

## ODONATOLOGICAL ABSTRACTS

1971

- (137) (Anonymous), 1971. Annual Meeting of the Society of Odonatology, Tokyo. Tombo 14 (3-4): 31. (Japanese). — (*Society of Odonatology, Totsuka III-123, Shinjuku-ku, Tokyo, 160, JA*).  
The meeting was held at Suita near Osaka, on November 15, 1971, and was attended by 32 members. A group photograph of the participants is added.
- (138) AITA, M., 1971. A case of triple-connection of *Trigomphus ogumai*. Tombo 14 (3-4): 26. (Japanese). — (2-6, *Sakae-machi, Ichinomiya, Aichi Pref., JA*).  
In Kaizu, Gifu Pref., Japan, the author observed and photographed a case of triple-connection of *T. ogumai*, of the type AB to B of Eda's classification. (1970, Tombo 13: 17-20).
- (139) ASAHINA, S., 1971. A list of papers published since 1952 dealing with the descriptions of Japanese odonate larvae. — (*Totsuka III-123, Shinjuku-ku, Tokyo, 160 JA*).  
This is the second part of the bibliography on the subject. It includes 28 titles, all but one in Japanese. (For the first part cf. OA No. 4).
- (140) ASAHINA, S., 1971. Announcement of the S.I.O. Tombo 14 (3-4): 31. (Japanese). — (*Totsuka III-123, Shinjuku-ku, Tokyo, 160, JA*).  
A brief announcement of the foundation of the international odonatological society, S.I.O., at the first European Symposium on Odonatology (Ghent, Belgium, October 22-23, 1971), with the list of Members of Honour and the addresses of the main officials.
- (141) BELYSHEV, B.F., 1971. Some distinctive features of the odonate fauna of Ceylon (*Odonata, Insecta*) and its probable origin. *Izv. sib. Otdel. Akad. Nauk SSSR, ser. biol.*, 2 (10): 110-115. (Russian, with Engl. s.). — (*Biol. Inst., Siberian Branch USSR Acad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR*).  
The census of the odon. fauna of Ceylon, as considered in this paper, is based on Fraser's volumes in the Fauna of British India (1933-1936). It is considered poor and resembling, in its structure, the faunas of the oceanic rather than those of the continental shelf islands. It is geologically young, originating at the end of the Tertiary. (For a revised list of spp. hitherto recorded from Ceylon cf. OA No. 63).
- (142) BELYSHEV, B.F., 1971. The zoogeographical division into districts of the Australian Faunal Region, on the basis of dragonfly distribution (*Odonata, Insecta*). *Izv. sib. Otdel. Akad. Nauk SSSR, ser. biol.*, 5 (1): 66-72. (Russian, with Engl. s.). — (*Biol. Inst., Siberian Branch USSR Acad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR*).  
The division proposed differs from that based on the distribution of birds and mammals. New Guinea and Oceania are not included in the Region, which is divided into 2 Subregions: the Northern (including the York and Arnhemland Provinces), and the Southern one (including the Provinces of New Zealand, Eastern and Western Australia). A schematic map is added.
- (143) BELYSHEV, B.F., H. REMM & A.G. PANKRATYEV, 1971. On the odonatological fauna of Ussuri Territory. In: *Zhivaya Priroda Dal'nogo Vostoka*, Tallin, pp. 162-170. (Russian, with Engl. s.). — (*Biol. Inst., Siberian Branch USSR Acad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR*).  
An account is given of the odon. material brought together by the Second (1961) Far East Expedition of the Estonian "Young Scientists". In all, 25 spp. are listed and discussed from a zoogeographical point of view. A description of a new spp., *Sympetrum vulgatum fuscopterum* Belyshev, collected between October 8-15, 1961, in humid forests of the Nature Reserve Kedrovaya Padj, is added. The new spp. appears closely allied to *S. v. imitans* Selys.

- (144) BELYSHEV, B.F. & V.V. SHEVCHENKO, 1971. Fauna strekoz (Odonata, Insecta) i raspredelenie ee komponentov v Kazahstane. (Dragonfly fauna [Odonata, Insecta] and distribution of its components in Kazakhstan). Biol. Nauki, Alma-Ata 2: 73-77. (Russian). - (*Biol. Inst., Siberian Branch USSR Acad. Sci., Ul. Frunse 11, Novosibirsk-91, USSR*).

A tabular review is given of 73 spp. recorded from Kazakhstan, USSR. The territory of the Kazakhstan SSR is divided into 6 areas (North, Central, South, Northeast, Southeast, West); their dragonfly faunas are separately analyzed. A geographic map is added.

- (145) BOEHMS, C.N., 1971. The influence of temperature upon embryonic diapause and seasonal regulation in *Sympetrum vicinum* (Hagen) (Odonata: Libellulidae). Thesis, Univ. North Carolina at Chapel Hill, 153 pp. - (*Dept. Zool., Univ. North Carolina, Chapel Hill, N. Carolina, USA*). - Microfilm (US \$ 4.-, or £ 2.-) and xerox copy (US \$ 10.-, or £ 5.-) available (refer to Order No. 71-30, 539) at University Microfilms, Dissertation Copies, P.O.B. 1764, Ann Arbor, Michigan 48106, USA (for USA) and at University Microfilms Ltd., Tylers Green, High Wycombe, Buckinghamshire, UK (for Europe and others).

(Verbatim abstract from Diss. Abstr. 32, 5 [1971]: 3072-B): Laboratory and field studies were combined to elucidate the influence of temperature upon embryonic development and seasonal regulation in *S. vicinum*, a north temperate zone anisopteran. A total of 4,800 eggs, collected over a three-year period (1962-4), were observed from oviposition to hatching to ascertain the developmental characteristics when exposed to constant temperatures of 2, 6, 10, 14, 18, 22, 26 and 30°C. and when exposed to a variety of time-temperature regimes. Detailed information on the thermal coefficients of eight morphological stages was obtained. The temperature requirements of specific morphological stages revealed three physiological periods designated as pre-diapause development, diapause development, and postdiapause development. A weak dia-

pause was noted since morphogenesis occurred during this period within a range of temperature from 10° to 26°C. Morphological development revealed that the physiological processes responsible for the rate of diapause development could be removed temporally from the actual morphological stages designated as constituting this physiological period. The rate of diapause development could be accelerated by exposing eggs to initial temporary low temperature treatments. Interactions between the durations and the timing of the low temperature treatments and the durations of the three physiological periods were observed. Preceding the low temperature treatment with temporary moderate temperature pretreatments of varying length increased the tolerance of the embryos to low temperature and altered the durations of all three physiological periods. A univoltine life cycle was noted through field and laboratory observations of the adult, nymphal, and egg stages. Laboratory rearing of nymphs revealed a ten instar nymphal stage which required 80-90 days from hatching to emergence. It was concluded that the southern limit of the distribution of *S. vicinum* is determined by the duration and the intensity of the low winter temperature to which the developing eggs are exposed. This was confirmed by reported sightings of representatives of this species.

