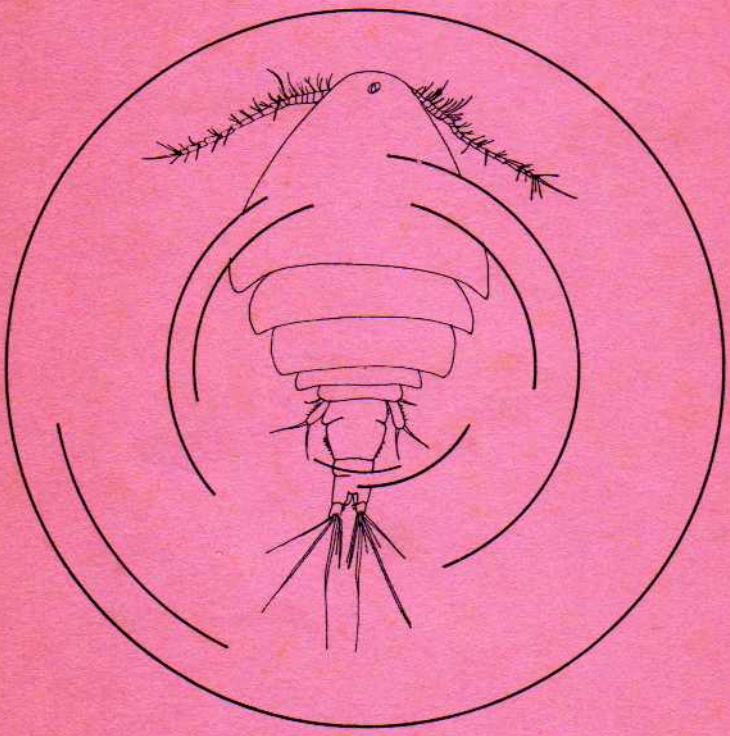
ISSN 0722-5741

MONOCULUS

Copepod Newsletter



Nr. 13

October 1986

bis

Bibliotheks- und Informationssystem der Universität Oldenburg
North American Edition distributed by National Museums of Canada

MONOCVLVS

Copepod Newsletter

Number 13 October 1986

Edited by: H. Kurt Schminke, Fachbereich 7 (Biologie), Universität Oldenburg, Postfach 2503, D-2900 Oldenburg, W. Germany.

Gerd Schriever, Zoologisches Museum der Universität Kiel, Hegewischstr. 3, D-2300 Kiel, W. Germany

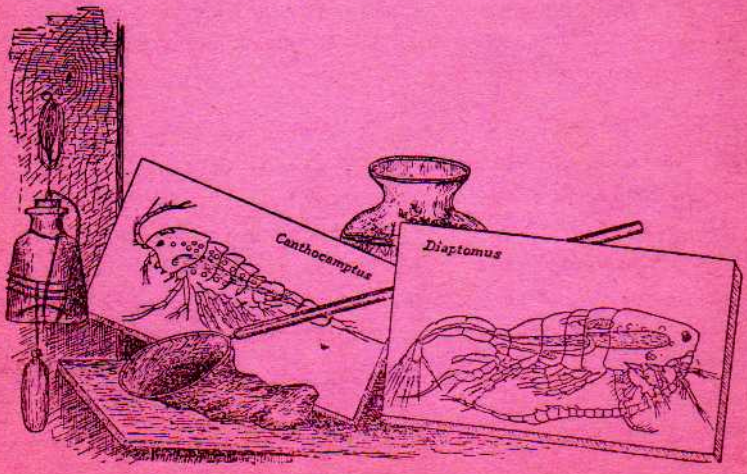
Cover by: A. Salewski, Kiel

Produced by: H. Kurt Schminke and Bibliotheks- und Informationssystem (BIS) der Universität Oldenburg, Ammerländer Heerstr. 67/99, D-2900 Oldenburg, W. Germany.

Distributed in North America by: National Museums of Canada (Chang-tai Shih, National Museum of Natural Sciences, Ottawa, Ontario, Canada K1A OM8).

This issue has been typed by: Angelika Sievers, Fachbereich 7 (Biologie), Universität Oldenburg.

From: HERRICK, C.L. - 1884: A final report on the Crustacea of Minnesota included in the orders Cladocera and Copepoda. 12th Annual Report. The Geological and Natural History Survey of Minnesota. Johnson, Smith & Harrison, Minneapolis 1884: p. 192



Deadline for the next issue of *MONOCULUS*: 1st March 1987

Editorial

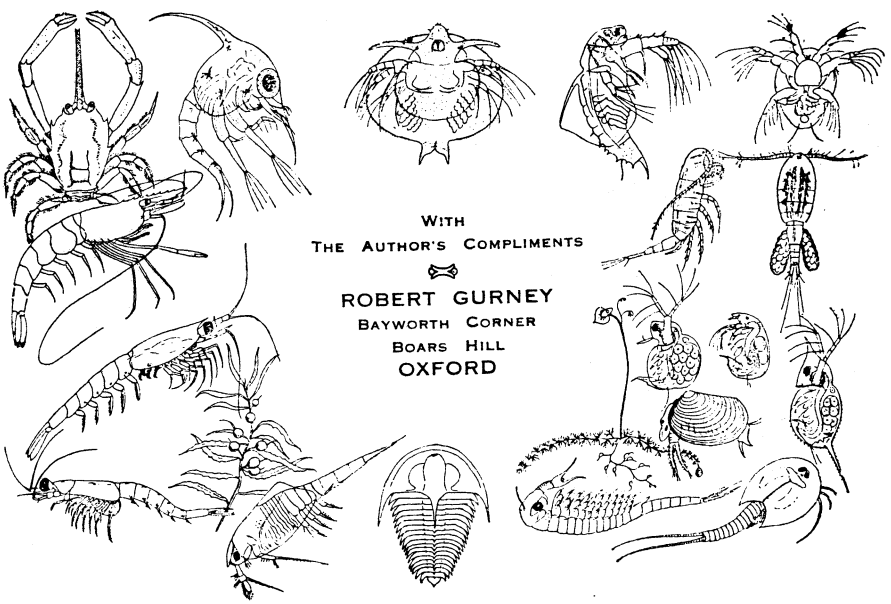
This issue of *MONOCULUS* will be a bibliophilic rarity. You remember, only those are to receive a copy of this newsletter who have returned the completed questionnaire added to the last issue. We have counted 263 questionnaires in the mail. This may seem a lot, but considering we had a bait and a sanction to offer in order to evoke reactions, it is a little disappointing all the same. We need the questionnaires for our next directory which we want to prepare for the London conference. We don't want it to be a torso, so we don't give up. We have prepared a letter which together with the forms for the meeting in London will be sent to all those who did not care so far to spend a few minutes on the questionnaire. A few more will be relented, but what do we do with the rest? As a reward for you who have cooperated, here is *MONOCULUS* No. 13.

Our idea with the "Excerpts from the literature" (which in German we would have called "Lesefrüchte", but didn't know the English equivalent) has caught on very nicely. We received a number of beautiful passages from the literature which will adorn the literature list of this issue. We are very glad about this good resonance and hope the new examples will provoke further contributions to this column which in a way takes the place of funny sketches or caricatures which nobody seems willing or able to provide.

We have had a lot of help (more than ever) in preparing this issue of the newsletter. We thank C. Cheng, C. Corkett, R. Cressey, D. Damkaer, F. Ferrari, G. Gardner, D. Geddes, G. Hicks, H. Juhl, S. Motoda for their cooperation. G. Boxshall has announced an interview with J.P. Harding on the occasion of his 75th birthday. He has a tight programme and couldn't fit it in in time for this newsletter. You will have to wait for the next.

R. Böttger, Hamburg, has donated 50.00 DM for *MONOCULUS*. This is a great help, since we have expensive extra plans for the next year: the new directory and a bibliography of all titles in the *MONOCULUS*-Library. Many thanks, indeed. Gerd's audit revealed that *MONOCULUS* disposes of a sum of 2,121.64 DM. Enjoy the proud sum, but don't ask us what will be left of it next year.

This issue of the newsletter will be a bibliophilic rarity. Guard it well! Together with the first issues it will once be the most valuable.



Dedicatory leaflet in one of Gurney's reprints

THE WORLD ASSOCIATION OF COPEPODOLOGISTS

WAC WAC ..... WAC WAC

1. Membership

You may recall that all of you are founder members of the WAC unless you inform the General Secretary (K. Schminke) by letter that you don't wish to be a member. In case you pay your annual dues of US $ 7.00 until 31st December 1986 you will turn into a founder member in good standing. 119 colleagues have paid their dues in the meantime and 6 have asked to have their dues waived. As it is to be expected that the Executive Council will decide positively in these 6 cases, there are 125 founder members of the WAC so far. Here are their names:

FOUNDER MEMBERS OF THE WORLD ASSOCIATION OF COPEPODOLOGISTS

AUSTRALIA: Arnott, McKinnon, Mufinon, West ----- **BELGIUM:** Bergmans, Revis ----- **BENIN:** Citarella ----- **BRAZIL:** Björnberg M.H., Björnberg T.K.S., Campaner, Carvalho, Hadel, Robertson, Rocha, Thatcher ----- **BULGARIA:** Naidenow ---- **CANADA:** Chapman, Chow-Fraser, Corkett, Crawford, Davies, Deets, Fulton, Gardner, Grainger, Hogans, Kabata, LeBrasseur, Mayzaud, McLaren, Rainville, Roff, Shih ---- **CHILE:** Castro Romero ----- **FINLAND:** Purasjoki ----- **FRANCE:** LeBorgne, Rouch ----- **GERMANY, FED. REP.:** Barthel, Beckmann, Böttger, Grau, Hahn, Hulsemann, Kukert, Kunz, Lenz, Mielke, Noodt, Rieper, Schminke, Schnack, Schriever ----- **GREAT BRITAIN:** Barnett, Boxshall, Conway, Gotto, Harding, Lindley, Thompson ----- **HUNGARY:** Holynska ----- **INDIA:** Battacharya, Chandran, Meenakshikunjamma, Ranga Reddy, Roy, Shirgur, Stephen ----- **IRELAND:** Holmes ----- **ISRAEL:** Kahan ----- **ITALY:** Fava ----- **JAPAN:** Nagasawa, Motoda, Taniguchi, Ueda, Urawa ----- **NETHERLANDS:** Stock, von Vaupel Klein, Vijverberg, unknown person from NIOZ, Texel ----- **NEW ZEALAND:** Bradford, Burns, Hicks, Jones ----- **NORWAY:** Fosshagen ----- **PAKISTAN:** Ali-Khan ----- **PHILIPPINES:** Mamaril ----- **POLAND:** Chojnacki ----- **PORTUGAL:** Vilela ----- **RUMANIA:** Plesa ----- **SOUTH AFRICA:** Grindley, Heeg, Rayner ----- **SPAIN:** Soler-Torres ----- **SWEDEN:** Elmgren ----- **THAILAND:** Suvapepun ----- **USA:** Barr, Bell, Bowman, Cohen, Dagg, Damkaer, Dojiri, Ferrari, Fleeger, Fleminger, Frost, Gannon, Haury, Heron, Ho, Jonasdottir, Marcogliese, Marcus, McAlice, Michel, Moisan, Morris, Orsi, Stearns, Tester, Toal, Turner, Vanderploeg, Walker, Walter.

