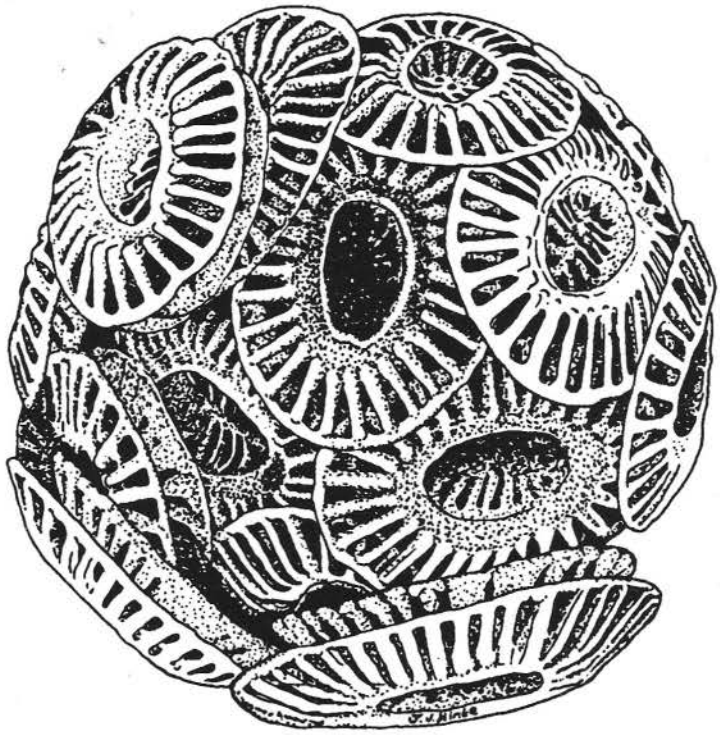
Journal of Nannoplankton Research



A Publication of the International Nannoplankton Association

JOURNAL OF NANNOPLANKTON RESEARCH

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NEWS AND GOSSIP

Compiled by Jackie Burnett on behalf of the INA Committee

NEW POSITIONS

Jan Krhovský recently gave up working in palaeontology, and geology in general, moving from the Academy of Science in Prague to the Ministry of Environmental Protection. He now deals with environmental pollution.

FORTHCOMING EVENTS

7th International Nannoplankton Association Conference, Puerto Rico 1998

Mark your calendars! We have the pleasure to announce to the world that the 7th International Nannoplankton Association Conference will be held at La Parguera, Puerto Rico from February 10th-13th, 1998, with a field-trip on February 14th (how romantic!). This conference will present results on all aspects of nannoplankton research, including both palaeontological and biological themes. There will be a special session on the role of coccolithophores in global change. If the weather this year was an indication of what we can expect next year, we will be very lucky - daytime highs of 27°C, nice breeze from the east at 10 knots, water temperature 27°C!

Preliminary timetable

Tuesday (10th February, 1998): registration; pre-conference workshops - any ideas? Ric Jordan has suggested a continuation of the living/Quaternary workshop on *Syracosphaera/Pontosphaera*. Paul Bown and Jeremy Young will host a workshop on the 'Higher Taxonomy of Calcareous Nannoplankton', and their series of papers published herein will form the discussion documents for this session. Patrizia Ziveri has proposed a workshop on sediment-traps and coccolithophore flux; lunch - on your own (many nice restaurants in La Parguera); boat trip on RV *Isla Magueyes* (74') to catch living coccolithophores; dinner. **Wednesday** (11th February, 1998): registration; opening session; scientific presentations; all-day poster session - posters will be displayed throughout the meeting but an official poster session will take place on Thursday afternoon; boat trip to Phosphorescence Bay. **Thursday** (12th February, 1998): scientific presentations; special session on nannoplankton and global change; lunch - on your own again; poster session with short introductions by authors; Chancellor's reception. **Friday** (13th February, 1998): scientific presentations; invited lectures; poster session; very lively farewell party at the hotel with live Meringue and Salsa Band! **Saturday** (14th February, 1998): field-trip.

