
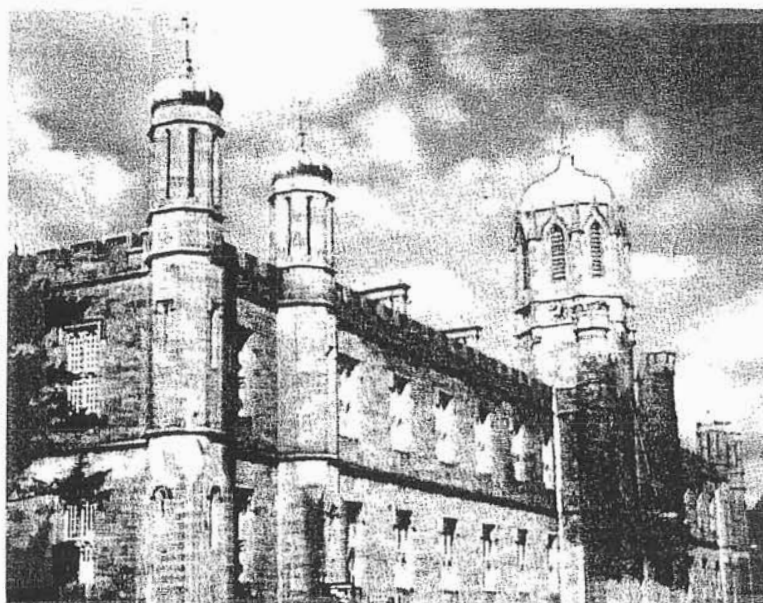


DEEP-SEA NEWSLETTER



No. 30, February 2001



NINTH DEEP-SEA BIOLOGY SYMPOSIUM GALWAY 2000

At last the deep-sea biologists got to Galway! As a venue for our triennial meetings Galway had been a favoured venue for a number of years. Research programme and ship-time commitments had prevented an earlier visit to Galway, but the wait has been worthwhile. 161 participants from 20 countries attended this symposium.

In typically English fashion I will comment on the weather first. If John Patching has a direct line to the Almighty, I hope he will share it. Each coffee break and lunch was taken in the glorious sunshine on the terraces and I am sure that in years ahead people will say that was where discussions led to their next research programme or their latest collaboration. The warm evenings were a delight in having a stroll into central Galway for dinner followed by a drink outside one of the local pubs or down by the river outside the staff bar.

As would be expected in Ireland, the welcome for all participants was warm and friendly. The first social was on Sunday evening when we met in the bar with plenty of time to renew old acquaintances and start formulating new ones. It may be real, or a function of my own increasing age, but the average age of the participants seemed lower than usual. Some of the established faces were missing and it was good to see them replaced by enthusiastic graduate students. The social round continued with the poster session, but more of that later.

A glimpse of the Irish countryside

Wednesday afternoon was for relaxing and chatting. The group was divided into two, as there were two parts to the trip. Our group drove by coach to the western end of Lough Corrib through the glorious scenery of the eastern Connemara Mountains. I am not sure the ice-cream stop was greatly appreciated by the tour guide but the ice

creams were great! At the top end of Lough Corrib we boarded the pleasure boats and steamed down Lough Corrib to Galway having a cream tea on the way (or in many cases a cream tea or an Irish coffee with Guinness). The last of our social events was the conference dinner held outside Galway culminating in Torben's Maori haka.

Highlights of the scientific programme

By popular consent I believe the standard of science, as well as the presentations, were excellent. There appears to be a direct negative correlation between age and maximizing the use of PowerPoint, but overall the standard was high. I was pleased to see that the organisers had resisted the temptation to compartmentalise different themes within the deep sea and each day we had a mix from sediments to vents and physiology to evolution. The committee had also resisted having parallel sessions and in this aspect also they are to be applauded.

In a meeting of high quality it is invidious to pick out individual papers, but some certainly set the tone. Ben Wigham got the scientific sessions off to a great start describing the 'Amperima event', suggesting that climate change can have an affect on the abyssal plain. The first of the jaw-snapping papers was Rich Lutz's high definition TV images of tubeworm pillar at 9°N on the EPR. The video quality was amazing, which, with the ability to frame grab stills, will bring our visual observation of the deep sea into a new class.

After Jim Barry's presentation in Monterey when everything fell over, the second slide of his presentation in Galway was greeted with stunned silence as the programme flashed up 'reboot'. Only Jim could insert such a slide and have us all believe he had blown it again! Later that day Torben took us back in time with an extended paper about the Galathea Expedition exactly 50 years ago. The paper gave an insight into the pursuance of marine science before the bureaucracy of safety committees and the tidal waves of paperwork.

Wednesday was a half-day brought to a close by Amy Baco describing the faunal succession on whale bones. For a topic that started as a serendipitous observation some years ago, the colonisation and succession on whale bones has become a decadal-length study.

I was also pleased to see cold seeps coming into their own. I have felt for a long time they are the Cinderellas to hydrothermal vents, but their study is giving us some excellent insights to what is becoming a common environment within the deep sea.

Other topics that came into their own at this meeting were midwater organisms and the increasing use of molecular techniques in the analysis of biological questions in deep-sea biology. Two other aspects were also apparent. Technology is having a major impact on how we study the deep sea. There were excellent papers on science that had used the rapidly developing lander technology, as well as Alvin and Johnson Sealink submersibles and the increasing deployment of ROVs for experimental deep-sea biology. Lastly, as a European, it is more obvious that big programmes funded by the EU are starting to have an impact.

The scientific meeting concluded at lunch on Friday and many of us took the opportunity to tour the area round Galway. I had a delightful trip to western Connemara with the Smiths, Barrys and Craig Young and found the only rain we had in the entire week!

More attention to poster session

With all the personal enjoyment of the meeting, and the efforts put in by the organising committee, it seems parsimonious to raise the subject of dedicated poster sessions. The organising committee had provided an excellent area for the posters but no formal poster session *per se*. With the effort put in by many participants, as well as the posters being an opportunity for graduate students to meet established scientists informally, I hope that in future meetings the profile of the poster session is raised by time dedicated to the posters. This was arranged by our hosts and proved a great success. My own graduate students came away from the sessions very fired up.

Thanks to the organisers

The organising committee led by John Patching should be sincerely thanked for their organisation and hospitality. With the exception of comments about the poster session, I heard nothing but praise for the whole meeting. This was the second symposium John had organised this summer. Talk about glutton for punishment!

See you all in 2003!

Our next meeting will be in 2003, hosted by Craig Young at the Harbor Branch Oceanographic Institution in Florida. The exact time of year has yet to be decided, but information will be brought in the *Deep-Sea Newsletter*. Harbor Branch is an excellent venue with brilliant facilities as well as the Florida sunshine. Hope to see y'all there!

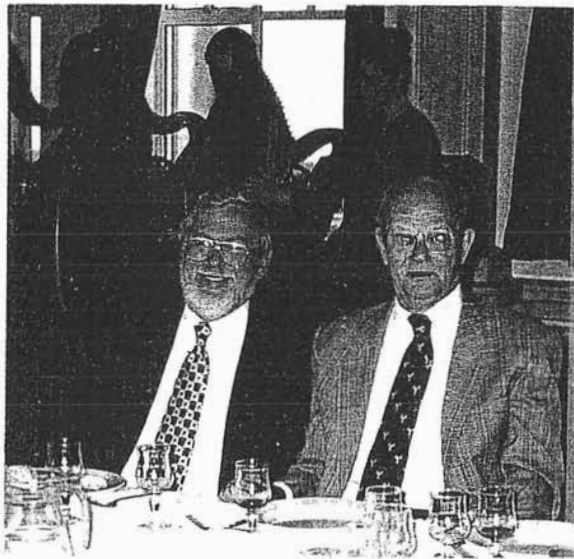
Paul Tyler
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PHOTOS FROM GALWAY

Only Robert Y. George kindly followed the Editors' request to send photos from the event.



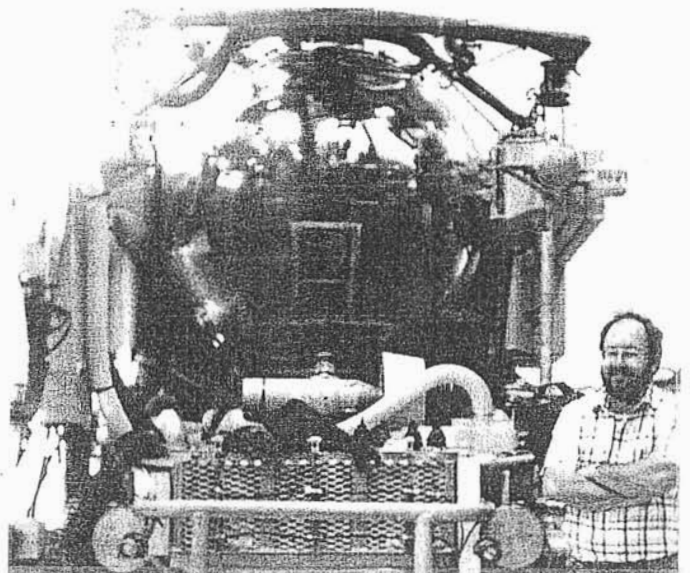
Right: Myriam Sibuet momentarily turning her back on Bob George and John Gage, who do not mind.



Bob George and Peter Herring en route. John Patching and Torben Wolff presiding at the Grand Farewell Dinner. Beautiful Irish girls playing harps in the background.



Amelia and Rudolf Scheltema – an active couple.



