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MONOCULUS

Copepod Newsletter

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Copepod Newsletter

Number 30 October 1995

Edited by: Hans-U. Dahms and H. Kurt Schminke, Fachbereich 7 (Biologie), Universität Oldenburg, D-26111 Oldenburg, Germany. Gerd Schriever, Forschungsinstitut Hohenwestedt, Kieler Str. 51, D-24594 Hohenwestedt, Germany.

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This issue has been typed by: Angelika Sievers; cover as well as cartoons by M. Pottek (Fachbereich 7 (Biologie), Universität Oldenburg).
Cover: *Ischnochitonika japonica*, new species. Holotype, mature female dissected out of host (after NAGASAWA et al. 1991 - Journal of Crustacean Biology 11(2): 315-321),

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Birthdays this year:

85: Helmut Kunz
70: Takea K.S. Björnberg
Kazimierz Patalas
Tamara Vucetic

Deadline for the next issue of MONOCULUS: 1st April 1996

EDITORIAL

Besides intensive studies of copepod systematics, morphology, behaviour, and ecology, preparations for next year's Copepod Conference are already keeping everybody busy in our group here in Oldenburg. We will provide some more detailed information about the conference in this issue of MONOCULUS.

There is so much to be considered - only those of you may know who were already enganged in the planning of an international conference. While the scientific programme became consolidated already at an early stage (see MONOCULUS 29), organizing the side-programme and „after-the-Conference-meetings" are still on the anvil. Problems to be overcome start with T-shirt design and do not end with requesting a coffee-break corner or projection aids. Of most concern is it to get the best for a low price in order to keep the conference fee as reasonable as possible. That far, Horst Kurt Schminke was quite successful in achieving funds.

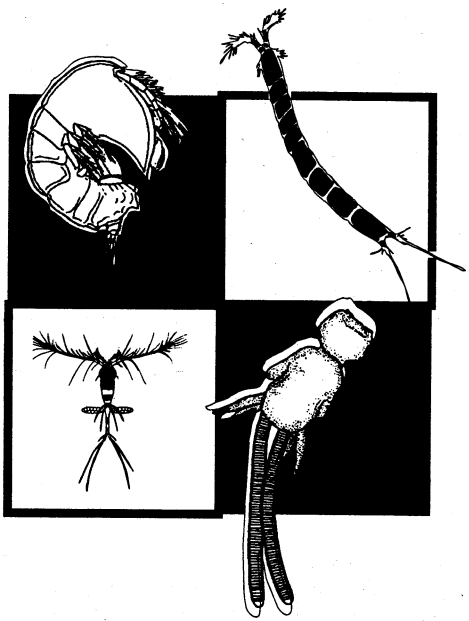
But we also need your help. We are looking for volunteers to join us in a cooking effort for the conference dinner (just a Copepod-soup prepared by Herbert Fernando should not do): So, please hand in some recipes from your area to make it a real multinational feast. Also, we are looking for artists among you daring a music or dance performance. Finally, for a calendar with copepodologists (those who are not with us anymore) to be offered during the conference we are in need of some „black & white" photographs.

Following a series of information reports on academic exchange services Kurt started with MONOCULUS 8 (May 1984), we felt that these have to be updated and provided also for programmes of countries not being considered yet. In most countries funds and scholarships are available for (exchange) scientists from abroad. Very often these possibilities are not as widely known as they should be or incertainty prevails as to where to write and what to do. What will be needed therefore are reports about the situation in countries offering such possibilities. Therefore, we need volunteers collecting such information from their respective countries. This issue of MONOCULUS will inform about funding possibilities for foreign researchers in Germany.

The annual lists of new copepod taxa (1985-1994) compiled by C.-t. Shih will be mailed under separate cover to those colleagues who did announce their interest.

Cornelia Metz (Bremerhaven) has won the contest on copepod determination from the front cover of MONOCULUS 29. She will receive a bottle of „Ammerländer Löffeltrunk" (a liquor specialty from Oldenburg region). Although she did not identify all the copepods to species level - she made by far the best approximate attempt. The right identification is as follows: 1. *Longipedia americana* - nauplius / 2. *Diaptomus castor* (syn. *Monoculus castor* Jurine, 1820) / 3. *Xarifia scutipes* Humes & Dojiri, 1983 (unfortunately, the Arabic number disappeared from the print) / 4. *Boxshallia bulbantennulata* Huys, 1988 / 5. *Metacyclops oraemaris* da Rocha, 1994 / 6. *Enhydrosoma variabile* (Coull & Wells, 1981).

Sixth International Conference on Copepoda



Oldenburg / Bremerhaven
Germany
July 29 – August 3, 1996

Welcome to Oldenburg and Bremerhaven

The two hosts of the „Sixth International Conference on Copepoda" look forward to welcoming you in Germany. The two hosts are the „Fachbereich Biologie der Carl von Ossietzky Universität Oldenburg" and the „Alfred-Wegener-Institut für Polar- und Meeresforschung" in Bremerhaven.

We plan a week with scientific and social highlights and hope that participating copepodologists will mobilize all their capabilities to contribute not only to the scientific programme but also to the events. About 280 people from 52 countries have announced their interest in the conference. Among them are lots of new relatives within the copepodologist family and we are curious about their contributions. We look forward with great sympathy also to meeting again all the others who have been more or less regular participants in the previous meetings and we are curious to hear how their work has progressed.

The motto of the week is: „to learn and to have fun together". The stress is on „together". This newsletter/letter provides you with the information you need to prepare the trip.

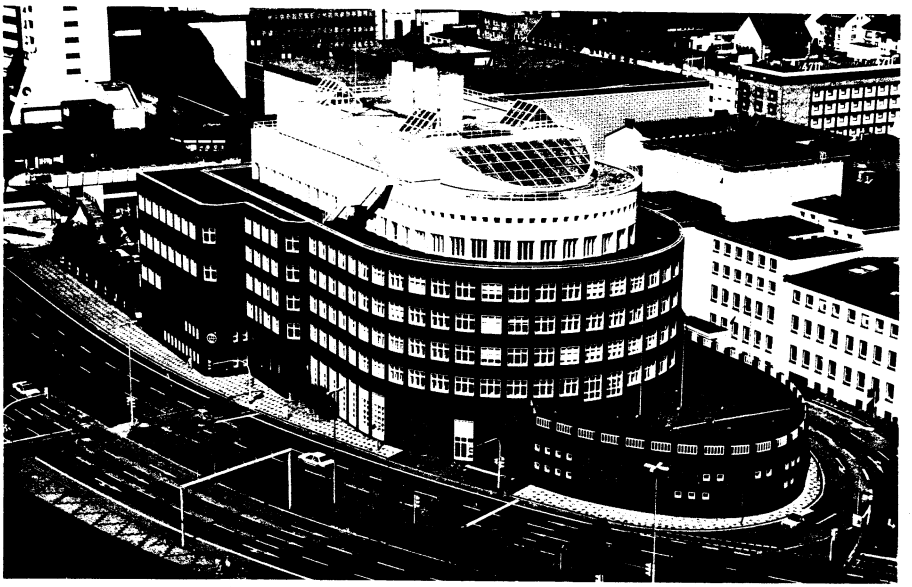
1. Agenda

Sunday, July 28th	Arrival at University of Oldenburg Registration Informal reception
Monday, July 29th **Oldenburg**	Opening of Conference Symposium on „Reproductive biology of copepods" Contributed papers Posters Visit to the pub of the local beer brewery „Hengelbräu"
Tuesday, July 30th **Oldenburg**	Symposium on „The role of copepods in freshwater ecosystems" Contributed papers Posters Musical evening

Copepodologists play music for copepodologists

If you play a musical instrument reasonably well or you have a family member who does and is willing and courageous enough not to hide his/her talents, please let us know. We want to organize an evening concert. Music of all kinds is welcome: classical music, jazz, national folk music, whatever. Please bring your instruments along but leave your piano at home (we have one), and let us have a great time. German „house music" is known for not being a professional enterprise, it is a social event where cooperation counts, not perfection. So send us a letter announcing your willingness to make a contribution and start practising. There is a lot of time yet.

Wednesday, July 31st **Bremerhaven**	Mid-conference excursion to Bremerhaven Sightseeing there (museums, Alfred-Wegener-Institute, stroll to the coast and the Wadden Sea, Zoo) Symposium on „Parasitic copepods of fishes" Reception by the Director of the Alfred-Wegener-Institut



Alfred-Wegener-Institute for polar and marine research

Bremerhaven

Bremerhaven is a seaside town at the entrance of the North Sea. In the beginning of the last century Bremen was in need of a harbour on the deep water of the outer Weser river, because the gradual silting up did not allow the big ships of those days to reach the Hanseatic Town. Hence, in 1827 it has originated as the outer harbour to Bremen. Already famous for its portbuilding skills Bremen laid the basis for what is now the seaport Bremerhaven. However, only in the seventies did Bremerhaven rise to its present significance. The opening towards its maritime tradition was the trigger to the foundation of the unique Maritime Museum and the adjoined museum port. Bremerhaven is not actually a picturesque city. Along the coast they say that everything is different here. Today Bremerhaven as Germany's biggest town on the North Sea coast represents both the continent's biggest and most important fishery port, one of the leading shipbuilding sites with tradition, a port of worldwide importance, and a centre of research.

Alfred Wegener Institute for Polar and Marine Research

The Alfred Wegener Institute (AWI) is one of the 16 national research centres in Germany. The Institute was established in 1980. The mandate of the AWI includes fundamental scientific research in the polar regions, national coordination of polar research projects and logistic support of polar expeditions from other German institutes. Furthermore, the Alfred Wegener Institute takes care of international co-operation in polar and marine research. The Institute comprises eight scientific departments: Biology I and II, chemistry, geology, geophysics/glaciology, physics of the ocean and atmosphere (field studies and modelling), and marine physics. Research work is carried out on board the ice-breaking polar research and supply vessel RV „Polarstern", in the laboratories of the Institute as well as on the ice and on land in the Arctic and Antarctic regions. The objective is to achieve a better understanding of the complex relationship between water, ice, the atmosphere, and the seabed as well as the fauna and flora. Special attention is given to developments in global change accelerated by human impact. In addition to these activities concentrated on polar regions there are some long-term research programmes in the North Sea as well as co-operative projects with South America. In 1992 the Institute had a staff of 420.

German Maritime Museum

Pirates, smugglers, whalers and fearless captains' splendid board-parties, sailors' feasts and yarns, tragic damages by sea: In the German Maritime Museum you walk through seafaring history as if in a thrilling adventures picture. Lying there mysteriously in green twilight the Hanse Kogge of the year 1368 - you can steer

the models of huge ocean liners through an original miniport, you climb through the interior of historic ships, or alternatively admire the pomp of the old shipping companies. The German Maritime Museum is a treasure well worth a journey to discover.