Publications

A special session on nannoplankton and global change will be held. The session will cover nannoplankton as both agents and monitors of change. The proceedings will be published as a special issue of *Marine Micropaleontology*. This will be guest-edited by Amos Winter, Jeremy Young and Paul Bown. Conference delegates will be able to purchase this volume at a discount rate.

Abstract booklet

Provided for all registrants, details of format to follow but basically camera-ready copy and diagrams are welcome. We are in the planning stages of having the proceedings published in the *Caribbean Journal of Science*, a journal of the University of Puerto Rico.

Venue and accommodation

Parador Villa Parguera Hotel and Restaurant, La Parguera, Lajas, Puerto Rico. This is a hotel on the SE side of the island with a convention hall. The hotel has 64 air-conditioned rooms and can hold a total of 118 persons. Thus, most people will have to double up with someone else. The hotel is situated on one of the loveliest spots in Puerto Rico, close to many good snorkelling and diving sites. The hotel has a pool! The town of La Parguera is a lazy fishing village and becomes very lively at the weekends. La Parguera is home to the Department of Marine Science's Caribbean Marine Research laboratories which are located on Isla Magueyes, a short boat ride from the hotel. Isla Magueyes has technical paraphernalia and e-mail connections if you need them. It is also home to many iguanas, so watch out!

The cost of the rooms will be very reasonable, about $75 per day single. Those sharing rooms will only pay about $42 per day! All rooms are more than adequate but some rooms have a better view than others. Those who register first will be given the better rooms.

Registration

Fully-funded delegates $230 per person. Discount rate $120. Registration will cover practically all costs, including meals (except lunches), all breaks, evening excursions, entertainment, drinks, *etc.*. The discount rate is available for students and delegates who are having to pay their own expenses. This rate solely covers the cost of food, drinks *etc.* and should be excellent value. The higher rate is to cover costs of organising the meeting and we ask industrial or academic delegates who are funded by their institutes to pay this level.

Field trip

We will visit various interesting outcrops around Puerto Rico. Cost around $35 per person.

Organising Committee

Jan Backman, Tim Bralower, Elisabetta Erba, Ric Jordan, Wuchang Wei, Amos Winter (convenor), Jeremy Young, Hernan Santos (in charge of field-trip).

Anticipated Participation

120 scientists.

Planning timetable

Summer 1997 - advertisement in newsletters, *etc.*
August-September 1997 - circular with registration details
November 1997 - accommodation booking deadline
December 1997 - registration and abstract submission deadline
December 1997- final circular in response to registrations

Possible conference sponsorship
University of Puerto Rico
Sea Grant College Program
Department of Marine Sciences
Department of Geology
US Geological Survey

If you have an ideas about possible sponsors please let us know.

Homepage
All information regarding this conference can be found at: *http://wwei.ucsd.edu/INA7.htm*

Mailing List
An automatic mailing list for INA7 has been made available: (*INA7@wwei.ucsd.edu*). Any message sent to *INA7@wwei.ucsd.edu* will be automatically broadcast to all the people who have joined this mailing list. Please join the INA7 mailing list to discuss, give suggestions and get the latest information on the conference. Just send a message to *list_manager@wwei.ucsd.edu* with the following in the body of the message: "join INA7". To leave the mailing list, send a message to the same address and write "leave INA7". Both the mailing list and homepage are courtesy of Wuchang Wei.

Registration
The registration circular will be made available to all members of INA. It is also possible to register at the INA7 homepage (*http://wwei.ucsd.edu/INA7.htm*). Registration may also be possible by e-mail to the convenor at *INA7@rumac.upr.clu.edu*

It is very important that we have a good idea of the number of people who will attend the conference, so please let us know your intentions as soon as possible. If you have not/cannot register by e-mail, please fill in and post the form enclosed with this issue.