This is a long list already, but it could be longer still. We hope that many more of you will make up their minds until 31st December of this year, the last day to become a founder member. No new founder members will be created after that date. So hurry up and take your chance! It would be fine if the number of founder members could be doubled by the end of this year!

2. Dues

The field of international money transfer hit us as an absolutely new experience. We have a lot to learn and this can only happen if we are told what the problems are. Here is a letter by T. Itô from Seto Marine Biological Laboratory, Japan:

I do not think the annual due of WAC is so expensive, but the way of remittance is very unfavorable to, at least, our Japanese. Remittance by bank draft is extremely expensive because of high rates of both remitter's charge and lifting charge. The charges will amount to 20 $ or more! Charges of a postal money order are very cheap. If WAC could have a P.O. transfer account number at any post office, we can remit our dues there by a charge of only 1.60 $.

For all those who want to pay by postal money order, please, use the following account: No. 3465 08-303 Postgiroamt Hannover. Please mark WAC, c/o Dr. H.K. Schminke.

For those from other countries Gerd Schriever gives the following advice: Colleagues from European countries may send their personal euro-cheques (15.00 DM) directly to him in Kiel. Americans and Canadians (10.00 Can $, please!) may do the same with their personal cheques. German colleagues may remit their dues (15.00 DM) directly to the account

No. 7233 190, Commerzbank Kiel.

Mark WAC, c/0 Dr. G. Schriever.

For all those who cannot, for what reason so ever, use cheques or postal money orders there is the possibility to send the 7 US $ in bank notes directly by letter. There is a risk that such a letter might get lost, but one third (we dare say) of

the dues paid so far have reached Gerd this way. Please use only US dollar or German mark notes, don't send coins or notes of your own national currency!
Several colleagues have sent more money than the required 7.- US $. As an example here is a letter from L. Walker, Bradentown, Florida, USA: *Enclosed please find 1) a check for $ 7.00 for dues - an extremely low price for the amount of information you provide with each issue of Monoculus, 2) a check for $ 20.00 for a donation to use as you see fit - perhaps towards the cost of publication of the Proceedings or for the dues of a colleague not able to transfer funds out of his/her country. Continue the fine work!*
Some have stated explicitly whom they want to sponsor. Such sponsorships for colleagues from countries with foreign exchange problems are an excellent idea and we wouldn't mind if it caught on more widely.
Extra money has been received from the following persons: Beckmann, Böttger, Grau, Kunz, McAlice, Mielke, Moisan, Rouch, Schminke, Schriever, Shih, Stock, Suvapepun, Taniguchi, Tester, Walker.
All the money received adds up to a total of 1,761.23 DM.
A proud sum already (stage whisper: it could be more, though). So storm the counter to make sure that you don't have to stay outside when WAC meets in London next year!

3. Nominations

We, the undersigned, herewith nominate Dr. Jan Hendrik Stock for the office of the President of WAC. It seems superfluous to introduce him to anybody with interest in Copepoda. We are certain that he is a household name with all copepodologists. However, to satisfy conventions, we present below a brief CV.

Dr. J.H. Stock was born in Amsterdam, the Netherlands, in 1931, was educated in the universities of Amsterdam and Paris and received his Ph.D. from the former of the two in 1957. His greatest claim to recognition are his 290 publications (he published at a rate of c. 10 papers per annum for some 30 years, a productivity rate that would make most of us green with envy).

To add to this prodigious output, he engaged in multifarious activities. He visited and worked in many marine institutions in Europe, North and South America, Africa and Australia, took part in scientific expeditions to the Balkans, Indian Ocean and the Canaries, personally led five expeditions to the West Indies.

We all know Dr. Stock as the indefatigable editor of Crustaceana, but he was, or still is, involved in editing seven (sic) other scientific periodicals. Add to it his teaching duties in two universities (Amsterdam and Groningen), invited lectures and a formidable administrative load - and you will have a man who, in our view, can be safely entrusted with the help of our Association. We hope that most members will share that view.

Z. Kabata, H.K. Schminke

Business ssenisuB

1. *MONOCULUS*-Library/Bibliography

Our project of a computerized bibliography of the copepod literature is under way. The German Government has allocated 70,000.00 DM for this project for the rest of this year. Another 120,000.00 DM have been promissed for 1987. We are now condemned to success. Please help us by regularly sending Kurt Schminke your latest reprints as soon as they become available and in case you have copies of your older publications left, please send them as well or let us have xerox copies of them. For keywording we need the publications now, not just the titles. Whereever you suspect stocks of older literature in your library or department, ask to have them sent to the *MONOCULUS*-Library. It could be vital for our project which is meant for the benefit of all.

We have again to say thank you to several colleagues, who have provided very valuable old literature. Ch. Walter, Washington, sent two boxes of duplicates from the Wilson Library and C.C. Davis, St. John's, Canada, helped with several parcels full of reprints of older literature. A. Chandran, F. Evans, F. Fiers and H. Kunz contributed one parcel each to the *MONOCULUS*-Library. We thank for these specific contributions as well as for the regular ones which form the list of current literature further below.

The *MONOCULUS*-Library is growing constantly but, of course, still is very small compared with the total output of publications on copepods. Our guess is that there are about 40,000 publications altogether of which we may now have 12 % or a little more. Especially the older literature is extremely underrepresented despite all donations so far. To catch up we need many more donations and our appeal for literature, old and recent, will therefore remain a constant feature of *MONOCULUS* in the years to come.

The *MONOCULUS*-Library has already had several requests for literature but has been able to help in only a few cases. The reasons for this are:

- lack of older literature
- lack of staff.

Some requests amounted to several thousands of pages and even though the costs for copying would have been paid we had to refuse the job. The *MONOCULUS*-Library unfortunately cannot as yet play the role that some hope it could play already. It is our aim that eventually the Library is able to handle all sorts of requests, but there is only one way to reach this goal. The Library must grow! Once it has reached a certain size and importance it will also be possible to raise funds for a librarian, but this stage is very far as yet. However, if all copepodologists make contributions to the Library regularly by sending their own publications and by helping to secure reprints of older literature, this stage may be reached sooner than expected and the *MONOCULUS*-Library will be in the position to

fulfill its intended task much earlier: help in all kinds of literature problems.

For the moment we can help with articles you have not been able to obtain through your national library system, but we cannot as yet replace these libraries. In case you are in trouble, you would like to know what is available through the *MONOCULUS*-Library. A typical letter in this respect is the following by T. Roy, Calcutta: *"However, it will be highly appreciable, if the stock of references present in the MONOCULUS-Library get published in series for future publications in the Copepod Newsletter - 'MONOCULUS' so that the member will have an idea of the stocked references which he/she faces difficulties to procure and the loan of which or xeroxed copies of the same may be available after paying such reasonable costs. In this connection I earnestly hope that you will consider my reasonable suggestions and take favourable decision for the benefit of the Copepodologists of the world."*

As for the current literature, you have only to follow the lists published regularly in *MONOCULUS* to know what is available through the *MONOCULUS*-Library. There are titles that have only been announced by letter but these are only a very small minority. As for the complete stock of literature in the *MONOCULUS*-Library we publish a bibliography available at our International Conferences on Copepoda. The first was distributed in Ottawa and contained about 2,200 titles, an up-dated issue is planned for next year and will be available in London.

2. *MONOCULUS*-Museum

No news.

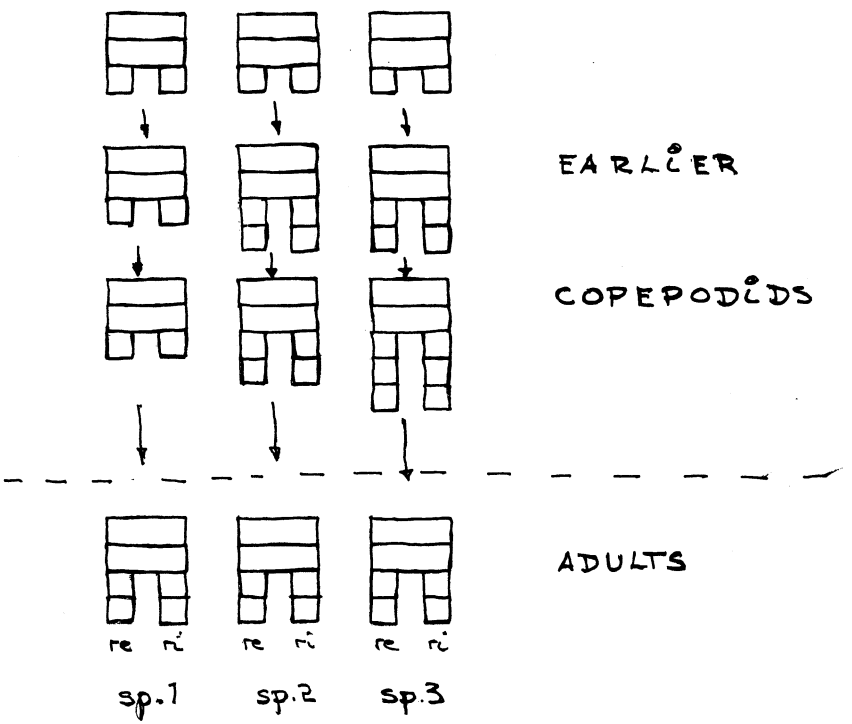
3. Current research activities

R. BÖTTGER from Universität Hamburg, FRG:
Presently I am involved in a study on the community structure and vertical distribution of cyclopoid copepods in the Red Sea. In the field of cyclopoid taxonomy I am cooperating with Geoff Boxshall and Frank Ferrari; joint papers of us are in preparation.

G. BOXSHALL from British Museum (Natural History), London, UK:
I have been studying misophrioid copepods collected from inland marine caves by Tom Iliffe. We have described 3 new genera and 5 new species from Lanzarote in the Canary Islands and from Palau, Indo-West Pacific. One of the new genera contains 2 species, one from Lanzarote and the other from Palau. This presents a nice biogeographical problem. In addition I am in the process of describing a further new species of Misophria collected in subtidal dredgings in Hong Kong. Much work remains to be done before these distributions can be interpreted with any confidence. I would be very interested to hear from Monoculus readers if they have records or specimens of misophrioids from the Indo-Pacific.

F. FERRARI from the Smithsonian Institution, Washington, D.C., USA:
Among crustaceans, and particularly copepods, phylogenetic analyses often focus on meristic characters which appear to exhibit sequential changes in numbers of elements (body segments, appendage segments, setae, spines, etc.). The usually accepted polarity for such sequences assumes that the largest number of elements is primitive, with each numerical loss showing a greater degree of derivation (thus 5 setae is a more primitive condition than 4, which in turn is more primitive than 3, etc.). The phylogenetic value of such reduction sequences has been called into question, particularly when such sequences are found among many presumedly separate lineages, indicating many independent convergences. Reductions in segment numbers of post-maxillipedal appendages in copepods are excellent examples of such character convergence. These reductions have occurred, apparently independently, in most of the nine copepod orders. As such, the number of appendage segments would appear to be a poor tool in phylogenetic analyses of copepods.
I am surveying literature on the ontogeny of post-maxillipedal appendage segment patterns among copepods. In describing major segmentation patterns and their exceptions, I have shown for example that among different genera not all 2-segmented legs

are the same because the ontogenetic pathway to a 2-segmented leg may differ (figure). Thus structures may look the same, while the ontogenetic pathways, and presumably the genetic systems controlling the final outcomes, are quite different. I believe a genetic model of a homeotic mechanism similar to that controlling fruitfly tagmosis could be applied to the developmental pathways of these copepod appendages, and I will consider the implications of such an application. If copepodologists are willing to accept information from differential developmental processes, more reliance can be placed on reduction sequences in phylogenetic analyses.