Morgenstern Museum

The Morgenstern Museum demonstrates the work and daily life of the people on the coast involving its visitors in the changes of life in a port, shipbuilding centre, and fishery town.

H.-J. Hirche

Thursday, August 1st Contributed papers
Oldenburg Posters
Maxilliped Lecture
General meeting of the „World Association of Copepodologists"
Demonstration of specimens:

Copepodologists demonstrate their specimens

Many may never have seen a mormonilloid or a platycopioid or any of those extravagant parasites of fishes. We plan to organize an evening demonstration with video to bring to mind the tremendous diversity of copepod forms. So please bring your specimens (as slides or in a preserving liquid) with you and tell us something about them. To coordinate the demonstration we would need to know in advance who offers to demonstrate what. Our motto is controlled improvisation.

Friday, August 2nd Symposium on „Life cycles of copepods"
Oldenburg Contributed papers
Conference Dinner

Copepodologists cook for copepodologists

German food is not every one's favourite. People have different tastes, thank goodness. What we need is a variety of dishes. We expect a lot of people. So we plan to make our conference dinner a common enterprise. If you or your spouse or whoever accompanies you is an experienced cook feeding the family not only on chips from around the corner you should consider signalling us your intention to volunteer as a cook. Your dish should be tasty but not too complicated to prepare. The recipes of what will finally strike your palate will be published in MONOCULUS and help to enrich your list of publications with an exotic entry. National dishes of all kinds will be welcome! Isn't diversity the hall-mark of biology?

Saturday, August 3rd Post-conference workshops, discussion groups and excursions:
Oldenburg and elsewhere

- Excursion to the Island of Helgoland: Visit of the island and of the Biologische Anstalt Helgoland (Marine Biological Station). Collection of copepods possible (costs DM 75.-/appr. US $ 50.- per person; minimum number of participants 20)
- Walk on the Wadden Sea. Collection of copepods possible (costs DM 50.-/appr. US $ 35.- per person; maximum number of participants 25)
- Workshop on preparation (marine copepods) and sampling techniques (groundwater copepods)
- Workshop on inner anatomy of copepods
- Computer application in phylogenetic reconstruction
- Discussion group on the taxonomy and systematics of freshwater Canthocamptidae (Harpacticoida)
- Discussion group on copepod dormancy

The Red Island: Helgoland

When approaching Helgoland by boat, even from the distance you will notice a flat red square just above sea level. Coming closer, you recognize a tower on it, then houses and a mole: The island of Helgoland, an isolated rock amidst the North Sea. For biologists it is a treasure representing the only marine rocky shore in Germany, with a distinct intertidal zonation on its vertical western slope. Great numbers of seabirds nest in the crevices, and lots of passing birds use the island for resting during their journey. They are registered in the „Vogelkoje". The Marine Biological Station has a long tradition in studying the marine flora and fauna. There is also an attractive aquarium. In the summer the island is invaded daily by ship loads of tourists. Besides the rock there is a dune with a sandy beach. The air is quite clean and without pollen grains.

How to explain this miracle amidst the thick diluvial layers, covering all northern Germany? Permian salt layers deep down are flexible enough to evade the high pressure of the deposits above at some isolated points and push the overlying rock formations right up to the surface. Thus Buntsandstein and Muschelkalk (variegated sandstone and shell lime) emerged in the basin of the present North Sea to form the island of Helgoland. This block then became exposed to erosion, in particular by diluvial glaciers and stormy waves. Finally there came the human impact: Since the 15th century the island was used as a limestone quarry. The dune now covers what was left. The red Buntsandstein was not useful for man's purposes.

Sad to say, but the island was also a factor in geopolitical and military respect. In 1890 Great Britain, the owner of Helgoland, substituted it for Zanzibar, which was a German colony. Political opponents of the German chancellor at that time, Bismarck, reproached him for having swopped trousers for a trouser button. But soon this „button" became an important base for the German Navy. Later on, all military installations were destroyed in 1918, but were rebuilt since 1933. After 1945 the victors tried to destroy the island altogether by bombing it and in 1947 by a powerful explosion. The rock resisted, but became heavily damaged. In 1952 two German students sneaked on the island and put up a bivouac there to stop the bombing. In 1953 reconstruction began of what is now a peaceful attraction for tourists and marine scientists.

H. Juhl

Walk *on* the Wadden Sea ... (*at low tide*!)

The Wadden Sea proper of the North Sea is the tidal area between the barrier islands and the mainland. It belongs to the most important wetlands of the world.

The Wadden Sea area originated in connection with the relative rise of sea level in this area which results from tectonic subsidence and compaction of the substratum and eustatic rise of sea level. The main landscape types of the Wadden Sea are 1) the barrier islands, 2) the tidal area with flats and channels and 3) the coastal area of the mainland with - mainly embanked - salt marshes. The main morphological features of the tidal landscape are the tidal inlets, spanned by curved series of sand bars, the tidal channels, - creeks and - flats, the tidal watersheds and the salt marshes. Tidal flat areas behind barrier islands and with the characteristics and size of the Wadden Sea area do not occur elsewhere on the earth. Therefore, the main part of the Wadden Sea is protected under national legislation as national parks, nature reserves etc., in all three Wadden Sea states: The Netherlands, the Federal Republic of Germany and Denmark.

Its biology is unique and of ecological and economic importance. The Wadden Sea serves as a nursery for fish and crustaceans, fish and shrimps are caught, and mussels fished and farmed. Copepods are numerous - being planktonic in the overlying water, or meiobenthic - especially the Harpacticoida.

The whole-day excursion will lead - on foot - right across this unique landscape from the mainland to the island of Spiekeroog and back *via* island ferry.

H.-U. Dahms

Preparation and sampling techniques

An introduction (video presentation of the basic methods for taking groundwater samples: standpipes, Karaman-Chappuis digging, Bou-Rouch pumping) will be given. The sampling devices will be demonstrated. Examples of basic sorting procedures (sorting living animals with a cooling device, Mc Intyre parting funnel, centrifuge) and equipment to be used will be shown. After the presentation of the sampling methods, the further treatment and preparation for determination of the specimens will be demonstrated and practised. This process involves embedding, dissecting and drawing. It is also possible to bring your own specimens with you. No previous knowledge is required, but calm hands will be useful.

P. Rumm

Inner Anatomy of Copepods

This workshop is addressed to everybody who is interested in the inner anatomy of copepods but has probably never looked at a section under the light microscope. The workshop will not introduce to the preparation of

sections but to the examination and interpretation of semithin and ultrathin sections (light and electron microscope). The introduction to the analysis of histological preparations and ultrastructural micrographs will be given by photographs and lantern slides.
B. Hosfeld

Computer Application in Phylogenetic Reconstruction
To learn how to use the two most popular computer programmes, PAUP and HENNIG86, in conducting phylogenetic reconstruction. After learning some essential commands, participants will have the chance to use two data files on the Copepoda to do a hands-on practice on the use of computer programmes. Participants are encouraged to bring their own data to the workshop for a better understanding of the utility of the computer programmes. The data here means a set of well analyzed characters for a genus, a family, or an order of your choice. It is highly recommended that participants bring their own diskettes (3.5") to the workshop.
J.-s. Ho

Discussion Group on Taxonomy and Systematics of Freshwater Canthocamptidae (Harpacticoida)
The aim of this reunion is to bring together researchers currently working on the family Canthocamptidae in order to discuss taxonomic problems and to clarify current systematic and zoogeographic confusions. The discussion will be chaired by F.D. Por (Jerusalem).
Major topics to be discussed will be:
- What are Canthocamptidae?
- Which genera belong to the family?
- Which is the zoogeographic range of each genus?
- Perspectives for future investigations.

Participants are encouraged to present their own new ideas in short oral communications before the beginning of the discussion.

Participants are also urged to bring along their specimens so that details can be checked and difficult problems discussed not only theoretically but with direct reference to actual material. Microscopes and video will be available for the presentation of this material.

Participants who intend to make a short oral presentation are asked to contact as soon as possible:
Gisela Moura
FB 7 / AG Zoomorphologie
Universität Oldenburg
26111 Oldenburg, Germany
e-mail: Moura@biologie.uni-oldenburg.de

Copepod dormancy - methodologies & perspectives
Copepod dormancy (diapause and quiescence) affects copepods in various morphological, ecological, and evolutionary attributes. Dormancy occurs at different times seasonally and different ontogenetic stages in various copepod taxa, which live in different aquatic realms. The dormant state and emergence patterns directly affect reproduction, population dynamics, distribution, community composition and coexistence of copepods, as well as the phenology of their living food items or predators. Still, there are several problems to overcome, which shall be the subject of a discussion group, joining colleagues from fresh and marine waters, working on different taxa, e.g.:
- characterization of a dormant/diapause state
- sampling procedures
- investigation of external/internal proximate and ultimate factors causing dormancy
- adaptive significance.

H.-U. Dahms

2. Programme of Symposia

Symposium „Reproductive biology of copepods"
Chairperson: Dr. Frank Ferrari (Smithsonian Institution, Washington)

Barbara Hosfeld (Universität Oldenburg):
Study of the reproductive system: History and perspectives

Darcy Lonsdale (SUNY Stony Brook):
Role of chemical cues in copepod reproduction

Julie Ambler (Millersville University):
Mating behaviour of copepods

Nelson Hairston, Jr. (Cornell University):
Reproductive strategies of copepods

Symposium „The role of copepods in freshwater ecosystems"
Chairperson: Prof. Dr. Geoffrey Fryer (University of Lancaster)

Jouko Sarvala (University of Turku):
Ecology and role of benthic copepods in freshwater ecosystems

Zdenek Brandl (University of South Bohemia, Budejovice):
Feeding strategies of planktonic cyclopoids in lacustrine ecosystems

Vernon E. Thatcher (Instituto Nacional de Pesquisas da Amazonia, Manaus):
Direct and indirect effects of copepods on Amazonian fish populations

G.F. Mazepova (Limnological Institute of the Siberian Branch of the Russian Academy of Sciences, Irkutsk):
Role of copepods in the Baikal ecosystem

Symposium „Parasitic copepods of fishes"
Chairperson: Prof. Dr. Ju-shey Ho (California State University, Long Beach)

Ju-shey Ho:
Cladistics of the Lernaeidae (Cyclopoida), a major family of freshwater fish parasites

André Raibaut (Université des Sciences et Techniques du Languedoc, Montpellier):
Analysis of species richness of parasitic copepods on Mediterranean coastal fishes

J. Brian Jones (Western Australian Fisheries Department, Perth):
Parasitic copepods - distant water sailors

Geoffrey Boxshall (The Natural History Museum, London):
Host specificity in copepod parasites of deep-sea fishes

Symposium „Life cycles of copepods"
Chairperson: Dr. Shin-ichi Uye (Hiroshima University)

Angus Atkinson (British Antarctic Survey):
Life cycles of Southern Ocean copepods, adaptation to a seasonally variable food supply

William Peterson (NOAA, Silver Spring):

Life cycles of copepods in coastal upwelling zones. Are copepods adapted or preadapted to upwelling conditions?