Craig Young, our next host at his lab's "Sea-Link".

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9th DEEP SEA BIOLOGY SYMPOSIUM

Galway, Ireland
June 26-31, 2000

"The Deep Ocean Biosphere – Change and Sustainability"

ORAL PRESENTATIONS

Monday, 25 June 2000

Frank Fahy, TD Minister for the Marine & Natural Resources – Welcome and introduction

Wigham, B.D.*, D.S.M. Billett, P.A. Tyler, B.J. Bett & G.A. Wolff – The 'Amperima Event': evidence for long-term change in abyssal ecosystems

Bett, B.J., D.S.M. Billett*, J. Galeron, A.J. Gooday, K. Iken, R.S. Lampitt, M.G. Malzone, A.L. Rice, M. Sibuet, M.H. Thurston, A. Vanreusel, B.D. Wigham, R. Witbaard & G.A. Wolff – The consequences of the long-term change in megafauna for benthic community dynamics and sediment geochemistry at the Porcupine Abyssal Plain

Galéron, J.*, A. Vangriesheim, M. Sibuet, A. Vanreusel, K.L. Mackenzie, A.J. Gooday & G.A. Wolff – Responses of the main components of the sediment community to trophic changes at the Porcupine abyssal plain

Bagley, P.M., I.G. Priede, M.A. Collins, C. Mullen, J.C. Partridge, J. Watson, M.A. Player, G. Gust & J.-F. Rolin – Future Lander technology for deep-sea research

Lutz, R.A., W. Lange & S. Low – Imaging the deep sea: Recent technological advances using DSV Alvin

Borowski, C.*, O. Giere, R. Amann & N. Dubilier. – Animal-bacteria symbioses in hydrothermal vent communities of the North Fiji back arc basin: Phylogenetic relationships of the endosymbionts and aspects of energy source utilization

Arndt, C. & H. Felbeck* – The role of oxygen in the physiology of animals with bacterial symbionts

Allen, C.E.*, D.W. Pond, P.A. Tyler & C.L. Van Dover – Lipid profiles of the hydrothermal vent tubeworm *Ridgeia piscesae* – are vestimentiferans entirely reliant on a chemoautotrophic source of organic matter?

Goffredi, S.K.*, J.P. Barry & R.E. Kochevar – Energy George, R. Y. – Origin and evolution of families and genera of deep-sea asellote isopod Crustacea acquisition and allocation in vesicomyid symbioses

Santini, F. – Evolution in the deep-sea: origin of the modern deep-sea acanthopterygian fish fauna, with an analysis of the patterns of speciation in the family Triacanthodidae (Tetraodontiformes, Teleostei)

Robinson, B.H. – Pelagic-benthic niche evolution in the Galapagos Islands

Creasey, S.S. – Population genetics of deep-sea organisms

Zardus, J.D.*, M.R. Chase, R.J. Etter & M.A. Rex – Genetic variation among ocean basins in *Deminucula atacellana*, a Pan-Atlantic protobranch bivalve

Hottenrott, S.I. – A phylogenetic analysis of the Ophiopodidae (Echinodermata: Ophiuroidea) with an evaluation of the origin of its deep-sea members

Radziejewska, T.*, V.V. Galtsova, I. Drzycimski, L. Kulangieva & V. Stoyanova – Genus-level biodiversity of deep-sea meiobenthic nematodes and harpacticoid copepods: a Clarion-Clipperton Fracture Zone (NE Pacific) example

Vanreusel, A.*, A. Muthumbi, S. Vanhove & M. Vincx – How similar are nematode communities from diverse bathyal sites?

Tuesday, 27 June 2000

Eardly, D.F.*, M.W. Carton, J.M. Gallagher & J.W. Patching – Microbial diversity in the deep-sea environment; the impact of molecular biological techniques

El-saied*, H. & Takeshi Naganuma – Phylogenetic diversity of autotrophic communities based on cloning and partial sequence for large subunit of RuBisCO gene forms from microbial mats at different deep-sea habitats

Boetius, A.*, K. Ravensschlag, C. Schubert, U. Witte, D. Rickert & K. Lochte – Microbial activity and diversity in gas hydrate bearing sediments (Cascadia Subduction Zone, NE-Pacific)

Wirsen, C.O.* & C.D. Taylor – Production of filamentous sulfur by hydrogen sulfide oxidizing chemoautotrophic microbes at deep sea hydrothermal vents

Marteinson, V.T., G. Erais, J.L. Birrien, K. Alain & D. Prieur* – Responses of deep-sea thermophilic prokaryotes to hydrostatic pressure

Barry, J.P., J.M. Grebmeier, R.B. Dunbar, J. Smith & K. Osborn – Bathymetric versus oceanographic control of benthic community patterns and processes in the SW Ross Sea

Buck, K.R. – Monterey Bay meiofauna: Quantitative estimates along a depth gradient

Etter, R.J.*, M.A. Rex, M.R. Chase, J.M. Quattro & J.D. Zardus – Population differentiation decreases with depth in deep-sea protobranch bivalves

- Hughes, J.A.* , A.J. Gooday & J.W. Murray – Trends in the taxonomic composition of deep-sea benthic foraminifera with increasing bathymetric depth
- Klitgaard-Kristensen, D. & L. Buhl-Mortensen* – Benthic foraminifera along an offshore-fjord gradient: A comparison with amphipods and molluscs
- Hughes, D.J.* , J.D. Gage & P.A. Lamont – Density, biomass and taxonomic composition of the benthic metazoan fauna at three contrasting NE Atlantic sites
- Christiansen, S.* & Sarah Jones – Marine protected areas in the deep sea – What is it good for?
- Connolly, P.L.* , M.W. Clarke & C.J. Kelly – Slope and shelf ecosystems: Two contrasting fisheries in the Rockall trough area
- Tamburri, M.N.* , J.P. Barry & P.G. Brewer – Determining the effects of CO₂ ocean disposal on deep-sea organisms
- Brewin, P.E. – The deep basins of Doubtful Sound, Fiordland, New Zealand – a comparison of benthic community structure
- Soltwedel, T.* , M. Klages & K. Vopel – First deployment of the French ROV "VICTOR 6000" from German research icebreaker RV "POLARSTERN"
- Vopel, K.* & T. Soltwedel – Sessile suspension feeders as a source of habitat heterogeneity – a hint from the Arctic deep-sea meiofauna
- Schewe, I.* & T. Soltwedel – Smallest benthic biota under the perennially ice coverage of the central Arctic Ocean
- Wolff, T.* – The Galathea Deep-Sea Expedition 1950-52: Purpose and accomplishments

Wednesday, 28 June 2000

- Smith, C.R.* , D.J. DeMaster, W.L. Fornes & A.W. Jones – Particle selectivity and ingestion rates of megafaunal deposit feeders on the continental slope: Are they keystone resource modifiers?
- Jones, A.W.* , C. Smith, D. DeMaster & W. Fornes – Evaluation of excess ²³⁴Th activity in deep-sea sediments as an indicator of food quality for deposit feeders
- Johnson*, M., Peter Shelton, E. Gaten & P. Herring – Mesopelagic eyeshine: trading off camouflage and visual sensitivity
- Priede, I.G., P.M. Bagley, S. Way, P.J. Herring & J.C. Partridge – Why do abyssal fish have eyes? Bioluminescence in the deep sea benthic boundary layer
- Van Dover, C.L. – Light at hydrothermal vents and the search for deep-sea phototrophs
- Desbruyères, D.M.* , T. Comtet, A. Khripounoff, N. Le Bris, P.-M. Sarradin & M. Segonzac – Distribution of hydrothermal vent communities along the Northern Mid-Atlantic Ridge
- Colaço, A.* , F. Dehairs, D. Desbruyères, J. Guezennec, N. Le Bris & P.-M. Sarradin – Nutritional relations of deep-sea hydrothermal fields at the Mid-Atlantic Ridge
- Herring, P.J. & H.J. Dutton – Midwater populations over hydrothermal vents
- Shillito, B.* , P.-M. Sarradin, F. Zal, D. Jollivet & F. Gaill – Investigations on temperature tolerance of hydrothermal vent organisms, using a video-equipped pressurized incubator
- Baco, A.R.* & C. Smith – Structure and succession of whale-bone epifaunal communities in the deep sea

Thursday, 29 June 2000

- France, S.C. – Speciation at hydrothermal vents: Using genes to trace the origin and spread of Eastern Pacific vent-endemic amphipods
- Young, C.M.* , D.T. Manahan, L.M. Mullineaux, A.G. Marsh & S. Brooke – Development rate and dispersal potential of the giant tube worm, *Riftia pachyptila*, on the East Pacific Rise
- Sibuet, M. & K. Olu-Leroy – Ecology of deep-sea cold-seep communities: Major characteristics and recent discovery of cold seep communities on Mediterranean mud volcanoes
- Gebruk, A.V.* , A.Y. Lein & E.M. Krylova – Methane seep community of the Haakon Mosby mud volcano
- Levin, L.* David James, Chris Martin, Bob Michener, Leslie Harris & Guillermo Mendoza – Macroinfauna of North Pacific methane seeps: Are they highly adapted or typical margin assemblages?
- Wishner, K.F.* , M.M. Gowing & C. Gelfman. – Pelagic ecology of the lower interface of the oxygen minimum zone
- Cook, A. A.* , P.J.D. Lambshead, L.E. Hawkins & N. Mitchell – Nematode community structure at the Arabian Sea Oxygen Minimum Zone
- McClain, C.R.* & M.A. Rex – The relationship between dissolved oxygen concentration and maximum body size in deep-sea turrid gastropods: an application of quantile regression
- Bühning, S.I.* & B. Christiansen – Lipids in selected abyssal benthopelagic animals: links to the epipelagic?
- Wolff, G.A.* , M. Ginger, D.S.M. Billett, K. Kiriakoulakis & K.M. Mackenzie – Organic matter assimilation by holothurians in the deep sea - where have all the sterols gone?
- Duplessis, M.R.* , O. Gross & H. Felbeck – D-alanine: An unusual amino acid in lucinid clams
- Bett, B.J. – UK Atlantic Margin Environmental Survey: Comparative benthic ecology of the Faeroe-Shetland Channel and Rockall Trough