- (146) CLAUSNITZER, H.-J., 1971. Bodenständige Libellen (Odonata) an intensiv bewirtschafteten Fischteichen. Ent. Z. Frankf. a.M. 81 (7): 68-71. - (*Südstrasse 24 A, D-3106, Eschede, GFR*).

The observations were carried out at the fish ponds Aschauteich and Loherteich in the Nature Reserve Südheide, GFR. The biotic and abiotic conditions of the site are described. The common feature of all resident odon. spp. is their capability to pass the winter period, when the ponds are dry, either as imago or at the egg stage. In all, 10 spp. were found to breed there; their mean abundance (per 100 sq. metres) and dominance (in %) are given in brackets: *Lestes sponsa* (34; 50), *Sympetrum sanguineum* (10; 22), *S. danae* (5; 10), *Sympecma fusca* (3, 100), *Sym-*

petrum vulgatum (3; 8), Aeshna mixta (2; 6), Sympetrum flaveolum (0.5; 0.2), Lestes dryas (0.2; 0.1), Sympetrum depressiculum (0.1; 0.01), Lestes viridis (-; -). Notes on their bionomy and phenology are added.

- (147) EDA, S., 1971. Abnormalities in the body patterns of *Ischnura senegalensis*. Tombo 14 (3-4): 26. (Japanese, with Engl. s.). - (2-7-5-208 Sodegaura, Narashino-shi, Chiba Pref., JA).

Antehumeral stripes of 2 ♂ of *I. senegalensis*, taken at Usui, Chiba Pref., Japan, showed a strong tendency towards reduction. A homochromatic ♀ from the same population had additional black speckles in the blue of the 8th segment. Photographs of the specimens are added.

- (148) EDA, S., 1971. Non-contact flying-oviposition of *Sympetrum risi risi*. Tombo 14 (3-4): 27. (Japanese, with Engl. s.). - (2-7-5-208 Sodegaura, Narashino-shi, Chiba Pref., JA). When the ♀ of *S. risi* oviposits in tandem, she always drops the eggs by flicking the abdomen, while hanging in the air. On October 3, 1970, at Hagi, Yamaguchi Pref., Japan, however, the author observed a lonely ♀, scattering the eggs about 40 cm above the mud adjacent to a pond without flicking movements.

- (149) FROST, S.W., 1971. *Pachydiplax longipennis* (Odonata: Anisoptera): records of night activity. Fla Ent. 54 (2): 205. - (Dept. Biol., Pennsylvania State Univ., University Park, Pa., USA).

In 1 month's time 96 spec. of *P. longipennis* were collected in light traps operated between 9 pm. and down at Archbold Biological Station, Florida, USA. 34 of these were taken between 10 pm. and down.

- (150) FUKUI, M., 1971. Record of *Aeshna juncea* from Shizuoka Pref. Tombo 14 (3-4): 25. (Japanese). - (c/o Nishino, 1-3-15, Ojika, Shizuoka-shi, JA).

In the central parts of the Japanese mainland *A. juncea* is a montane sp., but one ♂ was captured at a pond in Shizuoka, at a distance of some 300 m from the sea.

- (151) HALKKA, L. & O. HALKKA, 1971. Cyto-

plasmatic bodies common to nerve cells and oocytes. Scand. J. clin. Lab. Invest. 27 (suppl. 116): 62. - (Dept. Genet., Univ. Helsinki, P.-Rautatiekatu 13, Helsinki 10, SF). The ultrastructure of the cytoplasm at the basophilic stage was studied in the panoistic oocytes of *Cordulia aenea*. In this sp. larval development lasts several years and RNA accumulates in the cytoplasm during the warm period of each year. In addition to ribosome mass, nuage material, annulate lamellae and other types of organelles commonplace in oocyte cytoplasm, a number of spherical or elongate electron-dense bodies were regularly observed in the perinuclear cytoplasm. These bodies, which in cross section are about 2-3 times the average size of mitochondria, are not bound by any membrane and appear to consist of coarse interconnected granules with diffuse boundaries. The bodies are sometimes found close to the nuage material, which protrudes into the cytoplasm through the annuli of the nuclear membrane. The authors suggest that they may represent aggregates of masked information RNA, non-nucleolar in origin.

- (152) HOCUTT, G.E. & R.W. DIMMICK, 1971. Summer food habits of juvenile ducks in East Tennessee. J. Wildl. Mngt 35 (2): 286-292. - (Necedah Natn. Wildlife Refuge, Necedah, Wisc., USA).

In 57 juvenile wood ducks, *Aix sponsa*, shot between June and August on John Sevier Lake, Tenn., USA, dietary patterns were determined by analysis of the food remnants in the digestive tracts. The birds consumed 86.8% of plant and 13.2% of animal foods. The latter consisted mostly of Diptera, Coleoptera, Odon. and Lepidoptera. A pronounced shift from animal food to plants was observed with increased age. Thus, in ducks less than a week old, dragonflies represented 6.8% of the total volume, while this figure amounted to 1.3% in animals more than six weeks old. The odon. spp. involved were not identified.

- (153) HURST, G.A., 1971. The effects of controlled burning on arthropod density and biomass in relation to bobwhite quail brood

habitat on a right-of-way. Proc. Tall Timbers Conf. on ecol. anim. control by habitat mngt. 2 (1970): 173-183. — (*Dept. Biol. Sci., Southeastern Louisiana Coll., Hammond, La., USA*).

The effects of controlled burning on arthropod density (numbers) and biomass (dry weight) were determined at the TVA West Point-French Camp, W. of Starkville, Mississippi, USA. The burned areas had significantly more arthropods than the comparable unburned areas. This applies also to the Odon., though an analysis of dragonflies was not made and it appeared that there would be no significant difference. As a rule, predators show less response to burning than herbivorous arthropods.