Barbara Santer (Max-Planck-Institut für Limnologie, Plön):
Life cycle strategies of cyclopoid copepods in fresh waters

Adrianna Ianora (Stazione Zoologica, Neapel):
Copepod life cycle patterns in subtemperate marine waters

3. Special events for accompanying persons

Monday, July 29th
- Guided walk through historical Oldenburg

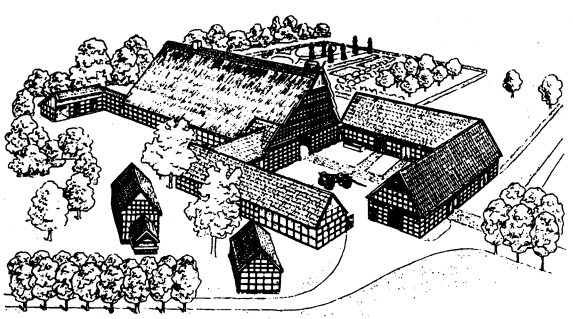
Tuesday, July 30th
- Excursion to open air museum in Cloppenburg (costs: DM 20.- /appr. US $ 14.- per person; maximum number of participants: 30), includes baking of own bread
- Tour by bike to „Zwischenahner Meer" (depending on the weather) (costs: DM 15.- /appr. US $ 10.- per person)

Museum Village Cloppenburg

In Cloppenburg, some 40 km from Oldenburg, you will find the oldest open air museum of Germany. It was founded in 1934 and presents a collection of more than 50 original buildings of the 16th to 19th century. Among these are old farm houses, barns, windmills and small factories. All buildings were dismantled at their former locations and rebuilt at the museum.

It is the intention of the museum village to show the history of countryside architecture in northern Germany as well as the circumstances of daily life in past times. Thus some of the factories and mills are still working, and you can see people demonstrating their almost forgotten skills. Visit the windmill and let the baker teach you how to make your own bread in the historic stone oven.

On your walk through the village you will pass along the pottery, the blacksmith and the goldsmith, the woodshoemaker, the carpenter and the brewery. You will notice how the style of housebuilding changed according to fashion, availability of materials or change of production methods. After all these impressions there will be enough time for a break, when you can taste your selfmade bread and have a refreshing drink.
J. Wiechmann



Bike to Bad Zwischenahn and discover the countryside around Oldenburg

The classical cyclist country are The Netherlands, and there is an influence reaching beyond the border right into northwestern Germany. Also, here you will find lots of people moving by bicycle. Along the roadside there are special paths for cyclists. The country is flat and ideal for biking; only storms and rain can be inconvenient.

We may recommend to undertake such a pleasant excursion by bicycle on small roads or special cycle-tracks through the typical countryside around Oldenburg with villages and farms, made possible by „cultivating" the enormous fens of the region. These have grown during humid post-Diluvium periods and have been drained artificially (by windmills in former times). In the ditches along the roads the peat is often visible beneath the vegetation. The houses are surrounded by lovely gardens, the roads are lined by trees.

Destination of the half-day trip we propose, will be Bad Zwischenahn, an attractive and quiet town with sanatoria and restaurants on the shore of a large but shallow lake, ideal for swimming and yachting in summer and for skating in cold winters. There is also a small open-air museum with typical old farm houses, stables and a windmill. The trip could be extended to a coffee-house on the other side of the lake. There is a magnificent view over the „Zwischenahner Meer" from over there, and also the pastry is worth the trip.

Distances to cover: 15 km to go to and the same to return from Bad Zwischenahn (on two different routes) and 12 km round the lake with the half-way stop at the coffee-house. This café can also be reached by boat and there is the possibility to return to Oldenburg by train.

H. Juhl

Wednesday, July 31st

- Mid-conference excursion to Bremerhaven (see above)

Thursday, August 1st

- Excursion to the town of Jever (visit to the famous Jever Brewery and of the historical museum in Schloß Jever) (costs: DM 20.- /appr. US $ 14.- per person; maximum number of participants: 30)

(- Tour by bike to „Zwischenahner Meer" - should the weather have been bad on Tuesday)

Jever is a town of the arts, legends and history - Stadt der Kunst, Sage und Geschichte

Friends gave Jever the title „Jewel of Frisia" (die Perle Frieslands) and the comparatively small residence deserves this name. Here the famous „Jever Pilsener" is brewed which has made Jever well-known in many parts of Germany. Jever is also called „Town of Lady Mary" and its residents affectionally remember and still honour the last Lady of an independent Jeverland. „Fräulein Maria" - Lady Mary - was the daughter of Edo Wiemken. Mary was unlucky with her love affairs: The first lover left her in the lurch, the second was stroken dead; so she stayed alone and was of service to Jever. This affection for Lady Mary, who 450 years ago presented Jever with the right to call itself „town" (which was connected with a couple of different important rights to Jever's citizens) is vividly expressed in the „Lady Mary Statue" and the „Lady Mary Grammar School". But it can also be heard by daily ringing of the castle bells. In summer at 10 p.m. and in winter at 9 p.m. the bells are rung to lead Lady Mary back to the castle which she left - so the legend tells - just temporarily.

But Jever is also the town of „Bismarck's Faithful Admirers". Each year these men send 101 pewitt eggs (Kiebitz - *Vanellus vanellus*) to the Russian Prime Minister on Bismarck's birthday. The restaurant „Haus der Getreuen" where these admirers come together still reminds the citizens of Jever of this custom.

Tourists should not miss exploring Jever's Castle with the local heritage museum which has been supported by Jever's Historical Society since 1886. This local heritage museum within the castle walls offers among many other interesting exhibits a Frisian living-room, workshops, china, traditional clothes, house and kitchen accessories, weapons, seals, banners and instruments of torture. The castle's glorious centre is the audience hall with a ceiling in wooden squares from the 16th century which Lady Mary had installed. Also remarkable is the gold-plated leather tapestry from the early 18th century. This hall is an impressive stage for summer concerts. The castle's Owl Tower serves as a pleasant background for various arts exhibitions all year round.

If you want to have a closer look at all of Jever's places of interest and its eventful history you should participate in a guided tour through the town.

And let's come back to the „Haus der Getreuen", the place of „Bismarck's Admirers". Each year on 1st April the wine-filled silver pewitt goblet which Bismarck had presented to his admirers in 1883, is passed round three

times. However, this is not a continuation of Bismarck's policy but a tradition since 1871 in order to remember that time.

As you can see: Jever has many attractions and offers interesting typical local activities like „Klootschießen" (you throw a wooden ball across a field), „Boßeln" (you throw a wooden ball along the country roads) or „Besenwerfen" (to throw a broom).

We cannot offer to you these typical local activities, but we will offer to you and your wife, husband, child and friend whom you will bring with you to Oldenburg a guiding in the Jever Brewery with a deep look into a filled glass of the typical Jever Pilsener „friesisch herb" and a guiding in the Castle on Thursday, 1st August.
Th. Glatzel

Friday, August 2nd
- Preparation of the meals for the conference dinner

4. Presenters

Audio-visual equipment will be available at the conference. We can offer the following equipment:
- Video: S-VHS, VHS, a beamer to connect a video cassette recorder or a PC with normal VGA-card - PAL-system
- We are able to exchange NTSC-PAL or SECAM-PAL, but it is the best to exchange your video at home to PAL-system
- LCD display to connect a PC or a notebook
- Slide projector 24/36 mm for large rooms or 6/6 cm with 135 mm objective for use in small rooms
- 16 mm film projector
- overhead

If you need another equipment, please do not forget to indicate this on your registration form.

In case you present a poster, it should not exceed 1 m in width x 1.20 m in height.

Please consider: In Germany we have a voltage of 230 V and a cycling of 50 Hz.

5. Publication of the Proceedings

The conference proceedings will be published in the „Journal of Marine Systems". Manuscripts should be written in the journal's format and submitted during the conference. A leaflet with the „Publication information" is to be found elsewhere in this newsletter. All papers will be refereed. Publication date will be within one year of the conference (for publication information see below).

6. Lodging / Accomodations

There is no possibility for on campus housing, except for a smaller group of people who can use the recreation area and facilities for camping. Please bring your camping equipment along. In case of heavy rain there is the possibility to spend the night in a seminar room.

We have arranged group rates at the two best hotels in Oldenburg, the CCH and ANTARES hotels. If you are prepared to share a room with a second person, you only pay DM 65.- (appr. US $ 45.-) per night in CCH and DM 55.- (appr. US $ 38.-) in ANTARES. For a single room add DM 25.- (appr. US $ 17.-) to these prices respectively. There are also a few suites with interconnected rooms and 3-4 beds which cost DM 55.- (appr. US $ 38.-) in CCH and DM

50.- (appr. US $ 35.-) in ANTARES. These prices are „bed & breakfast (buffet)" and include local taxes and service. In hotel CCH it also includes free access to a swimming pool and whirl pool. Both hotels are in walking distance from the railway station and opposite a bus stop from where the bus goes to the university as terminal station.

7. Meals

Breakfast is in the hotels or in the student restaurant for those who opt for camping on the nearby recreation area. Lunch can be taken in the student restaurant in the same building as the lecture rooms. You can also have lunch in several nearby restaurants. For dinner there is only one possibility: the nearby restaurants, but you will have to go there only on Monday, Tuesday, and Thursday. On Wednesday there is the reception at Bremerhaven and on Friday there is the conference dinner at the university. If you have lunch at the student restaurant and dinner in nearby restaurants, you will have costs of appr. DM 120.- (appr. US $ 83.-) per person for the week of the conference. If you have also lunch in the restaurants, you will have to spend appr. DM 160.- (appr. US $ 110.-). Breakfast in the student restaurant is for DM 5.- (US $ 3.50) daily.

8. Arrival / Departure

If you arrive by air, it is highly recommended to use **Bremen Airport**. From there we can arrange your transfer to Oldenburg either by public transport or taxi. The price will be about DM 25.- (appr. US $ 17.-), a little less with public transport, a little more with a taxi.

The second nearest airport is Hamburg. From there you have to go by bus to the railway station, take the train to Bremen, change train at Bremen central station and go to Oldenburg. If you are lucky with the connections, it takes you two and a half hours from Hamburg Airport to Oldenburg. If you arrive at Frankfurt or Amsterdam (Schipohl), it takes you even longer. Instructions for those arriving by train and car will be given in the next newsletter.