- Axelsson, M.B. – The seabed environment west of the Shetland Islands: Joint analysis of sidescan sonar images and photograph surveys
- Tselepidis, A., N. Lampadariou, T. Polychronaki & E. Hatzilyanni – The TransMediterranean Cruise (June 1999) of the MTP II project MATER. Major objectives and preliminary results from the deep benthic environment of the Mediterranean Sea
- Haddock, S.H.D. – The diversity of feeding mechanisms in deep-sea ctenophores
- Osborn, K.J. – Behavior, feeding, and spatial distribution of a new pelagic isopod (Munnopsidae, *Acanthamunnopsis*) in Monterey Bay, California, USA
- Vecchione, M.*, C.F.E. Roper, E.A. Widder & T.M. Frank – In-situ observations on three species of large-finned deep-sea squids
- Voight, J.R. – Predation by deep-sea octopuses
- Wagner, H.-J. – Comparative brain anatomy yields clues on sensory ecology of deep-sea fishes

Friday, 30 June 2000

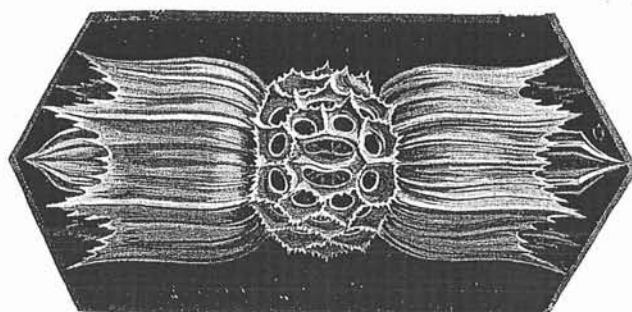
- Scheltens, R.S. – Fecundity in sublittoral and deep-sea protobranch bivalves
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- Gage, J.D.* & D.J. Hughes – Size matters: 2. Influence of sieve size for washing samples in measurement of deep-sea macrobenthic community structure
- Gallagher, J., M.W. Carton, D. Eardly, R. Haanstra, M.J.E.C. Van der Maarel & J.W. Patching – A spatial and temporal comparison of marine planktonic microbial populations from a North Eastern Atlantic site
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- Perovich, G.*, C. Epifanio, A. Dittel, P. Tyler & S. Cary – Observations on the reproductive biology of the hydrothermal vent crab, *Bythograea thermydron*

- Porteiro, F.M.* , R.S. Santos & R.D.M. Nash – The North Atlantic stomiids fishes (Actinopterygii: Stomiidae): Systematic and biogeography
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- Pusch, C.* , K.-H. Kock & P.A. Hulley – Resource partitioning of four lanternfishes (Myctophidae) inhabiting the mesopelagic zone of the Southern Ocean
- Ramirez Llodra, E.* & Paul A. Tyler – Reproductive biology of three caridean shrimp, *Rimicaris exoculata*, *Chorocaris chacei* and *Mirocaris fortunata* (Caridea: Decapoda), from hydrothermal vents along the Mid-Atlantic Ridge
- Raskoff, K.A. & R.E. Sherlock* – Predation by stealth: Predator-prey interactions of mesopelagic Narcomedusae
- Rex, M.A.* , J.M. Quattro, M.R. Chase & R.J. Etter – Pronounced population genetic structure in an upper bathyal gastropod
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- Roberts, J.M.* , A. Cunningham & J.D. Gage – Environmental monitoring – past studies and future approaches to understanding deep-water coral occurrence
- Sahling, H.* , D. Rickert, E. Suess, A. Boetius, U. Witte, O. Pfannkuche & P. Linke – Community structure and biogeochemical interactions associated with gas hydrates, Cascadia Subduction Zone, NE-Pacific
- Schander, C.* & Kenneth M. Halanych – A method for obtaining DNA from small amounts of formalin-fixed tissue
- Scheltema, A.H. – Is Aplacophora really such an uncommon taxon?
- Schlining, K.L.* , N.J. Stout & K.R. Walz – A unique video annotation database for studying the diversity of deep-sea organisms in Monterey Bay, California, USA
- Schwarzpaul, K.* , K. Sobjinski & L.A. Beck – Where do hot vent gastropods come from? – Considerations based on phylogenetics analysis of Neolepetopsidae (Patellogastropoda) and Shinkailepadinae (Rhipidoglossa)
- Shelton, P.M.J.* , E. Gaten, P.J. Herring & C.J. Chapman – Light induced eye damage in decapod crustaceans
- Sherlock, R.E.* , G.I. Matsumoto & K.R. Buck – Stomach contents of *Voragonema pedunculata* (Bigelow); the bottom line on the blue plate special
- Snelli, J.-A., T. Brattegard & O.S. Tendal – The Norwegian North-Atlantic Expedition 1876-1878: Historical account
- Solis-Marín, F.A., A.V. Gebruk, D.S.M. Billet, A. Rogers, P.A. Tyler & D.L. Pawson – The deep-sea holothurian *Mesothuria* in the North Atlantic Ocean
- Soltwedel, T. *, V. Mokievsky & I. Schewe – Indication in benthic activity and biomass for a lateral input of organic matter in peripheral regions of the permanently ice-covered Arctic Ocean
- Springer, B.M.* & R. Turnewitsch – Variability of particle characteristics of the abyssal near-bottom water column of the Arabian Sea and the North-East Atlantic
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- Tamburri, M.N. – In situ studies of chemically mediated feeding by deep-sea fishes and a midwater hydromedusa
- Thistle, D.* , James E. Eckman, W.C. Burnett, G.L.J. Patterson & P.J.D. Lambshead – Can cages be used as predator-exclusion devices in the deep sea?
- Tselepidis A., T. Polychronaki & N. Lampadariou – Distribution of meiofauna and sedimentary organic matter in the deep Eastern Mediterranean Sea
- Vallet, C., Kazutaka Takahashi & T. Toda – Ecophysiology of new scavenging deep-sea amphipod, *Anonyx* n. sp. from Hokkaido, Japan
- Weikert, H., R. Koppelman* & S. Wiegatz – Strong variability in deep-sea zooplankton abundance – Evidence of episodic and long-term changes in the Levantine Sea (Eastern Mediterranean)
- Wigham, B.D.* , M.G. Malzone, & B.J. Bett – Temporal variability in the activity of abyssal megafauna
- Witte, U.* , A. Boetius, P. Linke, O. Pfannkuche, D. Rickert & H. Sahling – Sediment biogeochemistry and solute fluxes through the sediment-water interface of gas-hydrate bearing sediments at the Cascadia Subduction Zone
- Yau, C., M.A. Collins*, Inigo Everson & Monty Priede – Observations on the scavenging fauna of the South Georgia slope from baited video and time lapse photography
- Yeh, H.-M.* & S. Ohta – Bathymetrical zonation and biogeography of deep-sea demersal fish around Japan