S. GRAU from Universität Hamburg, FRG:
The project I cooperate with is supported by the DFG and I am employed at IfM (Institut für Meereskunde) in Kiel. I am also doctorand at the University of Hamburg and my supervisor is Prof. Dr. D. Schnack. There are no publications yet.
The material I work with comes from the coastal upwelling region off the Northwest African coast (METEOR-cruise No. 64). I study the community structure and the vertical distribution of microzooplankton (50 µm nets). The main point of the project is the variability of short-term and small-scale distribution of zooplankton. In cooperation with Dr. R. Böttger I work with the genus Oncaea, a cyclopoid copepod.

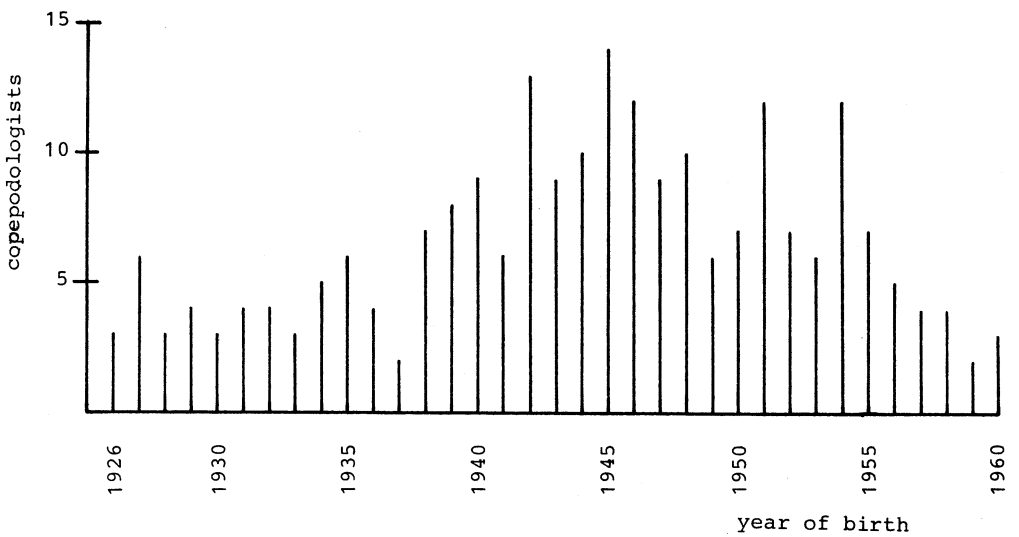
M.S. HOFFMEYER from Instituto Argentino de Oceanografia, Bahia Blanca, Argentina:
Dr. Ramírez is my scientific director. I have studied the zooplankton from estuarial area of the Blanca Bay, during 1979 and 1980. Since 1981 I have studied the feeding behaviour in Acartia tonsa Dana, the species dominant in the holoplanktonic fraction of the zooplankton. I have made experiments in vitro with algal cultures and natural particulate matter. I was in Barcelona with Dr. F. Vives at the Instituto de Investigaciones Pesqueras de Barcelona making a small work about feeding on natural seston of Centropages typicus, Acartia clausi and Calanus helgolandicus during one year. At the moment I'm finishing my doctoral thesis.

L.A. RAINVILLE from McGill University, Montreal, Canada:
I expect to submit my Ph.D. thesis by the spring of 1987. I am an oceanographer and a marine ecologist mostly interested in zooplankton communities and copepod populations. The three main topics of my thesis are: 1) structure and dynamics of the succession of the marine zooplankton into an alternate two/three-layered environment over a slope depth (Laurentian Trough, Gulf of St. Lawrence); 2) life cycles and energetics of the two dominant species Calanus finmarchicus and C. hyperboreus (which I called the "living substrate" of my community); 3) relations between diversity and energetics of a marine zooplankton com-

munity. I did my master research on the marine zooplankton of the Saguenay Fjord (Québec, Canada).
I have a general interest in copepod taxonomy since I identify all stages of the copepods of a community under study. Nevertheless, I have some minor interest in pure copepod taxonomy (paper on copepodid stages of Bradyidius similis (Sars 1902): Shih, Rainville & MacLellan, 1981, Canadian Journal of Zoology 59: 1079-93).

4. Questionnaire

263 questionnaires have been returned. They will help us to compile the next directory, but in order not to let you wait too long we shall start to disclose some of the information contained in them right now.
Let us e.g. have a look at the age structure of copepodologists. The oldest colleague among those who have returned the questionnaire was born in 1908, the youngest in 1963. The decade between 1910 and 1920 has produced 8 copepodologists, the decade between 1920 and 1930 saw the birth of 22, the decade between 1930 and 1940 added 46, the decade between 1940 and 1950 being the most productive with 98 copepodologists, and the decade between 1950 and 1960 still yielding 66 of this special brand of naturalists. Publication of *MONOCULUS* will not have to be stopped in a few years' time! In detail:



The next look is at the positions copepodologists occupy to earn their living. These are almost as diverse as copepods themselves. But see for yourself, it is an impressive list of 69 entries, most of them monotypic genera:

Assistant (2)
Assistant director (1)
Assistant doctor (1)
Assistant professor (6)
Assistent (3)
Associate oceanographer (2)
Associate professor (22)
Associate scientist (1)
Chargé de recherche C.N.R.S. (2)
Chief investigator (1)
Chief researcher (1)
Chief scientist (1)
Curator (9)
Director of aquatic program (1)
Director of research C.N.R.S. (3)
Dozent (2)
Experimental Scientist (1)
Fisheries biologist (2)
Free scientist (1)
Full time teaching and researching assignments (2)
Higher scientific officer (2)
Instructor (1)
Integrated expert (1)
Junior Researcher (1)
Keeper (1)
Lecturer (6)
Maître de conférences (1)
Marine biological technician (1)
Marine biologist (1)
Marine ecologist (1)
Museum technician (1)
None (1)
Oceanographer (1)
Parasitologist (1)
PhD student (15)
Postdoctoral research fellow (4)
Principal scientific officer (3)
Private consultant (1)
Professor (29)
Professor emeritus (4)
Reader (3)
Research analyst (1)
Research assistant (4)
Research associate (11)
Research biologist (1)
Research ecologist (1)
Researcher (1)
Research fellow (1)
Research fisheries biologist (1)
Research officer (10)
Research scientist (10)
Scientific attaché (2)
Scientific officer (1)
Scientist (4)
Senior fisheries biologist (1)
Senior lecturer (2)
Senior oceanographer (1)
Senior researcher (3)
Senior research fellow (1)
Senior research officer (14)
Senior research scientist (3)
Senior scientific officer (3)
Senior scientist (4)
Senior tutor (1)
Specialist researcher (2)
Student (11)
Vicepresident (1)
Wissenschaftlicher Angestellter (6)

75757575757575 B I R T H D A Y S 75757575757575

C. Cheng C. Cheng

Prof. Cheng sent us the following short biography:

I was born in Soochow, the famous garden city of China, in 1911. Since my graduation from the Dept. of Biology in 1934 I have studied planktology for 9 years in England, where I carried out research work in Hull, Aberdeen and Oxford under the supervision of world-famous planktologist, Prof. Dr. A.C. Hardy, F.R.S. Unfortunately he died in May 1985. It is a great loss to planktology and I have lost a most respectful teacher. He will forever be remembered in my heart. I obtained my Ph.D. degree from Aberdeen University in 1944.

Since my return from England in 1947 I have been teaching planktology in the Dept. of Biology and Oceanography for the past 40 years, during which I have written the following papers on marine planktonic Copepoda:

1. On the Species Composition and Geographical Distribution of marine planktonic Copepoda of China. J. Xiamen Univ. 2: 51-63 (1978).
2. New Records of planktonic Copepoda of South China Sea. Ibid. 3: 107-125 (1979).
3. On the Distribution of planktonic Copepoda of Taiwan Strait. Taiwan Strait 1: 69-79 (1982).

In addition to the above papers I have written 2 vols of "Marine planktonic Copepoda of China Seas", Science and Technology Press, Shanghai (1965,1982).

I am also interested in Cladocera for which I have published 8 papers (4 on marine species and 4 on freshwater species) dealing with taxonomy and general biology (growth and reproduction).

It would be too lengthy to give a complete list of my papers on other groups of Crustacea (including Amphipoda, Euphausiacea and Sergestidae (Lucifer and Acetes) and on

other subjects (including zooplankton and feeding ecology of fishes); but I would like to add my following two books on plankton:

1. Introduction to Planktology. Science Press, Beijing, 1964.
2. Marine Planktology. China Ocean Press, Beijing, 1984.

C. Cheng

75757575757575 B I R T H D A Y S 7575757575757575

Takuo Chiba

Takuo Chiba

Dr. Takuo Chiba was born on 10 February 1911 in Tohoku District of Honshu, Japan. He graduated from Department of Zoology, Faculty of Science, Hokkaido Imperial University, in 1937 and obtained a degree of Master of Science. After military service for three years from 1938 to 1941 he taught at Fisheries College of Pusan, Korea from 1941 to 1945. He returned to Japan after the end of the War, and was appointed Professor of Shimonoseki College of Fisheries, Ministry of Agriculture and Forestry (later renamed Shimonoseki University of Fisheries, Ministry of Agriculture, Forestry and Fisheries) in 1945. He worked on plankton enthusiastically, particularly interested in development of marine copepods. He received a degree of Doctor of Agriculture from Hokkaido University in 1956. He participated in the International Indian Ocean Expedition going on board the training ship, Koyo Maru, of the university in 1962-63.
He is not only marine biologist, but also wellknown poet of "HAIKU". One of his Haiku (poem):

Negaremo ti tsuku Chigyo amata, Natsu no Umi

(A number of larval fish, associated with floating seaweeds, drifting with current, in the sea of summer)

S. Motoda

7575757575757575 B I R T H D A Y S 7575757575757575

Charles C. Davis Charles C. Davis

Hogan's Pond must be one of the best sampled bodies of water in Newfoundland for the simple reason that the subject of this article, Charles C. Davis, has lived by its shores for almost twenty years! The sampling frequency is not just due to Chuck, but to the graduate and undergraduate students who have worked there over the years. The reason usually given by these students for choosing Hogan's Pond is its accessibility (from Dr. Davis' dock, using his boat) and the background data Chuck has collected over the years. Personally, I suspect that Chuck's and his wife Sally's hospitality has a lot to do with it. Many a student has returned late from a sampling trip with the explanation of "Oh, we had tea with the Davises after we finished sampling." (and no doubt consumed some of Dr. Davis' baking or some of the products from his garden!).

