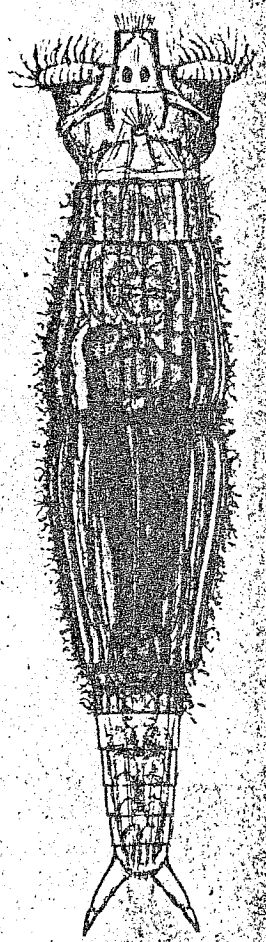
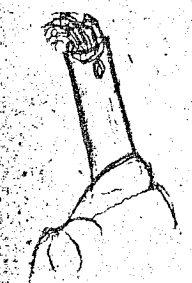
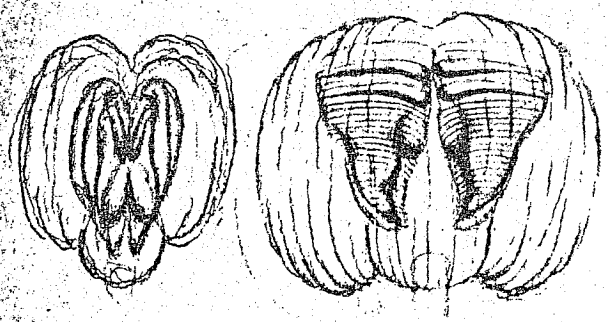
Number 13 Late Fall 1986

ROTIFER NEWS

A Newsletter for Rotiferologists throughout the World







Original drawings by E.F. Weber. From the collection of Paul N. Turner.

Editors: Robert L. Wallace and James R. Litton, Jr.
Correspondance: R.L. Wallace, Biology Department, Ripon College, 300 Seward Street, Ripon, WI, USA, 54971-0248.

This issue of Rotifer News has been reformatted to fit a standard 8.5" x 11" paper size (i.e., portrait layout). It was originally printed with two full pages reduced to fit sideways on US letter paper (i.e., landscape layout).

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ROTIFER NEWS is not part of the normal scientific literature (e.g., journals such as ECOLOGY, HYDROBIOLOGIA), therefore, it should not be cited as such. ROTIFER NEWS is a newsletter which prints citations of recent published literature, abstracts of papers published elsewhere, news, and notes about work in progress or such items being submitted for publication in regular scientific journals as a service to scientific investigators of the phylum Rotifera. ROTIFER NEWS is printed twice a year (each June and December) at Ripon College. Please send reprints and/or references, news, notes, requests to: Robert L. Wallace, Biology Department, Ripon College, 300 Seward Street, Ripon, WI USA 54971-0248.

PLEASE BE SURE TO INFORM THE EDITORS CONCERNING OTHER INVESTIGATORS WHO MIGHT WISH TO RECEIVE ROTIFER NEWS.

PRODUCTION OF ROTIFER NEWS

A letter quality copy of ROTIFER NEWS is produced at Ripon College from text files using a DEC PDP 11/70 as a text editor and the system programs EDT (editor) and RNO (runoff). Although we have made considerable progress in the addition of accents and scientific notation, there are still some editing problems with the computer which we have not been able to correct. Two problems have developed since we use BIOSIS to augment our search of the literature. (1) BIOSIS translates all titles into ENGLISH, therefore we may not be printing a correct citation of the paper, if it was published in another language. (2) BIOSIS also has been known to incorrectly or incompletely cite abstracts, addresses, etc., and to miss some completely. The editors encourage authors to send us reprints so that papers may be properly cited, abstracted, and annotated for the index. Some of the material printed below is from the author's abstract and/or textual material. Other material was obtained from Zoological Record information, BIOSIS, or specific information provided by the author. Some items were abstracted by the editors of ROTIFER NEWS. Since ROTIFER NEWS is not part of the scientific literature, but is rather a newsletter providing a service to researchers, we do not believe that this practice is an infringement of any copyright laws.

NEWS, NOTES, AND REQUESTS

Most items received by either editor on or before (1 December 1986) have been included in this issue of ROTIFERS NEWS (No. 13) all other items will be published in issue No. 14.

The editors are sorry to inform our readers that we must require support in the production of ROTIFER NEWS. As you are well aware, international and even domestic mailing costs are quite high. Production costs are also quite expensive. We are requiring that the readers of ROTIFER NEWS support us in this valuable endeavor by paying the annual dues ($ 5.00 US dollars per year). PLEASE FIND ENCLOSED QUESTIONNAIRE/ORDER FORM !! Readers of ROTIFERS NEWS who wish to may contributions beyond the dues are encouraged to do so !!!! Make all checks payable to ROTIFER NEWS.

1. Back issues of ROTIFER NEWS are still available! If you need a back issue (1-12) of ROTIFER NEWS copies are available from Bob Wallace at a cost of $3.00 per issue to cover mailing and reproduction. Your comments on any aspect of ROTIFER NEWS is requested by the editors!

2. David Strayer <Address: Institute of Ecosystems Studies, Box AB, Millbrook, NY 12545, USA.> has askes us to list the following request.

I am helping to compile the section on "Minor Taxa" for the annual bibliography produced by the North American Benthological Society and distributed to its 1500 members. I am especially interested in expanding the coverage of the meiofaunal taxa, and would appreciate receiving reprints of or references to work on freshwater meiofauna, including benthic and periphytic rotifers.

3. Charles M. James, (Kuwait Institute for Scientific Research, PO. Box 1638, 22017, Salmiya, KUWAIT) has three MSs in preparation.

(1) James, C.M., Abu-Rezeq, T., and Al-Khaus, A.M. (manuscript). Nutritional discrepancy of Chlorella for feeding the rotifer Brachionus plicatilis for aquaculture.

(2) James, C.M. and Al-Hinty. (manuscript). Studies on the effect of different strains of marine yeasts for feeding the rotifer Brachionus plicatilis.

(3) James, C.M. and Abu-Rezeq. (manuscript). Production and nutritional quality of two small-sized strains of the rotifer Brachionus plicalitis for aquaculture.

4. Warren D. Nagata (Pacific Biological Station, Dept. of Fisheries and Oceans, Nanaimo, BC., CANADA) has an MS in preparation.

Nagata, W.D. Long-term acclimation of parthenogenetic strain of Brachionus plicatilis III. Effect on respiration and excretion rates.

5. Howard L. Taylor (2221 N.E. 123 Street, North Miami, FL 33181, USA) has provided us with a unique look of Dr. Frank J. Meyers.

A LEGACY OF DR. FRANK J. MEYERS

Dr. Dr. Frank J. Meyers came to the American Museum of Natural History one day in the early 1930's to add some new holotype and paratype slides to the collection which he had established there. I was working part-time in Dr. Roy waldo Miner's department of living invertebrates then and studying Rotifera and he introduced us. Dr. Meyers spent a long time that day looking over my work and discussing my aspirations. At the end of the day he invited me to study with him at his home and laboratory in Ventnor, New Jersey. It was an extraordinary opportunity.

During the next few years I visited him in Ventnor, staying several weeks at a time, and spent part of one summer with him in the Pocono mountains. He was a wonderful teacher, full of enthusiasm for our little rotifer friends and generous to a fault with his time. He was meticulous in every phase of his work and very consistent in the practice of good microscopy. He was highly perceptive and blessed with an adroit hand for rendering faithful drawings of what he saw. There was no photographic equipment in his laboratory.

Dr. Myers knew how meager my financial circumstances were at that time and that I might well have to lay up my microscopes for a while. He had me take copious notes from the very beginning and to these he added his own notes and diagrams. when I was back in New York, we corresponded extensively on subjects related to work, on identifications and we exchanges drawings. All of these I still have.