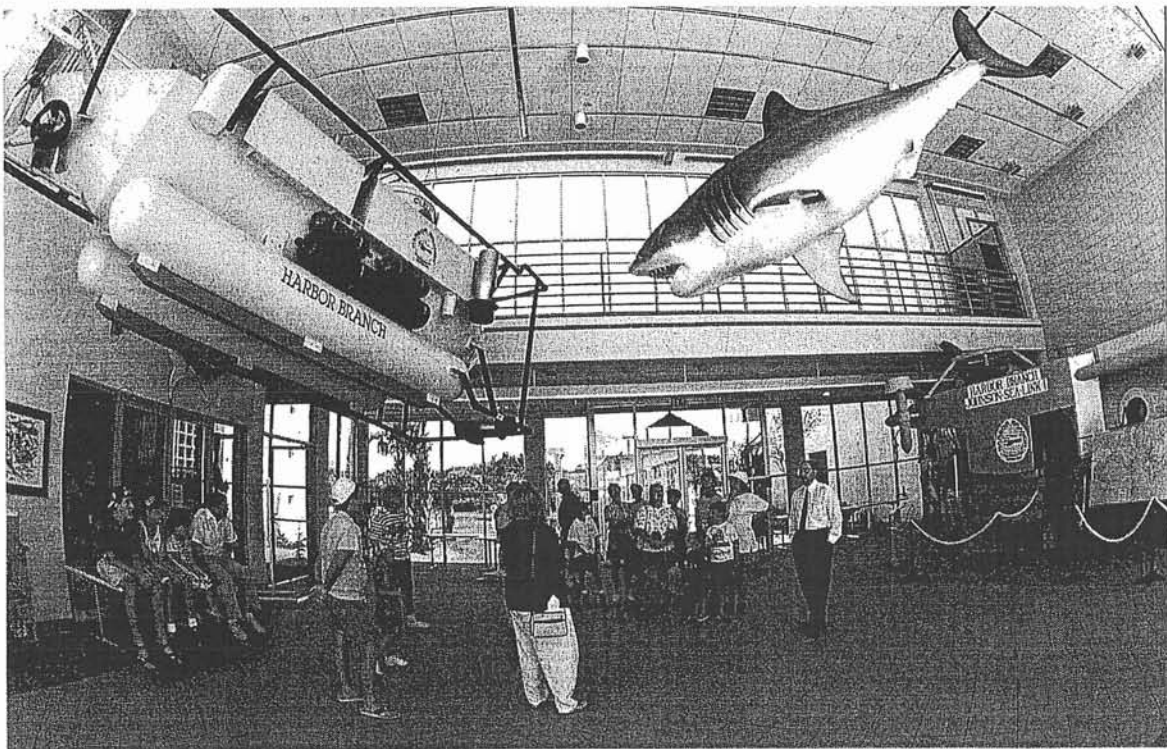


FIRST ANNOUNCEMENT: 10TH DEEP-SEA BIOLOGY SYMPOSIUM

Harbor Branch Oceanographic Institution, Fort Pierce, Florida

On behalf of Harbor Branch Oceanographic Institution, it is my pleasure to invite you to the next Deep-Sea Biology Symposium, which will be held in 2003 in Ft. Pierce, Florida. The scientific sessions will take place in the 350-seat auditorium of the J. Seward Johnson Marine Education and Conference Center, where participants will enjoy soft seats, air conditioning, and state-of-the-art projection facilities. The conference center, which overlooks the mooring sites of our oceanographic vessels and the Johnson-Sea-Link submersibles, lies in the center of a beautifully landscaped campus on the shores of the Indian River Lagoon. We expect that most participants will stay in beach-front hotels in Vero Beach, just a few miles north of campus, though there will also be some inexpensive on-campus dormitory rooms for students. One of the most beautiful towns on Florida's east coast, Vero Beach is the winter home of the Los Angeles Dodgers baseball team and the Walt Disney Vero Beach Resort. Perhaps more importantly for us, it has plenty of establishments for eating and drinking, including a vast assortment of excellent restaurants in all price ranges. The city of Ft. Pierce, which lies just south of HBOI, is the location of the newly dedicated Smithsonian Marine Laboratory and has a recently renovated harbor area with a number of fine restaurants and pubs. As one of the most popular tourist destinations in the world, the central Florida area is well organized for receiving visitors. There are direct and often inexpensive flights from most major European and North American cities, and rental cars are abundant and affordable. Post-meeting recreational possibilities include not only the theme parks of Orlando (about 2 hours away), but also great activities for naturalists, including snorkeling and scuba diving, canoe trips through lush subtropical jungle, and opportunities to view manatees, dolphins, nesting or hatching sea turtles, and a very rich bird fauna. In addition to myself, the organizing committee will include Dave Thistle of Florida State University and Edie Widder, Tammy Frank and Marsh Youngbluth from HBOI. We all look forward to welcoming you here in two years time. Stay tuned for more details!

Craig Young
Harbor Branch Oceanographic Institution
youngc@hboi.edu



Inside the J. Seward Johnson Marine Education and Conference Center, where the meeting will be held.

SECOND INTERNATIONAL SYMPOSIUM ON DEEP-SEA HYDROTHERMAL VENT BIOLOGY

8-12 October 2001, Brest, France

Major topics

Ecology, microdistribution, temporal evolution, interactions of organisms and habitat,

Physiology – Adaptation,

Microbiology of symbioses and free-living bacteria,

Biogeography, evolution, genetics and taxonomy,

Cold seeps communities,

Shallow water hydrothermal vent.



Organizers: DORSALES and InterRidge

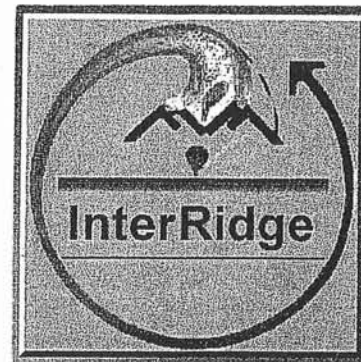
Scientific committee chaired by Prof. Verena Tunnicliffe

Organizing committee chaired by Dr. Daniel Desbruyères, Centre de Brest de l'IFREMER, BP 70, 29270, Plouzané, France

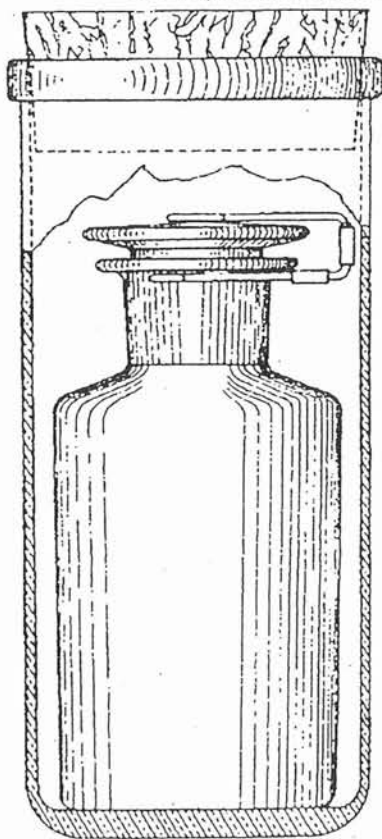
30 April 2001: Deadline for abstract submission and booking for hotels and excursions. The conference will be held at "Le Quartz".

Web site: "<http://triton.ori.u-tokyo.ac.jp/~intridge/brestvent.html>"

An online pre-registration form is available at the above web site.



MORE ABOUT THE MONACO APPARATUS CATALOGUE



Flask for samples of water to be used for determination of dissolved oxygen. (From "Preisliste 1914" from the Copenhagen Laboratoire hydrographique.)

A few days after having mailed *Deep-Sea Newsletter* No. 29 to the correspondents, I discovered, much to my annoyance, that the eighth and final volume of the *Catalogue des appareils d'océanographie en collection au Musée océanographique de Monaco* had been left out in my review of the Catalogue. The book had accidentally been pushed behind the other *Catalogue* volumes on the rather deep shelves of my bookcase. Soon after, the Editor, C. Carpine, sent me a note about the missing volume.

Well, here are the additional details (number of apparatus in parentheses): Vol. 76 (No. 1444), 1999: 8. Additions et index cumulatifs. Photometers (8); current meters (3); biological collecting (2); water samplers (6); sediment sampler (1); objects for demonstration or exhibition (11); meteorological instruments (13); non-oceanographic and navigational instruments (16).

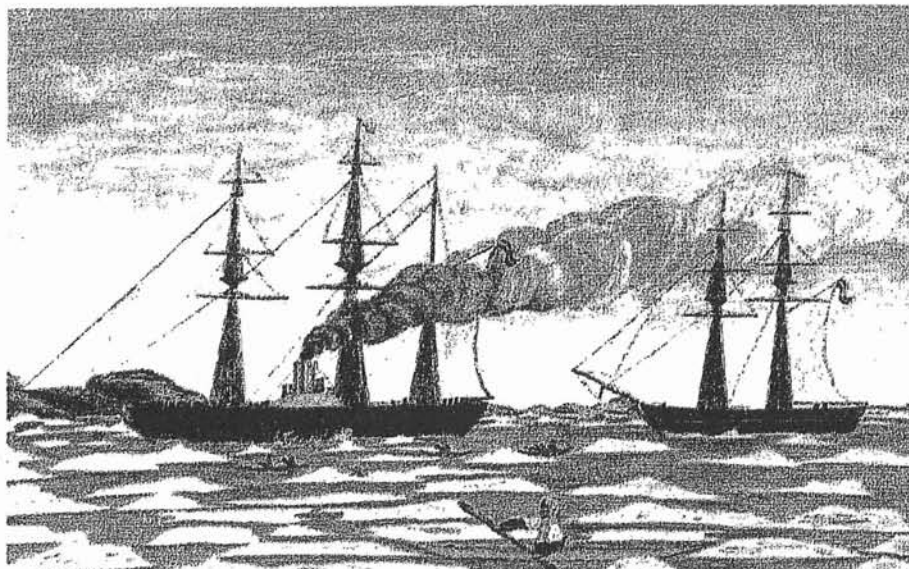
This volume's very useful indices for vols. 1-8 comprise the following: Cited names; inventors and constructors (the most numerous references concern Albert I^{er}, Martin Knudsen, Max Marx, Fridtjof Nansen, Negretti & Zambra, S. O. Petterson, Jules Richard, and Julien Thoulet); research vessels; described apparatus; and additions and corrections.

The Monaco Catalogue, covering 1287 pages with 440 items of apparatus and equipment, represents indeed a remarkable effort by its editor, Christian Carpine.

Torben Wolff

Zoological Museum, University of Copenhagen

THE "BULLDOG" ONCE AGAIN ...



In the last issue of our Newsletter I called attention to the native Greenlander Aron of Kangeq's drawing of the British paddle sloop "Bulldog" anchored in the harbour of Nuuk (at that time Godthaab) during an expedition in 1860.

Meanwhile, through the generosity of a very dear friend, I have come in possession of a recently published, large two-volume book covering all the known woodcuts, paintings and drawings by Aron of Kangeq. They number nearly 400, many of them known to only a few people because they have been stored away in archives.

One of the less known woodcuts shows the HMS "Bulldog" together with its coal-supply ship, the brig "Cicerone", approaching the coast in ice-filled waters, closely followed by Greenlanders in kayaks.