- (154) IKEZAKI, Y., 1971. First records of *Anax guttatus* from Nagasaki Prefecture. Tombo 14 (3-4): 27. (Japanese). — (*Matsu-ura High School, Shisa, Matsu-ura-shi, Nagasaki Pref., JA*).

The sp. was collected at Matsu-ura and Sasebo and is new to the fauna of Nagano Prefecture, Japan).

- (155) INGRAM, B.R. Jr., 1971. The seasonal ecology of two species of damselflies (Odonata: Zygoptera) with special reference to the effects of photoperiod and temperature on nymphal development. Thesis, Univ. of North Carolina at Chapel Hill. 269 pp. — (*Author's address unknown*). — Microfilm (US \$ 4.—, or £ 2.—) and xerox copy (US \$ 10.—, or £ 5.—) available (refer to Order No. 72-10, 734) at University Microfilms, Dissertation Copies, P.O.B. 1764, Ann Arbor, Michigan 48106, USA (for USA) and at University Microfilms Ltd., Tylers Green, High Wycombe, Buckinghamshire, UK (for Europe and others).

(Verbatim abstract from Diss. Abstr. 32, 9 [1972]: 5525-B): The seasonal ecology of two species of damselflies, *Enallagma hageni* and *E. aspersum*, was studied in small ponds near Highlands in western North Carolina, USA. The life cycle of *E. hageni* was completely univoltine with an early, relatively synchronized emergence. Although *E. aspersum* was primarily univoltine, some individuals of the new-year class were able to com-

plete their development and emerge within a single season (bivoltine): emergence in this species was temporally dispersed. Both species overwintered as instars preceding the final (F). Annual variation in the timing of seasonal events for both species was large at some ponds, while at others similar patterns were found in each year. Seasonal events tended to occur later at higher altitudes, presumably reflecting temperature differences. Nymphs of both species were collected at intervals from August to March and subjected to 11- and 14-hour photoperiods at 16° and 21°C. Development was completed more rapidly upon exposure to long day-lengths in most cases. Developmental times decreased from a maximum in August to a 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, there was no photoperiodic response by nymphs of *E. aspersum* at the lower temperature. Prolonged development occurred in the later instars, primarily the F-1 and F-2, but not in the final. Slow development for both species, generally associated with short days, was accompanied usually by supernumerary molts. The incidence of extra molting was greater at the higher temperature in most cases on both photoperiods. Extra molts were common in field populations of *E. aspersum*, but were rare in those of *E. hageni*. Abnormal wing-pad development was associated frequently with the supernumerary molts in the later nymphal instars of both species. Abnormal wing-pads were only found with nymphs exposed to the higher temperature, primarily under short-day conditions where extra molts and growth rates were respectively higher and lower than on long days. For both species, nymphs transferred to 21°C completed development on long days (14-hours) in approximately half the time of nymphs under short days (11-hours) after initial treatments (11-hours, 10°C; 14-hours,

- 10°C; and 11-hours, 21°C). An initial exposure to the low temperature (10°C) stimulated subsequent rapid development on long days to a greater extent than continuous exposure to long-day, 21°C conditions, and the longer the exposure (2, 4 and 8 weeks), the faster the subsequent response. The day-length at 10°C had no effect on developmental rates. There was no carry-over effect of stimulatory long daylengths administered during initial treatments. The differing responses of *E. hageni* and *E. aspersum* in the laboratory experiments proved relatable to the contrasting life cycles of the two species in nature.
- (156) JONGE, C.H. de, 1971. *Nederlandse tegels*. (Dutch tiles). De Bussy, Amsterdam, 336 pp., 158 pls. (Dutch; Engl. editions by Praeger, New York, and Pall Mall Press, London). — (Author deceased).  
The Dutch tiles of the 17th and 18th centuries represent one of the most wide spread objects of the Netherlands industrial art. Insect motifs were often used, though dragonfly illustrations are met with but seldom. The book gives several reproductions (partly in colour) of tiles where the dragonfly is used either as the central object of illustration (fig. 14 c, in a polychrome tableau, Rijksmuseum, Amsterdam) or in a composition with other decorative objects (figs. 79, dated 1967, private property, St. Malo, Bretagne, France; and 109, dated end 17th century, Lakenhal Museum, Leyden, NL).
- (157) JURZITZA, G., 1971. *Einige Beobachtungen an nordamerikanischen Libellen*. Tombo 14 (3-4): 17, 18-20. — (Zehntwiesenstr. 40, D-7505 Ettlingen, GFR).  
Observations on dragonflies made during a trip through West Virginia and Ohio, USA (30-VIII/6-IX, 1970) are recorded. *Anax junius* shows a "physiological colour change" sensu O'Farrell (1963, Austral. J. Sci. 25: 437-438). Male searching flight and oviposition of *Boyeria vinosa* and *B. grafiana* are very similar to those of the European *B. irene*. Sperm refill of the ♂ mating organ was observed in *B. vinosa* shortly after tandem formation. *Sympetrum obtrusum* seems to oviposit not in tandem position but with the ♂ hovering above the ♀. (Author).
- (158) KIAUTA, B., 1971. *The First European Symposium on Odonatology*. Tombo 14 (3-4): 29-30. — (Inst. Genet., Univ. Utrecht, Opaalweg 20, Utrecht, NL).  
A detailed report on the Symposium, held at Ghent, Belgium, on October 22-23, 1971. There were nearly 60 attendants, representing 11 countries. The titles of 12 lectures and 2 films presented in 3 Lecture Sessions are listed. In the framework of the Symposium a Colloquium on the status of the European odon. fauna has been organized, and the international odonatological society, *Societas Internationalis Odonatologica* (S.I.O.) was founded. The names of the 4 Members of Honour of the new society, elected by the participants in the Symposium, are listed and the main data on the journal *Odonatologica* are briefly mentioned. A photograph of the business session of the Symposium is added.
- (159) KOŘÍNKOVÁ, J., 1971. *Sampling and distribution of animals in submerged vegetation*. Věst. čsl. Spol. zool. 35: 209-221, 2 pls. — (Dept. Hydrobiol., Charles Univ., Viničná 7, Prague 2, CS).  
In a carp-pond a 1 sq. metre sampler was used for sampling the submerged phyto-macrofauna. The mean abundances and biomasses of animals, including Odon., were related to the unit bottom area, to unit plant weight, to the unit plant surface, and to the unit water volume. It is shown that a given aim of the sampling or a given animal sp. require an adequate expression of quantitative data. In animal populations various relations to the plant stand density were found. The distribution of animals was tested and a log-normal distribution was proved for the total animal biomass. Abundant material makes it possible to treat quantitative data in terms of the normal distribution. The size of the sampler is discussed in the light of species overdispersion and the "edge effect" of samplers.
- (160) KURIBAYASHI, D., 1971. *Observation on the emergence of the dragonfly, Pantala flavescens Fabricius*. New Entomol. 20 (1): 15-19. (Japanese, with Engl. s.) — (2878

*Saijo, Matsushiro-machi, Nagano-shi, JA).*

A record is presented of the emergence of *P. flavescens* as observed in the field (Matsushiro, Nagano City, Japan) and in the laboratory, where the process was filmed on August 25-26, 1970. The stages of ecdysis are illustrated by 17 photographs.