After the difficult depression years and some five years overseas during WWII, my work with microscopes was perforce sporadic. I was active in several fields of optics and later in electronics, printed circuitry design and in mechanical quality control. Throughout these years I benefited from the exposure to Dr. Myers' methodical approach to problem solving. When I retired recently, I set up my laboratory in my home at 2221 N.E. 123 Street, North Miami, Florida, 33181, USA.

My project is a study of the Rotifer fauna of the Everglades from the source of its flow at Lake Okeechobee down to Everglades National Park where the waters turn brackish and on down to Florida Bay -- ninety some miles of superb country. At the same time, I have been reviewing Dr. Myers' techniques and instrumentations which I have continued to use during these many years. My aim has been to take advantage of substances and materials which were not available to him.

First priority has been given to finding a better way to make permanent slide mounts of specimens in aqueous media. The slides at the Museum in New York and my own collections show signs of serious deterioration. It seems that the sealant was not compatible with the glycols, not sufficiently impermeable to water and it became brittle in time. This was aggraveted by using the same sealant for ringing.

Many tests and talks with chemists of leading firms have led me to a new compound which is commercially available and easy to handle with a special procedure. For ringing I have found another compound which handles well in traditional use and is commercially available; it is fully compatible with the new sealant. Both compounds provide excellent adhesion to glass. It is my belief that the procedure produces truly archival slide mounts for this difficult medium. My immediate plan is to remount my own collection, and, if that goes well, to remount some of the slides at the American Museum of Natural History. Publication of all pertinent information is planned for release in 1987.

Regarding instrumentation: design, prototyping and testing has been completed for the following: 1.) a new microcompressor which overcomes limitations that I have found in other such instruments. The new unit is compatible with and throughout the entire range of our modern light microscopes; 2.) a new type of micropipette for precision, manual control in isolation and transfer procedures; 3.) a very low profile ringing table which can also be used on the stage of a dissecting microscope for remounting procedures. Publication of detailed descriptions and availablity of these instruments is planned for 1987.

Dr. Myers' gift to me has been a lifetime avocation, and now a full-time occupation, doing what I have looked forward to for many years. I hope that I can, in turn, help others.

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6. Sigrid Neumann Leitâo a publication in press (see also her Master Thesis listed in the recent literature.

Sigrid Neumann Leitâo & Nogueira, J.D.C. Rotifers, cladocerans and copepods of Pernambuco. I. Planktonic species of prawn culture ponds at Nova Cruz, Pernambuco, Brazil. Amais do V Congresso Rordestine de Zoologia, Natal.

7. Walter Kleinow (Zoologisches Institute der Universität zu Köln, Weyertal 119, D-5000 Köln, FRG) has two papers in press.

(1) Kleinow, W. and Bender, K. in press. On the chemical composition of the lorica of Brachionus plicalitis (Rotatoria). Verh Dtsch Zool Ges 79.

(2) Kleinow, W. in press. Effects of acrylamide on Brachionus plicalitis (Rotifera). Comp Biochem Physiol.

DESCRIPTIONS OF NEW SPECIES

[5] Chengalath, R. 1985. The Rotifera of the Canadian Arctic sea ice, with description of a new species. Can J Zool 63: 2212-2218. <Address: Invertebrate Zoology Division, National Museum of Nat Sci, Ottawa, Ontario, CANADA> <Abstract: The rotifers found in ice from Frobisher Bay, Northwest Territories, Canada, are documented. A new speies Encentrum graingeri, and Proales reinhardti (Ehrenberg), a species recorded for the first time in Canada, are illustrated. Species assembleages found in ice are similar to those of marine interesitial habitats. The adapatations of these animals to life in ice are discussed.> <Keywords: sea ice, cold-water, Encentrum graingeri new speies, Proales reinhardti>

[100] Koste, W. 1986. Über die Rotatorienfauna in Gewässern südöstlich von Concepción, Paraguay, Südamerika. Osnabrücker naturwiss Mitt 12:129-155. <Address: see below> <Abstract: 9 plankton samples collected in 5 ponds near Concepción, Paraguay, in October 1985, were investigated for rotifers. 138 species were identified. 24 are plankton rotifers and 114 live in the different habitats of the littoral areas. Several new records are noted. Two new rotifers are described: Cephalodella hollowdayi new species and Lecane (s.str.) Boettgeri new species.> <Keywords: Cephalodella hollowdayi new species, Lecane (s.str.) Boettgeri new species.>

[102] Koste, W. and Sheil, R.J. 1986 New Rotifera (Aschelminthes) from Tasmania. Trans R Soc South Australia 109:93-109. <Address: Ludwig-Brill-Strass 5, Quakenbrück, D-4570, FRG.> <Abstract: of 130 species of rotifers identified, 63 were first records for Tasmania, 17 new to Australia, and 4 Brachiouns lyratus tasmaniensis subsp. nov., Lapadella tana sp. nov., Cephalodella lindamaya sp. nov., and Testudinella mucronata tasmaniensis subsp. nov.) new to science, bring to approximately 200 the rotifers known from the island.> <Keywords: new species, new records, Tasmania, biogeography>

184] Vidrine, M.F., McLaughlin, R.E., and Willis, O.R. 1985. Free-swimming colonial rotifers, Monogononta: Floscularacea: Flosculariidae, in southwestern Louisiana (USA) rice fields. <Address: Division of Sciences, LA State University - Eunice, Eunice, LA 70535, USA> Freshwater Invertebrate Bioliology 4(4):187-193. <Abstract: BIOSIS: 81-102929. During the summer of 1984, free-swimming colonial rotifers were collected incidental to field studies on mosquitoes in 335 rice fields in southwestern Louisiana. Six of the seven known species of free-swimming colonial flosculariid rotifers were found: Lacinularia elliptica Shepard, Lacinularia flosculosa (Mueller), Lacinularia ismailoviensis (Poggenpol), Sinanthernia semibullata (Thorpe) Sinanthernia socialis (Linnaeus) and Sinanthernia spinosa (Thorpe). Lacinularia causeyae n. sp., a species new to science, was collected and is described herein. Of the 335 fields sampled, 225 fields had a least one species of these rotifers, which were locally abundant. Estimates of relative abundance are presented.> [Editor's notes: this journal is no longer in print. Each volume consisted of 4 issues. FIB ran from Februrary 1982 (Volume 1, issue 1) through November 1985 (Volume 4, issue 4). It has been replaced with a new journal entitled Journal of the North American Benthological Society. Those interested in JNABS may write Irwin Polls, Metropolitan Sanitary District of Greater Chicago, Biology Research, 550 South Meacham Road, Schaumburg, Il, 60193, USA.] <Keywords: sessile rotifer, Lacinularia ismailoviensis, Lacinularia elliptica, Lacinularia flosculosa, Sinantherina semibullata, Sinantherina socialis, Sinantherina spinosa, Lacinularia causeyae new species, population, taxonomy>

RECENT LITERATURE

The literature cited below has been gleaned from several sources as noted above. We apologize for any incorrect citations which may follow! An attempt is always made to cite works completely and properly. We would like to be informed of any important errors in these citations; corrections will be published in the next issue (Number 14) which is scheduled for printing in June 1987. The editors encourage authors to send us reprints so that they can be properly cited and abstracted. Only if reprints are received can we properly annotate the citations. These references have been indexed at the end of RECENT LITERATURE section by using such keywords as the specific species names, predation, salinity, biogeography, etc. Suggestions concerning the index are welcome.

