2): 211-216. – (*Dept. Ent., California Univ., Riverside, CA 92502, USA*).
Granular and wettable powder formulations of the insect growth regulator TH 6040 [N-(((4-chlorophenyl)amino)carbonyl)-2,6-difluorobenzamide (or 1-(4-chlorophenyl)-3-(2,6 difluorobenzoyl)urea)] were evaluated in replicated tests in ponds against

Cules tarsalis Coq., Chironomid midges and some commonly associated non-target organisms. The material was applied at the rates of 0.25 and 0.05 lb active ingredient/acre. A decline in the population of third- and fourth-instar mosquito larvae was apparent 2-8 days after treatment but not 11 days after treatment; no appreciable decline was noticed in first-instar larvae, which resulted from continuous oviposition. Adult emergence from treated larvae isolated in floating cages was almost completely inhibited up to at least 11 days after treatment. No marked decline in the population of nektonic Chironomid larvae was detected during the 15-day duration of the experiment. The emergence of Chironomids however, was depressed up to 8-15 days after treatment. Among the non-target organisms studied, the numbers of mayfly (Baetis spp.) nymphs were depressed slightly but recovered to normal levels soon after treatment. Cladocera (Daphnia spp.) were moderately reduced in number by the wettable-powder but not the granular formulation. Copepods (Cyclops spp. and Diaptomus spp.) were affected for a short time. All affected non-target organisms recovered, as did the target organisms, 11-15 days after treatment. Ostracods (Cypricerus spp. and Cyprinotus spp.) were not affected by the treatments, nor were diving beetle larvae and adults (Dytiscids and Hydrophilids) and Odon. larvae during the experiments.

(1455) NAGASE, K., 1975. [Odonate fauna of Kagawa Prefecture]. Gracile 18: 13-15. (Japanese). – (*Sanrakuso, 548, Abiko-cho, Sumiyoshi-ku, Osaka, 558, JA*).
A list is given of 51 spp. recorded in the prefecture from 1973 through 1975. Sympetrum gracile is new to Kagawa, Japan. Along the Dokigawa River Mnais strigata occurs in 3 different forms: an opaque-specked, orange-winged population in the middle section, a hyaline-winged one in the upper section, and a transparent orange-winged one in the uppermost portion of the stream.

(1456) OBANA, S., 1975. [Considerations on the polymorphism in Mnais strigata]. Gracile 18: 1-7. (Japanese). – (*3-4-10, Kinryo-cho, Sakai, 590, JA*).
Five wing colour morphs are found in ♂♂, three in ♀♀ of M. strigata. A hypothesis is put forward according to which wing colour is controlled by a sex-linked recessive gene. The distribution of the different morphs in Japan is presented in tabular form: whereas orange-winged ♂♂ occur in Nankai District only and dark brown and opaque winged ♂♂ in Saikai and Bohsoh Districts, respectively, the occurrence of orange spots on the wings is reported for ♂♂ of Nankai, Chugoku and Tohoku Districts, and of dark spots for Hokkaido and Ko-Setouchi ♂♂. In ♀♀, opaque-winged specimens are reported for Bohsoh District, and light-orange specked ones for Ko-Setouchi, all other districts having hyaline-winged ♀♀ only. The low frequencies of coloured ♀♀ are explained by the hypothesis outlined above and also by the effects of genetic drift in very small populations. The present day small populations of different genetic constitution are thought to have arisen by geographic isolation when in the 2nd Setouchi Age the original mainland part of Japan was broken up into islands. Hybridization experiments are needed to test the hypothesis. – (*Abstracter's note*: An unabridged Engl. translation of the paper is available from Mr. K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA, or from the Editors of Odonatologica).

(1457) OBANA, S., 1975. [Report on the dragonfly survey at Kawakami-daira]. Gracile 18: 8-9. (Japanese). – (*3-4-10, Kinryocho, Sakai, 590, JA*).
12 spp., incl. Aeshna juncea, were taken on Sept. 29, 1974 at the mentioned locality, Shiga prefecture, Japan.

(1458) OBANA, S., 1975. [Report on the dragonfly survey at Mt. Koya]. Gracile 18: 10. (Japanese). – (*3-4-10, Kinryo-cho, Sakai, 590, JA*).
A list is given of 8 spp., incl. Epiophlebia

superstes and Mnais strigata, taken on June 1, 1975. The population of the latter consists of transparent orange winged ♂♂, hyaline ♂♂ and hyaline ♀♀. Some larvae of this sp. have emerged in the laboratory.

