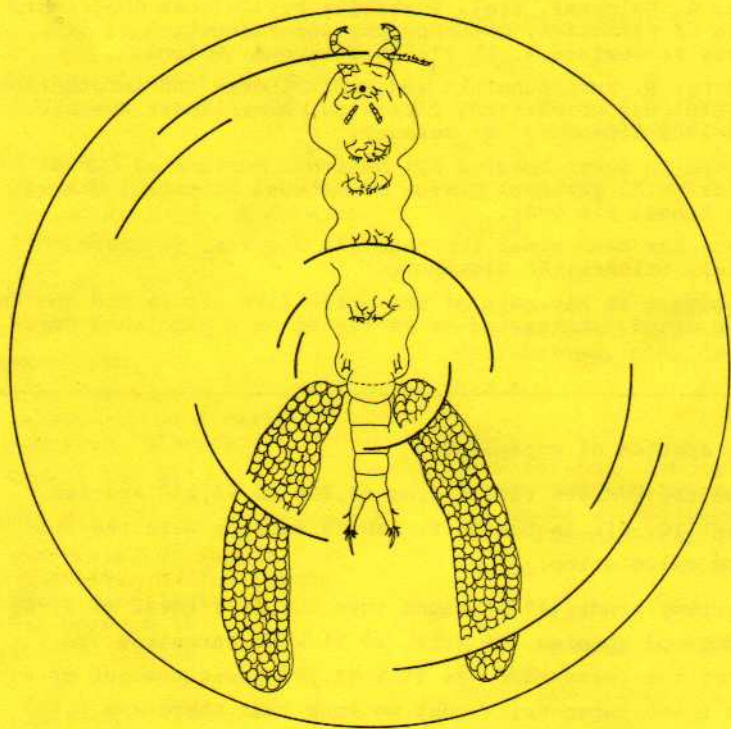


# MONOCULUS

Copepod Newsletter



Nr. 15

November 1987

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Copepod Newsletter

Number 15

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How many species of copepods?

In Ottawa the guesses ranged from 15,000 to 60,000 species. (*MONOCULUS* 10: 5). In London Z. Kabata came up with the following calculation:

In his survey Arndt (1940) found that out of a total of 3,900 marine copepod species 900 (viz. 23 %) were parasites. In freshwater the percentage was 19 % (1,300 parasites out of a total of 6,900 copepods). Today we know that there are 1,937 copepod species parasitic on fishes and 1,828 parasitic on invertebrates. If we accept that the total number of 3,765 known parasites accounts for 20 % of existing copepod species then the total number of species today should at least be 18,825.

Deadline for the next issue of *MONOCULUS*: 1st March 1988

## E d i t o r i a l

London has been a great event. It was a pleasure again to meet so many of you, some for the first time. We enjoyed your company, your lectures and the many lively and profitable conversations. It is good to see, how strong the ties have grown within our community through personal contacts and common aims.

Our appeal for reprints (Schminke/Janetzky) for the *MONOCULUS*-Bibliography has had a marvellous resonance. Reprints still keep arriving every day so that our list (further below) with the names of those who have responded will have to be continued in the next issue of the newsletter. Many reprints were accompanied by a letter. Thank you for praise and encouragement.

Due to this constant stream of reprints our list of current literature is particularly long. As this time we also have many other contributions, not much space is left for continuing the list of current research projects compiled from the questionnaire sent out in 1986. We shall have to continue this list next time even though it may then partly at least be out of date. C. Corkett, H. Juhl, K. Nagasawa, M. Omori, J. Read, and V. Thatcher have contributed to this issue. J. Chojnacki has drawn the portraits and D. Waloßek has given us a sketch from his scribblings during the London conference. Many thanks to all of them for their cooperation.

Many of you have ordered the new directory "Copepodologists of the World-Survey 1987". After the London meeting it had to be brought up to date and will go to print shortly together with the bibliography of the *MONOCULUS*-Library. Both volumes will be available at the end of November, and when finally they are ready for dispatch, Christmas and New Year won't be far any more.