Professor Davis has been an influential figure in planktology since his own days as a graduate student. Although his M.Sc. research was done on insects, he moved on to the plankton for his Ph.D. Long hours spent at a job sorting marine copepod samples had convinced Chuck that the most pressing problem in copepod work was the lack of adequate taxonomic keys, and he resolved to do work in systematics for his Ph.D., carried out under the supervision of Dr. Trevor Kincaid at the University of Washington. That work led to the publication of "The Pelagic Copepoda of the Northeastern Pacific Ocean" in 1949. Chuck's perception of a need for such a key was certainly correct, and the quality of his work was top notch, for when I arrived on the west coast of Canada over twenty years later to begin graduate work, the best available marine copepod key was still Davis (1949)! Since then, over 100 scientific papers and an important monograph have borne the name of C.C. Davis. He has worked on both marine and freshwater plankton, on both coasts of North America and in the Great Lakes, and has taken sabbatical leave in such places as Jamaica, El Salvador, and Norway.

During twenty years at Case Western Reserve University, he conducted extensive investigations in Lake Erie, occasionally going out onto the lake with his wife Sally at the oars of the boat. While at Case Western, Chuck also began work on the hatching mechanisms of aquatic invertebrates which he continues today.

In 1968, the Davis family moved to Canada, where Chuck took a position as Professor in the Department of Biology at Memorial University of Newfoundland. While at Memorial, Chuck has carried out invaluable baseline studies on both marine and freshwater plankton in Newfoundland. He retired from his position in 1977, but has since been named professor emeritus. Retirement for C.C. Davis, however, meant simply that he no longer had to concern himself with teaching and committee work! He has continued an active research programme, and maintains his involvement with graduate student advising and examining. Chuck and Sally are also dedicated to the peace movement, and have been involved in a number of peace and anti-war demonstrations and in organisations which aim to promote the concept of peace in the world.

All that activity, plus an idyllic existence on the shore of Hogan's Pond, might be sufficient for most of us, but not Chuck! As I write this, he and Sally are en route to Ethiopia, for a one year commitment to a program jointly administered by Addis Abeba University and the University of Waterloo, Canada, and funded by the Canadian International Development Agency. While much of his time in Ethiopia will be spent on graduate student training, he intends to take advantage of the opportunity to study the plankton of lakes in the rift valley, and no doubt to continue his work on hatching mechanisms.

No wonder my first response, when asked to write this, was "No, surely Chuck can't be 75 years old already!". But he is (or will be in November), and he and Sally celebrated their 50th wedding anniversary earlier this year. If I have half the energy when I am only 65 I will consider myself lucky! Charles

C. Davis is a special person. A scholar and a gentleman, with a keen scientific curiosity and a commitment to the betterment of humanity, he has set standards we would all do well to emulate. Happy Birthday, Chuck, and best of luck in your newest endeavour!

G. Gardner

7070707070707070 B I R T H D A Y S 7070707070707070

Arthur Humes

Arthur Humes

Arthur Humes was born on January 22, 1916 at Seekonk, Massachusetts, U.S.A. He received his university education at Brown University, Louisiana State University, and the University of Illinois, where he received his Ph.D. in 1941. Arthur served in the United States Navy from 1942 to 1946. During part of that time he was assigned to duty in the South Pacific. To relieve the tedium of military life Arthur collected various marine invertebrates. From some of these (decapods in particular) he removed associated copepods. At this point we could say "the rest is history."

After military duties were completed, Arthur resumed the academic life with a brief stint (1946-47) at the University of Connecticut. In 1947 he joined the faculty of Boston University where he remained until retirement in 1981. His gala retirement party was celebrated by his many well-wishing students, faculty associates, and one vivacious belly dancer, an event from which he has not yet fully recovered.

In spite of retirement, Arthur continues his association with the Boston University Marine Program at Woods Hole and is still actively working on copepods associated with marine invertebrates. He became the first editor of the Journal of Crustacean Biology and now devotes half of each work day to that task. He is a Fellow of the American Academy of Arts and Sciences and has served as President of the American Microscopical Society.

During 1963-64, he served as leader of the Nossi Be, Madagascar research program of the International Indian Ocean Expedition. His nearly 200 publications span 45 years of devotion to his work. Former students who are following in his copepod-stained footsteps are: Drs. Juey-shey Ho, Masahiro Dojiri, and Roger Cressey.

R. Cressey

P.S. Arthur Humes is the hero of a little book, "A day in the life of a Marine Biologist". It starts as follows: "Naming is the start of knowing. That is how it was for Arthur Humes and seashells ... Barefoot and in knickers Arthur combed the beaches, rocks and tidepools around Falmouth, finding shells. The Latin names enchanted him. It was a time when schools still taught Latin and Greek. But always the first passion was the shells, how beautiful they were, each one different: rough, smooth, brittle translucent, chalky, whorled, chambered, speckled, hard, soft ... There were so many different kinds, the sea kept tossing them up. Arthur labeled his shells and put them in paper trays and touched them and dreamed of owing one of every kind of seashell in the world ...

Arthur no longer collects shells. A person grows up, his tastes change, he tries to find the work that suits him, he changes. But Arthur Humes hasn't changed, inside he hasn't. He still collects, though not shells. He still searches and names. He finds animals in the oceans, tiny ones, unknown to others before he found them, and since they have no names he gives them one. His work today is an outgrowth of his passion as a boy. For a living he does what he loves ... For thirty years Arthur Humes has combed the seas for specimens. He is something of a legend in his field. He has taught some three thousand students."

In the book you can follow one of his working days which begins at dawn with grapefruit juice and ends at 9 p.m., fourteen hours after he came to work in the morning. The day is full of activities (all richly illustrated by photos), including work

in the lab., in his office, and a field trip out with students on board the "Ciona" to an island off the coast.

Finally the author, William Jaspersohn, thanks Arthur Humes, "a dedicated scientist and teacher, and a wonderful, generous man, for so cheerfully lending his reality to this layman's dream." The book was published in 1982 by Little, Brown and Company, Boston and Toronto. (I am not allowed to tell you the price of the book, because if I did this little note would qualify as an advertisement and raise the cost for mailing of this newsletter.)

H.K.S.

The l e t t e r box

Sad news from CHARLES BROWNELL, Sea Fisheries Research Institute, Private Bag X2, Rogge Bay, 8012, Cape Town, South Africa: *I expect to be leaving South Africa around the beginning of 1987 to return to the U.S.A. I do not expect to be able to continue my interest in copepods or for that matter, my career in marine biology. Please remove my name from your mailing list at the end of 1986.*
Thank you very much for putting me in contact with other people interested in copepods through MONOCULUS.

Proud news from GREG DEETS, Department of Zoology, University of British Columbia, 6270 University Boulevard, Vancouver, B.C. Canada V6T 2A9. Congratulations, Greg!
I hope this gets to you in time, so I'll get MONOCULUS 13 and the 2nd proceedings. Thanks. I was in the Sea of Cortez again this summer hacking up hammerheads and manta rays, and then I stayed home for a while in California visiting family and surfing before returning here to the University of British Columbia. Also I have enclosed the recent award in zoology I just received (Greg has been awarded the first Graduate Scholarship in Museum Studies, made available by the Friends

of the Provincial Museum (FOPM) of British Columbia) *so you'll know I'm serious about this stuff and that Dr. Kabata isn't the only award winning copepodologist in WAC!*

Encouragement from NELSON G. HAIRSTON, Cornell University, Ithaca, U.S.A.: *I enjoyed the new section in MONOCULUS with quotes from past literature. I do not see why it should be necessary to restrict your effort to English publications. I am certain that many of your readers know several languages, and would appreciate a look at the other "oldies but goodies" you have found. Those who can't read German or French (or whatever) might be enticed to learn those languages to find out what they are missing.*

NEWS NEWs NEws News news .... news newS neWS nEWS NEWS

SIXTH INTERNATIONAL MEIOFAUNA CONFERENCE

The Sixth International Meiofauna Conference was convened at the University of South Florida, Tampa, USA, from Monday 14 - Saturday 19 July 1986. This triennial meeting of members of the International Association of Meiobenthologists (IAM) was attended by about 75 scientists and students and consisted of a total of 49 oral and poster presentations. Session themes covered meioepifauna, physiology, deep-sea, communities, fish feeding and experimentation, copepod ecology, meiofauna and structure, taxonomy and methods, and freshwater and terrestrial meiofauna. This latter session was generally regarded as one of the highlights of the meeting with the traditionally marine meiofaunists being exposed to a refreshing and provocative series of papers on stream, lake and soil-dwelling faunas. Dr. Bob Pennak introduced the session with an entertaining glimpse at meiobenthic anomalies and varieties in freshwaters.

The conference was notable for the unusually high number of presentation which primarily concerned copepods: WALTERS, K.: Active migration: a method of dispersal for harpacticoid cope-

pods. THISTLE, D. and ECKMAN, J.E.: Why infaunal harpacticoids occur around a surface structure. COULL, B.C.: What do we know after 13 years of meiofauna studies in North Inlet, South Carolina? GEE, J.M.: The impact of predation by epibenthic predators on the harpacticoid copepod populations of sandy and muddy intertidal estuarine habitats. TIPTON, K.: The feeding ecology of two Syngathidae from a Florida seagrass bed with special reference to harpacticoid copepods. SMITH, L.D. and COULL, B.C.: Juvenile spot (Pisces) and grass shrimp predation on meiofauna in muddy and sandy substrates. FELLER, R.J.: Does fish predation control salt marsh meiofaunal abundance? PALMER, M.A.: Meiofaunal dispersal: flow, structure, and other elusive effects. PERLMUTTER, D.G. and O'DOHERTY, E.C.: A review of stream meiofauna. STRAYER, D.: Roles of the meiofauna in lacustrine ecosystems. BERGMANS, M.: Life history of Tisbe pori (Harpacticoida): A search for reproductive costs and lmc-related facultative sex ratios. CHANDLER, G.T. and FLEEGER, J. W.: Facilitative and inhibitory interactions among meiofauna with errant and semi-sessile life styles. HALL, M.O., BELL, S.S. and WALTERS, K: Habitat utilization by harpacticoid copepods: a morphometric approach. HICKS, G.R.F. and BELL, S.S.: Swimming behavior in seagrass copepods. DECHO, A.W.: Ontogenetic feeding shifts in larval vs. adult harpacticoid copepods. DECKER, C.J.: Food patch selection behavior in a harpacticoid copepod species. SERVICE, S.K.: The use of a null model to assess patterns of size class migrations of the copepod Zausodes arenicolus. FLEEGER, J.W., CHANDLER, G.T. and WILLIAMS-HOWZE, J.: Tube building harpacticoid copepods: an update. MEYER, H.: Biology of Metis holothuriae in a shallow water habitat, Tampa Bay, Florida. REID, J.W.: The cyclopoid copepods of a wet campo marsh in Central Brazil.

As in previous meetings an informal workshop over lunch allowed those participants with special interests in meiobenthic copepods to exchange views and outline current or projected areas of investigation. This was attended by about 30 copepodologists and considerable discussion rotated around suggested alterations and improvements to J.B.J. Wells' keys to the identifica-

tion of harpacticoid copepods (at his request!). It is hoped that this feedback may benefit the utility of this already excellent resource.

The Business Session of the IAM also resolved to urge The World Association of Copepodologists to seriously consider a joint meeting in Vienna in 1989 and henceforth to couple these conferences for the benefit of both. With extreme financial pressure on overseas travel funds it makes sense to attend two independent yet sequentially coupled conferences for the price of one, wherever they may be held. Additional close association with the nematologists was also felt to be greatly beneficial to all of these professional groups.