- (161) LOGAN, E.R., 1971. A comparative ecological and behavioral study of two species of damselflies, *Enallagma boreale* (Selys) and *Enallagma carunculatum* Morse (Odonata: Coenagriidae). Thesis, Washington State Univ., 93 pp. — (*Dickinson State College, Dickinson, N.D. 58601, USA*). — Microfilm (US \$ 4.—, or £ 2.—) and xerox copy (US \$ 10.—, or £ 5.—) available (refer to Order No. 71-18, 579) at University Microfilms, Dissertation Copies, P.O.B. 1764, Ann Arbor, Michigan 48106, USA (for USA) and at University Microfilms Ltd., Tylers Green, High Wycombe, Buckinghamshire, UK (for Europe and others).

(Verbatim abstract from Diss. Abstr. 32, 1 [1971]: 353-B): Ecological aspects, reproductive activity, and behaviour of single males of isolated populations of *Enallagma boreale* and *E. carunculatum* were studied. Population density was estimated for both species by capture-recapture methods. Behavioral patterns of single males and mating pairs were observed. Weather conditions during emergence and adult flying seasons altered population levels. Peak populations of *E. boreale* occurred on 27 May, 9 and 15 June while peak numbers of *E. carunculatum* occurred on July 12. Mean life expectancy of adults for both species was 22.2 days. This expectancy assumed an 18-day maturation period for *E. boreale* and a 19-day period for *E. carunculatum*. Exuviae indicated a numerical preponderance of females in both populations with 56% females in *E. boreale* and 65% in *E. carunculatum*. Localization of single males at the site was ephemeral with almost all males moving to new areas before the termination of a 30-minute observation period. Males divided their activities between aggressive and non-aggressive actions. The number of aggressive actions was a direct result of population

pressure whereas the number of nonaggressive reactions was more nearly independent of population pressure. No courtship activity was exhibited by either species nor was movement on the part of the female necessary for male attraction. Models indicated a dark dorsal abdominal pattern on a light background was most attractive to approaching males. Males made several visual mistakes with live and dead damselflies as well as models and other males. Overall behavioral patterns indicated that behavior was not an isolating mechanism between the two species. Successful attachment of the male's claspers to the female's mesostigmal laminae appeared to be the best isolating mechanism. After seizure the pairs spent a period of 23.4 minutes in copulation for *E. boreale* and 21.2 minutes for *E. carunculatum*. After copulation a period of 11.1 minutes was spent in exploratory oviposition by *E. boreale* and 10.6 minutes by *E. carunculatum*. True oviposition was divided into submergent and surface oviposition. A period of 23.1 minutes for *E. boreale* and 19.8 minutes for *E. carunculatum* was spent in submergent oviposition. *E. boreale* spent a period of 67.3 minutes and *E. carunculatum* spent 58.4 minutes in surface oviposition.

- (162) MANLY, B.F.J., 1971. Estimates of marking effect with capture-recapture sampling. *J. appl. Ecol.* 8 (1): 181-189. — (*Univ. of Papua and New Guinea, P.O.B. 1144, Boro-ko, Papua*).

A method is described that makes it possible, in capture-recapture experiments, to compare the survival of newly marked animals with that of animals that have been marked for some time but are still alive. In this way it is possible to check for high mortality caused by a temporary marking effect. The situation where 4 samples of *Enallagma cyathigerum* are taken has been specifically considered. Estimates of the total population size can be obtained. An example is given for samples of ♂ *Enallagma cyathigerum* and it is shown that there is some slight evidence of a marking mortality in this case. The example illustrates how the results from more than 4 samples can be utilized. (Author).