We wish you all the best for both of these events and hope you will enjoy this issue of *MONOCULUS*.

J. K. Minz

J. Schminke

Geoff's stimulating conference

We are gradually building up a tradition as regards the format of our conferences. In Amsterdam we only had contributed paper sessions. In Ottawa in addition to these, symposia, poster displays, and evening discussions have been added. This was continued in London, only with the provision that one of the symposia should be devoted to a species or taxonomic group (in London: Calanus) and a second one to a particular habitat (in London: deep-sea copepods). The major addition in London to this profile, however, has been a specific lecture to honour outstanding achievements in research on copepods. For this "Maxilliped-Lecture" as it has been called the choice will be among those who with their work have set their stamp on a field of copepodology, who have taken the lead and with their work stimulated progress and emulation. The first lecture was given by Dr. Kabata under the title "Copepods and copepodologists, or what's in a name".

The World Association of Copepodologists has officially been founded in London. A report on the founding phase was given by the Founder President, Dr. Kabata. Then the by-laws of the Association (in the form as published in *MONOCULUS* 11: 25-28) were accepted unanimously. They had been formulated by Dr. Heip and Dr. Kabata. Only article 5 has been changed. General Secretary and Treasurer will not be combined in one person but are separate responsibilities. The elections resulted in the following Executive Council:

President of WAC:	Jan H. Stock, Amsterdam, The Netherlands
Vicepresident:	John Wells, Wellington, New Zealand
General Secretary:	Christopher Corkett, Halifax, Canada
Treasurer:	Gerd Schriever, Kiel, W. Germany
Council Members:	Moshe Gophen, Tiberias, Israel
	Ju-shey Ho, Long Beach, U.S.A.
	Kurt Schminke, Oldenburg, W. Germany
	Chang-tai Shih, Ottawa, Canada

It was proposed and accepted that for the time being the newsletter shall continue to be sent to anyone interested in copepod research. It shall serve to spread the message of WAC and its activities and help to recruit new members. This means that with a small fraction of their fees members of WAC will subsidize those copies of the newsletter given to non-members. It is foreseeable that the funds (raised by H.K. Schminke and C.-t. Shih) with which the newsletter has been produced so far will not be available for ever. Lack of these funds will necessitate a revision of the above decision. Members of WAC in addition to a free copy of the newsletter will benefit from other services. For a start they will receive a free copy of the new directory "Copepodologists of the World-Survey 1987".

As for the next meeting in 1990, there is a good chance that it may be held in Japan. Dr. Uye said that it would be an honour for Japanese copepodologists to be host of the next conference but there are a few difficulties which need to be discussed at home. A final decision will be made in November at a national meeting of Japanese copepodologists. It was suggested that in the future efforts should be made to sequentially couple the conferences on Copepoda with those on meiofauna such as to allow to attend two meetings with the travel expenses for one. No objections were raised against trying to achieve such an arrangement in 1993.

The general meeting ended with the "Maxilliped Lecture". It had been preceded by one of the particulars of the London meeting: a session with two excellent and lively review lectures under the theme "Copepods and Light". Dr. P.J. Herring reviewed "Bioluminescence in Copepods" and Dr. M.R. Land summarized knowledge on "Copepod Eyes". Add to this the London specific by-programme with in particular the cruise along the River Thames onboard the launch "Queen Elisabeth" with music and the conference dinner and you know what distinguished the London conference from the ones before. Otherwise it has been as lively, gay and intimate as ever and

on me has had the same effects as the two previous ones. I went home full of new insights, ideas and renewed initiative. I had made new interesting contacts and strengthened older ones. In a word: I felt damned good travelling home.

I know all this could only happen because there had been someone sacrificing a lot of his working and spare time for us before and even more during the conference. Geoff Boxshall has organized a marvellous meeting and we owe a lot of gratitude to him. Trying to save money he did many things himself that others could have done. He awaited us when we arrived late at night the day before the official opening, personally welcoming us and handing out the conference kit. Constantly busy behind the scene he made sure that everything went smoothly and to the satisfaction of all participants. Also his wife helped out and at the expense of their family both worked full-time for the conference. That Kier, their 9 year old son, may forgive us. Coming home late at night as usual during the conference his parents one day found the following note on a bag of dirty clothes:

"To an adult.