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A

1] Al-Saboonchi, A.A., Barak, N.A., and Mohamed A-R.M. 1986. Zooplankton of Garma marshes, Iraq. J Biol Sci Res 17(1):33-40. <Address: Marine Sci. Centre, University of Basrah, IRAQ> <Abstract: BIOSIS: 82-32610. Seasonal variation in the quality and quantity of zooplankton in the Garma marshes of Iraq were studied. <Keywords: Season, Iraq, marsh>

B

2] Baker, R.L. 1979. Specific status of Keratella cochlearis (Gosse) and K. earlinea Ahlstrom (Rotifera: Brachionidae): mophōlological and ecological considerations. Canadian J Zool 57(9): 1719-1722. <Keywords: Keratella cochlearis, Keratella earlinea, mopholology>

3] Balvay, G., Druart, J.C., and Laurent, M. 1985. First additions to the inventory of the plankton of Lake Geneva (Switzerland). Schweiz Z Hydrol 47(1):76-80. <Address: Inst. Natl. Recherche Agronomique, Inst. Limnol., B.P. 11F, 75, avenue de Corzent, F-74203 Thonon les Bains, FRANCE.> <Abstract: BIOSIS: 82-2441. New zooplankton species are reported for the first time in Lake Geneva (Lac Leman). <Keywords: Lake Geneva, species list>

1] Bamforth, S.S. 1980. Test tube and microscope in microbial ecology. Trans Am microsc Soc 99(2): 145-151. <Keywords: microcosm>

] Barnes, R.D. 1985. Current perspectives on the origins and relationships of lower invertebrates. Pages 360-367 in Morris, S.C. et al. (eds.). The Systematics Association, Special Vol. 28. The origins and relationships of lower invertebrates; International Symposium, London, England, Sept. 7-9, 1983. xi+397p. Oxford University Press: New York, N.Y., USA; Oxford, England, Sept. 7-9, 1983. Illus. ISBN 0-19-857181-X. <Address: Department Biology, Gettysburg College, Gettysburg, PA, USA> <Abstract: Over the past 20 years studies in functional morphoolgy, comparative anatomy, and ultrastructure have contributed greatly to our current perspectives on the origins and relationships of lower invertebrates. Six phylogenetic assumptions which would now probably find general acceptance among zoologists are described along with the principal areas of controversy. New and persisting ideas about the realtionships of phyla to each other are summarized.> <Keywords: evolution, phylogeny>

] Beauvais, J.E. and Enesco, H.E. 1985. Life-span and age-related changes in activity level of the rotifer Asplanchna brightwelli: Influence of curare. Exp Gerontol 20(6):359-366. <Address: Department of Biology, Concordia University, 1455 de Maisonneuve Blvd. West, Montreal, Quebec H3G 1M8, CANADA> <Abstract: BIOSIS: 81-102738. The rotifer Asplanchna brightwelli shows a continuous decline in swimming activity through the course of its 5-day life span. This activity loss occurs at a slower rate when rotifers are treated with very low dosages (2.5 x 10E-4% to 5.0 x 10E-4%) curare. Rotifers treated with these low dosages of curare have a significantly longer life span than that of untreated control rotifers.> <Keywords: swimming, behavior, Asplanchna brightwelli, aging, pharmacology, toxic agent, curare>

] Bennett, W.N., Brooks, A.S., and Boraas, M.E. 1986. Selenium uptake and transfer in an aquatic food chain and its effects on fathead minnow (Pimephales promelas) larvae. Arch Environ Contam Toxicol 15(5): 513-518. <Address: Department Biology Sci., Univ. Wis.-Milwaukee, Milwaukee, WI, 53201, USA> <Abstract: BIOSIS:82-98125. The transfer of Se (Na_2SeO_4) was followed through a laboratory food chain (water-algae-rotifer-larval fish) and its effect on larval fathead minnows. Selenium transfer between algae (Chlorella pyrenoidosa) and rotifers (Brachionus calyciflorus) was a function of time and food availability. Selenium concentrations in the rotifers ranged from 46 to 91μg Se·g^{-1} dry weight after 5 hr of feeding. Selenium concentrations ($\pm$SD) in larval fish reached 61.1$\pm$1.1μg Se·g^{-1} dry weight for 9 day-old larvae and 51.7$\pm$1.6μg Se·g^{-1} for 17 day-old larvae after 7 and 9 days of feeding with Se-contaminated rotifers, respectively. Final dry weights of larvae fed Se-contaminated rotifers were significantly lower than those of controls, although acute toxicity (mortality) was not demonstrated. The biological half-life of food-derived Se in the larvae was 28 days.> <Keywords: Brachionus calyciflorus, Selenium, heavy metal, pollution, toxic agent, environmental toxicity>

8] Bergquist, A.M., Carpenter, S.R., and Latino, J.C. 1985. Shifts in phytoplankton size structure and community composition during grazing by contrasting zooplankton assemblages. Limno Oceanogr 30(5):1037-1045. <Address: Department of Biology, University of Notre Dame, Notre Dame, IN, 46556, USA> <Absrtact: Constrasting zooplankton assemblages consistently produced different compositional shifts in a phytoplankton community. Two experiments in 120-L enclosures were used to assess the responses of the algae to two different-sized zooplankton communities. Grazing by a mixture of small copepods, Bosmina longirostris, and rotifers led to increased growth of phytoplankters with greatest axial linear dimensions <25μm and ratios of surface area to volume <2.6, such as Chlamydomonas and Chlorococcales.> <Keywords: discriminant analysis, community structure, feeding, diet>

9] Bharadwaj, S., Datta Gupta, A.K., and Maleyvar, R.P. 1978. Rhythm in a few colonial rotifers. Science Cult 44(6): 281-282. <Keywords: colonial rotifers>

10] Blinn, D.W. and Green, J. 1986. A pump sampler study of microdistribution in Walker Lake, Arizona, USA: a senescent crater Lake. Freshwater Biology 16:175-185. <Address: Dept Biol Sci., Northern Arizona Univ., Flagstaff, AZ 86011, USA> <Keywords: microdistribution, sampler, crater lake, Walker Lake>

11] Bosselmann, S. 1979. Production of Keratella cochlearis in Lake Estrom. Archiv Hydrobiol 87(3): 304-313. <Keywords: Keratella cochlearis, Lake Estrom>

12] Bowers, J.A. 1986. Phosphorus regeneration by the predatory copepod Diacyclops thomasi. Can J Fish Aquat Sci 43(2):361-365. Ann Arbor, MI 48109, USA> <Address: Great Lakes and Marine Waters Center, University of Michigan, <Abstract: BIOSIS: 81-110011. The effects of temperature, prey density, and hunger state on phosphorus regeneration rates of the predatory copepod Diacyclops thomasi were estimated while they fed on the limnetic rotifer Synchaeta pectinata. Regeneration rates increased linearly from 2.0 to 7.0 nmol P·mg dry wt^{-1}·h^{-1} over a temperature range of 5-20°C. When offered a prey density range of 100-500·L^{-1}, satiated Diacyclops increased their regeneration rates to a maximum of 5.0 nmol P·mg dry wt^{-1}·h^{-1}. Given the same prey density range, starved Diacyclops had regeneration rates that increased to a maximum rate of 8.0 nmol P·mg dry wt^{-1}·h^{-1}. Predation rates were in all cases directly proportional to regeneration rates. Although a predator, Diacyclops regenerates phosphorus at rates within the range of many herbivorous zooplankton species> <Keywords: Synchaeta pectinata., temperature, predator-prey, behavior>

13] Boraas, M.E. 1980. Dynamics of nitrate, algae and rotifers in continuous culture: experiments and model simulations Diss Abstr int (B) 40(11):5126. <Keywords: microcosm>

14] Bosch, F.V.D. and Ringelberg, J. 1985. Seasonal succession and population dynamics of Keratella cochlearis (Ehrb.) and Kellicottia longispina (Kellicott) in Lake Maarsseveen I (Netherlands). Arch Hydrobiol 103(3): 273-290. <Keywords: season, succession, population dynamics, Keratella cochlearis, Kellicottia longispina>

15] Boshko, E.G. 1980. [Rotatoria in the gill cavity of Astacus (Pontastastacus) leptodactylus Eschsholtz of the Dnieper Basin. Communication I.] Vestnik Zool 1980(5): 15-21.