9. Registration

You are asked to complete the registration form attached to this issue of the newsletter/included in this letter. The completed registration form and all fees should be returned to the address indicated on the form.

The registration fee is DM 280.- (appr. US $ 193.-) for active participants, DM 190.- (appr. US $ 133.-) for students, DM 100.- (appr. US $ 69.-) for accompanying persons. Children are free of charge. For late registration after March 1st, 1996 add DM 100.- (appr. US $ 69) per active participant or student. The registration fee includes coffee breaks, Sunday reception, cocktails on Wednesday night, dinner & party on Friday night, bus shuttle service (not from and to the airport), and for active participants and students a copy of the Proceedings of the conference.

A deposit for the conference of DM 200.- (appr. US $ 138.-) has to be paid. If you pay by cheque or money order, please make all transfers out to Universität Oldenburg, c/o H.K. Schminke (account no. 90 000 100; bank: Raiba - BLZ 280 602 28; purpose: Kst 85419501 - Copepoda 96) **in German Marks (DM)**. A receipt and letter confirming registration and acceptance of your paper/poster will be sent out shortly after the deadline of March 1st, 1996. If it is necessary to cancel registration and accomodation prior to 15 June 1996, a full refund will be made, less a DM 50.- (appr. US $ 35.-) administrative fee.

10. Deadlines

All forms added to this issue/letter (registration form, accomodation form, abstract form) should be returned with your conference fees (pre-registration) no later than **March 1st, 1996**. For all registrations received after this date add DM 100.- (appr. US $ 69.-).

11. Conference shop

Cups, mugs, balloons, postcards, and T-shirts with the conference logo or other copepod design will be on sale at the conference. If you want to buy a T-shirt with the conference logo (price: DM 20.- / appr. US $ 14.-), please indicate on registration form.

12. Weather

Oldenburg is in a corner of Germany where it can be rainy. Please have clothes with you for rainy weather. If it is fine, temperatures at that time of the year will be 20-25 °C.

13. WWW-pages

All information pertaining to the conference will also be available for you on WWW-pages. You will find the „home page" under: http://www.hrz.uni-oldenburg.de/monoculus.

We can't await to have you here.

The local Organizing Committee
Hans-Uwe Dahms
Thomas Glatzel
Hans-Jürgen Hirche
Peter Jaros
Sigrid Schiel
Horst Kurt Schminke
Gerd Schriever

Sightseeing in Northern Germany - when the Conference is over

Coming from far away, you may want to learn more about the northern region of Germany than just to know the outstanding town of Oldenburg. Therefore, here are some suggestions, where you could go after the conference (numbers in parentheses indicate the time required to get there by train from Oldenburg).

Oldenburg is situated in the far northwestern corner of Germany. Therefore travelling from there means going east. There is a chain of famous Hanse towns, which have been historically and commercially important ever since the Middle Ages. I only mention the German ones. There are Bremen (half an hour) and Hamburg (1.5 h) (both near the North Sea) and Lübeck (2.5 h), Wismar (5 h), Rostock (5 h), Stralsund (6 h) (the latter towns are all along the coast of the Baltic), and Lüneburg (1.5 h) (further inland) (famous for its salt-mine and salt trade). Celle is a nice town and former residence near Lüneburg. Another important town at the Baltic is Kiel (3 h), where Remane taught and discovered the fauna of the Küstengrundwasser containing lots of harpacticoids. He also raised a number of scholars who became industrious taxonomists and ecologists. Last not least, I should mention Berlin (5.5 h), the future capital of Germany and symbol of the struggle against the Iron Curtain. There are two famous or even unique landscapes, worthwhile visiting from Oldenburg: the Wadden Sea (North Sea) and the Lüneburger Heide; the latter a treeless landscape formed by and used as sheep pasture, dominated by *Calluna* and *Juniperus*.

H. Juhl

Addendum: Publication information

Journal of Marine Systems (ISSN 0924-7963). For 1994 volume 5 is scheduled for publication. Subscription prices are available upon request from the publisher. Subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Issues are sent by surface mail except to the following countries where air delivery via SAL is ensured: Argentina, Australia, Brazil, Canada, Hong Kong, India, Israel, Japan, Malaysia, Mexico, New Zealand, Pakistan, PR China, Singapore, South Africa, South Korea, Taiwan, Thailand, USA. For all other countries airmail rates are available upon request. Claims for missing issues must be made within six months of our publication (mailing) date. Please address all your requests regarding orders and subscription queries to: Elsevier Science B.V., Journal Department, P.O. Box 211, 1000 AE Amsterdam, The Netherlands. Tel.: 31-20-5803642, fax: 31-20-5803598.

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Note to Contributors

A detailed Guide for Authors is available upon request. Please pay attention to the following notes:

Language

The official language of the journal is English, but occasional articles in French and German will be considered for publication.

Preparation of the text

(a) The manuscript should preferably be prepared on a word processor and printed with double spacing and wide margins and include an abstract of not more than 500 words.

(b) Authors should use IUGS terminolgoy. The use of S.I. units is also recommended.

(c) The title page should include the name(s) of the author(s), their affiliations, fax and e-mail numbers. In case of more than one author, please indicate to whom the correspondence should be addressed.

References

(a) References in the text consist of the surname of the author(s), followed by the year of publication in parentheses. All references cited in the text should be given in the reference list and *vice versa*.

(b) The reference list should be in alphabetical order.

Tables

Tables should be compiled on separate sheets and should be numbered according to their sequence in the text. Tables can also be sent as glossy prints to avoid errors in typesetting.

Illustrations

(a) All illustrations should be numbered consecutively and referred to in the text.

(b) Colour figures can be accepted providing the reproduction costs are met by the author. Please consult the publisher for further information.

Page proofs

One set of page proofs will be sent to the corresponding author, to be checked for typesetting/editing. The author is not expected to make changes or corrections that constitute departures from the article in its accepted form. Proofs should be returned within 3 days.

Reprints

Fifty reprints of each article are supplied free of charge. Additional reprints can be ordered on a reprint order form which will be sent to the corresponding author upon receipt of the accepted article by the publisher. One free volume is supplied for the first author.

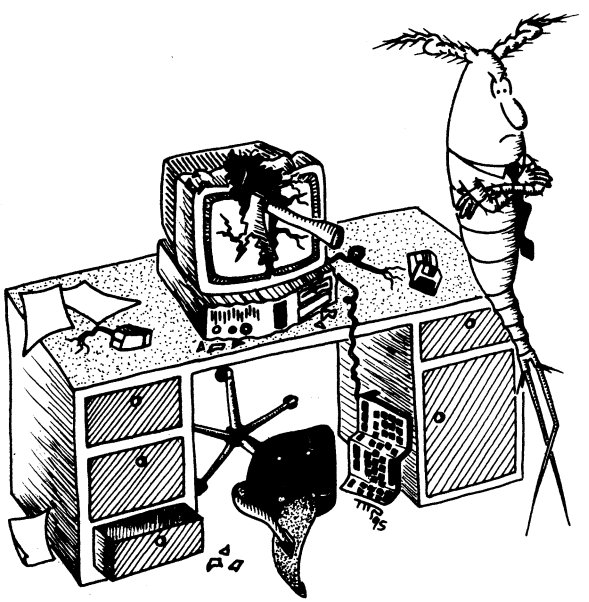
Submission of manuscripts

The indication of a fax and e-mail number on submission of the manuscript could assist in speeding communications. The fax number of the Amsterdam office is +31-20-5862696. Submission of an article is understood to imply that the article is original and unpublished and is not being considered for publication elsewhere.

Submission of electronic text

Authors are requested to submit the final text on a 3.5" or 5.25" diskette. [Both double density (DD) and high density (HD) diskettes are acceptable. Make sure, however, that the diskettes are formatted according to their capacity (HD or DD) before copying the files onto them.] As with the requirements for manuscript submission, the main text, list of references, tables and figure captions should be stored in separate text files with clearly identifiable file names. The format of these files depends on the wordprocessor used. Texts written with Display Write, MultiMate, Microsoft Word, Samna Word, Sprint, TEX, Volkswriter, Wang PC, WordMARC, WordPerfect and Wordstar or supplied in DCA/RFT or DEC/CX format can be readily processed. In all other cases the preferred format is DOS text or ASCII. It is essential that the name and version of the word processing program, the type of computer on which the text was prepared, and the format of the text files are clearly indicated.
Authors are requested to ensure that the contents of the diskette correspond exactly to the contents of the hard copy manuscript.

If available, electronic files of the figures should also be included on a separate floppy disk.



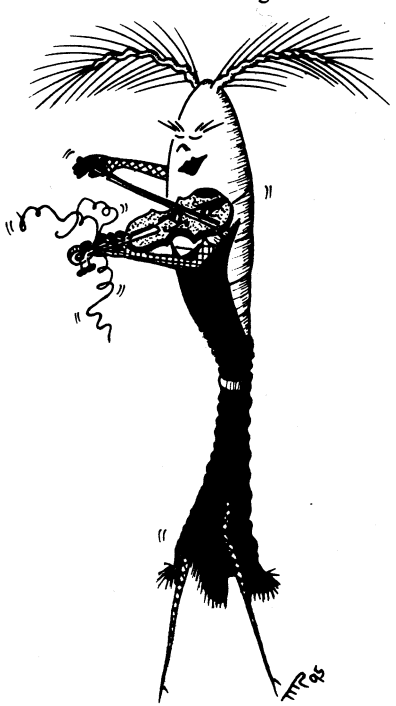
8585858585 **BIRTHDAY** 8585858585

Helmut Kunz

This year H. Kunz will celebrate his 85th birthday. I went to visit him at his home, situated in a nice setting in Bischmisheim, near Saarbrücken in southwest Germany. Now retired, he is still very active and involved in his work. He is a leading expert in the taxonomy and biogeography of harpacticoid copepods and his name comes to mind whenever help is needed in this field. When I started my studies on the morphology and biology of a harpacticoid copepod from Helgoland Island, this seemed to be unknown, at least for European waters. It was Helmut Kunz whom my mentor Horst Kurt Schminke suggested to consult for help in identification. Quickly I sent a vial with five specimens to his address, asking for his opinion about the taxonomic position of this diosaccid. It took no three days and the answer including valuable literature support was on my desk: The specimens belonged to *Paramphiasella fulvofasciata* described first by Rosenfield & Coull in 1974 from the east coast of the United States. Since then we have communicated frequently: exchanged literature and reprints, copepod samples and numerous post cards from our field trips abroad. However, I never had the opportunity to meet this man, who had my deep sympathy from the very first mail contact ...'till I made this interview in his warmly decorated home over lunch and coffee tastily prepared by his wife Trude.