References

Tendal, O.S., 2000: A little known picture of HMS "Bulldog", full of historical atmosphere. – *Deep-Sea Newsletter* No. 29: 15–16.

Thisted, K. (ed.), 1999: "Således skriver jeg Aron". Samlede fortællinger og illustrationer af Aron fra Kangeq (1822–1869). ["Thus I write, Aron". Collected narratives and illustrations by Aron of Kangeq 1829–1869]. – Vols. I & II. Attuakkiorfik. 539 pp.

Ole Tendal

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LOWERING OF ALCOHOLIC DRINKS

Dear Ole and Torben,

It was a delight to see your bits in the latest *Deep-Sea Newsletter*. I was particularly taken by the Eskimo picture of the dear old *Bulldog* which, as you know, is quite close to my heart.

But your pieces about lowering alcoholic drinks into the ocean really got me going. I can't believe that Alcock was the first to do it. I had a distinct recollection that they did it from *Challenger* (though with wine (perhaps even Madeira) rather than beer) – our early oceanographers were of a rather superior social class, of course. But try as I might I can't find any reference to it so I have come to the conclusion, at least for the time being, that you are correct. If you hear anything to the contrary from any other correspondent I would be delighted to learn about it.

Keep up the slightly offbeat contributions to DSN. I always look forward to them.

Best wishes to you both, Yours,

Tony Rice

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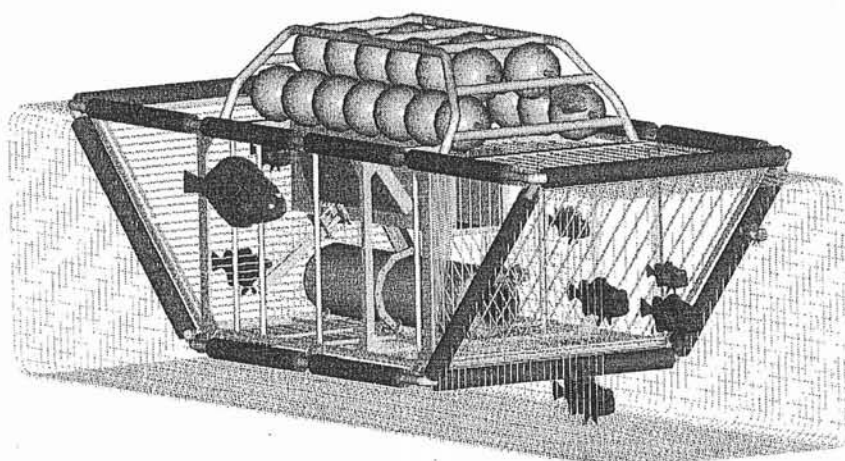
UNDERWATER TAGGING EQUIPMENT – UTE

The engineering company Star-Oddi (Iceland) has developed Underwater Tagging Equipment (UTE) for tagging fish. Being the first company to offer equipment for this purpose makes Star-Oddi a pioneer in the technology of tagging fish underwater. This newly developed equipment is expected to revolutionize methods for fish tagging and fisheries research. The equipment can be inserted in a ship's trawlnet to perform the operation underwater.

The main advantages of the UTE are:

- It prevents the need for hauling the fish to the surface for tagging and release.
- It makes it possible to tag deep-water species, which do not survive being brought to the surface.
- Less time is spent in handling the fish, which leads to increasing tagging efficiency.
- The fish is tagged in its natural environment, avoiding stress factors as pressure and temperature changes and therefore decreasing tagging mortality.

As a fish is inside the trawl and approaches the equipment at the cod-end of the trawl, it is enclosed by a grid which diverts the fish into the tagging place. The fish is viewed through the onboard video camera, and the tagging gun is moved into position.



A 3-D diagram of the Underwater Tagging Equipment.

A knife makes a small incision into the skin of the fish for the tag to be pressed into its body cavity. Although the tag is inside the fish, a small piece of tubing hangs outside to allow its identification. The tag includes electronics and can record parameters such as temperature and depth.

After tagging, the fish is released into open water through a channel in the device. Each fish can be tagged in tenths of a second, much quicker than with existing methods.

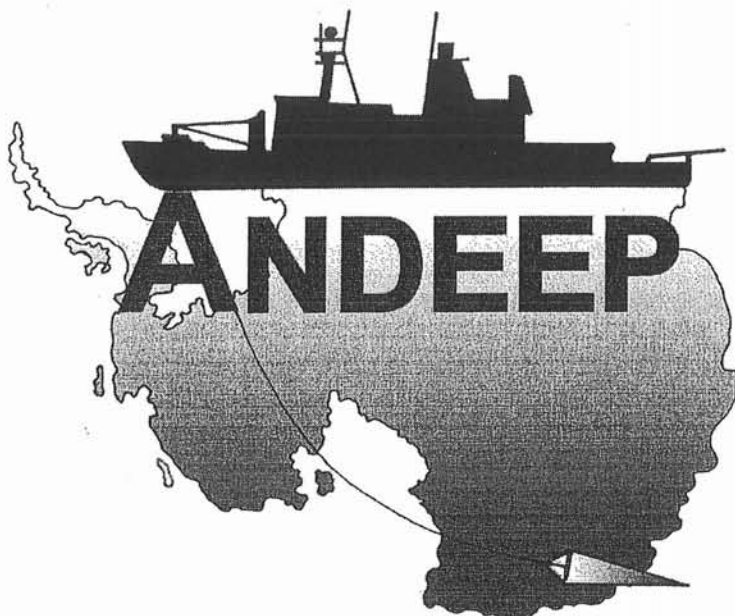
The operation is controlled by a marine biologist sitting at a computer onboard the vessel. He or she is able to see the fish online through the installed camera and operate the device via a cable wire. The only requirement for the vessel is that it is equipped with a standard trawl and a cable wire.

Successful tests have taken place in tagging redfish (deep ocean perch), a highly sensitive deep-water species which does not survive being hauled to the surface. The tagging was performed without damaging its health. This method will provide information on the behaviour of redfish, and other deep-water species can be tagged using this equipment.

The Underwater Tagging Equipment is specified to operate at depths down to 1000 m. Video clips of a fish being tagged underwater and from a tagging expedition are available upon request.

Further information can be found at <http://www.star-oddi.com> or contact star-oddi@star-oddi.com.

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Star-Oddi, Vatnagardar 14, 104 Reykjavik, Iceland
<http://www.star-oddi.com>



ANDEEP

ANtarctic benthic DEEP-sea biodiversity: colonization history and recent community patterns

An international project to investigate the deep-water biology of the Scotia and Weddell seas from F/S *Polarstern*

The deeper waters of the Scotia and Weddell seas are some of the least explored parts of the world's oceans and we know almost nothing about the bottom-dwelling (benthic) animals that inhabit them. By contrast, we know that the present-day benthic animals of the Antarctic continental shelf exhibit many striking and unusual features, including gigantism, longevity, an extraordinarily high degree of endemism, and absence of taxa which are abundant in similar environments elsewhere. Such attributes are believed to reflect the geographical and hydrographical isolation of the shelves and their special environmental characteristics, particularly the persistently cold climate combined with high and markedly seasonal primary production. Periodic extensions of the ice sheet may have enhanced speciation processes on the continental shelf - the Antarctic „diversity pump“

Waters deeper than 1000 m, however, have broad connections with the Pacific, South Atlantic and Indian oceans and might therefore be expected to be much less isolated. If so, might the faunas of the bathyal and abyssal areas around Antarctica be similar to those of comparable depths elsewhere?

It is possible that the deep bottom water production in the Weddell Sea acts as a distribution mechanism, driving Antarctic deep-water faunas northwards into the Atlantic Ocean over evolutionary time-scales. Thus the Weddell Sea may be an important source for taxa presently living in the Atlantic and other neighbouring parts of the deep oceans.

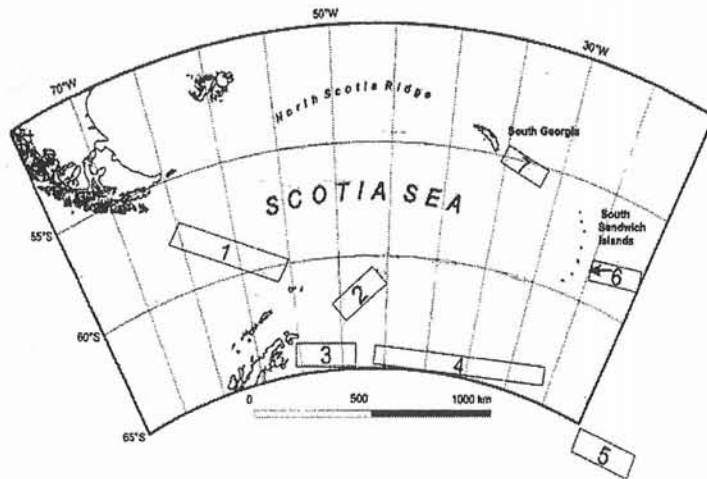
Furthermore, the more-or-less isothermal water column of the Weddell Sea and the surroundings of the Antarctic continent provides an obvious conduit for the migration of shallow-water species into the deeper waters.