Please wash this. I have no underwear or other items of clothing.

Love Kier."

H.K.S.

Zbigniew Kabata

Zbigniew Kabata

#### Interviewing copepodologists

When I first met him in Ottawa I was surprised to discover that he is not a Japanese. This situation is familiar to him. On the Philippines (or was it in Japan?) he ran into trouble. They wouldn't let him back into the hotel - his appearance being in contradiction to his name. Zbigniew (Bob) Kabata is Polish by birth and Canadian by option.

He is the leading expert on parasitic copepods and his name comes to mind whenever help is needed in this field. "I once received a vial with a copepod from a colleague who sent it in water hoping that it would produce egg-sacs in the meantime. What I got was a copepod soup. I wrote back to him to send it in alcohol next time. He did. He sent it in rum." Even more surprising was a sample received from Lake Baikal. When he opened the vial and studied the label he found it to read "Happy New Year".

In London he was the first to give the "Maxilliped Lecture", a new addition to the programme of our conferences in order to honour outstanding achievements in copepodology. While everybody expected a talk on parasitic copepods he surprised the audience with a "look at the history of copepod research by considering copepod names". At the end of this lecture he touched upon the enigmatic etymology of Calanus. "According to Marshall and Orr", he reported, "Calanus was a Jain ascetic, one of a strict and ancient sect which abhorred possessions so much that its members gave up even clothing. He followed in the train of Alexander the Great from India to Baghdad and there walked into the pyre because his life became worthless to him through illness. He is said to have murmured each morning an Indian greeting which the Greeks understood as 'Kalan' (perhaps 'Kalyan', i.e. God bless you) and so called him Kalanos. The outstretched antennules of the copepod may have suggested to Leach (who coined the name Calanus in 1819) some Yogi attitude practised by the ascetic". He finished his talk with a very personal word: "As I come to the end of my talk, I am acutely aware that this is my last conference before I retire, the last talk of my life with copepods. It was a good, often exciting life and I am glad I lived it. You all have been, to some degree, parts of that life. Let me, therefore, in this finale of my copepod career, stretch out my antennules and bid you farewell in the manner of the enigmatic Jain ascetic: Kalan, my friends and colleagues. And may copepods be as good to all of you as they have been to me."

"I have been lucky all my life. I have always had time for copepods even though I had other things to do." He also writes on Protozoa, but this he has to do, copepods he likes to do. No wonder that at times he even sacrifices his whole spare time for them. "The blue book (his Ray Society monograph on the 'Parasitic Copepoda of British fishes') was written in evenings, mornings, in all the spare time." His director at that time did not mind these activities because Kabata was successful. "How did your ties with copepods develop?" This is a question that Roger Cressey also asked back in 1970 at a dinner party in Washington. There had been twelve of us who had come together on the occasion of a parasitology congress. Except Heegaard, all of us had become copepodologists by accident." "What has been the accident in your case then?" "I graduated at Aberdeen in 1955. My first job in the marine laboratory of the Department of Agriculture and Fisheries consisted in studying migration of the haddock (Melanogrammus) using Lernaeocera as a tag. The result of this study was that it could not be used as a tag, but by the time I had finished I was in the middle of copepods. Lernaeocera has a flatfish as first host and on this flatfish more copepods turned up. I had to learn all by myself because the book by Scott & Scott, the only one of some help in those days, was completely out of date. Since I don't like untidy ends I became a copepodologist."

"What was your first paper on copepods about?" "It was published in 1957. I have only a vague idea of it now. It was on Lernaeocera in the North Sea, on its taxonomy, life cycle and distribution. Incidentally, my first description of a copepod was not valid. It turned out to be a variety of L. obtusa branchialis. Fortunately, I myself found out that this is so."