(1459) OBANA, S., 1975. [Reports of the 29th, 30th and 31st meetings of the Kansai Research Group of Odonatology]. Gracile 18: 18-20. (Japanese). – *(3-4-10, Kinryo-cho, Sakai, 590, JA).*
The meetings were held at the Osaka Museum of Natural History on Dec. 1, 1974, Feb. 2 and March 30, 1975, and were attended by 27, 27 and 29 members respectively. In all, 21 talks were given on faunistics, 10 on ecology, 1 on morphology and 10 on miscellaneous subjects.

(1460) OLAFSSON, E., 1975. Drekaflugen Hemianax ephippiger (Burm.) (Odonata), óvaentur gestur á Íslandi. (The dragonfly Hemianax ephippiger [Burm.] [Odonata], an unexpected guest in Iceland). Náttúrufræðingurinn 45: 209-212. (Icelandic, with Engl. s.). – *(Vesturbraut 20, Hafn, Iceland).*
H. ephippiger, native to the desert areas of Africa and to southern Asia, is a well known long-range migrant. U. Norling (1967, Opusc. Ent. 32: 99-100) recorded 2 specimens recovered in Iceland in late Sept., 1941 and on Oct 11, 1964. K. Mikkola (1968, Opusc. Ent. 33: 111-113) examined weather maps for the days before the latter record, and showed that the meteorological situation in Europe was suitable for passive anemochorous dispersal from the eastern Mediterranean via Scandinavia to Iceland. On Oct. 29, and Nov. 5, 1971, 2 more specimens were found in Iceland (Westman Islands). During Oct. 26-28, the weather situation highly favoured an anemochorous dispersal from the western Mediterranean over the Atlantic to Iceland. It is concluded that there hardly remains any doubt that the sp. is capable of reaching Iceland on its own wings.

(1461) PLETT, A., 1975. Über die Ermüdung von Teilhandlungen des Beutefanges bei Springspinnen (Salticus scenicus Cl.), Libellenlarven (Aeschna cyanea Müll.) und Ameisenlöwen (Euroleon nostras Fourcr.). Zool. Anz. 195 (1-2): 8-20. (With Engl. s.). – *(Zool. Inst., Univ. Kiel, Hegewischstr. 3, D-2300 Kiel, GFR).*
The response decrement of pray-catching actions, caused by continuous stimulation, has been studied in a salticid spider, and in an odon. and an ant lion larva. In S. scenicus after the response to the approach to a prey dummy is exhausted, no preying jumps can be solicited. At this point a small part of approaching action response, dependent on the rate of preying jumps obtained before, may still be solicited. If the approach response is exhausted a repeated exhaustion of preying jumps at the end of a 2 h recovery period decreases the recovery rate of the approach response. One preying jump response is equivalent to an approach response of 6s duration. The time course of recovery is almost identical for preying jumps and approach. In Aeshna cyanea the exhaustion of approaching and snapreaction responses was studied. The results correspond with those of S. scenicus. In E. nostras if "catch-throw action" responses are exhausted and animals are stimulated to perform other prey catching actions during recovery time, no influence of these actions on the recovery rate was noted. In Salticus and Aeshna both prey-catching action responses are released by the same stimulus. The response action shown depends on the distance of the predator to the dummy. The same sensory adaption for both actions is suggested. In Euroleon different prey-catching action responses are elicited by quite different stimuli; therefore an extinction by sensory adaption occurs only for the stimulated reaction response.

(1462) POOL, T.B. & T.R. HOAGE, 1975. Intranuclear and cytoplasmatic annulate lamellae in grasshopper spermatocytes (genus Melanoplus). Cell Tiss. Res. 156: 475-482. – *(Dept. Biol., Univ. Virginia, Charlottesville, Virginia 22901, USA).*