- (163) NARAOKA, H., 1971. On the discovery of the larval exuviae of *Trithemis aurora* in Japan. Tombo 14 (3-4): 24-25. (Japanese, with Engl. s.). — (*c/o Society of Odonatology, Totsuka III-123, Shinjuku-ku, Tokyo, 160 JA*).  
The exuviae of *T. aurora* (Burm.) collected on the shore rocks of the mountain lakes Ikeda-ko and Unagi-ike, Kagoshima Pref., Japan, are described and illustrated. The two lakes represent the only known Japanese locality of this sp.
- (164) NIKULIN, T.G. 1971. Strekozy poozerja Belorussii i ih rol'v rasprostraneni trematodozov ptic. (The dragonflies of the Belorussian lake country and their role as the vectors of bird trematodiasis). Sb. Rab. gel'mintol. 90-let. K.I. Skrjabin (Pap. Helminthol. Jub. Vol. 90th anniv. K.I. Skrjabin). Kolos, Moscow, pp. 284-289. (Russian). — (*Vitebsk Veterinary Inst., Vitebsk, Belorussian SSR, USSR*).  
Almost all of the 13 odon. spp., common in the Vitebsk and Grodno provinces, Belorussia, USSR, appear as vectors of prostogonimids; some of them are also hosts of echinostomatids and notocotylids. Evidence is presented on the extent, intensity and seasonal variation of the odon. infestation and on the localization of metacercariae. It is suggested that poultry might be infected throughout the vegetation period.
- (165) NORLING, U., 1971. The life history and seasonal regulation in *Aeshna viridis* Eversm. in Southern Sweden (Odonata, Aeshnidae). Ent. scand. 2: 170-190. — (*Dept. Ent., Inst. Zool., Univ. Lund, Lund, SW*).  
The life-history of *A. viridis* was studied at a peatpit in S. Sweden. In addition, larvae from some samples taken between late summer and early spring were subjected experimentally to constant artificial day-lengths of 13.0, 14.5, 16.0 and 19.5 hr at 20°C. The results of the experiments suggest that the rapid transition of photoperiod in autumn and spring is the most important factor in the regulation of the life-cycle, which in the population studied had a duration of 2-3 yr. Constant conditions probably do not favour growth. Long days (LD) and short days (SD)
- both induce diapause; SD affect the older larvae more strongly and the last instars most of all, while LD has the greatest effect on small larvae, though hatchings appear to be totally insensitive to photoperiod. Changes in photoperiod terminate and re-induce diapause according to the stage of growth. LD-diapause is also stimulated by lower temperatures. A comparison is made between the seasonal regulation in *A. viridis* and that in other spp. Discussion is presented on the causes of the phenological differences between certain types of spring and summer sp. and on the differences in the life-histories of *Aeshna* spp. at different latitudes.
- (166) PARNAS, I. & D. DAGAN, 1971. Functional organisation of giant axons in the central nervous systems of insects: new aspects. Adv. Insect. Physiol. 8: 95-144. — (*Dept. Zool., Hebrew Univ., Jerusalem, Israel*).  
The histology of the giant-fibre system in an Aeshnidae sp. is briefly surveyed, though the paper deals mainly with *Periplaneta americana* and *Locusta migratoria* (Orthoptera).
- (167) SCHÖTTNER, A., 1971. "Dreigespanne" bei Libellen. Tombo 14 (3-4): 21-22. — (*Bergstr. 29, D-6331 Katzenfurt, GFR*).  
*Pyrhosoma nymphula*, *Ischnura elegans*, *Lestes dryas*, *Calopteryx splendens* and *Sympetrum danae* should be added to the list of spp., as given by Eda (1970. Tombo 13: 17-20), in which the "triple-connection" was observed. Bibliographic references are given for the 4 zygopteran spp., while the record of *S. danae* is based on own observations. All five cases correspond to type A of Eda's classification (♂ — ♂ — ♀).
- (168) SONEHARA, I., 1971. Dragonfly fauna in the western mountainous region of North Nagano. 1. New Entomol. 20 (2-3): 33-40. (Japanese, with Engl. s.). — (*Tazawa 5035, Toyoshima-machi, Minami-azumi, Nagano Pref., JA*).  
In the period 1967-1970 the author and his high-school students collected 49 spp. in the western mountainous region of N. Nagano, Japan, bringing the total number of known spp. to 54. The territory surveyed is a basin

(400-500 m above sea level), surrounded by hills of 1000-1400 m elevation, the highest of these being Mt. Mushikura (1378 m) and Mt. Hijiri (1447 m). The summer climate is sultry, windless and extremely warm, the mean highest temperature of August amounting to 30.5°C. The peculiar climate is considered responsible for the fact that 10 spp. flew in large numbers into houses.

- (169) SVIHLA, A., 1971. Sub-niveal runway of *Tanypteryx hageni* Selys. Tombo 14 (3-4): 23. - (Rt. 3, Box 208, Camano Island, Wash. 98292, USA).

At Tipsoo Lake, Mt. Rainier National Park, Washington, USA, (elevation 1700 m approx.) a well-defined surface runway, apparently made by the larvae of *T. hageni* was found at the edge of recently receded snow, on July 7, 1970. This sp. usually does not make runways, but this one was well-worn and had the appearance of being in use for some time under the snow covering. Its construction under the snow was possible due to the heat radiation from the earth, which produced a clear space of a few cm beneath the overlying snow that allowed the larvae to move about. The observation seems to indicate that the larvae of *T. hageni* are active during the winter time, even though the habitat is covered by a deep mantle of snow for several months.

- (170) TAKETO, A., 1971. On the body-size of *Somatochlora viridiaenea atrovirens* from Kanazawa. Tombo 14 (3-4): 22. (Japanese). - (Dept. Biochem., Medical School, Kanazawa Univ., Kanazawa, Ishikawa, JA).

The nominate form and the ssp. *atrovirens* are conventionally separated by the length of the hindwing; below or above 40 mm respectively. The author has measured a sample of 40 ♂ from Kanazawa, Japan, but this separating character proved uncertain.

- (171) TOMBO. ACTA ODONATOLOGICA. Published by the Society of Odonatology, Tokyo. Vol. 14, Nos. 1-2 (March 31), 3-4 (December 31, 1971) - (c/o Dr. S. Asahina, Totsuka III-123, Shinjuku-ku, Tokyo, 160, JA).

(Nos. 1-2): *Eda, S.*: A female of *Plathemis lydia*; - *Kiauta, B.*: Predation by ants, For-

*mica fusca* L. and *F. rufa polycytena* Bondr. on the emerging dragonfly, *Aeshna juncea* (L.) and its teratological consequences; - *Eda, S.*: Submerged oviposition of *Cercion sexlineatum*; - *Kurata, M.*: The life history of *Gomphus melaenops* (Gomphidae); - (*Asahina, S.*): Col. Niall MacNeill; - *Okumura, T.*: On two small collections of the Odonata from continental China; - *Sonehara, I.*: Early instar larvae of *Aeshna juncea*; - *Takasaki, Y.*: *Tramea virginia* recognized in Shiojiri, Nagano Pref.; - *Kuwahara, H.*: Odonata from Heteruma-shima, in the Yayeyama Islands of the Ryukyus; - *Asato, S.*: A description of the larva of *Anax panybeus* Hagen; - *Asahina, S.*: A list of papers published since 1952 dealing with the descriptions of Japanese odonate larvae. I. (Nos. 3-4): - *Jurzitza, G.*: Einige Beobachtungen an nordamerikanischen Libellen; - *Schöttner, A.*: "Dreigespanne" bei Libellen; - *Taketo, A.*: On the body-size of *Somatochlora viridiaenea atrovirens* from Kanazawa; - *Svihla, A.*: Sub-niveal runway of *Tanypteryx hageni* Selys; - *Naraoka, H.*: On the discovery of the larval exuviae of *Trithemis aurora* in Japan; - *Fukui, M.*: Record of *Aeshna juncea* from Shizuoka Pref.; *Aita, M.*: A case of triple-connection of *Trigomphus ogumai*; - *Eda, S.*: Abnormalities in the body patterns of *Ischnura senegalensis*; - *Eda, S.*: Non-contact flying oviposition of *Sympetrum risi risi*; - *Ikezaki, Y.*: First records of *Anax guttatus* from Nagasaki Prefecture; - *Asahina, S.*: A list of papers published since 1952 dealing with the descriptions of Japanese odonate larvae; - *Yamaguchi, M.*: Rejecting attitude of an egg-laying female of *Anax nigrofasciatus*; - *Kiauta, B.*: The First European Symposium on Odonatology; - *Asahina, S.*: (Announcement of the S.I.O.); - *Anonymous*: Annual Meeting of the Society of Odonatology, Tokyo. (For abstracts of papers and addresses of the authors cf. OA Nos. 4-5, 9, 26-27, 49, 56-57, 95, 119, 124, 137-140, 147-148, 150, 154, 157-158, 163, 167, 169-170, 178).