I had brought my own copy of his Ray Society monograph with me to this interview to have it signed by him. I turned the pages and remarked: "You have developed a distinctive style in your drawings and looking through papers by other authors on



parasitic copepods I have the impression they have followed your lead. How did you achieve this?" "I have never tried to influence other people. I didn't think of me as a person of influence. If I have had some influence it was not through a conscious effort. I have worked in government departments all my life. I have never been a teacher. I have not had students except occasionally for a postgraduate one. One of them, a girl, wanted to study the life-cycle of a copepod on man eating shark! I told her I would give her a Purple Heart if she did this. The only avenue for me to create followers was through my work. Good work is the best vehicle to instruction for others. I have been active in publishing, so others started to adopt similar styles. Give 105 % of what you can do and you will succeed. Proper description is based on drawings and these have to be as camera-like as possible." He seized the book and opened it at figure 159. "It took me two weeks to draw the egg-sac. I drew every egg." Pointing at figure 782 and the following ones he said "In order to show the whole appendage I drew it in three or four views. I always think of that story about Louis Agassiz giving a student a fish and asking him to draw it. When the student had finished the drawing he sent him back again to draw the fish again and then again to make it an even more painstaking effort. To be a good copepodologist, try to think as a copepod. Put yourself in a copepod's shoes. A copepod is a working unit. It has goals and certain strategies at these goals and a lot of this is reflected in its morphology. 'No data is irrelevant' as we have heard at this conference." The inscription over the entrance of the Victoria and Albert Museum, a bit further along Cromwell Road from the British Museum (Natural History) came to my mind 'The excellence of every art must consist in the complete accomplishment of its purpose'.

"What kind of work do you think has to be done in future?"

"Descriptive work has to be continued and more consideration has to be given to studies on the biology of parasitic copepods. Structures have a function, they are not there for fun.

More has also to be found out on life histories. There are great difficulties, however, because laboratory work may impose an artifact. It has been found that in the laboratory a copepod may develop directly in the egg and have no nauplius, whereas in nature it has. These difficulties shouldn't stop us. We need to know more about host-parasite relationships. What influence do copepods exert on the fish? Fishery people want to know. Most people who work on parasitic copepods are also parasitologists unless they are what I call mere speciographers (people content with describing species after species). Taxonomy should be a tool, not an aim in itself."

Kabata has named many species and many species have been named after him. He did not mention this in his "Maxilliped Lecture" which also owes its name to him. In a letter to me long before the conference in London he wrote: "As to the name of the lecture, it should be a name with a clarion ring to it, recognizable by all copepodologists. Should we decide to give it a special name, not name it by someone, then something like a "Monoculus Lecture", or, why not, "Maxilliped Lecture". Whatever we name it, the very fact that we consider it an honour to be invited to give, will impose on it its own splendour." A letter later he added: "A new group like ours should make its own traditions. What might seem rather crazy at first, with time will become a hallowed custom and people will give their eye teeth to be "Maxilliped Lecturers".

Several presentations in London have shown that the name was a very good choice. A memorable lecture by a young colleague defying prescribed time limits has demonstrated (by reviving some of Sars' ideas) that the maxilliped may be of utmost importance in reconstructing the phylogenetic relationships of at least the harpacticoids, if not the Copepoda as a whole. The maxilliped also played an important role in the presentation by Roger Cressey of a fossil parasitic copepod from a Lower Cretaceous fish. Ending his lecture Cressey said that

there had been a slight problem in finding an appropriate name for this exciting species. "For an unusual copepod we needed an unusual name and we decided to call it Kabatarina pattersonia."

Kabata was borne under the sign of Fishes.

H.K.S.

Copepod bibliography: A report on the evening discussion at the Third International Conference on Copepoda held in London on Wednesday, August 12, 1987

The information given that evening can be summarized as follows:

The Crustacea Database, sectio Copepoda, has reached a size where it can begin to offer its services. These will be moderate at the start but become more and more sophisticated as the data-base grows.