Dr. Helmut Kunz was born on the 25th of October 1910 at Saarbrücken. He studied biology, chemistry, and geography in Munich, Göttingen, Halle and Kiel, where he passed his teacher examination in 1935. Before, he got a pre-examination at the veterinary medicine institute at the University of Munich. At the University of Kiel he became the scholar of the famous German zoologist Professor Adolf Remane, and studied copepods, mainly harpacticoids and cyclopoids for a Ph.D. thesis which he defended in 1937. Then be began a major ecological research project funded by the German Science Foundation located on the Northfrisian island of Amrum. This was suddenly and unexpectedly interrupted by the Second World War: H. Kunz should not be allowed to practice scientific research till 1949. He had to serve in the „Wehrmacht" from the very beginning to the end of the war (1939-45), being heavily wounded near St. Petersburg (Leningrad) where he had to stay in hospital for nine months. The war left him physically and mentally exhausted as a prisoner of war after more than four years in Russian captivity till 1948, when he was finally released. Never to give up is one of his secrets. The problems of reorganization after this inferno were especially demanding. „Besides the problem of getting housing", he remarked, „were funds scarce after the war, transport almost nonexistent, and the equipment rather poor. It was difficult to reach the sampling sites. We had to walk there and carry home the samples on our back."

Due to the lack of posts at the University of Kiel in those days, he accepted a job as a chemist at the coal mines „Saarbergwerke", which were under French administration near his Saarbrücken hometown. There he was mainly involved in the development of chemicals to prevent coal-dust explosions. He married his wife Trude Herrmann in 1952 who is a botanist and a teacher of biology. The couple has two sons and four grandchildren. Both are active members of the peace movement. They demonstrated against pershing rockets, cruise missiles and poison-gas to be installed in Germany. The couple (Helmut almost 78 years old) was even sentenced at court to high fines - however, exonerated later on.

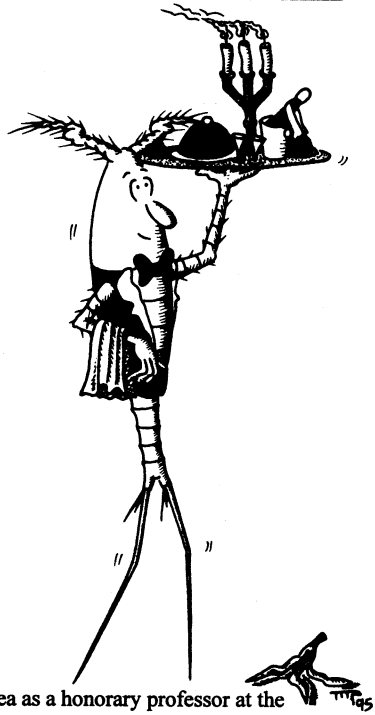


But Helmut Kunz never turned his back to the taxonomy and biology of copepods. „So, when did you first start studying copepods?" I asked him. „This was already in my school years, when I had to smuggle my microscope from Germany to the Saar territory" (which was under French administration). Then and later in his scientific career he was never exclusively involved in laboratory work only. Field work was one of his passions. He made trips to the closer surroundings of Bischmisheim, taking freshwater samples to study copepods. He went to Namibia in 1971, to Acores in 1975, and to Hawaii in 1979. H. Kunz made lots of copepods happy by giving them a name, and several microcrustaceans were named after him. Just to recall a few:

Harpacticoida:
Kunzia n.gen. Wells, 1967
Helmutkunzia Wells, n.gen.
Halectinosoma kunzi Lang, 1965
Schizopera kunzi Apostolov, 1967
Idyella kunzi Bodin, 1968
Paradanielssenia kunzi Soyer, 1970
Syngastes kunz Marcus, 1977i
Paramesochra kunzi Mielke, 1984
Paranannopus kunzi Schriever, 1985
Cylindropsyllus kunzi Huys, 1988

Ostracoda:
Paradoxostoma kunzi Hartmann, 1991

Halacaridae:
Scaptognathus kunzi Bartsch, 1988



From 1975-76 he taught courses on freshwater Crustacea as a honorary professor at the University of Saarbrücken.

He helped numerous copepodologists by providing specimens, whole samples, reprints, and helpful information on copepod biology, morphology, distribution, and phylogenetic relationships. We tried to estimate the overall number of his publications and got no less than 45 papers merely on copepods.

„What will your next publications be about?" I asked him finally. „Well, for a long time I have intended to revise the genus *Nitocrella* Chappuis (Ameiridae, Harpacticoida)", he answered. „ I also still have material of a new species belonging to *Sarsameira* from Hawaii."

Ever since he retired Helmut Kunz has resumed his scientific endeavours more actively than was possible during the preceding decades of his career as a chemist.

Helmut Kunz' 85th birthday is on the 25th of October this year, which he will celebrate amidst his family, wife, children and grandchildren. MONOCULUS sends best wishes. We are all looking forward to meeting him again during next year's conference in Oldenburg.

H.-U. Dahms

Report on NIMCO - Pergignan, July 3-7, 1995

The „Ninth International Meiofauna Conference" was held in Perpignan, France. Alain Dinet and his co-workers (Philippe Albert, Jean-Yves Bodiou, Francis de Bovée, Nicole Coineau, Marie-Josephe Dinet, Laurence Guidi-Guilvard, and Santiago Villora-Moreno) conveyed a wonderful conference with a lot of new information making possible stimulating communication which led to a number of joint projects.

About 115 people from 17 countries presented 67 oral and 33 poster presentations.

Harpacticoida is the copepod group which primarily dwells on or in aquatic substrata. Besides other meiofauna taxa many of the oral presentations dealt with harpacticoid copepods. They demonstrated: Their loss of genetic variability associated with off-shore platforms (Street & Montagna), the phylogeny of *Enhydrosoma* and related genera in the Cletodidae (Gee & Huys), the feeding biology and population dynamics of *Amonardia normani* (Souza-Santos et al.), use of planktonic and benthic microalgae by the meiobenthic copepod community of a Louisiana salt marsh (Carman & Pace), natural feeding of *Canuella perplexa* (Buffan-Dubau et al.), recolonization of azoic sand by sublittoral copepods (Colangelo & Ceccherelli), sediment characters and high harpacticoid diversity (Bodin), distribution of *Longipedia* and *Canuella* in a seagrass habitat (Chullasorn), effects of winter storms on shelf harpacticoid populations (Thistle et al.), effects of sediment-associated paths to estuarine harpacticoids (Lotufo). Poster demonstrations on Harpacticoida include the following: The long-term stability of a meiobenthic copepod community from a Mediterranean infralittoral sandy habitat and the problem of comparing results staggered in time (Villora-Moreno et al.), sulphide resistance of harpacticoids from the eulittoral of the island Hiddensee (Vopel & Arlt), sea ice harpacticoids of the Southern Ocean (Dahms et al.). There were many other papers including various meiofauna groups, also copepods, e.g. in community studies of environmental gradients or heterogeneity, toxicity studies *in situ* and *in vitro*, the bottom up *versus* top down regulation controversy (feeding) or seasonal variability.

Among the conference participants students formed an encouragingly large group. Student participation is an indication of growth and sound perspectives of a scientific endeavour like meiofauna research. As the chairperson of the IAM (= International Association of Meiobenthologists) puts it in PSAMMONALIA 109 (= newsletter of IAM): „The production of new ideas and new directions in meiofauna research certainly demonstrates that our field is still a dynamic enterprise". Any information on the IAM can be obtained from the chairperson:

Dr. P.A. Montagna
Chairperson of the IAM
Mar. Sci. Inst.
Univ. of Texas at Port Aransas
P.O.Box 1267
PORT ARANSAS, TX 78373
U.S.A.

The newly elected chairperson, Magda Vincx, and treasurer Ann Vanreusel (both Ghent) will begin their three-year term in January 1996. The next conference (Tenth International Meiofauna Conference) will be hosted by Richard Warwick and Mike Gee in Plymouth, U.K. Mike Gee reports that he has already booked the conference center at the University of Plymouth for the week of 27th to 31st July 1998.

H.-U. Dahms

LETTER BOX

Just wanted to tell you for MONOCULUS that
1) I finished the Ph.D. entitled: Copepod-chondrichthyan coevolution: A cladistic consideration. 1994. It is a revision of *Kroyeria* and *Eudactylina* with phylogenetic analysis of them plus *Kroyerina.*
2) my e-mail address is GBD@SAN.CI.LA.CA.US.
The e-mail address for Mas Dojiri is MAD@SAN.CI.LA.CA.US.

Greg Deets Ph.D., California

Limnology Centers for Tropical Regions

Over the past 20 years or so, tropical limnology has had spurts of work in different parts of the world, often based on projects. However, there are centres of excellence in the subject supported by indigenous expertise in a few places on the tropical continents. Some of these, for example, Addis Ababa, are the children of projects funded and partly manned by expertise from more affluent countries. The quality of the work done has improved immensely with time.

The UNESCO-Austrian course in Vienna and less long-term courses in Ghent, Wageningen, Stirling, and Alabama (mainly for fish culture) have helped in the training of limnologists from the tropics. Brazil is perhaps the only tropical country which has a major presence in limnology in the world today, and this country is an example of what can be achieved with good leadership, investment of funds backed by a socially open and democratic society.

It is an opportune time for SIL to back morally, if not financially, the creation and strengthening of some centres in limnology in the tropical region; not with a bureaucratic structure but rather as places where the energies of local people and surrounding countries can be blended for training and research with support from more affluent countries. The realization that water and aquatic resources are both valuable financially and in danger of damage, will, I think, spur governments both in developed and developing countries to support limnological research and training.

If a series of steps are taken now to officially put the name SIL behind supporting centres of excellence, it will be worthwhile now to discuss where these centres are to be located and what sort of SIL support can be offered to them.

There will be clamour for these centres to be in countries which are large or representative of an area. However, while these are important considerations, we must consider the past, present, and future potential for progress and research and training at these centres.

As a preliminary list, which is highly tentative, I would suggest Manãus and São Carlos for South America or at least one of them and Nicaragua. For Africa, one centre in South Africa and Addis Ababa in Ethiopia are worth considering. For Asia, a centre or two in India and one in Indonesia (Bogor) seem feasible. Obviously, the logistics, local conditions, and expertise available must all be considered, and all decisions arrived at by discussion.

I think that if such centres are designated and the policies of SIL toward them are defined, more cooperative efforts can be made to do research and provide training courses *in situ* in the tropics. Thus, the quality and quantity of limnological work will be enhanced in the tropics.

C.H. Fernando, Waterloo (Canada)

ERRATA: Guides to the Identification of the Microinvertebrates of the Continental Waters of the World, vol. 7, Introduction to the Copepoda

The no. 7 of the Guides to the Identification of the Microinvertebrates of the Continental Waters of the World, vol. 7, Introduction to the Copepoda, 277 pages, SPB Acad. Publ. is just published. The authors, B.H. Dussart and D. Defaye, sent their script and the corresponding disk on Dec. 31, 1992. They never had access to any proof and, in consequence, are not responsible of the numerous errors and other modifications to the original text which make the book unusable.