;] Bozovic, V. and Enesco, H.E. 1986. Effect of antioxidants on rotifer lifespan and activity. Age (Omaha) 9(2): 41-46. <Address: Department of Biology, Concordia University, 1455 de Maisonneuve Boulevard West, Montreal, Quebec, H3G 1M8, CANADA> <Abstract: BIOSIS:82-44836. The antioxidant thiazolidine-4-carboxylic acid (TCA) is a sulfhydryl scavenger. At concentrations of 400 or 800μM it was found to significantly extend the mean lifespan of the rotifer Asplanchna brighwelli by 7.8%. Maximum lifespan of A. brighwelli was not influenced by this drug. Butylated hydroxytoluene (BHT), a true chain-breaking antioxidant, was toxic to the rotifers. Vitamin-C, an antioxidant of the reducing agent category, had no effect on rotifer lifespan. Although TCA brought about a significant increase in mean rotifer lifespan, it did not significantly affect the activity level of the rotifers. The results presented here are consistent with the free radical theory of aging.> <Keywords: Asplanchna brightwelli, aging, age, culture>

'] Boyer, E.M. and Snell, T.W. 1986. Biochemical composition of sexual and asexual eggs of the rotifer Brachionus plicatilis. Fiftieth Joint Annual Meeting of the Florida Academy of Sciences, the Florida Anthropological Society, the American Association of Physics Teachers (Florida Section), and the Florida Junior Academy of Sciences and Science Talent Search, Orlando, Fla., USA, Apr. 10-12, 1986. Fla Sci 49(Suppl 1):13. <Address: Division of Sci., Univ. of Tampa, Tampa, FL 33606 USA> <Abstract: BIOSIS: 31-93411> <Keywords: biochemistry, reproduction, egg, Brachionus plicatilis>

] Buikema, A.L., Jr., and Loeffelman, P.H. 1978. Effect of pump storage operations on rotifer populations. Verh int verein Limnol 20(3): 1597-1603. <Keywords: population>

] Buikema, A.L., Jr., Miller, J.D. and Younge, W.H., Jr. 1978. Effect of algae and protozoans on the dynamics of Polyarthra vulgaris. Verh int verein Limnol 20(4): 2395-2399. <Keywords: Polyarthra vulgaris>

] Burns, C.W. and Gilbert, J.J. 1986. Direct observations of the mechanisms of interference between Daphnia and Keratella cochlearis. Limnol Oceanogr 31(4): 859-866. <Address: Department Zoology, University of Otago, Dunedin, New Zealand.) <Abstract: BIOSIS:82-91036. Direct observation was used to describe and quantify four types of interaction between Daphnia (D. pulex, D. rosea, D. galeata mendotae, D. ambigua, and D. magna) and the rotifer, Keratella cochlearis f. tecta. The types of encounter differed primarily in duration, in the appendage movements elicited in Daphnia, and in the damage to Keratella. Egg-carrying rotifers were just as susceptible to damage by Daphnia as nonovigerous rotifers. The frequency of interactions lethal to Keratella increased with increasing body size of Daphnia and decreased at algal concentrations above the incipient limiting concentration. By combining direct observations of the proportions of Keratella killed with measurements of Keratella-based clearance rates by Daphnia, the actual pumping rate of Daphnia could be estimated.> <Keywords: Keratella cochlearis f. tecta, cladoceran-rotifer interactions, morphology, mortality, clearance rates, rotifer damage, eggs>

21] Burns, C.W. and Gilbert, J.J. 1986. Effects of daphnid size and density on interference between Daphnia and Keratella cochlearis. Limnol Oceanogr 31(4): 848-858. <Address: Department Zoology, Univ. Otago, Dunedin, New Zealand.) <Abstract: BIOSIS:82-91037. The cladocerans Daphnia pulex, Daphnia ambigua, Daphnia rosea Daphnia magna and Daphnia galeata mendotae were tested in the laboratory for their competency to kill Keratella cochlearis (f. tecta) in the course of their normal filter-feeding behavior. At daphnid sizes >1.2mm of body length, all five species killed the rotifer at rates that increased with body length as y = 0.485x - 0.588 where y is Keratella killed/Daphnia/h, and x is daphnid body length in mm. No species-specific differences in ability to kill rotifers were detected. Keratella was found in the gut contents of some Daphnia, indicating carnivory and a new pathway in trophic interactions in freshwater ecosystems. Keratella density did not affect Keratella mortality rate within the range tested (125-1,000/L). Daphnia cleared live Keratella from the medium at rates about three times those at which it cleared Cryptomonas from the medium. Relations between Keratella mortality, Daphnia density, and Daphnia size were used to derive a family of curves from which the potential impact of Daphnia-induced mortality in field populations of Keratella can be calculated. When the daphnids are large (>2mm) and present at densities of about 1-5 individuals/L, they could have a major impact on the population dynamics of the rotifers.> <Keywords: Keratella cochlearis f. tecta, filter feeding, cladoceran-rotifer interactions, mortality, population dynamics>

C

22] Carter, J.C.H., Taylor, W.D., Chengalath, R., and Scruton, D.A. 1986. Limnetic zooplankton assemblages in Atlantic Canada with special reference to acidification. Can J Fish Aquat Sci 43(2):444-456. <Address: Department of Biology, University of Waterloo, Waterloo, Ontario, N2L 3G1, CANADA> <Abstract: BIOSIS: 81-116857. Crustacean and rotifer plankton assemblages of 93 lakes in Labrador, 107 in Newfoundland, and 142 in New Brunswick, Nova Scotia were investigated for evidence of correlations with lake morphometric, chemical, & biological factors, including water buffering capacity and acid precipitation.> <Keywords: fish predation, chemistry, buffering capacity, pollution, alkalinity, toxic agent, acidification, discriminant analysis>

23] Casper, S.J. et al. 1986. Taxa observed in the Lake Stechlin area. Pages 485-529, in casper, S.J. (ed) Lake Stechlin. A temperate oligotrophic lake. ISBN 90-6193-512-1. Dr. W. Junk Publishers. <Keywords: oligotrophic>

24] Chaga, I.L. 1979. [Peculiarities of Brachionus plicatilis population cultivated in sea water. Izvestiya tikhookean nauchno-issled Inst ryb Khoz Okeanogr (103): 115-119. <Keywords: Brachionus plicatilis, culture>

25] Chengalath, R. 1985. The Rotifera of the Canadian Arctic sea ice, with description of a new species. Can J Zool 63: 2212-2218. <Address: Invertebrate Zoology Division, National Museum of Nat Sci, Ottawa, Ontario, CANADA> <Abstract: The rotifers found in ice from Frobisher Bay, Northwest Territories, Canada, are documented. A new speies Encentrum graingeri, and Proales reinhardti (Ehrenberg), a species recorded for the first time in Canada, are illustrated. Species assembleages found in ice are similar to those of marine interesitial habitats. The adapatations of these animals to life in ice are discussed.> <Keywords: sea ice, temperature, Encentrum graingeri new species, marine Proales reinhardti>

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96] Kiss, I. 1985. Ecological studies on zooplankton species important for fish farms: I. Population biological investigations on zooplankton breeds. Misc Zool Hung 3(0): 91-102. <Address: Department Zool., Univ. Agriculture, H-2103 Godollo, HUNGARY.>) <Abstract: BIOSIS:82-52457. The population dynamics of the zooplankton species common in fishponds in Hungary, [Brachionus calyciflorus (Pallas), Asplanchna priodonta (Gosse), A. brightwelli (Gosse), Moina brachiata (Jurine), and Daphnia magna (Straus)], was examined. <Keywords: Asplanchna priodonta, temperature, Brachionus calyciflorus, Asplanchna brightwelli, fish culture ponds>