G.R.F. Hicks

SECOND INTERNATIONAL CONFERENCE ON COPEPODA

C.-t. Shih closes the books of the Second Conference:

After the publication of the Proceedings and the closure of the bank account, my final responsibility to the Second International Conference on Copepoda is to ask you to include the attached financial statement in the next issue of MONOCULUS.

	Income	Expenditure
Balance forwarded from last statement (Monoculus 10:11)	Can.$ 3080.21	
Bank interest since last statement	308.96	
Donation from Dr. Sigrid Schnack	3.00	
Payment for typing and printing of Correction of Systematic Index		500.00
Donation to the Third International Conference on Copepoda		2000.00
Donation to Monoculus		839.17
Bank charges on money orders		3.00
Artist's fee		50.00
Total:	3392.17	3392.17

C.-t. Shih
1986-08-08

ANNOUNCEMENTS

THIRD INTERNATIONAL CONFERENCE ON COPEPODA

BRITISH MUSEUM (NATURAL HISTORY)

10th - 14th August 1987

Conference News:
There has been an encouraging response from WAC members to the initial Announcement in the last *MONOCULUS*. I would like to remind participants that if they want to reserve a single room in the student Hall of Residence they must send me a deposit of £ 10 before 1st December 1986. Please check in *MONOCULUS* No. 12 and fill in the yellow form.
The good news is that the 1987 price has now been set by the University at £ 11 per night for bed and breakfast (less than in my original estimate).

Registration:
The Registration form is enclosed in this issue of *MONOCULUS*. When making payment by Eurocheque please put your Eurocard Number on the back of the cheque otherwise we have to pay commission and bank charges.

Call for Papers:
It was the experience of the editors of the Proceedings of the Second Conference that typists found microdot (=dot matrix) printers hard to read. More errors were made when manuscripts were retyped, necessitating more expensive corrections. The Committee requests that manuscripts are typed or printed as near to letter quality as possible. With some word processors if you print the entire manuscript in bold the result is very clear and easy to read even if printed on a dot matrix printer.

OFFER AND REQUEST CORNER

R. Cressey, Smithsonian Institution, Washington, sent the following information:

I have been advised by Dr. Nancy G. McCartney that much of David Causey's parasitic copepod material is housed at the University of Arkansas and is available for study to interested scientists.

Interested workers should write to:

Dr. Nancy G. McCartney
Curator of Zoology
University Museum
University of Arkansas
Fayetteville, Arkansas 72701
USA

E. Soler Torres, Laboratorio de Puertos, E.T.S.I.C.C.P., Universidad Politecnica de Valencia, Ap. Correos 22012, 46071 Valencia, Spain, is in want of specimens. Pity the *MONOCULUS*-Museum is unable to help:

I am very interested in getting some material, both mounted and just fixed individuals, to compare with my samples and to carry out the redescription of Centropages ponticus on which I am working nowadays. Could you tell me where (or who) I could ask for that subject? I would be very grateful for your answer.

S. Wellershaus and B. Witzel, Alfred-Wegener-Institut für Polar- und Meeresforschung, Postfach 120161, D-2850 Bremerhaven, Fed.Rep.Germany, need your attention:

W. Giesbrecht and O. Schmeil published the book, Copepoda, I. Gymnoplea, in 1898 (in: F.E. Schulze (editor), Das Tierreich, 6. Lieferung, Friedländer & Sohn, Berlin, 169 pages). It seems that since this book appeared no newer complete account on gymnoplean copepods has been published. For several reasons such a book is urgently needed. We therefore plan to start a project to collect literature, data and samples in order to compile a new book on Gymnoplea. It should perhaps not include

Diaptomidae because scientific tradition, collections and manners of taxonomic treatment seem to differ from the rest of the Gymnoplea.
The new book should contain a key or rather an identification list (cf. Wellershaus, S., 1970: On the taxonomy of some Copepoda in Cochin Backwater, Veröff. Inst. Meeresforsch. Bremerh. 12: 463-490, on Oithona), descriptions of each species, drawings and eventually ecological remarks.
Before starting the planning we would like to know whether such a project is already being planned or under preparation. Please write to us if you have similar plans or if you have recommendations for our project. Should we include all planktonic Copepoda: also Podoplea? Should the variability of taxonomic marks be included?

V. Canada

There are many institutions in Canada that would welcome copepodologists for a period of study, but there are no simple procedures for obtaining funds and some sources of funds are restricted to Canadian citizens.

1. Students wishing to study for the M.Sc. or Ph.D. degree should write to the Professor or Department of the University of their choice. Most Universities have some support at the graduate level that the student could apply for. In the case of Dalhousie University non-Canadian students may apply for Dalhousie Graduate Awards and Killam postgraduate scholarships.

2. Scholars with a Ph.D. who wish to obtain a post doctoral position would be funded by the Natural Science and Engineering Research Council of Canada (NSERC) only if they are Canadian citizens. In the case of Dalhousie University,

students of any nationality may apply for Killam postdoctoral fellowships.
Funding can be provided by Fisheries and Oceans for non-Canadian post doctoral fellows with a fisheries related project in cooperation with a University or Government Department. For further information contact: National Research Council of Canada, Ottawa, Ontario K1A 1H5.

3. North American scientists have more individual funds (NSERC operating grants) than their European counterparts and these are a possible source of assistance for scholars cooperating on research projects with Canadian University professors.

4. Scholars wishing to do taxonomic work in museums and related institutions would not be able to obtain funding from these institutions, however, no change would be made for the use of space and a microscope could be provided. Scholars should get in touch with the director or curator and the following are institutions that may be of interest to copepodologists.

   1. National Museums of Natural Sciences (contact Mark Shih)
      Ottawa, Ontario K1A OM8
   2. Royal Ontario Museum
      100 Queens Park, Toronto, Ontario M5S 2C6
   3. British Columbia Provincial Museum
      675 Belleville St., Victoria, B.C. V8V 1X4
   4. Atlantic Reference Centre (contact Bill Hogans)
      Huntsman Marine Laboratory, St. Andrews, N.B. EO6 2XO

5. Scholars who wish to work with the Government on fisheries related research may not be able to obtain funds directly from Fisheries and Oceans but may be able to work in Canadian companies supported by the Industrial Research Assistance Program. For further information contact: Industrial Research Assistance Program Offices, National Research Council of Canada, Montreal Rd. Ottawa, Ontario K1A 0R6.

6. British scholars wishing to work in Canada may be able to obtain some funding from the British Council. For further information contact: British Council, 80 Elgin St., Ottawa, Ontario K1P 5K7.

C.J. Corkett

..terature-literature-literature-literature-literature-litera..

1984

HIPEAU-JACQUOTTE, R. - 1984: A new concept in the evolution of the Copepoda: Pachypygus gibber (Notodelphyidae), a species with two breeding males. Crustaceana, Suppl. 7: 60-67

KOGA, F. - 1984: The developmental stages of Temora turbinata (Copepoda: Calanoida). Bull.Plankton Soc.Japan 31(1): 43-52

KOGA, F. - 1984: Morphology, ecology, classification and specialization of copepods nauplii. Bull.Nansei Reg.Fish.Res. Lab. 16: 95-229 (In Japanese with English summary)

MILLER, C.B., B.W. FROST, H.P. BATCHELDER, M.J. CLEMONS & R.E. CONWAY - 1984: Life histories of large, grazing copepods in a subarctic ocean gyre: Neocalanus plumchrus, Neocalanus cristatus, and Eucalanus bungii in the northeast Pacific. Prog.oceanogr. 13: 201-243

MONTEIRO, M.T. DA SILVA - 1984: Contribuicao para o conhecimento das comunidades zooplânctónicas das albufeiras a sul do Tejo. Bol.Inst.Nac.Invest.Pescas 11: 29-43

MONTEIRO, M.T. DA SILVA - 1984: Ciclo anual do zooplâncton de uma albufeira eutrofizada - Divor. Bol.Inst.Nac.Invest.Pescas 11: 59-69

MONTEIRO, M.T. DA SILVA - 1984: Ciclo anual do zooplâncton de uma albufeira recém-formada - Odivelas. Bol.Inst.Nac.Invest. Pescas 11: 71-81

PESCE, G.L. - 1984: Diacyclops languidoides nagysalloensis Kiefer ciclopoide nuovo per la fauna italiana, e note sullo status tassonomico del complesso "languidoides" in Italia. Boll.Mus.civ.Stor.nat.Verona 11: 333-337 (appeared 1986)

SOBRAL, P. - 1984: Dussartius baeticus Dussart, 1967 (Copepoda, Diaptomidae) in the Tagus estuary. Bol.Inst.Nac.Invest. Pescas 12: 25-31

STEARNS, D.E. & R.B. FORWARD - 1984: Photosensitivity of the calanoid copepod Acartia tonsa. Mar.Biol. 82: 85-89

STEARNS, D.E. & R.B. FORWARD - 1984: Copepod photobehavior in a simulated natural light environment and its relation to nocturnal vertical migration. Mar.Biol. 82: 91-100

Excerpt from the literature

From: GURNEY, R. - 1932: British Fresh-water Copepoda, Vol II, Ray Society, London. 336 pp.

On Tachidius discipes, Giesbrecht

I have included in the synonymy certain of the very remarkable species described by Labbé, attaching to each of them reference to such of his figures as seem to be recognizable as belonging to T. discipes. Many of his figures are mediaeval in their grotesqueness, and it is certain that two or more species went to the making of some of his new discoveries; but it is equally sure that T. discipes was an ingredient in three of them. Of his T. convergens it is impossible to be sure. The agreement seems very close, having regard to the nature of the figures, except for legs 2 and 3. If these are correctly drawn, it is rather a new family than a new species that is required.

1985

ANDRONOV, V.N. - 1985: Benthic Copepoda in the area of Cape Blanc (Islamic Republic of Mauritania) I. The family Platycopiidae. Zool.Zh. 64(11): 1735-1739 (In Russian with English summary)

BAKKER, C., T.C. PRINS & M.L.M. TACKX - 1985: Interpretation of particle spectra of electronic counters by microscopical methods. Hydrobiol.Bull. 19: 49-59

BARETTA, J.W. & J.F.P. MALSCHAERT - 1985: Experimental problems using electronic particle counters. Hydrobiol.Bull. 19: 21-27

BATCHELDER, H.P. - 1985: Seasonal abundance, vertical distribution, and life history of Metridia pacifica (Copepoda: Calanoida) in the oceanic subarctic Pacific. Deep-Sea Res. 32(8): 949-964

BRENNING, U. - 1985: Beiträge zur Calanoidenfauna (Crustacea, Copepoda) vor Nordwest- und Südwestafrika VII. Die Vertreter der Familien Centropagidae und Temoridae. Wiss.Z.Univ.Rostock 34, Naturwiss.R. 6: 5-16

CASTEL, J. & A. FEURTET - 1985: Dynamique du copepode Eurytemora hirundoides dans l'estuaire de la Gironde: utilisation d'un modèle à compartiments. J.Rech.Océanogr. 10(4): 134-136

CRESSEY, R. & H.B. CRESSEY - 1985: Holobomolochus (Copepoda: Bomolochidae) redefined, with descriptions of three new species from the eastern Pacific. J.Crust.Biol. 5(4): 717-727

FAVA, G. & B. BATTAGLIA - 1985: Processes of differentiation between Mediterranean populations of the super-species Tisbe clodiensis Battaglia and Fava (1968) (Copepoda). In: MORAITOU-APOSTOLOPOULOU, M. & V. KIOTSIS (eds.), Mediterranean marine ecosystems, Plenum Publishing Corporation, p. 333-346