The authors prepared an erratum which is printed in this issue of MONOCULUS and is at the disposal of any reader. Write to the authors: Laboratoire de Zoologie-Arthropodes (Crustacés), MNHN, 61, rue Buffon, F-75005 PARIS (France).

INTRODUCTION TO COPEPODA
ERRATA

Acknowledgements: 1.6, Rebière au lieu de Rebi re
Abbreviations: Te (terminal external seta of furcal ramus) (4)
Ti (terminal internal seta of furcal ramus (1)
Tme ..... (3)
Tmi ..... (2)
Ur: urosome (Ur1....
Introduction: line 6, „Calanoida" instead of Calaniformes"
p.3, 1.6, *Nitokra* instead of *Nitocra*
p.8, 1.38, read: „which are resins able to be dissolved in toluene for remounting if necessary".
p.11, 1.11, read: „Each somite is fundamentally composed of a dorsal tergite with chitinous cuticle ..."
p.16, Fig. D5: (ps:peg sensillum; p:pore) related to j instead of k
p.20, Table on chaetotaxy, 12 and 14 must be on the second column „segment".
p.23, 128, read: „Exopodite and endopodite are fundamentally three-segmented..."
p.29, 1.3, read: „is made up of three distinct structures."
p.31, add after „chitinized wall": „The oral aperture gives access to the oesophagus, the beginning of which is oriented perpendicularly". „In omnivorous ..."
p.32, 1.8, read „the diverticulum, when present"
p.32, 1.40, read „they might be replacing cells for ageing or lost cells".
p.33, 1.6, read „The anterior part of the midgut (Im1 of Defaye et al., 1985)"
1.42, read „remotor muscles".
p.36, 1.5, read „Detailed studies do not exist ..."
p.40, 1.4, read „and run posteriorly ..."
p.41, 1.12, read „the aperture of the seminal receptacle is often protected"
p.42, 1.23, read „development. If such immediate development generally occurs, sometimes the eggs are laid at the blastula or gastrula stage. Such eggs are called resting eggs, ..."
p.46, 1.39 after „as follows:", add (Table F1). Here should be placed Table F1
p.47, read Table F1 (instead of Table 1),
The three lines following as legend of Table 1 must be placed after Table F1 as current text before Table F2.
Read 1.3: „the values listed in Table F2."
p.47, read Table F2 (instead of Table 2)
Read then chapter „c - feeding ..."

p.46, 1.41, read „cyclopoids generally prefer dilacerating".
p.47,1.4, read „eating available food"
p.50, 1.19, read „dormancy. Entering dormancy is stimulated ..."
p.51, 1.36 „but their mathematical interpretation has been controversed (Enright, 1977 ..."
p.55, last lines: The process consists in the excision and elimination of heterochromatic segments (H-segments) in chromosomes of presomatic cells
p.59, Table Ha4, the lines should be straight
p.61, 1.20, „matter, or directly by sorption"
p.62, 1.13, read „ , in perceiving light gradients"
1.18, read „sunlight. This behaviour permits to reduce the fish predation pressure."
p.64, 1.32, read „*Cyclops, Mesocyclops* and other Cyclopidae, or harpacticoids (as *Elaphoidella*) (Whistler et al, ..."
p.65, 1.18, read „more than five million people in the world and particularly in Africa ..."
p.66, 1.9, „Wautier (1945-48)"
p.73, 1.39, read Copepiones instead of Copepils
p.74, 1.7, read Copepiones instead of Copepils
p.74, last line „Pseudocalanidae Gurney, 1931)
p.75, 1.2, read:
„2-P1 to P4 with all endopodites 3-segmented 3
P1 to P4 with endopodites 1 to 2-segmented .....4"
1.14, read:
„and of P2 to P4, 2-segmented ..... Fam. Temoridae"
p.76, 1.20, read „Antenna with a three-segmented endopodite and a six to seven-segmented exopodite", instead of „Six to 7-segmented antenna with 3-segmented endopodite but strong exopodite"
p.77, 1.3, read „3.Antenna with 1-segmented exopdite ..."
1.18-19: „- P1 with exopodite elongated, ending in two spiniform claw-like setae and endopodite flattened, ending in long setae, more or less bent ..... fam. Tisbidae Stebbing, 1910"
1.26, read: „lateral spines; endopodite 2-segmented ..."
p.82, the controversial genus (Bowman, 1991) is *Lamellipodia*, not *Epischura*.
p.84, 1.30, read „a lobe at its posterior surface .....22"
p.86, 1.8, read „of right male A1 very elongated"
1.30, read „Exp3 of male left P5 with a long lateral seta, of particular structure (fig. L38)."
p.90, 1.2, read „Spine formula of exopodites not 3 3 3 2"
p.97, add to Note: Without any other information, in figures of Chap. L, the scale near the adult in toto, corresponds to 0.5 mm.
Foot note: starts with *, read :p.viii.;
1.21, $Th5^1$ has to be replaced by Th5*
p.105, 1.9, Type: *Boeckia triarticulata* (Thomson, 1883)
(fig. L8: *Boeckella triarticulata*, orig.)
p.136, 1.14-15, read „...on segments 10 to 16, those on segments 13, 11 and 10, the strongest."
p.185, 1.8-9, read „A1 25-segmented, segment nine with two setae."
p.197, last line, read „two setae of different length."
p.199, 1.10, read „Enp3P4 ending in two spiniform and relatively short setae.
p.238, 1.8, read „Ti 0.5 time longer than Te"

p.253, after 1.4, add: „Abbreviations used are those recommended by the International Serials Data System (1985) (List of serial title word abbreviations. International Standard Office, ISO 4-1984, with supplements 1985, 1988, 1989. ISDF, F75002 Paris)."
p.253, 1.16, read ....95, :213-233
1.43, read :277-281, :316-318.
p.256, 1.30, read ....."of Australian *Mesocyclops*"
1.49, read „6:127-184"
p.257, 1.30, read „cavernicoles connus en 1931"
1.47, read CHINNAPPA, C.C. & VICTOR, R. 1979a
p.260, 1.9, DUSSART, B.H. & DEFAYE, D., 1985
1.15, EDWARDS, C.L., 1891, ...Arch. Nat...
p.261, 1.5, read „Acta biol. hung., 21:225-233."
p.263, 1.13, read Hamond, R., 1973 ... Harpacticoida: Canuellidae)...
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p.266, 1.54, KRITCHAGUINE, N., 1873.

B.H. Dussart and D. Defaye, France

ANNOUNCEMENTS ANNOUNCEMENTS ANNOUNCEMENTS

Systematic Biology Network

The European Science Foundation offers an exciting new opportunity to bring systematics together as a closely knit community that can develop a powerful and influential voice in European science. The ESF Network in Systematic Biology will run for three years. It recognises the global importance of European biological and palaeontological collections and the special scientific strengths that Europe could contribute to tackling the biodiversity crisis. More than half the world's biological collections are in European systematic institutions.

The primary purpose of the ESF Network is to stimulate communication and collaboration between the scientists working in what have been traditionally separate disciplines. The specific objectives of the Network include:

- Unite European systematists through good communication
- Define and mobilise Europe's contribution to tackling the scientific challenges of biodiversity
- Consider new developments in systematic theory, practice and application
- Explore the relationship between morphological and molecular systematics
- Produce policy papers on systematic priorities
- Establish priorities for and consider ways of promoting the training of systematists
- Provide a platform for worldwide cooperation among systematists.

The chairperson of the Coordination committee is Prof. S. Blackmore (The Natural History Museum, London). More information (including free subscription to the network) is available on the e-mail line of Nicola Donlon, London (nd@nhm.ac.uk; FAX 0171 938 9506) or on the e-mail line of Magda Vincx (magda.vincx@rug-ac.be; FAX 32 09 2645210).

Second European Crustacean Conference
hosting
the 7th Meeting of the „Groupe d'Etudes et de Réflexions sur l'Evolution des Crustacés" (GEREC), the Crustacean Larval Conference, and an ESCPB Specialized Symposium.

LIEGE (Belgium)
September 2-6, 1996

All aspects dealing with morphology, systematics, phylogeny, physiology/biochemistry including nutrition, metabolism, osmoregulation, endocrinology and neurobiology as well as with ecology, ecotoxicology, fisheries and aquaculture will be concerned.

FOURTH INTERNATIONAL CRUSTACEAN CONGRESS (ICC IV) 1998

Following the first, second, and third International Crustacean Conferences, respectively, in Ernakulam, India (1965), Sydney (1980) and Brisbane (1990), Australia, now European carcinologists have taken the initiative to organize a fourth such meeting in Amsterdam, The Netherlands. Planning will target one week in June-July 1998. The putative general theme will be:

CRUSTACEANS AND THE BIODIVERSITY CRISIS

Within this theme, papers on all aspects of all groups of crustaceans may be submitted. Both invited lectures and contributed papers will be organized according to the following subthemes: Phylogeny/Systematics, Evolution/Paleontology, and Biogeography; Biodiversity and Environment (including Pollution and Toxicology); Morphology and Anatomy; Larval Biology and Life History; Ecology and Ethology; Physiology and Biochemistry; Genetics and Molecular Biology; and Fisheries and Aquaculture.

Participants from all over the world working on Crustacea will be welcome. Papers to be published in the Proceedings will be subject to normal refereeing. The Dutch members of the Organizing Committee and their institutions will host the congress. On their behalf, Charles H.J.M. Fransen, Frederick R. Schram, Dick H. Spaargaren, J. Carel von Vaupel Klein, and Gerard van der Velde invite all those who are interested to respond to this call at the address given below before February 1996, in order to receive a „First Circular" in the spring of 1996.

Please send your reaction as soon as possible to:

Fourth International Crustacean Congress
c/o Secretariat
Institute of Systematics and Population Biology of the
University of Amsterdam
P.O.Box 94766
NL-1090 GT Amsterdam
The Netherlands
(FAX: +31.205255402; e-mail: zijl@bio.uva.nl)

3rd International Conference on Reservoir Limnology and Water Quality
Ceské Budejovice, Czech Republic
August 31-September 5, 1997
Preliminary Announcement

CONTACT ADDRESS:
Jaroslav Vrba, Conference Secretary
Hydrobiological Institute
Academy of Sciences of the Czech Republic
Na sádkách 7
CZ-370 05 Ceské Budejovice
Czech Republic
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DEADLINES
Preliminary registrations: December 31, 1995
Abstract submission & registrations: January 31, 1997
Manuscript submission: September 1, 1977

ZOEA - larval development newsletter for carcinologists

Editors:
J.A. Cuesta
Departamento de Ecologia, Facultad de Biología, Apdo. 1095
E-41080 Sevilla, Spain
e-mail: mariscal@cica.es

J.I. Conzález-Gordillo
Laboratorio de Biologia Marina, Facultad de Biología, Apdo. 1095
E-41080 Sevilla Spain
Fax: +34 5 4233480 / e-mail: jcgarcia@cica.es

Guide for contributions

Zoea is a publication available to all workers interested in crustacean larval development. It is not part of the scientific literature and is not to be cited, abstracted or reprinted as a published document. Items of interest, details of ongoing work, requests, publication lists, mailing lists, etc. for inclusion in *Zoea* should be sent to the editors.