Intranuclear and cytoplasmatic annulate lamellae were studied with the electron microscope in 3 Melanoplus spp. Although in all of them cytoplasmatic annulate lamellae were observed, intranuclear annulate lamellae were found in 1 sp. only. The latter encompass certain nuclear material adjacent to the nuclear envelope forming a vesicle that is extruded into the spermatocyte cytoplasm. In this same sp., cytoplasmatic annulate lamellae are seen contiguous with granular masses of varying size. These structures were noted as being morphologically indistinguishable from the "yolk nuclei" of odon. oocytes as described by R.G. Kessel & H.W. Beams (1969, Annulate lamellae and "yolk nuclei" in oocytes of the dragonfly, Libellula pulchella. J. Cell Biol. 42: 185-201). – (*Abstracter's note*: For a general review of the subject, Odon. included, cf. the monograph by the first author of the mentioned paper, R.G. Kessel, 1973. Structure and function of the nuclear envelope and related cytomembranes. Progr. Surface & Membrane Sci. 6: 243-329. Author's address is: Dept. Zool., Univ. Iowa, Iowa City, Iowa 52240, USA).

(1463) PROVONSHA, A.V., 1975. The Zygoptera (Odonata) of Utah with notes on their biology. Gt Basin Nat. 35 (4): 379-390. – (*Dept. Ent., Purdue Univ., West Lafayette, Indiana 47907, USA*).
Detailed distribution maps of Utah, USA, are provided for each of the 33 spp. known from the State. Notes on the general range, habitat preference, reproductive behaviour, emergence data, and general biology of each sp. are also included. (Author).

(1464) RUPPRECHT, R., 1975. The dependence of emergence-period in insect larvae on water temperature. Verh. int. Ver. Limnol. 19: 3057-3063. (With German s.). – (*Zool. Inst., Univ. Mainz, Saarstr. 21, D-6500 Mainz, GFR*).
Aeshna cyanea, Cordulia aenea and Pyrrhosoma nymphula were studied. Aeshna, kept under laboratory conditions at 16.5°C, emerged 7 months earlier than in nature. Even a moderate temperature increase (2°C) will accelerate the larval development and ecdysis, which might cause the extinction of the sp. in warmed up biotopes. The same is true of the other 2 spp., in which it was demonstrated that the temperature has a more decisive influence on emergence than the photoperiod.

(1465) SOSZKA, G.J., 1975. The invertebrates on submerged macrophytes in three Masurian lakes. Ekol. pol. 23 (3): 371-391. (With Polish s.). – (*Zakład Higieny Radiologicznej, Cent. Lab. Ochrony Radiologicznej, ul. Konwaliowa 7, PO-03-194 Warszawa*).
The composition and number dynamics of invertebrates on 4 spp. of submerged macrophytes (genera Potamogeton, Myriophyllum, Elodea) in 3 lakes of Masurian Lakeland (Mikołajskie, Sniardwy, Warniak), Poland, are analysed. The odon. larvae (Zygoptera) represent on average but <1% (maximum 5%) of the total number of invertebrates associated with macrophytes. They are most abundantly represented (particularly on Elodea) by Enallagma cyathigerum, and less so by Erythromma najas and Ischnura pumilio.

(1466) SOSZKA, G.J., 1975. Biological relations between invertebrates and submerged macrophytes in the lake littoral. Ekol. pol. 23 (3): 393-415. (With Polish s.). – (*Zakład Higieny Radiologicznej, Centr. Lab. Ochrony Radiologiczney, ul. Konwaliowa 7, PO-03-194 Warszawa*).
The invertebrates inhabiting 4 spp. of submerged macrophytes (genera Potamogeton, Myriophyllum, Elodea) in the Mikolajskie Lake, Poland, are analysed. The larval Lepidoptera and Trichoptera are the most strongly connected with the macrophytes. Among the Odon., Enallagma cyathigerum dominated. 60 alimentary tracts of this sp. were analysed. Only in one case a small fragment of a plant was found. The sp. feeds on animal food, particularly on Cladocera, Chironomidae, Stylaria lacustris, Copepoda, Ephemeroptera and Trichoptera. In alimentary tracts considerable

amounts of periphytic algae and small amounts of detritus together with particles of calcium deposit occur. In winter the food of the zygopteran larvae consists of algae and animal remains. The macrophytes are used by Enallagma larvae "very strongly" as a wintering place, and occasionally "as a substrate".

(1467) TOMINAGA, O., 1975. [Dragonflies collected in Tohoku District]. Gracile 18: 16-17. (Japanese). – (*1395, Fukui-cho, Takahata, Nara, 630, JA*).
17 spp. were collected in Aomori, Akita and Iwate prefectures, Japan, Aug. 22-29, 1975.