The Scotia-Weddell sea region has a long and complicated plate tectonic history, which has provided a rich and changing variety of habitats and environmental conditions for marine life over geological time. Whereas the formation of the Weddell Sea began during Jurassic time (165 million years ago), a continental link between South America and Antarctica persisted until a little more than 20 million years ago. The disruption of this link and the dispersal of its continental fragments allowed the inception of the Circum-Polar Current and caused the geograph-

ical and climatic isolation of Antarctica. These geographical and climatic changes, including intermittent periods of global warming and global sea-level rise and fall, are likely to have influenced migration in and out of the Antarctic region.

The continental remnants of the old land link now form many of the islands within the Scotia arc, whereas others are submarine islands, 1000 m below sea level, and possible refuges for animals exiled from the Antarctic continental shelf by advancing ice sheets. A chain of volcanoes, the South Sandwich Islands, and their associated subduction trench (> 7000 m) to the west represent a highly active tectonic environment that contrasts with the weakly active trench off the South Shetland Islands.

To address these issues, seven areas of the deep sea, and of submerged continental blocks which might be faunal refuges, have been selected for investigation.



Two ANDEEP cruises are planned for 2001/02 with the possibility of a third in 2004. F/S *Polarstern* (Alfred-Wegener-Institut für Polar-und Meeresforschung, Bremerhaven) will be the science platform.

ANDEEP I - Target 1

ANDEEP II - Targets 6, 4, 3, 2, with 7 as an alternative to 6

ANDEEP III - Target 5

ANDEEP will contribute to other major initiatives on biodiversity research:

Diversitas
SCAR EASIZ
and SCAR EVOLANTAR.

ANDEEP Steering Committee (See "List of interested collaborators" for full addresses. D-SN eds.)

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Antarctic benthic deep-sea biodiversity (ANDEEP): colonization history and recent community patterns

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ANDEEP II: 23rd Feb. – 24th Mar. 2002 (Cape Town – Puerto Williams, ANT XIX-4)

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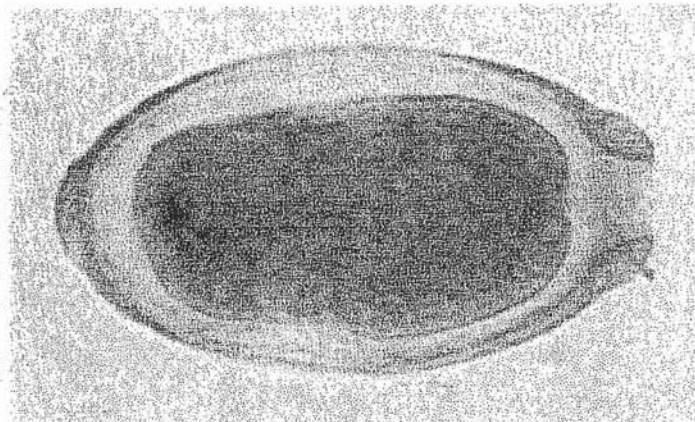
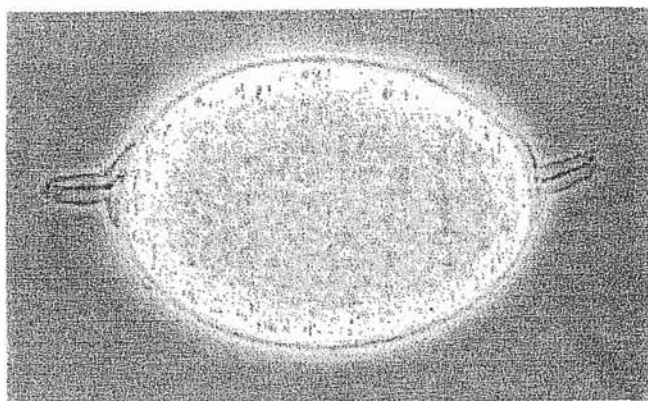
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	Pearse, John, Prof. Dr.	Joseph M. Long Marine Laboratory, Institute of Marine Sciences, University of California, Santa Cruz, 100 Shaffer Road, Santa Cruz, CA 95060, USA pearse@darwin.UCSC.EDU	phylogenetics of Antarctic ctenophores



A NEW LOOK AT ALLOGROMIID FORAMINIFERA

Deep-sea meiobenthic assemblages are often dominated by foraminifera, which include a wide variety of soft-shelled taxa. Among these are the allogromiids in which the test has an organic wall and is typically sack-like (Figs. 1 and 2). These forms often account for 10–20% of both 'live' (Rose Bengal stained) foraminiferal individuals and species in abyssal samples but are very poorly known taxonomically and frequently disregarded. Allogromiids are not only found on the deep ocean floor. They are reported from many other marine habitats, including intertidal, shelf and slope environments. Some common, easily-cultured species have played a major role in the development of ideas about the ultrastructure of protistan cells.



Figures 1 and 2. Examples of deep-sea allogromiids, probably undescribed.

These important, but poorly-known organisms (and, as it turned out, a wide variety of other foraminifera) were the subject of the First International Workshop on Allogromiid Foraminifera, which met in late August 2000 at the Tjärnö Marine Biological Laboratory of the University of Göteborg, on the west coast of Sweden. The workshop was organised by Tomas Cedhagen (University of Århus, Denmark) and brought together some 23 scientists who included biologically-inclined micropalaeontologists, biologists and protozoologists from 12 different countries. It consisted of a mixture of lectures, discussions, sampling and practical work for which the Tjärnö Laboratory provided an ideal and tranquil setting.

One central theme of the Workshop was the question: 'What are allogromiids?' Many of us left Tjärnö with a concept of the group that was radically different from the one we arrived with. Work on foraminiferal molecular genetics has shown that allogromiids do not form a coherent taxonomic group but are scattered amongst the 'simple' (single-chambered) agglutinated foraminifera (Jan Pawlowski and others, Geneva). The barriers between these higher taxa are therefore artificial, and the idea that the allogromiids comprise only organic-walled forms is no longer tenable. The group must be redefined to embrace many agglutinated taxa as well as a variety of testate and atestate forms with granuloreticulate pseudopodia living in marine, freshwater and terrestrial environments (Vassil Golemansky, Sofia; Maria Holzmann, Geneva; Norbert Hülsmann, Berlin; Tom Wilding, Oban). These include the large, freshwater naked 'amoeba' *Reticulomyxa* (Fig. 3) and its testate relative *Wobo*. It also appears from preliminary molecular work that the xenophyophores belong with the foraminifera rather than being a distinct group (Pawlowski). Perhaps these giant, deep-sea testate protozoans will eventually end up within an expanded concept of the allogromiids (Ole Tendal, Copenhagen). In a broader sense, it is clear from organisms such as *Reticulomyxa* that

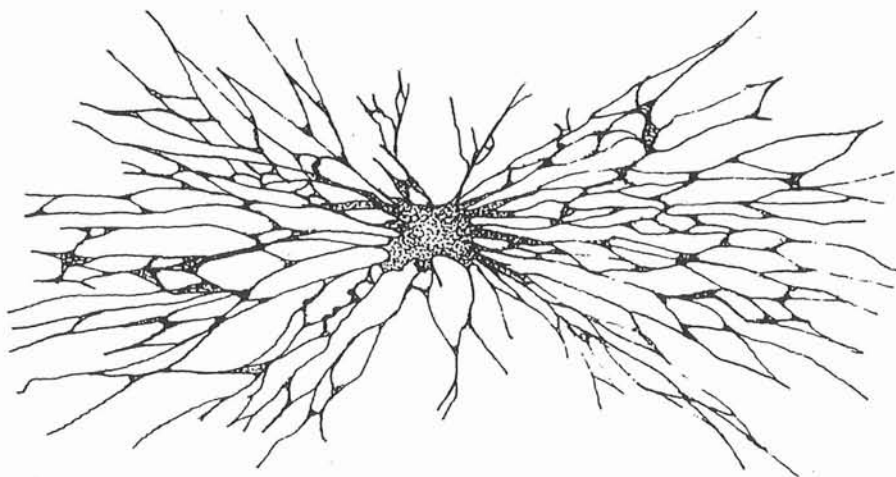


Figure 3. *Reticulomyxa filosa*. Active, reticulate (after Nauss).

the foraminifera as a whole can no longer be defined by the possession of a test. Features of their cellular ultrastructure, particularly the microtubular cytoskeleton, are the really fundamental characteristics (Sam Bowser, Albany). A rather alarming development is that our picture of foraminiferal phylogeny is coming more and more to resemble a brush in which no clear gaps can be discerned, rather than having a tree-like form (Pawlowski and others). This 'brush phenomenon' seems to result from convergences in groups where detailed analysis of characters is difficult or impossible.

The Workshop covered other important topics and highlighted a number of areas where our knowledge of allogromiids (in the broad sense) is sparse or lacking. In particular, we need to learn more about many aspects of their ecological role (Bengt Christiansen, Oslo; Onno Gross, Hamburg; Sergei Korsun, St. Petersburg). Allogromiids are a quantitatively important component of the fauna in many environments and feed at many different trophic levels (Andy Gooday, Southampton). What part do they play in carbon cycling and the structuring of benthic communities? There is still much to learn about many aspects of their life cycles (Sue Goldstein, Georgia). The allogromiids may be an ancient lineage with a long Precambrian history, although their geological record is obscure (Joan Bernhard, South Carolina). For ecologists, the most pressing problems arise from the sheer diversity of allogromiids, particularly when we include the agglutinated forms. The task of describing new species and creating higher taxa is most acute in the deep sea where the vast majority of species are undescribed. Workshop participants discussed plans for a morphotype-based key (Alexei Smirnov, St. Petersburg) and a field guide, which should at least make it easier for non-specialists to recognise members of this difficult group.