1. Types of contribution

Short communications, book reviews, letters to the editor, comments, review articles.

2. Text

The official language of the newsletter is English. One copy should be provided, in double-space typed on one side of the paper on pages of uniform size (format 21 x 29.7 cm, A4). The text should neither exceed 1,500 words or about four printed pages, not divided up into conventional sections. Reference to published work should be indicated at the appropriate place in the text (using author(s)' name(s) and date), with a reference list, in alphabetical order, at the end of the paper. The list should give name(s) and initial(s) and title, volume number , year of issue and initial and final page numbers of the journal. You can also send contributions on a floppy disc 5¾ or 3½) on IBM compatible word processor (MS Word is preferred). In this case, one printed copy of the manuscript should be sent. Label disc with the author's name, text file, machine and word-processor programme used.

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The original without copies of each illustration should be provided. Illustrations should be numbered according to their sequence in the text. References should be made in the text to each illustration. The quality of the illustration offprints will depend on the quality of the original submitted. Legends to illustrations should be typed on separate sheets.

4. Submission

Contributions for consideration can be sent to the Editors or Editorial Advisors for submission to the Editors.

Since there will not be referees to review the manuscripts, the authors will be responsible for the quality of their contributions, opinions or information submitted.

5. Page charges and offprints

There will be no page charges, and no reprints of papers submitted will be available but only complete issues.

PLANKTON NEWSLETTER

Journal on marine plankton, ISSN 0920-2285, published by SBNO (Organisation for the Advancement of Oceanography in the Netherlands), supported and distributed by the Institute of Systematics and Population Biology (ISP), University of Amsterdam. Editors: M. van Couwelaar & S. van der Spoel, Institute of Systematics and Population Biology, Amsterdam, The Netherlands.

All correspondence should be sent to the editors.
Address: P.O.Box 16915, 1001 RK Amsterdam, The Netherlands,
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Instructions to authors

Letters, questionnaires, papers, comments, discussion notes, announcements, convocations of symposia and conferences, expeditions etc. for the next issue of PN (Vol. 21) should be sent in before the 1st of September 1995.

As the Plankton Newsletter is an information and discussion platform for marine planktologists, we invite you to publish your ideas, (personal) theories, short notes or papers on any plankton subject. If you are interested in publishing in the Plankton Newsletter please read the following remarks:

- Your manuscript should be typed/printed in double line spacing, not exceeding 8 pages including figures, written in English, about marine plankton. For technical reasons, please avoid italics and use word underline instead. Figures should be clearly drawn in black ink on white paper, or be laser printed; we will reduce them to a PN-convenient size.
- You can also send in your text on 3.5 inch diskette together with a hard copy. MS Word for Macintosh/MS-DOS is preferred. In case you apply another MS-DOS word processing, the document should be saved as RTF or TXT. Please mark the format and the application on the diskette label. Also text can be send in by e-mail as attached document.
- Tables and figures should have clear captives, be referred to in the text.
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SYSTEMATICS AGENDA 2000: CHARTING THE BIOSPHERE
A Global Initiative to Discover, Describe and Classify the World's Species
Technical Report

Produced by Systematics Agenda 2000
A Consortium of the American Society of Plant Taxonomists, the Society of Systematic Biologists, and the Willi Hennig Society, in cooperation with the Association of Systematics Collections
1994

Prologue

Imagine yourself transported to a strange, but magnificent planet. The scenery around you is awe-inspiring. As you walk along a coast, waves pound a shoreline that gives way to grassy meadows, meandering rivers, luxuriant forests, and far-off, snow-clad mountain peaks. Even a glance shows that this world is teeming with life - bewildering in variety, and sometimes vaguely menacing in appearance.

Imagine how much there would be to learn about this new planet, and how important that knowledge might become. Some of the plants might provide new foods to help feed starving human populations, or new drugs to fight illness. Some of the animals might successfully control the pest species that devastate crops. The microorganisms might be able to break down pollutants, or help maintain the atmosphere of a crowded world. Imagine, too, that you can stay on this fascinating new world for less than a generation, so that you only have a narrow window of time in which to make all of these discoveries.

In fact, little imagination is required, for this little-known planet is our own Earth. Life on our planet is astoundingly diverse and holds as much promise for potential benefit as that on any planet we might imagine, much less explore in the near future. And the window in time is just as real, for large parts of our planet's surface, both land and water, are facing rapid degradation by growing human populations with needs for shelter, food, and fuel. Another generation or two of rapid population growth and resource consumption will destroy much of life's diversity, long before we have had a chance to discover, much less investigate in detail, what it is we are losing.

Many people are surprised to learn that millions of species on Earth have not yet been discovered or described. In fact, because the Earth is so rich with life, and some groups of organisms are so poorly studied, we still have no clear idea of how many species actually live on our planet. If there turn out to be ten, or even fifty, million species on Earth, few biologists would find that surprising.

We do, however, have a clear idea of how important life's diversity has been to us in the past, and how important it may prove to be in the future. We also have a clear idea of what the study of that diversity can tell us about the history of life on this planet, and how that study can help us solve some of the most pressing problems confronting the world as we move into the 21st century. We face an unprecedented opportunity, one that our grandchildren will not have should we fail.

The science of systematics is the branch of biology that seeks an understanding of life's diversity. Systematists order this knowledge into classification systems that represent what we know about species existing today, or in ages past, and that best predicts what we do not yet know. Systematic biologists worldwide are being asked to accelerate their exploration of life on Earth to provide society with essential background knowledge to discover and utilize new

biological resources and make informed decisions that will ensure preservation of the Earth's biological diversity.

Executive Summary

Earth's species, including humans, comprise an intricate fabric, a fabric that has shaped the atmosphere, climate, soil, water, and other ecological features of the planet that are essential for the very existence of life. More than a million of the individual threads (species) that make up this fabric have been discovered and described by systematic biologists, the scientists responsible for exploration of the world's biological diversity. Descriptions of species set the stage for studies of their relationships, as well as for classifications that tell us about the organization and history of life's diversity. These classifications are powerful tools that help us to understand, maintain, and rationally utilize the great biological wealth we have inherited.

Yet, despite over two centuries of accomplishment in systematic biology, we have much to learn about the fabric of life. Tens of millions of species remain unknown to us, species that stabilize the delicate balance of ecosystems, species that have potential for expanding and diversifying our agricultural production, and species that hold new and effective cures for the diseases that plague human populations. Fortunately, recent advances in systematics offer the prospect of undertaking in a timely fashion the daunting task of charting the biosphere in a way that will capture the enormous scope of species diversity.

Meeting this challenge, now more than ever, is pivotal to our survival and well-being. We are faced on a world-wide scale with rapidly declining diversity, disappearing habitats, and increasing demand for precious biological resources. Basic systematic research on species diversity is urgently needed for international efforts by natural resource managers, pharmaceutical explorers, conservation biologists, ecologists, and many others.

The more we know about Earth's biological diversity, the better will be our capacity to conserve natural habitats on land and in the oceans. This knowledge is critical if future generations are to share this planet with the myriad life forms on which we depend.

The international community of systematic biologists proposes Systematics Agenda 2000 to achieve a scientific objective sought by the nations of the world: To discover, describe, and classify an intensive international effort involving three interrelated scientific missions.

Mission 1: To discover, describe, and inventory global species diversity.
Mission 2: To analyze and synthesize the information derived from this global discovery effort into a predictive classification system that reflects the history of life.
Mission 3: To organize the information derived from this global program in an efficiently retrievable form that best meets the needs of science and society.

The benefits to science and society will be significant:
- The newly discovered species will multiply society's inventory of usable resources.
- New systematic data will arm conservationists, policy makers, and biological resource managers with the knowledge necessary to sustain and use their nation's species diversity.
- Knowledge of species diversity will assist in the discovery of new products and will guide the selection of new and improved food crops and medicines.
- Baseline data will be generated to monitor global climate and ecosystem change, including rates of species extinction, ecosystem degradation, and the spread of exotic, disease-causing, and pest organisms.

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OBITUARIES

Sigeru Motoda (1908-1995)

You will be sorry to learn that Professor Sigeru Motoda succumbed to renal insufficiency at the Kawakita Hospital, Tokyo, on September 24, 1995, at two o'clock in the morning. He was 87 years old. The funeral service was held at the Mejiro Episcopal Church, Tokyo, on September 27 at six o'clock in the afternoon.

The bereaved family is Mrs. Michiko Motoda and her son Susumu, 2-35-2 Asagaya-kita, Suginami-ku, Tokyo 166.

M. Omori, Tokyo

Thomas Elliot Bowman III (1918 - 1995)

Thomas Elliot Bowman III died on August 10, 1995; he was 76 years old. Copepods were a continuing interest of Tom's during his distinguished career as carcinologist at the Smithsonian Institution's National Museum of Natural History. From 1955 to 1994 he published 45 articles, alone or with others, about copepods.

Tom began his work with copepods as a student of Martin Johnson at Scripps Institution of Oceanography in 1948 (Tom contributed to a sketch of his mentor for Monoculus 11:7-13 with Ferrari and Fleminger). He completed his Ph.D. in 1953 and his studies of planktonic calanoid copepods and hyperiidean amphipods contributed to our present understanding of Pacific biogeography.

Tom's articles about copepods, mainly calanoids, account for about one-fourth of his published works. He was interested in their general biology, and particularly systematics, seasonal occurrence, regional distributions and oceanic biogeography. Tom described, alone or with others, 28 new copepod species, a new subspecies and two new genera, the calanoid *Miostephos* and the harpacticoid *Cithadius*, and he redescribed many more. He also contributed a history of copepodology at the Smithsonian Institution to Monoculus 25:10-12.

A sketch of Tom's professional life among copepods was chronicled on these pages by Janet Reid and me in 1988 (Monoculus 17:10-21). Ed Brinton, a student at Scripps with Tom, and Mark Ohman remembered Tom in the Scripps Institution of Oceanography Log [SIO Log 32 (34) (August 25 - September 1, 1995)].

Tom's clear thinking, unique insights, unpretentious writing style and, above all, his controversial views will be missed by all copepodologists.