1. The Crustacea database contains about 7000 entries on Copepoda at present. Nearly 4000 of these are titles from the *MONOCULUS*-Library, the rest are titles from the Wilson-Library at the Smithsonian Institution (Washington) and from other sources.
2. Until the end of 1988 the number of entries on Copepoda will have reached 20,000. About 8000 of these will by then have gone through a detailed keywording procedure, while for the rest keywording will as yet be less detailed. Accordingly, the taxonomic thesaurus will only be partially complete.
3. On-line searches in the copepod section of the Crustacea database will be possible through 'Deutsches Institut für Medizinische Dokumentation und Information (DIMDI)', Cologne, from the beginning of 1988.

4. Printed catalogues on particular topics are available from now on and can be ordered also under the provision of automatic continuous completion as the data-base grows. Catalogues can be provided in the form of either lists or index cards. Bibliographies (in the form of booklets) of all copepod families are planned for the future.
5. Prices are (on a US dollar basis) 5 cents per index card or per page in the case of lists. Prices for family bibliographies will be announced separately when available.

The printed services are at your disposal right now.  
Address your orders to:

Crustacea Database  
c/o Dr. J. Sieg  
Fachbereich 13  
Universität Osnabrück  
Abt. Vechta  
Postfach 1349  
D-2848 Vechta  
W. Germany

or

MONOCULUS Bibliography  
c/o Dr. H.K. Schminke  
Fachbereich 7 (Biologie)  
Universität Oldenburg  
Postfach 2503  
D-2900 Oldenburg  
W. Germany

(A report on the other evening discussion on 'What makes a good taxonomic description?' will be given in the next issue of the newsletter.)

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B I R T H D A Y S

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Otohiko Tanaka

Otohiko Tanaka

The name of Dr. Otohiko Tanaka brings to mind an outstanding taxonomist of marine Copepoda and a connoisseur of conversation and drink. Dr. Tanaka loves Scotch whisky and shochu (Japanese spirits) as much as copepods. It is always a pleasure to talk and drink with him. Although he has never travelled to foreign countries, except for his military



service in China and New Guinea, during these friendly conversations his speech turns from Japanese to English, then to German, and finally to French. We would like to show him different countries and seas where the copepods live. Especially this year, when many copepodologists will celebrate Dr. Tanaka's 85th birthday.

Dr. Tanaka was born in Tokyo on March 21, 1902. He graduated from the Department of Fisheries, Faculty of Agriculture, Tokyo Imperial University in 1929. He looks back upon the day when he saw a swarm of Euchaeta marina for the first time. This happened when he was senior student and led him to the world of copepods. After graduation, he was given a position at the Kobe Marine Meteorological Observatory, but because of military service he soon had to resign from there. He returned to the University after his service and, as a research assistant, began his life work on the "taxonomy of marine copepods of the Izu Region". In 1934, he became a scientist of the Mitsui Marine Laboratory, a private research institute sponsored by the Baron T. Mitsui at Suzaki near Shimoda.

The Mitsui Laboratory was situated at an isolated place, but was ideal for sampling copepods from both Sagami Bay and Suruga Bay. Dr. Tanaka enjoyed the life and his energetic study continued until 1939 when he was called to the Imperial Army troops in Manchuria, the northeastern part of China. He had to stop his studies during the war, and, as an officer in an engineer battalion, he moved to various places, including central and northern China, New Britain Island, and New Guinea. In 1944, his ship was sunk in the Bashi Channel by a U.S. submarine, but he was rescued after floating in the sea for many hours.

Dr. Tanaka married Yasuko in 1932, and had one daughter and one son. The family stayed in China when the war was over. To our great regret, his only son Ryo was killed early in his boyhood on the way to Japan. In 1956, Dr. Tanaka described the new genus Ryocalanus in memory of his only son.

After the war, Dr. Tanaka resumed the academic life at Kyushu University (1947), where he joined the Department of Fisheries, Faculty of Agriculture, and remained until his retirement in 1965. He received the degree of Dr. Agr. in 1949 with a thesis on the pelagic copepods of the Izu Region. The world-renowned paper "The pelagic copepods of