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100] Koste, W. 1986. Über die Rotatorienfauna in Gewässern südöstlich von Concepción, Paraguay, Südamerika. Osnabrücker naturwiss Mitt 12:129-155. <Address: see below> <Abstract: 9 plankton samples collected in 5 ponds near Concepción, Paraguay, in October 1985, were investigated for rotifers. 138 species were identified. 24 are plankton rotifers and 114 live in the different habitats of the littoral areas. Several new records are noted. Two new rotifers are described: Cephalodella hollowdayi new species and Lecane (s.str.) Boettgeri new species.> <Keywords: Cephalodella hollowdayi new species, Lecane (s.str.) Boettgeri new species.>

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5] Lorenzen, S. 1985. Phylogenetic aspects of pseudocoelomate evolution. Pages 210-223 in Morris, S.C. et al. (Eds.). The Systematics Association, Special Vol. 28. The origins and relationships of lower invertebrates; International Symposium, London, England, Sept. 7-9, 1983. xi+397p. Oxford University Press: New York, N.Y., USA; Oxford, England, Sept. 7-9, 1983. Illus. ISBN 0-19-857181-X. <Address: Zool. Inst., Christian-Albrechts-Univ., Kiel, FRG> <Abstract: There is evidence that pseudocoelomates have evolved from relatively latge ancestors with body sizes measured in cm rather than mm, which reproduced by external fertilization (eggs & sperm shed into the water) and had a fluid-filled body cavity. Holophyly (= monophyly sensu Hennig; see Lorenzen 1983) for a putitative taxon Pseudocoelomata as well as for the Priapulida, Nematomorpha, and Rotifera, cannot be established. Holophyly for the Kinorhyncha, Gastrotricha, Nematoda, and Acanthocephala is, however, well founded. It is argued that htere are probably two main lines of evolution within the pseudocoelomates, one line giving rise to the Priapulida, Kinorhyncha, Gastrotricha, Nematoda, and Nematomorpha, the other to the Rotifera and Acanthocephala. New evidence is presented that

the Acanthocephala are most closely related to the Rotifera, especially the Bdelloida.> <Keywords: phylum status, phyolgeny, pseudocoelomates, evolution>

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107] Matveeva, L.K. 1985. The effect of spatial heterogeneity on the community structure of planktonic rotifers. Zh Obshch Biol 46(6):813-823. <Address: A.N. Severtsov Inst. Evol. Morphol. Ecol. Anim., Acad. Sci. USSR, Moscow, USSR> <Abstract: BIOSIS: 82-2308. Spatial heterogeneity of a lake pelagic zone was estimated by the several temperature parameters.> <Keywords: species diversity, thermocline, temperature>

108] May, L. 1986. Rotifer sampling: A complete species list from one visit? Hydrobiologia 134(2):117-120. <Address: Institute of Terrestrial Ecology, Bush Estate, Penicuik, Midlothian, Scotland, UK> <Abstract: BIOSIS: 82-32570. This paper describes a possible method of compiling a rotifer species list for any site from a single visit. Sediment samples collected from Loch Leven (Scotland, UK) on one occasion in winter were exposed to light and a range of temperature conditions in the laboratory. Resting eggs in the sediment were induced to hatch. The resultant species list was very similar to that obtained from regular plankton collections over the previous six year period. <Keywords: resting eggs, sediment, Loch Leven, Scotland, sampling, temperature, culture, species list>

109] Mitchell, S.A. 1986. Experiences with outdoor semi-continuous mass culture of Brachionus calyciflorus, Rotifera. Aquaculture 51(34):289-298. <Address: Inst. Environmental Sci., University of Orange Free State, P.O. Box 339, Bloemfontein 9300, REPUBLIC SOUTH AFRICA.> <Abstract: BIOSIS: 81-100560. Three 500-L cultures of Brachionus calyciflorus were maintained out of doors fed on Chlorella sp. that was cultured on a semi-defined medium. The biomass, production and growth efficiency of the cultures were measured at various dilution rates. At the optimum dilution rate of 0.16 day^{-1}, the mean dry biomass of the culture was 0.1227 $g \cdot l^{-1}$, the mean daily production from 500-L was 9.82 g (0.01963 $g \cdot l^{-1}$). The growth efficacy was 23.7% ±2.8% at a dilution rate of 0.2 d^{-1}. Problems were experienced in the maintenance of cultures, and these and their solutions are discussed.> <Keywords: Brachionus calyciflorus, culture, biomass, growth, production>

110] Morris, S.C. 1985. Non-skeletalized lower invertebrate fossils: A review. Pages 343-359 in Morris, S.C. et al. (eds.). The Systematics Association, Special Vol. 28. The origins and relationships of lower invertebrates; International Symposium, London, England, Sept. 7-9, 1983. xi+397p. Oxford University Press: New York, N.Y., USA; Oxford, England, Sept. 7-9, 1983. Illus. ISBN 0-19-857181-X. <Address: Department Earth Sci., Univ. Cambridge, Cambridge, UK.) <ABSTRACT: The fossil record of those lower invertebrates lacking substantial hard skeletal parts is briefly reviewed. Much of the evidence is dependent on exceptional examples of soft-part preservation, but in a number of cases trace fossils provide additional evidence. Examples are discussed from amoungst the cnidarians (especially those from the

late Precambrian Ediacaran fauna), ctenophores, platyhelminths, nemerteans, nematodes, nematomorpha, rotifers, priapulids, pogonophores, echiurans, and sipunculans. The available fossil record of these groups is unlikely to revolutionize our understanding of the lower invertebrate phylogeny, but it does give some indication on the first appearances and the subsequent evolution of lower invertebrates, especially with respect to adaptive radiations. <Keywords: evolution, phylogeny>

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.3] Nagata, W.D. and Hirata, H. 1986. Mariculture in Japan: past, present, and future prospectives. Mini Rev Data Fish Res 4:1-38.

[4] Narf, R.P. 1985. Impact of phosphorus reduction via metalimnetic alum injection in Bullhead Lake, Wisconsin (USA). Wis Dep Nat Resour Tech Bull 0(153):1-25. <Address: Department of Natural Resources, P.O. Box 7921, Madison, WI, USA> <Abstract: BIOSIS: 81-100524. Phosphorus control using alum proved to be useful in place of copper sulfate to reduce undesired algae blooms. It also effected the internal recycling of phosphorus from the sediments. Diatoms, green algae, flagellates, and rotifers flourished and provided a base for the food chain. No apparent acute or chronic detrimental effect was observed during the 3-year project.> <Keywords: lake management, chemistry, toxic agent, alum, population>

15] Nero, R.W. and Sprules, W.G. 1986. Predation by three glacial opportunists on natural zooplankton communities. Can J Zool 64(1):57-64. <Address: Department of Zoology, Erindale Campus, University of Toronto, Mississauga, Ontario, L5L 1C6, CANADA> <Abstract: BIOSIS: 82-11999. We examine the influence of three glacial opportunist predators, Mysis relicta, Limnocalanus macrurus, and Senecella calanoides, on natural zooplankton communities of central Ontario (Canada) through a series of feeding experiments in small enclosures (23.6 L). Estimates of in situ clearance rates (CR) by M. relicta match previously determined rates, with the following gradation of values: Asplanchna sp. > daphnids and bosminids > Epischura lacustris > large cyclopoids, Chydorus sphaericus, and small Diaptomus sp. > L. macrurus > S. calanoides. Limnocalanus macrurus and S. calanoides prey primarily on copepods, Diaphanosoma spp., and rotifers in the hypolimnion. <Keywords: predator-prey, Asplanchna sp., clearance rate, population density, species composition, relict species>

116] Nogrady, T. and Keshmirian, J. 1986. Rotifer neuropharmacology: I. Cholinergic drug effects on oviposition of Philodina acuticornis, Rotifera, Aschelminthes. Comp Biochem Physiol C Comp Pharmacol Toxicol 83(2):335-338. <Address: Department of Biology, Queen's University, Kingston, Ontario, K7L 3N6, CANADA> <Abstract: BIOSIS: 82-6544. (1) The presence of acetylcholine in the culture medium was found to result in egg retention in the bdelloid rotifer