- (172) VOJTKOVÁ, L., 1971. Beitrag zur Kenntnis der Helminthofauna der Wasserwirbellosen. II. Zweiter Teil der Trematodenlarven. Věst.

čsl. Spol. zool. 35 (2): 136,145, 2 pls. – (Dept. Parasitol., Fac. Nat. Sci., Purkyně Univ., Kotlářská 2, Brno, CS).

In the abdomen of the larva of *Anax parthenope*, collected at Kava, Czechoslovakia, a not further identified metacercaria was found. The cyst and the trematode larva are described in detail.

- (173) VOJTKOVÁ, L., 1971. Beitrag zur Kenntnis der Helminthofauna der Wasserwirbellosen. III. Cestoda, Nematoda, Acanthocephala. Věst. čsl. Spol. zool. 35 (2): 146-155, 1 pl. – (Dept. Parasitol., Fac. Nat. Sci., Purkyně Univ., Kotlářská 2, Brno, CS).

In larvae of 3 odon. spp. from various Czechoslovak localities the following cestode spp. were found: *Schistotaenia macrorrhyncha* Rudolphi (host: *Somatochlora metallica*; locality: Lednice), *Tatria* sp. (near *acanthorhyncha* Wedl) (*Anax parthenope*; Kava), and a not further identified cysticercoid (*Enallagma cyathigerum*; Strachotin). The recovered stages are described and the intensities of odonate infestation are stated.

- (174) WAAGE, J.K., 1971. Aspects of the reproductive behavior and ecology of *Calopteryx maculata* (Beauvois) (Odonata: Calopterygidae) and a study of its reproductive isolation from *C. aequabilis* Say. Thesis, Univ. Michigan, 272 pp. – (Div. Biol. and Med. Sci., Brown Univ., Providence, Rhode Island 02912, USA). – Microfilm (US \$ 4.-, or £ 2.-) and xerox copy (US \$ 10.-, or £ 5.-) available (refer to Order No. 72-15, 033) at University Microfilms, Dissertation Copies, P.O.B. 1764, Ann Arbor, Michigan 48106, USA (for USA) and at University Microfilms Ltd., Tylers Green, High Wycombe, Buckinghamshire, UK (for Europe and others).

(Verbatim abstract from Diss. Abstr. 32, 11 [1972]: 6750-B): Natural populations of the damselflies *C. maculata* and *C. aequabilis* were studied in southern Michigan and other USA localities, with extensive use of motion pictures and observation of marked individuals. The pair-forming, courtship, and post-copulatory behavior of *C. maculata* is similar to that previously described for other *Calopteryx* species. The sequence of behavioral

acts in the early stages of pair formation differs among three types of male-female encounters: (1) female flies into the territory of the male; (2) male encounters an ovipositing female; and (3) male discovers a female on shore. Pair-forming and courtship displays are given in the same sequence in *maculata* and *aequabilis*, but some are performed differently. Display sequences of *maculata* observed during this study differ from those reported earlier by Johnson in Texas. In southern Michigan emergence of *maculata* begins in the last week of May and extends into late July or early August with two peaks about 20 days apart. Newly emerged individuals attain adult coloration in about 11 days and return to the water. Mean longevity of adults, based on recovery of marked individuals, is 6.24 days for males and 8.59 days for females, with a maximum of 37 days for both sexes. This difference is not statistically significant (at  $p = 0.05$ ,  $N = 358$ ). Mean longevity estimates did not increase significantly when the length of stream surveyed was increased from 100 to 3,700 feet. Adults were observed being eaten by birds, frogs, spiders, and dragonflies. Some males remained in the same place (up to 8 days) on consecutive days, others moved, often considerable distances (up to 1,760 feet). Females were not found in the same place on consecutive days, but their average movements between observations were not as great as those of all males combined. *Calopteryx* males occupy territories containing perch and oviposition sites. Conspecific males are excluded by aggressive behavior which is limited to the territories and their immediate vicinity. Nonterritorial males are present in most populations. *C. maculata* and *C. aequabilis* overlap geographically, spatially, and temporally. Males court females of either species, and three interspecific tandems involving *aequabilis* males and *maculata* females were observed. Two of these resulted in what appeared to be normal copulation, suggesting that mechanical barriers to copulation are not important. The lack of interspecific hybrids indicates the presence of postmating barriers. In male-choice experiments *maculata* males