(1468) YAMASHITA, R., 1975. [Libellula quadrimaculata asahinai in the Nagai Botanic Gardens]. Gracile 18: 9-10. (Japanese). – (*Hozenji Temple, 6-3, 4-chome, Hannan-cho, Abeno-ku, Osaka, 545, JA*).
Mating and oviposition were observed at a pond in the Nagai Botanic Gardens, Osaka, Japan, on May 24, 1974. In southwestern Japan this is a rather rare sp., therefore an appeal is made for its conservation. (Cf. also *OA* No. 1361).

1976

(1469) CUPPEN, H.P.J.J., 1976. Floristische en faunistische inventarisatie van het Loobeekdal (gem. Venray). [Flora and fauna inventarisation of the Loobeekdal (Venray municipality)]. Natuurh. Maandbl. 65 (6): 93-105. (Dutch). – (*Kranestraat 1, Horst, Zuid Limburg, NL*).
Calopteryx virgo is recorded from the brooklet, Giessevennekesbeek, Zuid Limburg province, the Netherlands.

(1470) FORSYTH, M.A. & R.C. FOX, 1976. The influence of substrate and heated effluent from Oconee Nuclear Station on populations of fresh water insects in Lake Keowee – littoral zone. J. Georgia ent. Soc. 11 (2): 138-150. – (*Dept. Ent. & Econ. Zool., Clemson Univ., Clemson, S.C. 29631, USA*).
A study was conducted in Lake Keowee, South Carolina, USA (July 1973 - Dec. 1974) to determine the effects of the thermal effluent from the Oconee Nuclear Station upon aquatic insect populations. Biweekly sampling in 3 major natural inlets and the heated water discharge cove indicated that 99% of the aquatic insects were Diptera, 1% was represented by 5 orders, incl. 0.2% Odon. (Libellula sp.). The water temperature differences were not great enough to disrupt or accelerate insect population cycling. The discharge cove yielded only 5% of the total number of insects collected from the 4 sampling stations. Substrate preference appeared to have more influence than water temperature in determining population densities. Low numbers in the discharge cove were attributed to fish predation, the sand substrate, and insufficient organic detritus. (Authors).

(1471) GEIJSKES, D.C., 1976. De insektenwereld van het tropische regenbos. (The insect world of the tropical rainforest. Panda Nieuws 12 (7-8): 89-97. (Dutch). – (*State Mus. Nat. Hist., Raamsteeg 2, Leyden, NL*).
A popular article, illustrated mainly with the author's photographs from Surinam, and incl. a few references to the Odon.

(1472) FEDERLE, P.F. & W.J. COLLINS, 1976. Insecticide toxicity in three insects from Ohio ponds. Ohio J. Sci. 76 (1): 19-24. – (*Dept. Ent., Ohio State Univ., Columbus, Ohio 43210, USA*).
Lestes congener and Notonecta undulata (Heteroptera) and Peltodytes sp. (Coleoptera) from Ohio, USA, ponds were examined for susceptibility (96-h LC_{50}) to insecticides representing the major classes (organochlorines, carbamates and organophosphates). For all 3 spp. propoxur and carbaryl (carbamates) were generally the least toxic of all insecticides (LC_{50} from 0.16-8.0 ppm); dichlorvos (phosphate) and malathion (phosphorodithioate) (LC_{50} from 0.02-1.0 ppm) were more toxic than the carbamates; lindane (LC 50 from 0.003-0.2 ppm) was more toxic than di-

chlorvos and malathion, parathion and chlorpyriphos (phosphorothioates) and dieldrin were the most toxic of all insecticides examined (LC_{50} from 0.0008-0.007 ppm); DDT (LC_{50} from 0.001-0.1 ppm) exhibited the widest range of toxicity among the 3 insects. In all cases, mortality increased with exposure time. Piperonyl butoxide synergized allethrin and Zectran in Peltodytes spp.

(1473) HAMMOND, C.O., 1976. The Odonata of Canada and Alaska, Vol. 3. By E.M. Walker & P.S. Corbet. Ent. mo. Mag. 111 (1331-1333) Apr.-June 1975: 87. – (c/o *Dr. B.M. Hobby [Ed.], 7 Thorncliffe Rd., Oxford, UK*).
Book review of the volume listed in *OA* No. 1194. (Cf. also *OA* Nos. 1301, and 1249, 1274, 1395).