Frank D. Ferrari, Washington, D. C.

Table 1. New species and subspecies of copepods described by Thomas E. Bowman.

CALANOIDA

Calanidae
Calanus lighti Bowman, 1955
Candaciidae
Candacia paenelongimana Fleminger & Bowman, 1956
Clausocalanidae
Ctenocalanus citer Heron & Bowman, 1971
Ctenocalanus heronae Vega-Pérez and Bowman, 1990
Diaptomidae
Mastigodiaptomus nesus Bowman, 1986
Notodiaptomus caperatus Bowman, 1979
Notodiaptomus venezolanus deeveyorum Bowman, 1973
Paracalanidae
Acrocalanus andersoni Bowman, 1958
Paracalanus quasimodo Bowman, 1971
Pontellidae
Calanopia biloba Bowman, 1957
Pseudocyclopidae
Pseudocyclops cokeri Bowman & González, 1961

Pseudocyclops paulus Bowman & González, 1961
Pseudocyclops rostratus Bowman & González, 1961
Pseudocyclops rubrocinctus Bowman & González, 1961
Pseudodiaptomidae
Pseudodiaptomus cokeri González & Bowman 1965
Stephidae
Miostephos cubrobex Bowman, 1976
Tortanidae
Tortanus compernis González & Bowman 1965
Tortanus scaphus Bowman, 1971
Tortanus lophus Bowman, 1971

CYCLOPOIDA

Oithonida
Oithona colcarva Bowman, 1975
Oithona björnbergae Ferrari & Bowman, 1980
Oithona fonsecae Ferrari & Bowman, 1980
Paroithona flemingeri Ferrari & Bowman, 1980

HARPACTICOIDA

Ameiridae
Nitokra sphaeromata Bowman, 1988
Tachidiidae
Cithadius cyathurae Bowman, 1972
Tisbidae
Tisbe monozota Bowman, 1962

SIPHONOSTOMATOIDA

Nicothoidae
Sphaeronellopsis monothrix Bowman & Kornicker, 1967
Sphaeronellopsis hebe Bowman & Kornicker, 1968
Sphaeronellopsis dikrothrix Kornicker & Bowman, 1969

Copepod publications of Thomas E. Bowman

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CANDIDATE MEMBERS

BIOGRAPHICAL NOTES

I was born in 1957 in Tashkent (Uzbekistan: Central Asia). I finished my graduate course in 1974 and postgraduate course in 1984 at the Department of Invertebrate Zoology of Moscow State University. My dissertation for the degree of Candidate of Biology was defended at Moscow State University in 1986. It was devoted to the study of taxonomy and ecology of planktonic ciliates (Protozoa) of Uzbekistan. Then I worked as a researcher at the Institute of Fishery in Tashkent. Since 1991 I have been Head of the Division of Aquatic Zoology at the Institute of Zoology of Uzbek Academy of Sciences. I am the author of about 45 scientific publications devoted to studies on systematics and ecology of Ciliophora, Rotifera, Cladocera, and Copepoda of Central Asia, and to macrosystematics and phylogeny of eukaryotes. Now my major scientific interests are concerned with taxonomy, distribution and ecology of microcrustaceans (mainly Cyclopoida) of Central Asia (mainly Aral Sea Region). I am an advisor of two postgraduate students in Tashkent and in Nukus, who study Copepoda.

I.M. Mirabdullaev
Institute of Zoology
Tashkent 700095, Uzbekistan

CHAU, Shih-Long
Institute of Oceanography
National Taiwan University
Taipei
TAIWAN 106

FOFONOFF, Paul W. (Dr.)
Smithsonian Environmental
Research Center (SERC)
P.O.Box 28
Edgwater, MD. 21037
USA
e-mail: fofonoff@serc.si.edu

HARN, Shih-Long
Institute of Oceanography
National Taiwan University
Taipei
TAIWAN 106

HUANG, Che-Chung
Institute of Oceanography
National Taiwan University
Taipei
TAIWAN 106

HUANG, Wen-Bin
Department of Zoology
National Taiwan University
Taipei
TAIWAN 106

HWANG, Jiang-Shzou (Dr.)
Institute of Marine Biology
National Taiwan Ocean University
Keelung
TAIWAN
e-mail: B0106@ntou66.ntou.edu.tw

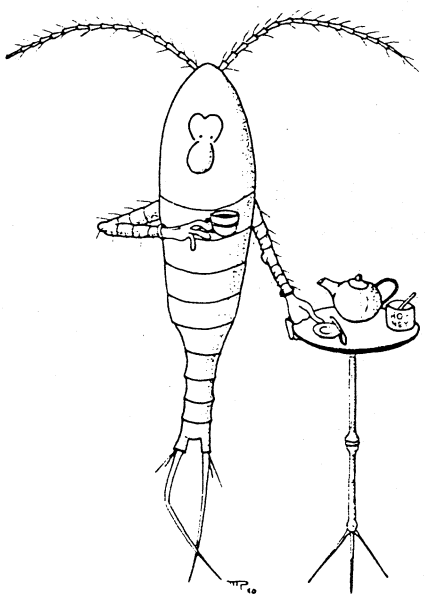
JAUME, Damia (Dr.)
c/o B. Sta. M.
Del Sepulcre, 11
Palma de Mallorca
SPAIN

KAMAUCHI, Hiromitsu
Laboratory of Planktology
Department of Aquatic Biosciences
Tokyo University of Fisheries
4-5-7 Kounan
Minato-ku, Tokyo 108
JAPAN

LEE, Hwa-Ja (Dr.)
Department of Biology
College of Natural Sciences
Cheju National University
1, Ara-Dong
Cheju 690-156
KOREA

MOEMENBELLAH-FARD, M.-D. (Dr.)
210, Fellows Court
Appelby Street
London, E2-8L2
UNITED KINGDOM

OLAFSSON, Emil (Dr.)
Department of Zoology
University of Stockholm
S-106 91 Stockholm
SWEDEN
e-mail: Emil.Olafsson@Zoologi.Su.Se



SOLOKHINA, E.V.
The Timiryasev State Museum of Biology
Malaya Yrusinskaya 15
Moscow 123242
RUSSIA

SORGELOOS, Patrick (Dr.)
Artemia Reference Center
University of Gent
Rozier 44
B-9000 Gent
BELGIUM
e-mail: Patrick.Sorgeloos@rug.ac.be

WETZER, Regina
University of South Carolina
Biological Sciences
Columbia, SC 29208
USA
e-mail: RWETZER@univscvm.cd.scarolina.edu

YOUNG, Shu-Sen (Dr.)
Dept. of Mathematics and Science Education
National Hsinchu Teachers College
521 Nan-Dah Road
Hsinchu City 30033
TAIWAN

CHANGE OF ADDRESS

ARCOS, F. (Prof.)
Escuela Sup. Politécnica del Litoral
Facultad de Ingeniería Marítima y
Ciencias del Mar
Campus Prosperina
P.O.Box 09-01-5863
Guayaquil
ECUADOR
Phone: (593-4)354518-269477
Fax: (593-4)854587
e-mail: farcos@espol.edu.ec

CHOI, K.-H.
Department of Biology
College of Natural Sciences
Pusan National University Kum Yeong
Pusan 609-735
KOREA

FAVA, G.
Università di Udine
Dip. Produzione Animale
Via S. Mauro 2
I-33010 Pagnacco (UD)
ITALY

FOSSHAGEN, A.
Department of Fisheries and
Marine Biology
High Technology Center
N-5020 Bergen
NORWAY

JONASDOTTIR, S.H. (Dr.)
Danish Institute for Fisheries Research
Dept. of Marine and Coastal Ecology
Charlottenlund Castle
DK-2920 Charlottenlund
DENMARK
e-mail: sjo@dfu.min.dk

KANG, Y.-S. (Dr.)
National Fisheries Research &
Development Agency
South Sea Fisheries Res. Inst.
#26 Namsan-Dong
Yoesu, Cheonnam, 550-120
KOREA

MARCOTTE, B.M. (Dr.)
S.A.I. Foundation
401 Cumberland Avenue
Suite 1006
Portland, ME 04101
U.S.A.

NOMURA, H. (Dr.)
Lab. of Global Biological Processes
Inst. for Hydrospheric-Atmospheric Sci.
Nagoya University
Furo-cho, Chikusa-ku
Nagoya-shi, Aichi 464-01
JAPAN

ONBÉ, T. (Dr.)
2-60-406 Saijo Nishi-Honmachi
Higashi-Hiroshima 739
JAPAN
Phone/Fax: +81-824-22-8208

PIASECKI, W. (Dr.)
Division of Fish Diseases
University of Agriculture in Szczecin
ul. Kazimierza Królewicza 4
71-550 Szczecin
POLAND
e-mail: piasecki@uoo.univ.szczecin.pl

RAYNER, N.A.
Dept. of Zoology
University of Burban-Westville
Private Bag X54001
Durban, 4000
SOUTH AFRICA

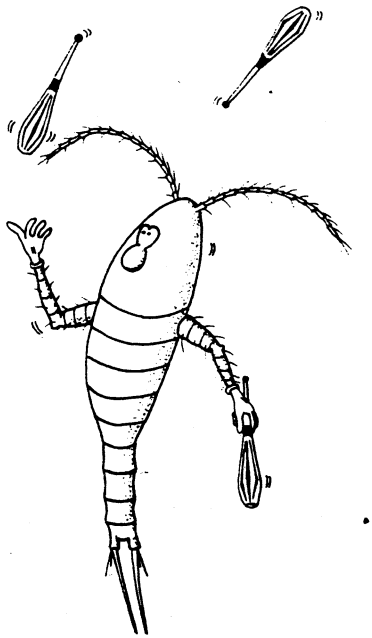
SANTOS SILVA, E..N.
Rua Tereza Bonato Signori, 56
CEP 13084-820 Barão Geraldo
Campinas - SP
BRASIL
Phone/Fax: 0055 (0)192 39 2825

STOCK, J.H. (Dr.)
Ridderweg 2
NL-4327 Serooskerke (Schouwen)
THE NETHERLANDS

VUCETIC, T. (Dr.)
Vela Luka
i. Korcula Obala IV No. 9
CROATIA

VUORINEN, I.
Archipelago Research Institute
University of Turku
FIN-20500 Turku
FINLAND
e-mail: ilppo.vuorinen@utu.fi

WALOSSEK, D. (Prof.)
Sektion für Biosystematische Dokumentation
Universität Ulm
Liststraße 3
D-89079 Ulm
GERMANY



e-MAIL ADDRESSES

Barbara Hosfeld HOSFELD@BIOLOGIE.UNI-OLDENBURG.DE
Silvina Menu-Marque SILVINA@ARTRO.UBA.AR
Motohiro Shimanaga MOTOHIRO@ORI.U-TOKYO.AC.JP