Amos Winter
a_winter@rumac.upr.clu.edu

Copenhagen Conference Proceedings Volume
Since Dave Jutson received only one manuscript and enquiries from two more 'possibles' for the Copenhagen Conference Proceedings volume, it has been decided that a volume was not worthwhile. This was probably the result of the problems Dave had with timing - the newly-merged *Geological Survey of Denmark and Greenland Bulletins* having come into being well after the conference, and consequently making it impossible for him to send out author's guidelines until an advanced date, by which time contributor's had had ample opportunity to publish their manuscripts elsewhere. The INA Committee can only apologise for this turn of events, and ensure that it does not happen again. Conference organisers of the future please take note! For those of you who wanted to publish your conference contributions in these proceedings, we are prepared to publish such papers in the next issue of the *JNR*, with a note to explain that the contributions were presented at the conference.

Jackie Burnett

CODENET:
a new phase of multidisciplinary coccolithophore research

Coccolithophores present interesting possibilities for interdisciplinary research. As we all know, they have an exceptionally fine fossil record, they play major roles in the oceanic ecosystem and the carbon cycle, they can easily be studied as laboratory cultures, and the wide biogeographic ranges of individual species means that results can be widely extrapolated. This combination of advantages has been usefully exploited over the past few years through research focused on the single species *Emiliania huxleyi*, particularly due to the efforts of Peter Westbroek with the Global *Emiliania* Modelling Initiative (GEM) and the EC-funded EHUX project. This approach of focusing studies on a single species has had great benefits, especially for integrating diverse studies and maximising research efficiency. However, obviously, exclusive focus on a single species is not appropriate for all types of study and indeed creates a demand for comparative data on other species. As a consequence, a group of researchers associated with the GEM initiative decided, in 1995, to put together a research network proposal based on their mutual interest in coccolithophorid biology and palaeobiology but focused on comparative studies of a selected set of species spanning the biotic diversity of coccolithophorids. We are now pleased to be able to announce that - subject to contract negotiations - this project has been funded by the EC Training and Mobility of Researchers Programme (TMR). This will provide for a three year project with Post-doctoral appointments in the participating laboratories.

Choice of taxa: A limited set of keystone taxa had to be selected for this project. Criteria for taxon selection were: (1) they must be capable of being maintained in culture; (2) they should be significant components of the marine flora; (3) their coccoliths should be readily preserved yielding a useful geological record; (4) detailed study of some aspects of their biology and geology should have already been carried out; and (5) the taxa, taken together, should provide an overview of the coccolithophorids, a set of taxon pairs of varying degrees of relatedness, and a set of taxa at increasing taxonomic separation from the single best-studied coccolithophorid, *Emiliania huxleyi*. The selected taxa are: *Gephyrocapsa* spp. (a plexus of closely-related species), *Calcidiscus leptoporus, Coccolithus pelagicus, Umbilicosphaera sibogae, Helicosphaera carteri* and *Syracosphaera pulchra*.

Participating laboratories and types of study: There are two main types of study involved in the project. First, biological (*sensu lato*) studies based on laboratory cultures. These include: culture isolation, life-cycle study and cytological study at the University of Caen (lead by Chantal Billard); molecular genetic studies at AWI Bremerhaven (lead by Linda Medlin); lipid biomarker studies at NIOZ, the Dutch marine research centre (lead by Jan de Leeuw); and combined biomarker and marine ecology studies at Institute de Ciencias del Mar in Barcelona (lead by Marta Estrada). Second, biogeographic and geological studies covering plankton samples, sediment-trap studies, Holocene sediment samples and ODP core studies based on groups at ETH-Z, Zürich (lead by Hans Thierstein),

VU-Amsterdam (lead by Jan van Hinte), Lisbon (lead by Mario Cachão) and the Natural History Museum London, plus University College London (lead by Jeremy Young, and co-ordinating the network as a whole). These geological groups will concentrate on different taxa and types of study.

These individual sub-projects are supposed to be integrated into three major work areas to answer specific questions concerning: (1) the diversity within coccolithophorids; (2) the characterisation of stable, genetically-controlled aspects of that diversity; (3) how and why species evolve; and (4) the ecological adaptations within the group. This research should not only contribute greatly to our knowledge of coccolithophorids but also advance our understanding of evolutionary biodiversity and ecology in the world's oceans.