FERRARI, F.D. - 1985: Postnaupliar development of a looking-glass copepod, Pleuromamma xiphias (Giesbrecht, 1889), with analyses of distributions of sex and asymmetry. Smithson. Contr.Zool. 420: 1-55

FRANSZ, H.G. & S. DIEL - 1985: Secondary production of Calanus finmarchicus (Copepoda: Calanoidea) in a transitional system of the Fladen Ground area (northern North Sea) during spring of 1983. In: GIBBS, P.E. (ed.), Proc. 19th EMBS, Cambridge University Press, p. 123-133

GEE, J.M. - 1985: Seasonal aspects of the relationship between temperature and respiration rate in four species of intertidal harpacticoid copepod. J.Exp.Mar.Biol.Ecol. 93: 147-156

GILL, C.W. & D.J. CRISP - 1985: The effect of size and temperature on the frequency of limb beat of Temora longicornis Müller (Crustacea: Copepoda). J.Exp.Mar.Biol.Ecol. 86: 185-196

GULATI, R.D. - 1985: Zooplankton grazing methods using radioactive tracers: technical problems. Hydrobiol.Bull. 19: 61-69

HAIRSTON, N.G. & S. TWOMBLY - 1985: Obtaining life table data from cohort analyses: a critique of current methods. Limnol. Oceanogr. 30(4): 886-893

HO, J.-S. - 1985: Copepod parasites of deep-sea benthic fishes from the western North Atlantic. Parasitology 90: 485-497

HO, J.-S. & P.S. PERKINS - 1985: Symbionts of marine Copepoda: an overview. Bull.Mar.Sci. 37(2): 586-598

HOLMES, J.M.C. - 1985: Crustacean records from Lough Ine, Co. Cork; part III. Bull.Ir.biogeogr.Soc. 8: 19-25

HULSEMANN, K. - 1985: Two species of Drepanopus Brady (Copepoda Calanoida) with discrete ranges in the Southern Hemisphere. J.Plankton Res. 7(6): 909-925

HULSEMANN, K. - 1985: A new species of Neoscolecithrix Canu (Copepoda Calanoida) in Antarctic water with remarks on the genus. Polar Biol. 5: 55-62

ITO, T. - 1985: A new subspecies of Longipedia andamanica Wells from the Pacific coast of Japan, with reference to the morphology of L. coronata Claus (Copepoda: Harpacticoida). Publ.Seto Mar.Biol.Lab. 30(4/6): 307-324

KERSTING, K. - 1985: Specific problems using electronic particle counters. Hydrobiol.Bull. 19: 5-12

KIMMERER, W. & A.D. McKINNON - 1985: A comparative study of the zooplankton in two adjacent embayments, Port Phillip and Westernport Bays, Australia. Estuar.Coast.Shelf Sci. 21: 145-159

KLEIN BRETELER, W.C.M. - 1985: Fixation artifacts of phytoplankton in zooplankton grazing experiments. Hydrobiol.Bull. 19(1): 13-19

MIELKE, W. - 1985: Interstitielle Copepoda aus dem zentralen Landesteil von Chile: Cylindropsyllidae, Laophontidae, Ancorabolidae. Microfauna Marina 2: 181-270

MONCHENKO, V.I. - 1985: A new species of Diacyclops (Crustacea, Copepoda) from Transcaucasia. Vestn.zool. 1985(5): 19-25 (In Russian with English summary)

NAGASAWA, K., Y. IMAI & K. ISHIDA - 1985: Distribution, abundance, and effects of Penella sp. (Copepoda: Pennellidae), parasitic on the Saury, Cololabis saira (Brevoort), in the western North Pacific Ocean and adjacent seas, 1984. Bull.Biogeogr.Soc.Japan 40(5): 35-42

NAIR, B.U. - 1985: Four species of Scambicornus (Copepoda: Cyclopoida, Sabelliphilidae) associated with invertebrates in the Indian waters. Aqua.Biol. 5: 96-109

PESCE, G.L. - 1985: Contributo alla conoscenza degli Arpacticoidi (Crustacea: Copepoda) dell acque sotteranee della regione abruzzese. Boll.Mus.Civ.Stor.Nat.Verona 10: 459-484

PESCE, G.L. - 1985: A new harpacticoid from phreatic waters of Lesbos, Greece, and notes on the "Rassenkreise" of Elaphoidella elaphoides (Chappuis) (Copepoda: Ameiridae). Revue suisse Zool. 92(3): 605-612

PIASECKI, W. - 1985: Badania wstepne nad cyklem rozwojowym Tracheliastes maculatus Kollar, 1833 (Copepoda: Lernaeopodidae). Wiad.Parazytol. 31(4-6): 587-596

RIEPER, M. - 1985: Some lower food web organisms in the nutrition of marine harpacticoid copepods: an experimental study. Helgoländer Meeresunters. 39: 357-366

SALONEN, K. & J. SARVALA - 1985: Combination of freezing and aldehyde fixation, a superior preservation method for biomass determination of aquatic invertebrates. Arch.Hydrobiol. 103(2): 217-230

TACKX, M.L.M. & E.M. VAN DE VRIE - 1985: Calculation of results in grazing experiments using the counting method. Hydrobiol. Bull. 19: 29-36

THATCHER, V.E. & V. PAREDES - 1985: A parasitic copepod, Perulernaea gamitanae gen. et sp.nov. (Cyclopoida: Lernaeidae), from the nasal fossae of a Peruvian Amazon food fish. Amazoniana 9(2): 169-175

THATCHER, V.E. & V. PAREDES - 1985: A parasitic copepod, Amplexibranchius bryconis gen. et sp.nov. (Ergasilidae: Acusicolinae), from an Amazonian fish and remarks on the importance of leg morphology in this subfamily. Amazoniana 9(2): 205-214

UYE, S.-I. - 1985: Resting egg production as a life history strategy of marine planktonic copepods. Bull.Mar.Sci. 37(2): 440-449

VAN IERLAND, E.T. - 1985: Use of the floy cytometer in grazing studies. Hydrobiol.Bull. 19: 37-39

Excerpt from literature

From: DANA, J.D. - 1852: United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842. Under the command of Charles Wilkes, U.S.N., Vol. XIII, Crustacea, part II, p. 1223

Corycaeus inquietus. - Plate 86, fig. 5a,b, represents imperfectly a specimen taken in the Sooloo Sea. It was lost before the drawing was finished, having leaped from the glass containing it, the glass at the time being nearly dry.

From: LOWNDES, A.G. - 1934: Reports of an expedition to Brazil and Paraguay in 1926-7 supported by the Trustees of the Percy Sladen Memorial Fund and the Executive Committee of the Carnegie Trust for Scotland. Copepoda. Linn.Soc.J. Zool 39: 87-88

As a second case I would cite the genus Mesocyclops, containing at the present moment some thirty species. Now one of the species, Mesocyclops obsoletus, has a singularly useful characteristic in the absence of a spine or seta on one of its swimming feet. The species is world-wide in its distribution and the special peculiarity has been stressed by Sars, Gurney, and myself. The spine in question has, however, seldom been looked for, or its presence or absence noted in any other species of the genus. It is somewhat unfortunate that so many taxonomists when describing species of this genus make no mention of the presence of this particular spine.

1986

ANDRONOV, V.N. - 1986: Bottom Copepoda in the area of Cape Blanc (Islamic Republic of Mauritania) 2. The family Pseudocyclopiidae. Zool.Zh. 65(2): 295-298 (In Russian with English summary)

ANDRONOV, V.N. - 1986: Bottom Copepoda in the area of Cape Blanc (Islamic Republic of Mauritania) 3. The family Pseudocyclopiidae. Zool.Zh. 65(3): 456-462 (In Russian with English summary)

ARNOTT, G.H., G.W. BRAND & L.C. KOS - 1986: Effects of food quality and quantity on the survival, development, and egg production of Gladioferens pectinatus (Brady) (Copepoda: Calanoida). Aust.J.Mar.Freshw.Res. 37: 467-473

BOXSHALL, G.A. - 1986: A new species of Mugilicola Tripathi (Copepoda: Poecilostomatoida) and a review of the family Therodamasidae. Proc.Linn.Soc.N.S.W. 108(3), (1985): 183-186

BOXSHALL, G.A. & T.M. ILIFFE - 1986: New cave-dwelling misophrioids (Crustacea: Copepoda) from Bermuda. Sarsia 71: 55-64

BRADLEY, B.P. - 1986: Genetic expression of temperature tolerance in the copepod Eurytemora affinis in different salinity and temperature environments. Mar.Biol. 91: 561-565

BRADLEY, B.P. - 1986: Traits, problems and methods in copepod life history studies. Syllogeus 58: 247-253

BRAND, G.W., G.J. FABRIS & G.H. ARNOTT - 1986: Reduction of populations growth in Tisbe holothuriae Humes (Copepoda: Harpacticoida) exposed to low cadmium concentrations. Aust.J.Mar.Freshw. Res. 37: 475-479

CASTRO R., R. & H. BAEZA K. - 1986: Two new species of Hatschekia Poche, 1902 (Copepoda, Hatschekidae) parasitic on two inshore fishes from Antofagasta, Chile. J.Nat.Hist. 20: 439-444

CASTRO R., R. & H. BAEZA K. - 1986: Pre-metamorphosis stages of two pennellids (Copepoda, Siphonostomatoida) from their definitive hosts. Crustaceana 50(2): 166-175

CHOJNACKI, J. - 1986: Biomass estimation of Temora longicornis on the basis of geometric method. Syllogeus 58: 534-538

COULL, B.C. - 1986: A new species of Pseudobradya and the rediscovery and correction of Quinquelaophonte capillata (Copepoda: Harpacticoida). Trans.Am.Microsc.Soc. 105(2): 121-129

CRESSEY, R.F. - 1986: Biogeography of parasitic copepods. Syllogeus 58: 136-143

DARO, M.H. & M.A. BAARS - 1986: Calculations of zooplankton grazing rates according to a closed, steady-state, three-compartment model applied to different ^{14}C methods. Hydrobiol. Bull. 19(2): 159-170

DIEL, S. & W.C.M. KLEIN BRETELER - 1986: Growth and development of Calanus spp. (Copepoda) during spring phytoplankton succession in the North Sea. Mar.Biol. 91: 85-92

Excerpt from the literature

From: STEUER, A. - 1911: Leitfaden der Planktonkunde. Verlag von B.G. Teubner, Leipzig und Berlin. p. 2

Im Jahre 1845 begann Johannes Müller auf Helgoland mühsam durch "mikroskopische Untersuchung des eingebrachten Seewassers" Echinodermenlarven zum Studium ihrer Entwicklung zu sammeln und sprach damals zu seinem Schüler E. Haeckel die denkwürdigen Worte: "Da können Sie noch viel tun; und wenn Sie erst recht in diese pelagische Zauberwelt hineinkommen, werden Sie bald sehen, daß man nicht wieder davon loskommen kann."