Philodina acuticornis is a dose-dependent fashion, with no other discernible physiological effect. When six to eight eggs accumulate, the animals distend, burst and die. No other cholinergic agonist has been shown to produce a similar effect. (2) The antagonistic effect of six anticholinergic drugs and five acetylcholinesterase-inhibitor insecticides was investigated on egg retention. All compounds were found to inhbit this phenomenon to varying degrees, but on the basis of their EC50 neuromuscular blockers appear to be most active in inhibiting egg retention. (3) We suggest, therefore, that egg retention is caused by a spasm or increased tone of the cloacal sphincter rather than a paralysis of muscles needed in the peristaltic expulsion of the egg. (4) Five acetylcholine-esterase inhibitory insecticides also inhibit egg retention. <Keywords: enzyme inhibitor, drug effects, acetylcholine, anesthetic drugs, autonomic system, insecticide, toxic agent, environmental toxicology, egg retention, muscle, acetylcholinesterase, bdelloid, Philodina acuticornis, neuropharmacology>

117] Nogrady, T. and Keshmirian, J. 1986. Rotifer neuropharmacology: II. Synergistic effect of acetylcholine on local anesthetic activity in Brachionus calyciflorus, Rotifera, Aschelminthes. Comp Biochem Physiol C Comp Pharmacol Toxicol 83(2):339-344. <Address: Biol. Dep., Queen's University, Kingston, Ontario, K7L 3N6, CANADA> <Abstract: BIOSIS: 82-4501. (1) A number of compounds showing general anesthetic action in the rotifer Brachionus calyciflorus were investigated in the presence of acetylcholine. Non-ionizing anesthetics, including tricaine, showed no interaction with acetylcholine. (2) However, highly ionized compounds like the local anesthetics procaine and lidocaine, the muscarinic blocker and local anesthetic atropine, and the beta-adrenergic blocker propranolol showed a synergistic effect with acetylcholine. (3) ACh increased the general anesthetic effect of these compounds in a statistically highly significant dose-dependent fashion. (4) To account of the mechanism of this unsual and novel effect it is proposed that these compounds interact wiht the anesthetic binding site of the rotifer cholinoceptor ionophore in the open state. (5) It is also proposed that non-ionizing compounds have a general membrane effect only. (6) In addition to anesthesia, atropine and propranolol cause foot paralysis in B. calyciflorus. This other novel effect is also enhanced by acetylcholine as well as decamethonium, a neuromuscular blocker. <Keywords: neuropharmacology, neuromuscular block, acetylcholine, anesthetic, Brachionus calyciflorus, drug effects, pharmacodynamics>

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118] Ohtaka, A. and Morino, H. 1986. Seasonal changes in the epiphytic animals on the Potamogeton malaianus in Lake Kita-ura (Japan), with special reference to oligochaetes. Jpn J Limnol 47(1): 63-76. <Address: Zoological Inst., Fac. of Sci., Hokkaido Univ., Sapporo 060, JAPAN> <Abstract: BIOSIS:82-71295. A quantitative investigation of the epiphytic animals living on a freshwater submerged plant, Potamogeton malaianus, was carried out in Lake Kita-ura from December 1980 to December 1981. The total individual number of epiphytic animals except for protozoans, rotifers and aeolosomatid annelids fluctuated between 0.5/cm² leaf area in September and 22.1/cm² leaf area in January, showing a high peak in the winter period and a lower one in the summer.> <Keywords: macrophyte, epiphytic fauna>

119] Okauchi, M., and Fukusho, K. 1984. Food value of a minute alga, Tetraselmis tetrathele, for the rotifer Brachionus plicatilis culture -I. Population growth with batch culture. Bull Natl Res Inst Aquaculture 5: 13-18. <Keywords: food, Brachionus plicatilis, culture>

[20] Okauchi, M., and Fukusho, K. 1984. Seasonal isolation between two strains of rotifer Brachionus plicatilis in an Eel-culture pond. Bull Japan Soc Sci Fish 50(5): 909. <Keywords: Brachionus plicatilis, season, culture>

[21] Okauchi, M., and Fukusho, K. 1984. Different modes in carrying resting eggs of wild S-strains of the rotifer Brachionus plicatilis. Bull Natl Res Inst Aquaculture 8:59-61. <Keywords: Brachionus plicatilis, strains, resting eggs>

[22] Okauchi, M., and Fukusho, K. 1985. Different modes in carrying resting eggs between two wild types of the rotifer Brachionus plicatilis from Matsusaka.Bull Japan Soc Sci Fish 51(11): 1907. <Keywords: resting eggs, Brachionus plicatilis>

[23] Okauchi, M., and Fukusho, K. 1984. Environmental conditions and medium required for mass culture of a minute alga, Testraselmis tetrathele (Prasinophyceae). Bull Natl Res Inst Aquaculture 5: 1-11. <Abstract: Chlorella is one of common feeds for mass culture of the rotifer Brachionus plicatilis in Japan, but the density of Chlorella tends to decrease especially when water temperature becomes about 30°C.> <Keywords: mass culture, Brachionus plicatilis>

[24] Okauchi, M., Oshiro, T., Kitamura, S., Tsujigado, A., and Fukusho, K. 1980. Number of rotifer, Brachionus plicatilis, consumed daily by a larva and juvenile of porgy, Acanthopagrus schlegeli. Bull Natl Res Inst Aquaculture 1, 39-45. <Keywords: rotifers as food for fish>

[25] Orcutt, J.D. and Porter, K.G. 1984. The synergistic effects of temperature and food concentation on life history parameters on Daphnia. Oecologia (Berlin) 63: 300-306. <Keywords: temperature, food, synergistics effects, survivorship, fecundity, reproduction, experimental design>

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[26] Pace, M.L. 1986. An empirical analysis of zooplankton community size structure across lake trophic gradients. Limnol Oceanogr 31(1):45-55. <Address: Inst. Ecosystem Studies, New York Botanical Garden, Carey Arboretum, Box AB, Millbrook, NY 12545, USA> <Abstract: BIOSIS: 81-110018. The hypothesis was tested that zooplankton community size-structure shifts toward an increased relative biomass of microzooplankton with increased lake trophy at 12 sites in Quebec (Canada). The seasonal mean abundance and biomass of ciliates, rotifers, nauplii, cladocerans, and cyclopoid copepods were significantly ($P<0.1$) related to lake trophy, but calanoid copepod abundance and biomass varied independently of lake trophy. Regressions of microzooplankton and macrozooplankton biomass with total phosphorus (TP) were highly significant ($P<0.001$), and TP explained a large proportion of the total variation (microzooplankton: $r^2=0.72$; macrozooplankton: $r^2=0.86$). The regression models for microzooplankton and macrozooplankton were not significantly different, refuting the hypothesis that relative biomass changes with lake trophy. Further analysis with a community structure index (the slope of the log weight-log abundance relationship) and mean lengths of various taxa indicated that zooplankton community size structure was not correlated with either TP or chlorophyll. On average, about 40% of the total zooplankton biomass is accounted for by microzooplankton in the Quebec lakes. The inverse relationship between body size and specific flux rates suggests that microzooplankton account for the major portion of zooplankton community rates> <Keywords: community structure, biomass, microzooplankton, lake trophy>

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128] Paranagua, M.N. 1985. Zooplankton of Suape area, Pernambuco, Brazil. International Symposium on Marine Plankton, Shimizu, Japan, July 22-Aug. 1, 1984. Bull Mar Sci 37(2):774. 1985. BMRSA <Address: Department de Oceanografia DA, University, Federal de Pernambuco, Avenida Bernardo Vieira de Melo, 986, Piedade, Recife, 50.000, BRASIL> <Abstract: BIOSIS: 31-13574> <Keywords: Brachionus plicatilis, Brachionus falcatus, Rotaria rotatoria>