Possibilities for external participation: Unfortunately TMR rules mean that funding is restricted to the participant laboratories. However, the project is not intended to be introverted or exclusive, rather we hope that participation will be significantly wider. This will certainly occur through participation of post-docs previously with other European research groups (TMR rules restrict us to employment of workers from the EU, Iceland, Norway and Israel). In addition, any workers with suggestions of possible collaborations are welcome to contact me or the other participants. We will also of course be presenting results at INA conferences and other meetings.

Jeremy Young
j.young@nhm.ac.uk

Conferences

August: 6th Congress of the European Society for Evolutionary Biology - **August 24th-28th**, Arnhem, The Netherlands. Contact: Jos van Damme, Netherlands Institute of Ecology, PO Box 40, 6666 ZG Heteren, The Netherlands. E-mail: *eseb97@nioo.knaw.nl*; fax: +31 26 4723227; tel: +31-26 4791111.

September: Second European Meeting on the Palaeontology and Stratigraphy of South America - **September 2nd-4th**, Heidelberg, Germany. Contact: Prof. Dr. Peter Bengtson or Priv.-Doz. Dr. Heinrich Bahlburg, Geologisch-Paläontologisches Institut, Im Neuenheimer Feld 234, D-69120 Heidelberg, Germany. E-mail: *Peter.Bengtson@urz.uni-heidelberg.de*; tel: +49 6221 548293; fax: +49 6221 548640. Palaeontology in the 21st Century - **September 3rd-9th**, Senckenberg, Germany. International Conference on Evolution and Rationalism - **September 8th-10th**, Zaragoza, Spain. Contact: Eustoquio Molina, Area de Paleontología, Dept. de Ciencias de la Tierra, Universidad de Zaragoza, 50009 Zaragoza, Spain. E-mail: *emolina@msf.unizar.es*; tel: +34 76 761077; fax: +34 76 761088. The final meetings of the UNESCO IGCP Project 335 'Biotic Recoveries from Mass Extinctions' - **12th-16th September**, Prague, Czech Republic. Contact: Petr Čejchan, e-mail: *recovery@gli.cas.cz*. To access the conference details, please point your browser to: *http://www.gli.cas.cz/conf/recovery/recovery.htm*. Economic and Applied Paleontology - **September 28th-30th**, Corner Brook, Newfoundland. Sixth Canadian Conference presented by Memorial University of Newfoundland. Contact: Henry Williams, tel: (709) 737-8395.

November: AAPG/ABGP Joint Research Symposium on Petroleum Systems of the South Atlantic Margin - **16th-19th November**, Rio de Janeiro, Brazil. Contact: M.R. Mello, PETROBRAS-CENPES/Divex/Cegeq, Cidade Universitaria, Quadra 7, Ilha do Fundao, 219-900, Rio de Janiero, Brazil. E-mail: *maecio@cenpes.petrobras.com.br*. Evolutionary researches including speciation, phylogeny, evolution of palaeoecosystems - **November 27th-29th**, Tomsk State University, Tomsk, West Siberia, Russia. Contact: Organizing Committee, Dept. of Palaeontology and Historical Geology, Tomsk State University, Lenin Avenue 36, Tomsk 634050, Russia. E-mail: *natalia@mineral.tsu.tomsk.su*; tel: (7-3822) 231101, 410291; fax: (7-3822) 222466, 226162.

December: Palaeobiogeography of Australasian Faunas and Floras - **8th-11th December**, University of Wollongong, New South Wales, Australia.