From: DANA, J.D. - 1852: same work as above, p. 1237-1238

The Sapphirinae were met with both in the torrid and temperate zones, and in some regions were very abundant. Nothing can exceed the beauty of some species, and especially the males. On account of their extreme brilliancy and rich reflected tints they may be seen at great depths on a sunny day, and as each becomes visible only when the position is right for the observer's eye, the water seems to flash with moving gems; they even rival the richest opal and sapphire, and the most brilliant combination of metallic hues. They swim with a graceful motion, often turning over and over, changing their tints, and disappearing to reappear again, through their varying motions. Blue is a common colour; but with this shade, fire-red, carmine, and bright yellow are often commingled. Some females have a nearly black colour, giving smalt blue reflections; while others are faintly tinted, or are quite colourless. The species were not observed to be phosphorescent.

FAVA, G. - 1986: Genetic differentiation in experimental populations of the copepod Tisbe clodiensis Battaglia & Fava from two Adriatic lagoons. J.Exp.Mar.Biol.Ecol. 97: 51-61

FERRARI, F.D. & R. BÖTTGER - 1986: Sexual dimorphism and sex-limited polymorphism in the copepod Paroithona pacifica Nishida, 1985 (Cyclopoida: Oithonidae) from the Red Sea. Proc. Biol.Soc.Washington 99(2): 274-285

FLÖSSNER, D. - 1986: Beitrag zur Kenntnis der Branchiopoden- und Copepodenfauna der Mongolei. Mitt.Zool.Mus.Berlin 62(1): 3-40

GEE, J.M. & J.T. DAVEY - 1986: Stages in the life history of Mytilicola intestinalis Steuer, a copepod parasite of Mytilus edulis (L.), and the effect of temperature on their rates of development. J.Cons.int.Explor.Mer 42: 254-264

GEE, J.M. & J.T. DAVEY - 1986: Experimental studies on the infestation of Mytilus edulis (L.) by Mytilicola intestinalis Steuer (Copepoda, Cyclopoida). J.Cons.int.Explor.Mer 42: 265-271

GOTTO, R.V. - 1986: A new parasitic copepod crustacean of uncertain affinities: Megallecto thirioti n.gen., n.sp. Bull. Zool.Mus.Univ.Amsterdam 10(21): 185-189

HAIRSTON, N.G. & W.E. WALTON - 1986: Rapid evolution of a life history trait. Proc.Natl.Acad.Sci.USA 83: 4831-4833

HARDING, G.C., W.P. VASS, B.T.HARGRAVE & S. PEARRE - 1986: Diel vertical movements and feeding activity of zooplankton in St. Georges Bay, N.S., using net tows and a newly developed passive trap. Can.J.Fish.Aquat.Sci. 43(5): 952-967

HIPEAU-JACQUOTTE, R. - 1986: A new cephalic type of presumed sense organ with naked dendritic ends in the atypical male of the parasitic copepod Pachypygus gibber (Crustacea). Cell Tissue Res. 245: 29-35

HO, J.-S. - 1986: Harpacticoid copepods of the genera Sunaristes and Porcellidium associated with hermit crabs in Japan. Rep. Sado Mar.Biol.Stat., Niigata Univ. 16: 21-38

HOLMES, J.M.C. - 1986: Records of some interesting copepods belonging to the Clausidiidae, a family new to Ireland. Ir. Naturalists J. 22(1): 30-32

IZAWA, K. - 1986: On the development of parasitic Copepoda III. Taeniacanthus lagocephali Pearse (Cyclopoida: Taeniacanthidae). Publ.Seto Mar.Biol.Lab. 31(1/2): 37-54

JONES, J.B. & B.A. MARSHALL - 1986: Cocculinika myzorama, new genus, new species, a parasitic copepod from a deep-sea wood-ingesting limpet. J.Crust.Biol. 6(1): 166-169

KLEIN BRETELER, W.C.M. & S.R. GONZALEZ - 1986: Culture and development of Temora longicornis (Copepoda, Calanoida) at different conditions of temperature and food. Syllogeus 58: 71-84

KOCHINA, E.M. & V.I. MONCHENKO - 1986: On species distinctness of Cyclops kikuchii (Crustacea, Cyclopidae). Vestn.zool. 1986(1): 15-18 (In Russian)

LINDLEY, J.A. - 1986: Dormant eggs of calanoid copepods in sea-bed sediments of the English Channel and the southern North Sea. J.Plankton Res. 8(2): 399-400

MIELKE, W. - 1986: Copépodos de la meiofauna de Chile, con descripción de dos nuevas especies. Rev.Chil.Hist.Nat. 59: 73-86

MONCHENKO, V.I. - 1986: The first endemic genus of Copepoda (Cyclopidae) in the Caspian Sea. Zool.Zh. 65(3): 333-340 (In Russian with English summary)

MONNIOT, C. - 1986: Prêsence en Guadeloupe de deux phênotypes femelles du copépode ascidicole Pachypygus macer Illg, 1958. Syst.Parasitol. 8: 151-162

NAIR, B.U. & N.K. PILLAI -1986: Three new species of copepods associated with south Indian invertebrates. Crustaceana 50(1): 27-38

NISHIDA, S. - 1986: A new species of Oithona (Copepoda, Cyclopoida) from the neritic waters of Australia. J.Plankton Res. 8(5): 907-915

NISHIDA, S. - 1986: Structure and function of the cephalosome-flap organ in the family Oithonidae (Copepoda, Cyclopoida). Syllogeus 58: 385-391

REID, J.W. - 1986: Some usually overlooked cryptic copepod habitats. Syllogeus 58: 594-598

REID, J.W. - 1986: A redescription of Microcyclops ceibaensis (Marsh, 1919) (Copepoda: Cyclopoida) from Marsh's specimens in the National Museum of Natural History. Proc.Biol.Soc. Washington 99(1): 71-78

SARVALA, J. - 1986: Patterns of benthic copepod assemblages in an oligotrophic lake. Ann.Zool.Fennici 23: 101-130

STOCK, J.H. - 1986: Cases of hyperassociation in the Copepoda (Herpyllobiidae and Nereicolidae). Syst.Parasitol. 8: 71-81

VEIGA, J.-M. & J. CASTEL - 1986: Coût énergétique de la locomotion chez le Copépode Eurytemora hirundoides (Nordquist, 1888). C.r.Acad.Sci.Paris (III) 303(6): 203-206

WALTER, T.C. - 1986: New and poorly known Indo-Pacific species of Pseudodiaptomus (Copepoda: Calanoida), with a key to the species group. J.Plankton Res. 8(1): 129-168

WALTER, T.C. - 1986: The zoogeography of the genus Pseudodiaptomus (Calanoida: Pseudodiaptomidae). Syllogeus 58: 502-508

WARWICK, R.M., J.M. GEE, J.A. BERGE & W. AMBROSE - 1986: Effects of feeding activity of the polychaete Streblosoma bairdi (Malmgren) on meiofaunal abundance and community structure. Sarsia 71: 11-16

Theses

BÖTTGER, R. - 1985: Untersuchungen zur Verteilung der kleinen Metazoa im Plankton des Roten Meeres, unter besonderer Berücksichtigung cyclopoider und harpacticoider Copepoden. Ph.D. thesis, Universität Hamburg, p. 1-248

CHOJNACKI, J. - 1984: Zoocenozy planktonowe południowego Bałtyku. Habil. thesis (DSc thesis?), Akademia Rolnicza Szczecinie, Nr. 93: 1-24

FERNANDEZ DE PUELLES, M.L. - 1986: Biological cycle of the mesozooplankton and microzooplankton-community: biomass, structure, trophical relationship and production in Canary Island waters. Ph.D. thesis, Madrid Autónoma University

VARELLA, A.M.B. - 1985: O ciclo biológico de Ergasilus bryconis Thatcher, 1981 (Crustacea: Poecilostomatoida, Ergasilidae) parasita das brânquias do matrinxa, Brycon erythropterum (Cope, 1872) e aspectos de sua ecologia. MSc. thesis, Fundaçao Universidade do Amazonas e Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil, 100 pp.

DIRECTORY OF COPEPODOLOGISTS

ACHMAD, S. SARNITA

Inland Fisheries Research Institute
JL. Sempur No. 1
P.O.Box 51
Bogor, Jawa Barat

INDONESIA

(Systematics, zoogeography and autecology of Indonesian freshwater cyclopoids.)

BJÖRNBERG, M.H.G. DE CARVALHO

Instituo de Biociências -USP
Dept. de Zoologia
Cidade Universitária
C.P. 20520 - CEP 01000
Sao Paulo - S.P.

BRAZIL

(Systematics and larval development of Brazilian freshwater cyclopoids.)

BÖTTGER, RUTH (Dr.)

Institut für Hydrobiologie und Fischereiwissenschaft der Universität Hamburg
Zeiseweg 9
D-2000 Hamburg 9

FED. REP. GERMANY

(Red Sea ecology: community structure and vertical distribution of cyclopoid copepods; population structure and vertical distribution of Macrosetella gracilis (Copepoda, Harpacticoida) in relation to blue-green algae.)

CHANDLER, G. THOMAS (Dr.)

Zoologisches Institut und
Zoologisches Museum
Universität Hamburg
Martin-Luther-King Platz 3
D-2000 Hamburg 13

FED. REP. GERMANY

(Ecology and species interactions of harpacticoid copepods; culture of harpacticoid copepods from muddy sediments.)

DAGG, MICHAEL J.

Louisiana Universities
Marine Consortium
Chauvin, Louisiana 70344

USA

(Lab. and field measurements of egg production by Acartia tonsa and of feeding by Neocalanus plumchrus, Calanus pacificus, and Metridia pacifica.)

GELLER, WALTER

Limnologisches Institut
Universität Konstanz
D-7750 Konstanz

FED. REP. GERMANY

(Production and population biology of zooplankton in Lake Constance, Germany.)

GILL, CATHERINE W. (Dr.)

Station d'Océanologie et
de Biologie Marine de Roscoff
Place Georges Teissier
F-29211 Roscoff

FRANCE

(Food detection and selection by copepods; receptor structure and function.)

GRAU, SABINE

Institut für Hydrobiologie und
Fischereiwissenschaft der
Universität Hamburg
Zeiseweg 9
D-2000 Hamburg 50

FED. REP. GERMANY

(Coastal upwelling ecology: community structure and vertical distribution of cyclopoid and calanoid copepods; the variability of short-term and small-scale distribution of copepods; distribution and variation of development stages of copepods, especially nauplii.)

GRIGG, HELEN

1 Rochester Road
North Hill
Plymouth, PL4 6HU

ENGLAND

(Biology of planktonic copepods.)

GUNNILL, FREDERIC C.

Dept. Marine Invertebrates
San Diego Natural History
Museum
P.O.Box 1390
San Diego, CA 92112

USA

(Benthic/marine ecology; plant-animal associations.)

HUYS, RONY

Institute of Zoology
Marine Biology Section
K.L. Ledeganckstraat 35
B-9000 Gent

BELGIUM

(Morphology and systematics of Cylindropsyllidae and of Scottopsyllus-group of Paramesochridae, Harpacticoida.)

JONASDOTTIR, SIGRUN HULD

School of Oceanography, WB-10
University of Washington
Seattle, Wa 98195

USA

(Egg production of Pseudocalanus spp.; food of nauplii of Cyclops abyssorum.)

KIMOTO, KATSUNORI

Seikai Regional
Fisheries Research Laboratory
Kokubu-machi
Nagasaki, 850

JAPAN

(Swarm of neritic calanoid copepods.)

LIM, RICHARD P. (Prof.)

Zoology Department
University of Malaya
59100 Kuala Lumpur

MALAYSIA

(Systematics of Malaysian copepods.)