- formed tandems more frequently with maculata females than with aequabilis females, and more frequently with dark-winged aequabilis females (most closely resembling maculata females) than with light-winged aequabilis females. Outside the area of geographic overlap maculata males discriminated less well, suggesting reinforcement in the area of overlap.
- (175) WALLS, J.G. & M. WALLS, 1971. Some stream-dwelling dragonflies from Allen Parish, Louisiana. *Ent. News* 82 (5): 133-134. — (*P.O. 49, Hinghtstown, NJ 08520, USA*).  
The following spp. were recorded at 3 localities in Allen Parish, Louisiana, USA: *Progomphus obscurus* (Ramb.), *Hagenius brevistylus* Sel., *Gomphus modestus* Needh., *Boyeria vinosa* (Say) and *Macromia georgina* (Sel.). Some field observations on their behavior are added.
- (176) WEDTS DE SWART, J.C., 1971. Sterke libellentrek over Zeeland. (A large dragonfly migration across the Zeeland Province). *De Lev. Nat.* 74: 176-177. (Dutch). — (*Noordbolwerk 3, Middelburg, NL*).  
In the surroundings of the town of Middelburg and at various other localities in the Zeeland prov., Netherlands, migratory flight of *Libellula quadrimaculata* L. was observed on June 3, 1971. The appearance of the swarms is described and speculations are offered as to the origin of the insects.
- (177) WRAY, D.L., 1971. Additions to the North Carolina faunal list. *Ent. News* 82 (6): 160. — (*Insect Survey, N. Carolina Dept. Agric., Raleigh, N.C. 27611, USA*).  
*Lestes eurinus* Say, recorded nr. Greensboro, N.C., USA, is added to the faunal list of the State.
- (178) YAMAGUCHI, M., 1971. Rejecting attitude of an egg-laying female of *Anax nigrofasciatus*. *Tombo* 14 (3-4): 29. (Japanese). — (*2-13-7, Kasuga-cho, Nerima-ku, Tokyo, JA*).  
An ovipositing ♀ of *A. nigrofasciatus* refused the approaching ♂ by raising the wings. The same attitude was shown also towards approaching *Orthetrum triangulare melania*.
- (179) BELLE, J., 1972. Een opmerking over het gedrag van *Enallagma cyathigerum* (Charp.) bij het eierleggen (Odonata). (A remark on the behaviour of *Enallagma cyathigerum* during oviposition). *Ent. Ber. Amsterdam* 32 (2): 39. (Dutch). — (*Onder de Beumkes 35, Velp, Gld., NL*).  
The note is a comment on the film on dragonflies broadcasted by the Dutch TV on August 11, 1971. The film suggested that prior to oviposition, the ♂ pushes the ♀ under the surface. According to the author's observations, in contrary, it is the ♀ who takes with her the ♂ until the abdomen of the latter is well under water. At this stage the ♂ frees itself and remains hovering over the place where, under the surface, the ♀ is ovipositing.
- (180) BELLE, J., 1972. Nederlandse Odonata verzameld in de afgelopen vijf jaren (1966-1971). (Dutch dragonflies collected between 1966-1971). *Ent. Ber., Amsterdam* 32 (6): 105-111. (Dutch, with Engl. s.). — (*Onder de Beumkes 35, Velp, Gld., NL*).  
A list is given of the 68 spp. hitherto known from the Netherlands. For 48 spp. collected by the author new locality data are listed. A discussion on the occurrence of *Erythromma viridulum* Charp. in the Netherlands is added.
- (181) CONTACTBRIEF NEDERLANDSE LIBELLENONDERZOEKERS (Newsletter of Dutch dragonfly workers). Nos. 7 (February), 8 (March), 9 (April), 10, with 2 supplements (June, 1972). (mostly Dutch, one suppl. Engl.). (*c/o Dr. B. Kiauta, Inst. Genet., Univ. Utrecht, Opaalweg 20, Utrecht, NL*).  
Various news items on work of Dutch odonatologists; — *No. 7*: Review of the membership in *Societas Internationalis Odonatologica* as per January 31, 1972; — Bibliography on Dutch odonate fauna and that of Dutch odonatologists (for 1971; 29 titles, including mimeographed publications); — *No. 9*: Program of Third Colloquium of Dutch Dragonfly Workers; — *No. 10*: Report on Third Colloquium of Dutch Dragonfly Workers; — Announcement of Second International

Symposium of Odonatology (Karlsruhe, 1973); – *No 10* (supplements): G.H. Bick, A review of territorial and reproductive behavior in Zygoptera (14 pp., Engl.); – D. Smit, The dragonfly in arts of design and in industrial art (4 pp., 16 black and white photographs).

- (182) DVORAK, J., 1972. On a collection of dragonflies (Odonata) of the nature reservation De Lindevallei. Ent. Ber. Amsterdam 32 (2): 21-22. – (*Vl. Vančury 15, Smichov, Praha-5, CS*).

A list of 11 spp. (adult and larvae) collected in June, 1969 in Driessen-polder, Friesland prov., the Netherlands, is given. *Anaciaeschna isosceles* (Müll.) and *Orthetrum cancellatum* (L.) were not previously recorded from this province. (Cf. also Abstract No. 44).

- (183) EDA, S., 1972. (Dragonflies trapped by plants). Gekkan Mushi 10 (1): 23. (Japanese). – (2-7-5-208 *Sodegaura, Narashino, Chiba Pref., JA*).

This is the third continuation in the series of papers as listed in OA Nos. 28-29.

- (184) EDMUNDS, G.F. Jr., 1972. Biogeography and evolution of Ephemeroptera. Ann. Rev. Ent. 17: 21-42. – (*Dept. Biol., Univ. Utah, Salt Lake City, Utah, USA*).

In the discussion of biogeographic interpretations it is suggested that the fact that the lowland streams of New Caledonia are dominated by Crustacea, Chironomidae and Odon., whereas Ephemeroptera, Trichoptera and Plecoptera are lacking, might be due to the amount of northward drift of the island.

- (185) FISCHER, C., 1972. Beitrag zur Odonatenfauna des Landesteils Schleswig. Heimat, Kiel 79 (4): 111-114. – (*Schulweg 1, D-238 Schleswig, GFR*).

A review of dragonfly records brought together in 1970 in the Schleswig territory, Schleswig-Holstein prov., German Federal Republic.

- (186) HALKKA, L. & O. HALKKA, 1972. Identification of storage structures in the oocyte cytoplasm. Scand. J. clin. Invest. 29 (suppl. 122): 53. – (*Dept. Genet., Univ. Helsinki, P.-Rautatiekatu 13, Helsinki 10, SF*).

With the help of cytochemical staining, autoradiography and electron microscopy, the cytoplasmic inclusions in the oocytes of *Cordulia aenea* were investigated in relation to the physiological state of the cell. These bodies, which are essentially storage depots, reveal their nature by showing marked changes in size and morphology coincidentally with changes in temperature and season. The following main types of storage bodies were found: The granular masses are presumably formed of ribosomes with affiliated non-ribosomal material. The dense masses appear to be globules formed of convoluted fibrillar RNP. The nematosomes contain RNP, have an intricate network structure and occur in contact with the dense masses. The dense bodies are electron dense spherules which occur in association with the annulate lamellae. These storage structures afford interesting parallels to similar bodies recently reported from other types of cells. Although the inclusions found in the oocyte are primarily storage bodies they are probably not entirely passive in the productive metabolism of the cell.

- (187) HENRY, M., 1972. Hoe de "nieuwe kunst" antiek werd. (How Art Nouveau became classical). Elegance, Amsterdam 29 (3): 52-55. (Dutch). – (*c/o Bonaventura Publishing House, P.O.B. 152, Amsterdam, NL*).

On page 52 a colour photograph is given of the interior of a Brussels' drawing room furnished in Art Nouveau (Jugendstil) style, with a table, in the foreground, carried by dragonfly-shaped legs, by the famous French Art Nouveau designer Emile Gallé.