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131] Piantanelli, L. 1986. A mathematical model of survival kinetics: I. Theoretical basis. Arch Gerontol Geriatr 5(2): 107-118. <Address: Cent. Biochem., Department Gerontol. Res.-INRCA, Via Birarelli, 8, I-60100 Ancona, Italy.) <Abstract: BIOSIS:82-92599. A mathematical model of mortality and survival kinetics is proposed based upon the two main aspects of survival data, namely, the rate of vitality reduction with age and its statistical distribution.> <Keywords: age, survivorship, aging, math models, longevity, lifespan>

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133] Pontin, A.J. and Pontin, R.M. 1980. Bullhousen Pond, Bisley, 1979. Newsletter Surrey Trust Nat Cons (55): 8-9

134] Pourriot, R. and Francez, A.J. 1986. Practical introduction to the systematics of organisms of French continental waters. Bull Mens Soc Linn Lyon 55(5): 148-176. <Address: Ecole Normale Superieure, Lab. Ecol., U.a. 258, 46 rue d'Ulm, 75230 Paris Cedex, FRANCE.> <Abstract: BIOSIS: 31-51844. <Keywords: species list & key>

135] Pourriot, R., Rougier, C., and Benest, D. 1986. Temperature influence on the reproduction and on the mictic response to photoperiod in the rotifer Notommata copeus. Vie Milieu 36(1): 37-44. <Address: Lab. Zool., U.A. CNRS 258, Ecole Normale Superieure, 46 rue d'Ulm, 75230 Paris Cedex 05, FRANCE> <Abstract: BIOSIS:82-71445. In constant conditions of population density (one female/10ml), medium, food and light intensity (about 200μW/cm^2), the daily fertility of a parthenogenetic female is influenced by temperature, but not by photoperiod. At low temperature, the age-fecundity curve extends over a long time without any maximum. At high temperature, the maturity is shortened and the daily fecundity shows a pronounced peak. The mean net reproduction rate (R0) varies from 30 to 37 eggs per female and, between 18 and 28°C, is independent of temperature and photoperiod. In stock cultures, the females loose their sensitivity to photoperiod. We observe a gradual recovery of their sensitivity when they are isolated from the stock and maintained, at low population density. Zero or low as soon as they are isolated, the rate of mictic females in F1 reaches or exceeds 50% one year later. The mictic response is limited by low

temperatures: at 18°C, the mictic female in F1 is never higher than 20%, while it is twice or three times higher at 23 or 28°C. The high temperatures modify the position of the minimal daily duration of light (= critical photoperiod), which appears more early. These results are coherent with the biogeography of the species and the fate of the resting egg production assuring the species survival.> <Keywords: dormancy, culture, parthenogenesis, reproduction, fecundity, temperature, mixis, photoperiod, light, Notommata copeus>

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146] De Ridder, M. 1984. Notes on the distribution of African rotifers: IV. Natuurwet Tijdschr 66(56):143-159. <Address: Lab. voor Morfol. en Systematiek der Dieren, Rijksuniv. Gent, K.L. Ledeganckstr. 35, 9000-Gent, BELGIUM> <Abstract: BIOSIS: 82-35174. A study is made on the Rotifer fauna of a series of 49 plankton samples, collected in different water types of the Ivory Coast. The author identified 80 taxa to species level (some of which were present in different forms) and 6 to genus level. Though the Ivory Coast is rich in running and stagnant waters, its Rotifer fauna has only been studied in a very limited number of papers.> <Keywords: Ivory Coast, Africa, distribution, biogeography, biotopes>

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unreliable any routine sampling protocol at a single station. The abundance of four rotifers (Keratella cochlearis, Polyarthra vulgaris, including Polyarthra major, Conochilus unicornis, and Kellicottia longispina) was sufficient to provide a picture of the distribution in depth as well as distance from the shore. Results indicate that there is some patchiness in the distribution of these rotifers, especially between the deep part of the lake and the shore line.> <Keywords: distribution, Lunz Untersee, patchiness, horizontal distribution, Keratella cochlearis, Polyarthra vulgaris, Polyarthra major, Conochilus unicornis, Kellicottia longispina>

0] Ruttner-Kolisko, A. 1986. Fütterungsversuche an einigen Planktischen Rädertierarten. Wasser und Abwasser 30: 465-481. <Language: GERMAN with English summary> <Abstract: Individual feeding experimens were carried out by observing single animals in individual animals under low (250X) and high (400X & 630X) magnifications. Keratella cochlearis selects its food according to size, shape, and edibility, manipulating larger food items, and rejecting latex beads. Brachionus plicatilis swallows every object up to a diameter of at least 15μm, including latex beads. Hexarthra fennica shows a behavior similar to B. plicatilis in not discriminating between edible and inedible particles.> <Keywords: Keratella cochlearis, food, latex beads, Brachionus plicatilis, Hexarthra fennica, feeding>

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159] Shiel, R.J. and Koste, W. 1985. Records of rotifers epizoic on cladocerans from South Australia. <Address: Department of Botany, University of Adelaide, G.P.O. Box 498 Adeliade, South Australia 5001.) Trans R Soc S Aust 109(4):179-180. <Abstract: BIOSIS: 30-100005: This work reviews the genus Brachionus (Rotifera: Monogononta). Some species were collected typically as epizoites on planktonic crustaceans: (Brachionus rubens and less commonly Brachionus variabilis occurred of Daphnia and Ceriodaphnia sp.; Brachionus charini was reported from eastern Europe as a commensal in the brachial chamber of Coenestheria davidi, a phyllopod; Brachionus sessilis was recorded as an epizoite of Diaphanosoma brachyurum, and the known hosts of Brachionus rubens and Brachionus variabilis were listed as Daphnia magna, Daphnia pulex, Daphnia longispina, Moina rectirostris, Ceriodaphnia sp., Polyphemus pediculus and several macroinvertebrates.> <Keywords: Brachionus novaezealandiae, epizoic rotifers, Australia.> Brachionus rubens, Brachionus variabilis, Brachionus variabilis, Brachionus charini, Brachionus sessilis, Brachionus rubens>

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.65] Snell, T.W. and Garman, B.L. 1986. Encounter probabilities between male and female rotifers. J Exp Mar Biol Ecol 97(3): 221-230. <Address: Division Sci. Mathematics, Univ. Tampa, Tampa, FL, 33606 USA> <Abstract: BIOSIS:82-71401. The relationship between population density and sexual reproduction is explored for planktonic rotifer populations. It has been argued that selection favors sex at population maxima because of favorable probabilities of encounter. Factors determining the probability of encounter are examined. Experimentally determined parameters for males and females (swimming speed, duration of fertility, net fecundity, and encounter distance) are used to investigate density effects on the probability of encounter. As population density increases, the probability of encounter also increases sigmoidally. The probability of a female encountering a male during her fertile period begins to increase rapidly at about 50 males/L. The increase continues until it becomes asymptotic at about 1000 males/L, where the probability of a female encountering at least one male during her fertile period approaches one. The duration of female fertility is less than that of males, causing the female curve to be displaced toward higher population densities. Critical density, the population density where Ro' is exactly equal to one, for males and females is 11.7 and 141 individuals/L, respectively. The precision of the model was evaluated by observing the frequency of male-female encounters during 212 5-min observation periods. The observed encounter rate was 1.49/min, compared to a predicted rate of 1.53/min. These values are not significantly different as determined by t-test. The constraints placed on the timing of sex by population density are discussed.> <Keywords: sex, mating, math model, reproduction, population density, fertility>

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169] Strayer, D. 1985. The benthic micrometazoans of Mirror Lake, New Hampshire. Archiv Für Hydrobiologie (Suppl) 72:287-426. <Abstract: The entire zoobenthic community (including the micro- and meiofauna, but excluding the Protozoa) of this small, oligotrophic lake is described in detail. [especially see pages 323-333 on rotifers.] <Keywords: trophic status, benthos>

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84] Vidrine, M.F., McLaughlin, R.E., and Willis, O.R. 1985. Free-swimming colonial rotifers, Monogononta: Flosculariacea: Flosculariidae, in southwestern Louisiana (USA) rice fields. <Address: Division of Sciences, LA State University - Eunice, Eunice, LA 70535, USA> Freshwater Invertebrate Bioliology 4(4):187-193. <Abstract: BIOSIS: 81-102929. During the summer of 1984, free-swimming colonial rotifers were collected incidental to field studies on mosquitoes in 335 rice fields in southwestern Louisiana. Six of the seven known species of free-swimming colonial floscularíid rotifers were found: Lacinularia elliptica Shepard, Lacinularia flosculosa (Mueller), Lacinularia ismailoviensis (Poggenpol), Sinanthernia semibullata (Thorpe) Sinanthernia socialis (Linnaeus) and Sinanthernia spinosa (Thorpe).