MOISAN, JOHN R.

Ira C. Darling Center
University of Maine
Walpole, Maine 04573

USA

(Larval development and life cycle of Parathalestris jacksoni; changes in production rates of harpacticoid copepods.)

MONTSCHENKO, V.

Zoology Institute
Academy of Sciences
Lenina 15
252601 Kiev

USSR

(Systematics and faunistics of free living marine and freshwater copepods in the southwest of the Soviet Union.)

MORAITOU-APOSTOLOPOULOU, M. (Prof.)

Zoological Laboratory
University of Athens
Panepistimiopolis
Athens 15771

GREECE

(Studies on the secondary production of copepods; impact of pollutants on marine organisms.)

MORENO, ISABEL (Prof.)

Marine Biology Department
Facultad de Ciencias
Universidad
E-07071 Palma de Mallorca

SPAIN

(Copepod cultivation as food for young fishes.)

NAIR, VIJAYALAKSHMI, R.

National Institute of
Oceanography
Sea Sheel
7-Bungalows, Versova
Bombay-61

INDIA

(Distribution of copepods in polluted and relatively unpolluted environments; toxicity studies using selected copepods.)

PAUL, GITA (Prof.)

Dept. of Biology
Fatima College
Madurai-625018, Tamil Nadu

INDIA

(Biology of the freshwater cyclopoid, Mesocyclops leuckarti, including morphology and anatomy.)

RAINVILLE, LUC A.

Institute of Oceanography
Eaton Building
McGill University
3620 University Street
Montréal, Québec

CANADA H3A 2B2

(Succession of marine zooplankton species; dynamics and energetics of populations; heat capacity of copepods.)

RAMCHARAN, CHARLES W.

Dept. Zoology
Erindale Campus
University of Toronto
Mississauga, Ontario

CANADA M9V 3Y3

(Interference competition between calanoids and cladocerans; feeding and fat levels in freshwater calanoids.)

TAKEGAMI, TOSHIYA

Seto Marine Biological Laboratory
Faculty of Science
Kyoto University
Shirahama, Nishimuro
Wakayama 649-22

JAPAN

(Biology of parasitic copepods.)

THRELKELD, STEPHEN T. (Prof.)

Biological Station
University of Oklahoma
Kingston, Oklahoma 73439

USA

(Trophic and nutrient related effects of fish on plankton communities; turbidity and water renewal effects on plankton communities.)

TOAL, JONATHAN P.

Kinnetic Laboratories Inc.
3050 Paul Sweet Rd.
P.O.Box 1040
Santa Cruz, CA 95065

USA

(Adaption of marine organisms to chronic hydrocarbon exposure.)

VRIŠER, BORUT (Dr.)

Inštitut za Biologijo
Univerze E. Kardelja,
Ljubljana
Morski Raziskovalni in
Izobr. Center
66330 Piran, Cesta Ila 65

YUGOSLAVIA

(Ecology of meiofauna, community structure.)

WONG, C. KIM (Dr.)

Ocean Ecology
Institute of Ocean Sciences
P.O. Box 6000
Sidney, B.C.

CANADA V8L 4B2

(Feeding behaviour of calanoid copepods; seasonal differences in feeding rate; swimming behaviour, predator-prey interactions.)

YOOSUKH, WANTANA (Prof.)

Dept of Marine Science
Faculty of Fisheries
Kasetsart University
Bangkhen, Bangkok 10900

THAILAND

(Parasitic copepods.)

THIRD INTERNATIONAL CONFERENCE ON COPEPODA

British Museum (Natural History), London
10th - 14th AUGUST 1987

CALL FOR PAPERS

First author.....
(Family name) (Forenames)

Co-author(s) if applicable .....
Organisation .....
Mailing address .....
.....Phone:-.....

TITLE OF PAPER .....
.....

Method of presentation: Oral ..... Poster.....
35mm and overhead projectors will be available for all oral presentations.
Any other facilities: .....(please specify)
Poster display facilities:
A maximum space of 2m x 1m is available per poster presentation.

ABSTRACTS

Invited speakers and all persons wishing to present a paper in the contributed paper sessions or the poster session are requested to prepare an abstract of not more than 200 words. Abstracts should be typed in black ink on plain white paper and must fit within a rectangle 140 by 90mm. as in the example given below. Please underline the name of the author presenting the paper and use a double space to separate the title from the first line of the abstract.

Darwin, C. & Lamarck, J.P., Dept. of Evolutionary Studies, University of Life, Aristotleville, Wallacea.
HINTS ON ABSTRACT PREPARATION PLAGIARISED FROM THE SECOND COPEPOD CONFERENCE.

It is important that abstracts are properly prepared so that they can be included in the Book of Abstracts. Yours will be found most easily if you type your SURNAME first followed by your FORENAME or INITIALS and the names of co-authors. Your name must be included in the allotted space.
Improperly prepared abstracts cannot be printed. Abstracts are most commonly rejected due to the failure of authors to included their names within the space.
Mark out a rectangle (140x90mm) lightly in pencil on a sheet of plain white paper and type the abstract within the lines. The abstract you send in will be used as camera-ready copy so please try to avoid making any corrections as these often remain visible even after duplication. Thank you.

PLEASE RETURN THIS COMPLETED FORM WITH YOUR ABSTRACT BY 1st MARCH 1987 TO:

Third International Conference on Copepoda,
c/o Dr G.A. Boxshall,
Department of Zoology,
British Museum (Natural History),
Cromwell Road,
LONDON SW7 5BD, ENGLAND.

THIRD INTERNATIONAL CONFERENCE ON COPEPODA

REGISTRATION FORM

Name .....

Address .....

.....

Accompanying persons .....

.....

Payment enclosed: £..... Registration (£90)

£..... Student registration (£45)

£..... Late registration supplement (£10)

TOTAL £..... (pounds sterling)

We hope to arrange a Conference Dinner one evening to which all participants and any accompanying persons will be invited. It would be most helpful if we had some idea of the numbers that might attend such a function. The cost would be between £10 and £15.

If you would be interested in attending the dinner please indicate so below:

YES..... :- with ..... accompanying persons/guests.

NO.....

PLEASE COMPLETE AND RETURN THIS FORM BY 31st MAY 1987 TO:

Third International Conference on Copepoda,
c/o Dr G.A. Boxshall,
British Museum (Natural History),
Cromwell Road,
London SW7 5BD,
England.

Change of address

DOJIRI, MASAHIRO (Dr.)

Institute of Parasitology
Department of Biology
California State University
Long Beach, CA 90840

USA

FERNANDEZ DE PUELLES, M.L.

Oceanographic Institute
of Spain
Laboratorio Costero de Baleares
Apartado 291
E-07080 Palma de Mallorca

SPAIN

GANNON, JOHN E.

Glentlakes Regional Office
International Joint Commission
100 Onellette Ave., 8th floor
Windsor, Ontario

CANADA N9A 6T3

GRYGIER, MARK, J. (Dr.)

Department of Invertebrate
Zoology
National Museum of Natural
History
Smithsonian Institution
Washington, D.C. 20560

USA

HADEL, VALERIA FLORA

Centro de Biologia Marinha
Univ. de Sao Paulo
C.P. 83 - CEP - 11.600
Sao Sebastiao - Sao Paulo

BRAZIL

KOGA, FUMIHIRO

Seikai Regional
Fisheries Research Laboratory
Fisheries Agency of Jaoan
Kokubu-cho 49
Nagasaki 850

JAPAN

KUKERT, HELMUT

School of Oceanography, Wb-10
University of Washington
Seattle, Washington 98195

USA

MAMARIL, AUGUSTUS (Prof.)

Department of Zoology
College of Science
University of the Philippines
Diliman
Quezon City

PHILIPPINES 3004

MAYZAUD, PATRICK (Dr.)

INRS-Océanologie
Université du Québec
310 Ave. des Ursulines
Rimouski, Québec

CANADA G5L 3A1

MONTAGNA, PAUL A.

Marine Science Institute
The University of Texas
Port Aransas Marine Institute
Port Aransas, Texas 78373-1267

USA

STEARNS, DONALD EDISON (Dr.)

Marine Environmental
Sciences Consortium
Dauphin Island Sea Lab.
P.O.Box 369-370
Dauphin Island, Alabama 36528

USA

TACKX, MICHELE L.M.

Ecology and Systematics Lab.
Vrije Universiteit Brussel
Pleinlaan 2
B-1050 Brussels

BELGIUM

THIRD INTERNATIONAL CONFERENCE ON COPEPODA

British Museum (Natural History), London
10th. - 14th AUGUST 1987

CALL FOR PAPERS

First author.....
(Family name) (Forenames)

Co-author(s) if applicable .....
Organisation .....
Mailing address .....
.....Phone:-.....

TITLE OF PAPER .....
.....

Method of presentation: Oral ..... Poster.....
35mm and overhead projectors will be available for all oral presentations.
Any other facilities: .....(please specify)
Poster display facilities:
A maximum space of 2m x 1m is available per poster presentation.

ABSTRACTS

Invited speakers and all persons wishing to present a paper in the contributed paper sessions or the poster session are requested to prepare an abstract of not more than 200 words. Abstracts should be typed in black ink on plain white paper and must fit within a rectangle 140 by 90mm, as in the example given below. Please underline the name of the author presenting the paper and use a double space to separate the title from the first line of the abstract.

Darwin, C. & Lamarck, J.P., Dept. of Evolutionary Studies, University of Life, Aristotleville, Wallacea.
HINTS ON ABSTRACT PREPARATION PLAGIARISED FROM THE SECOND COPEPOD CONFERENCE.

It is important that abstracts are properly prepared so that they can be included in the Book of Abstracts. Yours will be found most easily if you type your SURNAME first followed by your FORENAME or INITIALS and the names of co-authors. Your name must be included in the allotted space.
Improperly prepared abstracts cannot be printed. Abstracts are most commonly rejected due to the failure of authors to included their names within the space.
Mark out a rectangle (140x90mm) lightly in pencil on a sheet of plain white paper and type the abstract within the lines. The abstract you send in will be used as camera-ready copy so please try to avoid making any corrections as these often remain visible even after duplication. Thank you.

PLEASE RETURN THIS COMPLETED FORM WITH YOUR ABSTRACT BY 1st MARCH 1987 TO:

Third International Conference on Copepoda,
c/o Dr G.A. Boxshall,
Department of Zoology,
British Museum (Natural History),
Cromwell Road,
LONDON SW7 5BD, ENGLAND.

THIRD INTERNATIONAL CONFERENCE ON COPEPODA

REGISTRATION FORM

Name .....

Address .....

.....

Accompanying persons .....

.....

Payment enclosed: £..... Registration (£90)

£..... Student registration (£45)

£..... Late registration supplement (£10)

TOTAL £..... (pounds sterling)

We hope to arrange a Conference Dinner one evening to which all participants and any accompanying persons will be invited. It would be most helpful if we had some idea of the numbers that might attend such a function. The cost would be between £10 and £15.

If you would be interested in attending the dinner please indicate so below:

YES..... :- with ..... accompanying persons/guests.

NO.....

PLEASE COMPLETE AND RETURN THIS FORM BY 31st MAY 1987 TO:

Third International Conference on Copepoda,
c/o Dr G.A. Boxshall,
British Museum (Natural History),
Cromwell Road,
London SW7 5BD,
England.