(1474) INOUE, K., 1976. [Recent papers on Mnais by Dr. S. Asahina]. Gracile 19: 7-11. (Japanese). – (*5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA*).
This is an abridged Japanese translation of the papers listed in *OA* Nos. 940, 941, 1161, 1162, 1242, 1297 and 1298.

(1475) INOUE, K., 1976. [Report on the 33rd meeting of the Kansai Research Group of Odonatology]. Gracile 19: 12. (Japanese). – (*5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA*).
The meeting was held at the Osaka Museum of Natural History on Feb. 8, 1976, and was attended by 31 members. The 3 papers presented were all related to various aspects of the Mnais research.

(1476) JENSEN, H., 1976. Ultrastructure of the aortic diverticula of the adult dragonfly Sympetrum danae (Odonata: Anisoptera). Cell Tiss. Res. 168 (2): 177-191. – (*Cellular Cardiology Res. Group, Inst. Anat., Univ. Bergen*, Arstadveien 19, N-5000 Bergen, Norway).
The aorta of S. danae possesses two dorsal diverticula: one in the mesothorax and one in the metathorax. They are very similar in form and position. Each diverticulum has a dorsal valve through which blood is pumped from the wings down into the aorta. The wall of the aortic diverticula consists of two simple cell layers: an outer epidermis-like layer and an inner muscle layer. The nuclei of the muscle cells are situated close to the lumen of the diverticula. The mitochondria are evenly dispersed between the myofibrils and are often paired up on either side of the Z-band. The Z-bands are thick and fragmented. The length of the sarcomeres varies from 3.3 to 6.1 μ. The A-band length is about 3 μ. The myofibrils consist of thick (250 A) and thin (85 A) filaments. Each thick filament is surrounded by 9-12 thin filaments. The sarcoplasmic reticulum is well developed and separates the myofibrils with one or two layers. The T-tubules are flattened and branch irregularly like a two-dimensional tree between the lamellar myofibrils. Intercalated discs are observed. – The peculiarities of the muscle of aortic diverticula in S. danae are discussed in relation to various muscles of other insects and arthropods (Author).

(1477) JUMPPANEN, K., 1976. Effects of waste waters on a lake ecosystem. Ann. Zool. Fenn. 13: 85-138. – (*Water Protection Assoc. of SW Finland, Kreetank 5 B, SF-20340 Turku, Finland*).
The effects of waste waters were studied in 2 oligotrophic lakes in central Finland. Special attention has been paid to the successive changes caused in the plankton and benthic faunal communities by eutrophication, and its consequences for the aquatic fauna chain. Ischnura elegans and Leucorrhinia dubia are the only odon. spp. mentioned, but no reference is made as to the development of their populations with the increased eutrophication.

(1478) OBANA, K., 1976. [Report on the 32nd meeting of the Kansai Research Group of Odonatology]. Gracile 19: 11-12. (Japanese). – (*3-4-10, Kinryo-cho, Sakai, 590, JA*).

The meeting was held at the Osaka Museum of Natural History on Nov. 30, 1975, and was attended by 26 members. In all, 15 talks were given on faunistics and 2 on ecology.

(1479) PETERS, J.V., 1976. Notes on the distribution of Australian Odonata. Aust. ent. Mag. 3 (1): 9. – *(245 Quarry Rd., Ryde, N.S.W., 2112, AU).*

Austrogynacantha heterogena and Rhyothemis phyllis chloe are recorded for north-eastern New South Wales, Australia. The first of these was taken at U.V. light. In addition, a few inaccuracies that have slipped in the paper listed in *OA* No. 834, are corrected.

(1480) PRASAD, M. & R.N. BHARGAVA, 1976. Observations of the coitus of Orthetrum pruinosum neglectum (Rambur) (Insecta: Odonata). Cheetal 17 (1): 1 p. (sep.). – *(Northern Regional Stn, Zool. Surv. India, 13 Subas Rd., Dehra Dun-248001, U.P., India).*

Field observations, carried out at the Sahastradhara rivulet, NE of Dehra Dun, Uttar Pradesh, India, Sept.-Oct., 1974, on the following aspects of sexual behaviour are brought on record: (1) the copulation of 2 pairs took place partly on wings, partly while resting on a twig and on a stone, and lasted 80 and 95 min. respectively; (2) oviposition occurred in tandem.