Lacinularia causeyae n. sp., a species new to science, was collected and is described herein. Of the 335 fields sampled, 225 fields had a least one species of these rotifers, which were locally abundant. Estimates of relative abundance are presented.> [Editor's notes: this journal is no longer in print. Each volume consisted of 4 issues. FIB ran from Februrary 1982 (Volume 1, issue 1) through November 1985 (Volume 4, issue 4). It has been replaced with a new journal entitled Journal of the North American Benthological Society. Those interested in JNABS may write Irwin Polls, Metropolitan Sanitary District of Greater Chicago, Biology Research, 550 South Meacham Road, Schaumburg, Il, 60193, USA.] <Keywords: sessile rotifer, Lacinularia ismailoviensis, Lacinularia elliptica, ricefield, Lacinularia flosculosa, Sinantherina semibullata, Sinantherina socialis, Sinantherina spinosa, Lacinularia causeyae new species, population, taxonomy>

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186] Voronova, L.D, and Pushkar', I.G. 1985. Evaluating the impacts of agricultural pesticides and herbicides on aquatic biota. page 23-28 In Mehrle, P. M., Jr., R. H. Gray, and R. L. Kendall (eds). Toxic substances in the aquatic environment: An international aspect. International Symposium held in conjunction of the 112th Annual Meeting of the American Fisheries Society, Hilton Head, S.C., USA, Sept. 24, 1982. American Fisheries Society: Bethesda, MD, USA. ISBN 0-913235-35-0. <Address: Pesticide Branch, All-Union Sci. Res. Inst. Nat. Prot. Preserves, USSR Minist. Agric., Moscow, USSR.> <Abstract: BIOSIS: 30-105549.> <Keywords: mortality, fertility, embryotoxicity, toxic agent, environmental toxicology.>

W

187] Wallace, R.L and Edmondson, W.T. 1986. Mechanism and adaptive significance of substrate selection by a sessile rotifer. Ecology 67(2):314-323. <Address: Biol. Dep., Ripon College, Ripon, WI, 54971-0248 USA> <Abstract: BIOSIS: 82-2371. We examined the nature and adaptive significance of substrate selection by larvae of the sessile rotifer Collotheca gracilipes. In a small artificial pond the preferred substrate was the anatomical undersurfaces (abaxial) of Elodea canadensis leaves, although four other macrophytes were present. Density of adults on Elodea at times reached >6 individuals·mm^{-2}, with >98% attached to abaxial surfaces. However, larvae offered plants in pairwise combinations selected substrates in a slightly different order. No larval loyalty to parental substrate was exhibited. Larvae preferentially selected abaxial or adaxial surfaces of Elodea leaves (91% on abaxial) in continuous illumination experiments, but the larvae did not discriminate between the two surfaces in total darkness (48% on abaxial). In the absence of a plant substrate, cell debris from any one of four aquatic and two terrestrial plant species induced larval settlement on the bottom of plastic well-depressions. Activity could not be attributed to carbohydrate, lipid, nucleic acid, or protein moieties within these extracts. However, alpha-amylase induced rapid larval settlement in the depressions. In the presence of this calcium chelator, larvae did not distinguish between ad- and abaxial leaf surfaces to the same degree as without the enzyme. Phospholipase-C and EDTA induced similar effects. Larval preference for abaxial surfaces

could be reduced slightly when pH was stabilized at <7.0. Because living Elodea in neutral to alkaline water can remove Ca^{+2} from beneath its leaves and release it from adaxial surfaces while photosynthesizing, we hypothesized that larvae initiate substrate activities on any surface when they are in microhabitats having ambient Ca^{+2} concentrations below a threshold concentration. Short-term, in vitro growth experiments showed that rotifers attached to abaxial surfaces of Elodea leaves grew significantly taller and produced more eggs per female than those which had been induced to settle on adaxial surfaces> <Keywords: larvae, Collotheca gracilipes, habitat selection, sessile rotifer, substrate selection, calcium.>

8] Williamson, C.E. and Butler, N.M. 1986. Predation on rotifers by the suspension-feeding calanoid copepod Diaptomus pallidus. <Address: Department of Biology, Lehigh University, Bethlehem, PA 18015, USA.> Limnol Oceanogr 31(2):393-402. <Abstract: BIOSIS: 82-12102. Predation on rotifers by the small suspension-feeding calanoid copepod Diaptomus pallidus was examined in order to quantify the effects of prey density, prey type, and the presence of algal food resources on ingestion rates, and to determine whether ingested rotifer biomass could be utilized to enhance the survival and reproduction of the copepods. Clearance and ingestion rates of D. pallidus on rotifers were 5.5-6.2x greater than on algae presented at the same concentration and similar to the maximum rates previously reported for more carnivorous cyclopoid copepods preying on rotifers. The survival and reproduction of D. pallidus were substantially enhanced by the addition of rotifers to a threshold algal diet. When presented with a natural assemblage of plankton, D. pallidus preferentially ingested certain rotifer species over others. Predation on rotifers by such diaptomids may form an important trophic link in freshwater planktonic food webs. <Keywords: food web, ingestion rate, predator-prey, clearance rate, reproduction>

9] Wissel, C., Beuter, K., Halbach, U. 1980. Analysis de Populationsdynamics von Rotatorien mittels Korrelationsfunktionen. Verhandlungen Ges Ökol 9: 271-279. [English summary]

X

Y

1] Yamasaki, S. and Hirata, H. 1985. Effects of salinity on food conversion rate of rotifer, Brachionus plicatilis. Mem Fac Fish Kagoshima Univ 34(1):37-43. <Address: Lab. Fish. Cultivation Physiol., Fac. Fish., Kagoshima University 50-20 Shimoarata 4, Kagoshima 890, JAPAN> <Abstract: BIOSIS: 82-32843. In this experiment, effects of salinity on food conversion rate are observed in order to reduce the pollution through [decay of] excess food materials. At the same time, an optimal salinity level within the rotifer cultures was estimated based on their food conversion rates and tolerance to higher salinities. The results of this study were aimed at direct application for the seed production of marine fishes.> <Keywords: water quality, salinity, food conversion rates, Brachionus plicatilis, assimilation>

] Yu, J.-P. and Hirayama, K. 1986. The effect of Un-ionized Ammonia on the population growth of the rotifer in mass culture. Bull J Soc Sci Fisheries 52(9):1509-1513. Address: Faculty of Fisheries, Nagasaki Univ., Bunkyomachi, Nagasaki 852, JAPAN> <Abstract: Brachionus plicatilis was cultured in mass cultures.> <Keywords: Brachionus plicatilis, mass culture>

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192] Zaret, T.M. 1980. Predation and freshwater communities. Yale Univ. Press, New Haven, CT, USA. <Keywords: predator-prey>

193] Zuniga, L.R. and Araya, J.M. 1985. Spatial and temporal distribution of planktonic Rotifera in Lake Llanquihue (Chile). XXVIIIth Annual Meeting of the Sociedad de Biologia de Chile, Pucon, Chile, Nov. 28-30, 1985. Arch Biol Med Exp 18(2): R177. <Address: Inst. Biology, Univ. Catolica de Valparaiso, CHILE> <Abstract: BIOSIS: 31-64344. <Keywords: season, Lake Llanquihue, Chile>

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