Whatever happens, our view of allogromiid foraminifera will never be the same.

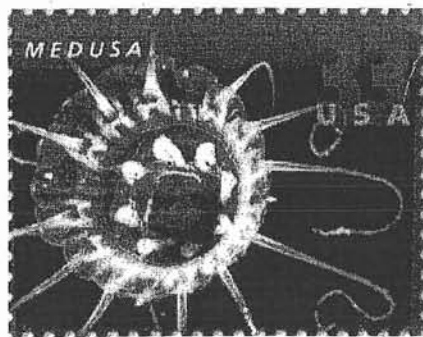
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CREATURES OF THE DEEP – US 33-CENT STAMPS

<http://new.usps.com/cgi-bin/uspstv/scripts/content.jsp?D=16470>

Susan Hottenrott (sih@gwu.edu) of George Washington University, Washington, D.C. drew our attention to a series of five 33-cent stamps issued by the US Post Office in early October 2000. They feature deep-sea vertebrates and invertebrates, three of which are shown here. The black and white reproductions unfortunately do not do the stamps justice, but as we went to press a preliminary version could be seen on the above url and the stamps could still be purchased for face value. Thanks to Susan for drawing our attention to these attractive stamps. Unfortunately, we were unable to find Latin names for the figured specimens.



From left to right are shown an amphipod, a medusa and a sea cucumber.

FROM ABALONE TO ZANZIBAR AND ZOOANTHELLAE: ENCYCLOPEDIA OF THE SEA

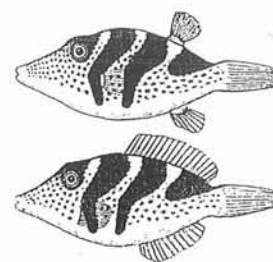
ENCYCLOPEDIA OF THE SEA

Richard Ellis. 2000.

Alfred A. Knopf, New York.

380 pp., hardbound, \$35.00.

ISBN 0-375-40374-4



MIMICRY: poisonous black-saddled puffer (*Canthigaster valentini*, top) and nonpoisonous mimic filefish (*Paraluteres proinurus*, bottom).

The marine author and illustrator Richard Ellis is fascinated by particularly the large creatures inhabiting the sea. He has published many articles and eight books on whales and dolphins, sharks, giant squids, the monsters of the sea, and recently a book on the oceanic life of the deep Atlantic and the history of its exploration (reviewed in D.-S. N. No. 25, 1996). Based on his intimate knowledge of many aspects of the oceans, he has now singlehandedly assembled a vast range of information for everybody interested in the sea.

This encyclopedia encompasses nearly 1900 alphabetical entries. The dominating topic is the animals: all marine mammals and reptiles, plenty of seabirds and common or odd fishes as well as all major groups of invertebrates plus the more spectacular species.

In addition to oceans and border seas, etc., also islands – from Greenland to Corregidor and Manhattan (!) – are included and make up the second most comprehensive subject. It may be a matter of argument whether or not islands should be dealt with in a book like this. Readers may find information about rather insignificant islands too detailed and irrelevant. It seems illogical that presence of a marine laboratory on any island remains unmentioned, even on the small islands like the Bahamas, Bermuda and Phuket.

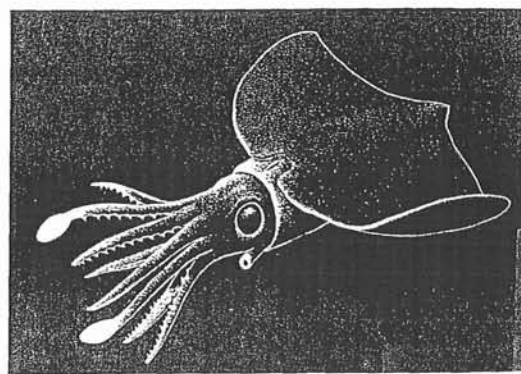
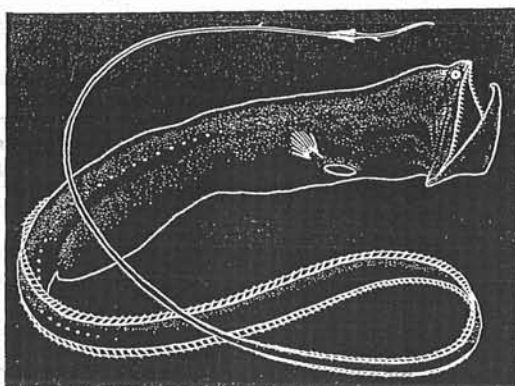
Since much emphasis has been laid on what may be termed good stories – e.g., the Pillars of Hercules, Perry's "opening" of Japan, man on the North Pole, etc. – there are entertaining biographies from Noah, Ptolemy and Eric the Red to Eugenie Clark and Robert Ballard. There is an abundance of navigators and buccaneers, but I find that there are too many naval officers and too few oceanographers, both biological and (geo)physical.

Many famous ships are included, but again there are, for the scientifically orientated user, strange omissions. Exploration expeditions mentioned as entries are only *Challenger*, *Discovery* and *Galathea*. More ship names are fortunately included in the text dealing with the following expedition leaders: James Ross and Franklin (*Erebus & Franklin*), Wyville Thomson (*Lightning & Porcupine*), Nansen (*Fram*), Nordenskjöld (*Antarctic*), Shackleton (*Nimrod & Endurance*), Charcot (*Français & Pourquoi Pas?*), Murray (*Michael Sars*) and Schmidt (*Thor & Dana*). But not a word about *Blake*, *Travailleur & Talisman*, *Prince Albert of Monaco* with his *Hirondelle* and *Princesse Alice*, *National*, *Pola*, *Ingolf*, *Belgica*, *Valdivia*, *Albatross* (USA), *Planet*, *Meteor*, *Albatross* (Sweden), and *Vitiaz* ...

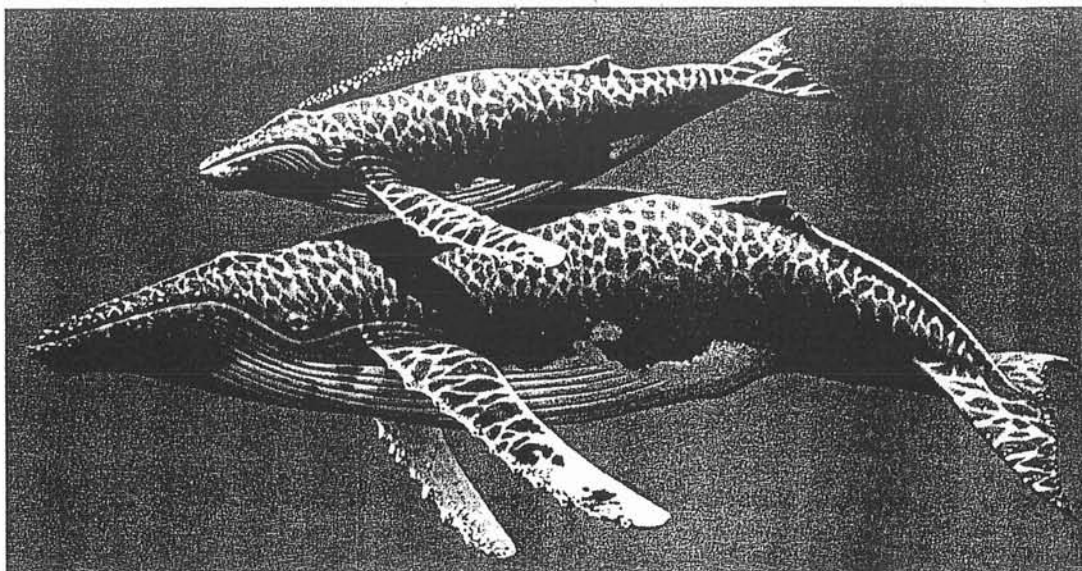
All the links or "see also"s to related entries are a great advantage. For instance, under the measuring device astrolabe is, in addition to compass, quadrant and sextant, also a reference to La Pérouse, where is told the fascinating story of the explorer and his ships *L'Astrolabe* and *La Boussole* being wrecked in 1788 at Vanikoro, Santa Cruz Islands; their destiny there was first recorded more than 40 years later by Dumont d'Urville (who also found the Venus statue on Milo!); a reference under La Pérouse to d'Urville is one of few I have found missing.



Humboldt penguin



Left: Humboldt penguin. Middle: Black swallower (*Saccopharynx harrisoni*), up to 6 feet long. Right: *Taningia danae*, very large squid that has the largest light organs of any known animal on two of its arms.

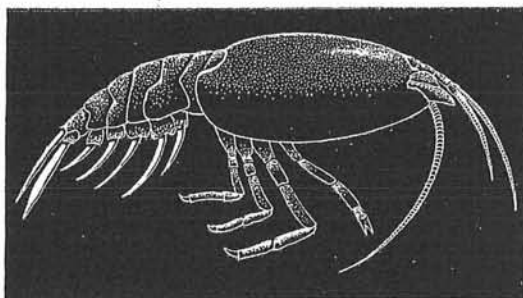


The amount of work spent in putting together the information presented here is admirable, and one cannot expect the book to be without errors, besides such incomprehensible omissions as those mentioned above. There are, unfortunately, many minor errors. Here e-mailing of articles to dedicated colleagues might have minimized such annoying shortcomings; this also applies to inconsistencies, e.g., using the entry words Celebes and Spitsbergen instead of Sulawesi and Svalbard.