(1481) SCHMITZ, M. & H. KOMNICK, 1976. Rectale Chloridepithelien und osmoregulatorische Salzaufnahme durch den Enddarm von Zygopteren- und Anisopteren-Larven. J. Insect Physiol. 22 (6): 875-883. – *(Inst. Cytol. & Mikromorphol., Univ. Bonn, Ulrich-Haberland-Str. 61 a, D-53 Bonn-1, GFR).*

The larvae of Coenagrion puella possess 3, and those of Aeshna cyanea up to 486 rectal chloride epithelia which in both spp. are organized as transporting epithelia. Combined applications of the histochemical chloride precipitation technique, energy-dispersive micro-analysis of X-rays, autoradiography and scintillation counting on A. cyanea revealed that the chloride epithelia adsorb chloride from the external solution. By use of radioactive sodium and chloride in hypotonic concentrations applied on normal and anus-sealed larvae it was demonstrated that the rectum of both spp. is the main pathway for salt uptake into the haemolymph. The stepwise increase in external osmolarity by the addition of mannitol results in a concomitant reduction of chloride uptake into the haemolymph. These results suggest that the rectal chloride epithelia are involved in hyperosmotic regulation by the absorption of salt from the external medium (Authors).

(1482) STOBBE, H., 1976. DJN Libellenschlüssel für die BRD. Zweite Auflage. Deutscher Jugenbund für Naturbeobachtung, München. 30 pp. – Price (approx.): DM 2.50. – (Author's address: *Ahrensburger Platz 4, D-2000 Hamburg-67, GFR;* – Publishers' address: *Mechthildenstr. 36, D-8 München-19, GFR).*

This is a completely revised second edition of the key for the identification of dragonflies of the German Federal Republic, prepared originally by D. Glitz, published by the same Publishers in 1970, and for some time now out of print. A very brief outline of the structural features employed in the keys is followed by the actual keys to the imaginal stages. A check-list of the 80 spp. known to occur in the German Federal Republic is appended. The keys are excellently illustrated and for each sp. a brief statement is made as to its general distribution and phenology in the territory considered. As stated in the Foreword, the keys were revised in accordance with suggestions and remarks obtained from the users of the first edition, therefore one may trust that the new version wil very well correspond to the needs of its main potential users: the members of the German Youth Federation for Nature Study (DJN). Although quite a few German-language dragonfly identification works are available,

the present publication represents a welcome addition to the literature and will be certainly used to advantage by any one interested in identification of adult central European material. – (*Abstracter's note*: The booklet can be ordered solely from the Publishers; no copies are available from the author.

(1483) TSUDA, S., 1976. [Considerations on Mnais strigata]. Gracile 19: 1-7. (Japanese). – (*7-17-9, Habikigaoka, Habikino, Osaka Pref., 583, JA*).
A hypothesis is put forward to explain the history of speciation in Mnais. There are two species, M. nawai and M. strigata, the latter consisting of 5 races. One of these, the "Setouchi race", has hyaline-winged ♂♂ only, whereas all other races have two types of males. It is argued that coloured-winged males were lost in the Setouchi race through hybridization of orange-winged M. strigata with M. nawai. It is estimated that 99.9% will become hyaline-winged in the 2000th generation if the orange-winged ♂♂ are eliminated at a rate of 1% per generation, starting from a population with 50% coloured-winged males. – (*Abstracter's note*: An unabridged Engl. translation of the paper is available from Mr. K. Inoue, 5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, JA, or from the Editors of Odonatologica).

(1484) WATERSTON, A.R., 1976. On the genus Cordulegaster Leach, 1815 (Odonata) with special reference to the Sicilian species. Trans. R. Soc. Edinb. 69 (19): 457-466. – (*Royal Scottish Mus., Edinburgh EH1 1JF, Scotland, UK*).
The genus is represented in Sicily, Italy, by 2 spp. From an examination of material recently collected there, and from evidence in the literature it is concluded that one of these has previously been misidentified and is here named C. boltoni trinacriae ssp.n. The other is the little-known C. bidentatus sicilicus Fraser, 1929. A key to ♂♂ of the Old World taxa is provided and lectotypes for C. boltoni algiricus Morton, C. insignis amasinus Morton, C. insignis nobilis Morton, C. coronatus Morton and a neotype for C. charpentieri (Kolenati) are designated. (Author).