- (188) JOHNSON, C., 1972. The damselflies (Zygoptera) of Texas. Bull. Fla. St. Mus. biol. Sci. 16 (2): 55-128. – (*Dept. Zool., Univ. Florida, Gainesville, Florida 32601, USA*). The paper presents an identification guide to adult Zygoptera occurring in Texas. Illustrated characters, a guide to morphological terminology, and short text support the diagnostic keys. The text gives geographical range and habitat preferences for each group. Distribution data appear by county

for each sp. and reveal patterns of convergence between east and west faunas. (Author).

- (189) JURZITZA, G., 1972. *Societas Internationalis Odonatologica* (und) die Zeitschrift *Odonatologica*. *Naturw. Rdsch.* 25 (3): 118. – (*Zehntwiesenstr. 40, D-7505 Ettlingen, GFR*).

A note on the First European Symposium on Odonatology (held at Ghent, Belgium, on October 22-23, 1971) and an announcement of the foundation of the S.I.O. and its journal *Odonatologica*.

- (190) JURZITZA, G., 1972. Das ist die Liebe der Libellen. *Kosmos* 68 (5): 215-218. – (*Zehntwiesenstr. 40, D-7505 Ettlingen, GFR*).

A popular description of courting and mating behaviour in the European *Calopteryx splendens* and *C. virgo*, with black-and-white and colour photographs. The original text has been abridged and modified by the Editors, without the knowledge of the author, to such an extent, that the description of courting behaviour became unclear in some points. (Personal communication by the author).

- (191) KIAUTA, B., 1972. The First European Symposium on Odonatology. *Ent. Ber. Amsterdam* 32 (2): 22-23 – (*Inst. Genet., Univ. Utrecht, Opaalweg 20, Utrecht, NL*).

A report on the First European Symposium on Odonatology (held at Ghent, Belgium, on October 22-23, 1971), and an announcement of the foundation of the S.I.O. and its journal *Odonatologica*.

- (192) KIAUTA, B., 1972. Notes on new or little known dragonfly karyotypes. I. The germ cell chromosomes of three Latin American species, *Argia funebris* (Hagen), *Megapodagrion contortum* (Selys) (Zygoptera: Coenagrionidae, Megapodagrionidae) and *Castor-aeschna castor* (Brauer) (Anisoptera: Aeschnidae). *Genen Phaenen* 15 (1): 23-26. – (*Inst. Genet., Univ. Utrecht, Opaalweg 20, Utrecht, NL*).

Male germ cell chromosomes of *M. contortum* (Selys) ( $2n=25$ ,  $n=13$ ) and *C. castor* (Brauer) ( $2n=27$ ,  $n=14$ ), both collected in

October, 1970, nr. Sao Paulo, Brasil, are described. A pair (bivalent) of m-chromosomes and XO sex determination occur in both species. Negative heterocycly of sex element at late diakinesis, fragmentation of a bivalent and precocious segregation of m and several other autosomes at metaphase I were occasionally observed in *M. contortum*. A note on oogonal metaphase of *A. funebris* (Hagen) from Mexico (June, 1969) is added ( $2n=28$ ). (Author).

- (193) (KIAUTA, B. & J.M. VAN BRINK), 1972. *Societas Internationalis Odonatologica*. *Vakbl. Biol.* 52 (1): 14. (Dutch). – (*Inst. Genet., Univ. Utrecht, Opaalweg 20, Utrecht, NL*).

A brief report on the First European Symposium on Odonatology (held at Ghent, Belgium, on October 22-23, 1971), and an announcement of the foundation of the S.I.O. and its journal, *Odonatologica*.

- (194) (MILL, P.J.), 1972. *Societas Internationalis Odonatologica*. *Nature* 236: 187. (Engl.). – (*Inst. Zool, Univ. Leeds, Leeds LS2: 9JT, UK*).

Announcement of the foundation of the international odonatological society and its journal *Odonatologica*.

- (195) MEULENBROEK, J.L., 1972. Nogmaals het gedrag van *Enallagma cyathigerum* (Charp.) (Odonata). (Once more the behaviour of *Enallagma cyathigerum*). *Ent. Ber. Amsterdam* 32 (4): 69 (Dutch). – (*Willempijperlaan 2, Leidschendam, NL*).

This is an answer to the polemic note by J. Belle (cf. *OA* No. 179). Prior to oviposition the ♂ pushed the ♀ under the surface. The latter submerged head first. The diversity of the types of ovipositing behaviour in *Enallagma* is stressed.

- (196) (THEEUWISSE, B.), 1972. Zo boeiend is de libelle. (*The fascination of the dragonfly*). *Libelle (Haarlem)* 1972 (10): 63-64, 81-82. (Dutch). – (*Luxemburglaan 449, Heemskerk, NL*).

A popular account on dragonflies and their possible extinction in the Netherlands as a consequence of water pollution, with a water painting of *Cordulegaster boltoni* (♂)

- (28 X 30 cm) by D. Smit, in a women's magazine.
- (197) WHITTEN, J.M., 1972. Comparative anatomy of the tracheal system. *Ann. Rev. Ent.* 17: 373-402. — (*Dept. Biol. Sci., Northwestern Univ., Evanston, Illinois, USA*).  
Miller's views on functional and morphological structure of the dragonfly tracheal system are critically discussed. (Cf. P.L. Miller, 1962, *J. Exp. Biol.* 39: 513-523).
- (198) WILHM, J., 1972. Graphic and mathematical analyses of biotic communities in polluted streams. *Ann. Rev. Ent.* 17: 223-252. — (*Dept. Zool., Oklahoma State Univ., Stillwater, Oklahoma, USA*).  
The subject is of general importance for odonatology, though on one place only reference is made to Odon.
- (199) WILLEY, R.L. & H.O. EILER, 1972. Drought resistance in subalpine nymphs of *Somatochlora semicircularis* Selys. *Am. Midland Nat.* 87 (1): 215-221. — (*Biol. Sci. Dept., Univ. Illinois, Chicago Circle, Chicago 60680, USA*).  
Survival mechanisms of a species maturing and living in habitats regularly drying up in August was studied. In the field, nymphs occurred under rocks, logs etc. of a dried pond. In the laboratory, nymphs survived desiccation for almost 3 weeks and died after losing the same amount of water as *Aeschna interrupta interna* Walker and *Libellula quadrimaculata* L. However, *S. semicircularis* took almost twice as long to reach this point. Low transpiration and early formation of the snow pack over dry ponds are believed to contribute to its survival.