Richard Ellis is a celebrated artist. All of the over 470 black-and-white illustrations plus 8 full pages in colour have been drawn or painted by him, giving a pleasant uniformity. His technique of using reverse shading to depict the black deep sea has again been employed with great effect.

This is the first comprehensive, illustrated reference on subjects related to the sea. In spite of the above-mentioned drawbacks, I shall find it stimulating and useful in my daily work.

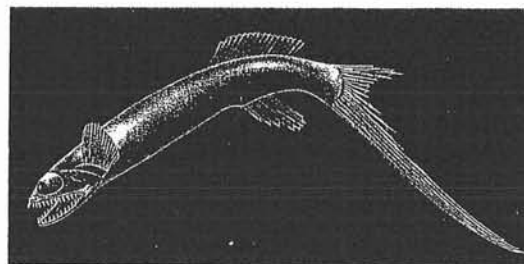
Torben Wolff
Zoological Museum, University of Copenhagen



rift shrimp

rift shrimp (*Rimicaris exoculata*) Discovered in 1985 at the 11,000-foot-deep Trans-Atlantic Geotraverse (TAG), these 2-inch-long shrimp occur in dense schools in the immediate vicinity of hydrothermal vent sites. They have no eyes (their scientific name can be translated as "rift shrimp without eyes"), but on their dorsal surface there is a pair of light-sensitive organs just below the skin. Since they live in total darkness, the ability to "see" is probably unnecessary, but these organs may be useful in detecting the faint light emitted by the vents. Like many other hydrothermal vent animals, rift shrimps do not breathe oxygen, but subsist on sulfides dissolved in the water or scraped off the sides of the mineral chimneys.

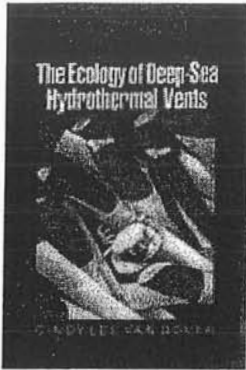
See also hydrothermal vents, tube worms



giganturus

giganturus (*Giganturus chuni*) Because of its tubular eyes, directed straight forward, giganturus is sometimes known as the telescope fish. Half of its 10-inch length is tail. This species is found in deep water, and little is known of its natural history. When brought to the surface in trawls, it appears a burnished silver color, unlike so many other deep-sea fishes, which are black. A ferocious predator, giganturus has been found with a complete viperfish (*Chauliodus*) twice its own size in its stomach. The larval form is a big-headed, round-bodied little creature, so different from the adult that it was originally believed to be a completely different species. Long puzzled by its unusual eyes, scientists now believe that giganturus swims upright in a vertical position, using its upward-facing eyes to pick out prey species silhouetted against the lighter surface.

See also dragonfish, viperfish



THE ECOLOGY OF DEEP-SEA HYDROTHERMAL VENTS

Cindy Lee Van Dover.

2000.

Princeton University Press, Princeton, New Jersey, USA.

424 pp., 4 pp. color plates, 28 halftones, 158 line drawings, 30 tables.

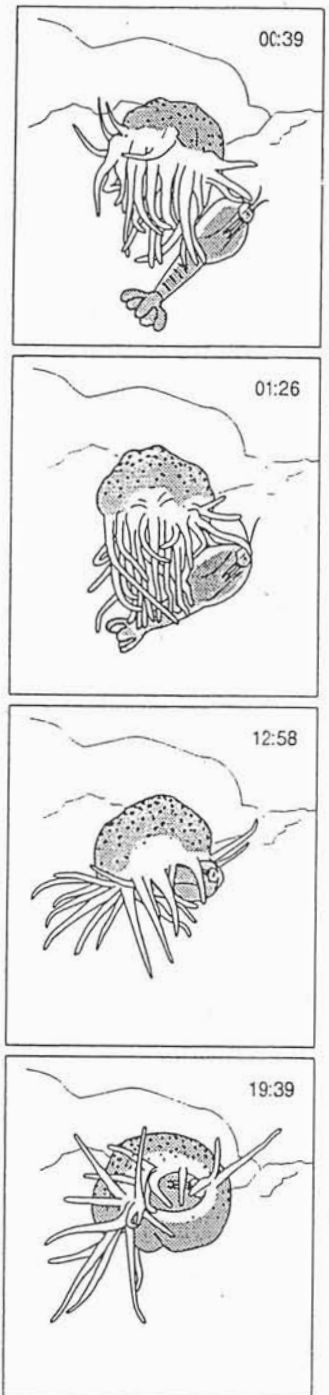
ISBN 0-691-05780-X (Cloth) \$85.00 / £53.00.

ISBN 0-691-04929-7 (Paper) \$39.50 / £25.00.

For a very atypical curriculum (she was, once, the first woman to pilot *Alvin*) and nonconventional scientific thinking, Cindy Lee Van Dover occupies a very special place within our small community. Her involvement with the deep sea has been very broad: As a pilot or observer, she has more than 100 dives in different manned submersibles and her work with *Alvin* brought her to almost all the vent fields known in the Atlantic and Pacific Oceans. As a scientist, her research effort has resulted in many diverse and durable findings from general ecology to taxonomy, food webs and even to stimulating hypotheses on photosynthesis at vents.



Figure 2.13. Perspective drawing of the eruptive fissure (axial valley) at 9°N on the East Pacific Rise. The linear fissure defines the ridge axis and the locus of incremental spreading. Note the "bathtub rings" along the margin of the fissure, lava tubes and other drainback features, and the fissure-controlled distribution of high-temperature vents along the one wall. From Fornari and Embley 1995 (artist: P. Oberlander, Woods Hole Oceanographic Institution).



Cartoon sequence of ingestion of a shrimp by an anemone. Elapsed time (min:s) is indicated in the upper right-hand corner of each panel. From Van Dover et al. 1997.

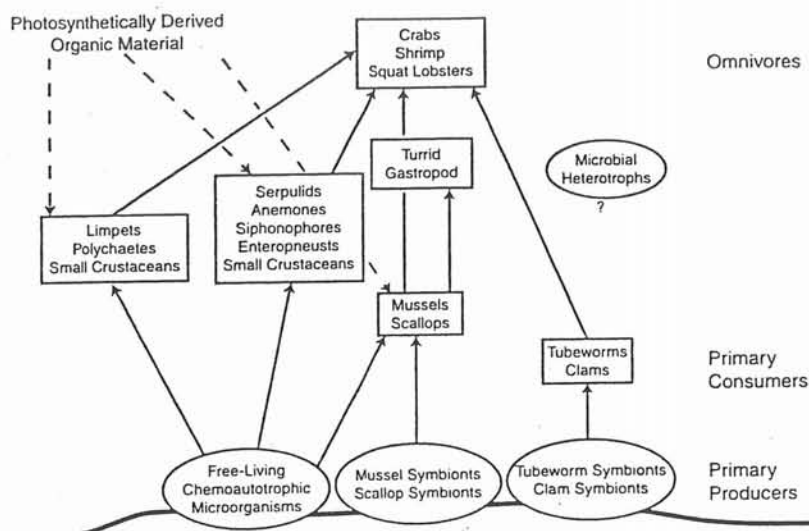


Figure 8.2. The food web at the Rose Garden hydrothermal vent. Vertical height reflects trophic level. From Hessler and Smithey 1983; Fisher et al. 1994; and C. L. Van Dover, personal observations.

Because she is also a truly gifted writer, she was able to formulate this very comprehensive and synthetic textbook so that it is within the reach of scientists as well as students and teachers. Available both as paperback and hardbound, the book includes 424 pages that are enhanced by more than two hundred illustrations and four colour plates.

It begins with a short chapter that describes the main characteristics of the deep-sea (non-vent) environment and communities (composition, diversity, biogeography, physiological adaptations, benthic-pelagic coupling). The following three chapters deal with main physical and chemical features of hydrothermal environ-

ments (fluids and minerals) and with the main spatial and temporal variations among Mid-Oceanic Ridges and Back-Arc Basins. They make a true comprehensive update of what you must know about vent physical settings although the primary interest of the book is not there.

The fifth chapter treats microbial ecology, describing metabolisms, microbial habitats for free-living and bacterial mats as well as the existence of a sub-surface biosphere. Symbioses between chemoautotrophic bacteria and invertebrates are described in the following chapter. Their discovery in different taxa, host-symbiont relationships, phylogeny of symbiotic bacteria and symbiont acquisition are introduced. Information on dynamics of symbiotic systems (growth, life span) is also given. Of course, the physiological ecology of *Riftia* and bivalves are the backbone of the next chapter, where information on episymbioses (*Alvinella* and *Rimicaris*) are more sparse, reflecting our ignorance of their physiological significance.

The three following chapters deal with the dynamics of transfers within communities (food-web analyses) and dynamics (reproduction, dispersal and successions). The three last chapters treat the evolution of vent taxa, the relations with cognate communities (based on chemosynthesis) and one evocation of theories on origin of life and pre-biotic syntheses in vent habitats.

This book is easy to read and well documented. It is an invaluable general survey for everyone who is fascinated by this strange and marvellous environment, scientists as well as students and teachers. The reference lists are exhaustive and are by themselves one of the major contributions of the book. This book is by nature very academic and calls, doubtless for a continuation for the general public. We are impatiently waiting for it.

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Contributions may be sent as e-mail attachments in Word (any version), WordPerfect 5.x DOS to 6.0 (Windows) or ASCII to. Torben Wolff or Mary E. Petersen (mepetersen@zmuc.ku.dk)

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