(1485) WATSON, J.A.L., 1976. The synonymy of Ischnura heterosticta (Burmeister) and Ischnura torresiana Tillyard (Odonata: Coenagrionidae). J. Aust. ent. Soc. 15: 71-78. – (*Div. Ent., CSIRO, Canberra, A.C.T., 2601, AU*).
The synonymy of the 2 spp. is demonstrated. The data presented indicate that they do not show diagnostic structural characters, but constitute the ends of a range of forms varying in the structure of the appendages, and in abdominal and thoracic coloration. The concept that the 2 spp. are distinct species is no longer tenable. Nor is it useful to regard them as subspecies.

(1486) WILLIAMS, P.H., 1976. A note on preserving the dragonflies of the family Aeshnidae in the field. Bull. amat. Ent. Soc. 36 (311): 70. (c/o *Mr. P.W. Cribb [Ed.], 355 Hounslow Rd., Hanworth, Feltham, Middx., UK;* refer to the author's Membership No. 4965 J).
If the abdomen is detached from a freshly killed specimen and soaked for 24 hrs in ethyl acetate, when it dries the spots have become white in contrast to the brown and black ground colour. Thus the shapes of the spots are clearly visible and a good approximation to the natural colours can be seen at any time by re-immersing the abdomen in ethyl acetate. The head and thorax are best dried rapidly in air, e.g. over a radiator and the abdomen can be re-affixed later when all parts are dry. (Author).

ERRATA

In the English abstract of the paper by Dr. G. JURZITZA, as published in Vol. 3, No. 4, p. 221, the name of the new *Antiagrion* species should read *GRINBERGSI*, and not *grinsbergsi* as erroneously printed.

Dr. N.N. AKRAMOWSKI has supplied the following addition and corrections concerning the odonatological bibliography of Dr. B.F. Belyshev, as printed in Vol. 4, No. 4, pp. 211-218:

Addition:

1965 g. Formoobrazuyushchie territorii v severnoi Palearktike. *Izv. altai. Otdel. geogr. Obshch. SSSR* 5: 145-147. (Russian).

Corrections:

1966 f. "42 (1)" should read "42 (6)".

1966 g. There are two errors in this reference: the coauthor's name is omitted, and the volume number is wrong. The reference should read as follows:
(– & E.YA. REMM) Unknown and little known larval phases of dragonflies (Odonata, Insecta) from southeastern Siberia. *Gidrobiol. Zh., Kiev* 2 (5): 10-23. (Russian, with Engl. s.).

1969 c. "(– & YA.E. REMM)" should read "(– & E.YA. REMM)".

1970 c. ":32" should read ":124".

1970 d, 1970 e, and 1970 f. "1970/2" should read "1".

Dr. E.C.G. PINHEY has drawn the Editors' attention to the following error that has slipped into the list of odonate taxa, as printed in Vol. 5, No. 2, p. 100:
"*A. umbargae....*" should read "*Agriocnemis umbargae....*"

In Figure 10 of the paper by Dr. D.C. GEIJSKES, as published in Vol. 5, No. 3, p. 220, three names of venation details have, unfortunately, got lost during the printing processing. The first of the top row should read *an1*, and the third and fourth of the bottom row, *q* and *p* respectively.

The following are the more serious errors that slipped into the text of ODONATOLOGICAL ABSTRACTS:

No. 1111 (Vol. 4, No. 4, p. 282): the text of the abstract should be replaced by the following: "On May 20, 1974, the newspaper, 'Shinano-mainichi', reported that a decision had been taken not to sacrifice the habitat of Nannophya pygmaea at Ochikura, Hakubamura, Kitaazumigun, Nagano Pref., Japan, to a rural development project. This is the result of efforts made by the author and a few others during June 1971 through Dec. 1973."

No. 1131 (Vol. 4, No. 4, p. 284). The original English title reads: "New stands of dragonfly Cordulegaster boltoni (Donov.), Odonata, in northwestern Poland".

No. 1387 (Vol. 5, No. 3, p. 300). The paper has a subtitle, viz. "I. Effects of centrifugation and starvation".

No. 1423 (Vol. 5, No. 3, p. 307). There are erroneously two abstracts with the same numbers. The second one should be numbered 1424.