January, 1998: International Seminar on Recent Advances in the Study of Cretaceous Sections - **6th-12th January**, Chennai, India. Contact: Dr. A. Govindan, Convenor, International Cretaceous Seminar, 1998, Regional Geoscience Laboratory, Oil & Natural Gas Corporation Ltd., No.3, 1st Lane, Nungambakkam High Road, Madras, Chennai 600 034, India. E-mail: *ongc.madras@gems.vsnl.net.in*. XVI Indian Colloquium on Micropalaeontology and Stratigraphy - **22nd-24th January**, NIO, Goa, India. Contact: Dr. Rajiv Nigam, Convenor, XVI ICMS, National Institute of Oceanography, Dona Paula, Goa, India. E-mail: *nigam@bcgoa@ernet.in* or *nigam@csnio.ren.nic.in*

August, 1999: 5th Symposium on the Brazilian Cretaceous and First Symposium on the Cretaceous of South America, Sao Paulo, Brazil. Contact: Dimas Diasbrito, Dept. de Geologia Sedimentar, UNESP, Av. 24-A No.1515, 13506-900 Rio Claro, SP, Brazil. E-mail: *dimasdb@caviar.igce.unesp.br*

Compiled by R.Venkatachalapathy
raja@gg.iitkgp.ernet.in

PAST EVENTS

British Micropalaeontological Society Nannofossil Group Excursion

The Boulonnais, Friday 7th - Sunday 9th March, 1997

In the absence of an INA meeting this year, the British nannofossil workers (or Nannofossil Group of the British Micropalaeontological Society) decided to indulge in an excursion to France for the sake of gastronomy, palaeontology and bonhomie. Conveniently for us, the Boulonnais Inlier provides enticing Jurassic and Cretaceous coastal outcrops within minutes of the Channel Ports and so formed an ideal objective for this, our first foreign fieldtrip (if we exclude INA post-conference trips, individual fieldwork, *etc.*). After rather a long planning gestation, some deficiencies in advance organisation, a couple of late postings offshore and innumerable problems with cars, we managed to assemble a party of eight of us in three cars - including four INA officers (Jackie Burnett, Nicky Hine, Paul Bown and myself), two PhD students (Pat Quinn and Andy Howard), an industrial colleague (Matt Hampton), and Matt's girlfriend, Sarah (an editor, and nothing to do with geology)!

The palaeontological objectives were met through examinations of sections through the Kimmeridgian on

Saturday and in the Albian Gault Clay on Sunday. Both formations are in more proximal facies than their English equivalents and so provided interesting contrasts. Jackie collected Kimmeridge Clay samples for comparison with the English Kimmeridgian as part of a project on the formation, Pat took back large samples of Gault for experiments on the effect of clay firing on nannofossils, and the rest of us collected a range of reference samples. In addition, we tested our lithostratigraphic skills and collected some fine macrofossils.

The gastronomic objectives were more easily satisfied with a couple of fine evening meals in Boulogne and two superb picnics on the coast based on French bread, cheese, wine and tarts. Bonhomie seemed in some danger at first, as navigation out of London was rather chaotic (caused by Jeremy's confusion as to which port we were sailing from), but we soon recovered and can report the trip as highly successful in the general objective of providing a low-stress opportunity for networking. As a follow up, we are contemplating the idea of a trip to the Paleogene of Belgium, but with no very precise date as yet - if any other workers would be interested in joining us then they are very welcome to get in touch.

Jeremy Young
j.young@nhm.ac.uk

British Micropalaeontological Society Nannofossil Group Research Meeting
May 15th, 1997
Host: The Natural History Museum, London

This year's nanno-workers research meeting was held in the Palaeontology Demonstration Room at the Natural History Museum in London and provided a diverse agenda. Proceedings kicked of at around 12:00 with a cheese and wine lunch, thus ensuring an attentive audience when the lights were turned down for the first talk of the afternoon. Due to a schedule change (Patrick Quinn claiming car trouble), the first talk of the meeting was given by Andy Howard (UCL) on preliminary findings from biometric studies performed on the *Broinsonia parca* plexus as part of his first-year PhD work. Ideas discussed included the taxonomic nightmare involved, and methods of data-capture and -analysis utilising light-microscope images. The system is based on an Apple Macintosh microcomputer with direct image-capture from a Zeiss Axioplan Photomicroscope via a Sony XC77 8-bit CCD and Perceptics Framegrabber. Image manipulation and morphometric measurements are carried out using the public domain software program NIH-Image. The second talk was performed by Patrick Quinn (Sheffield) after a dramatic entrance! The talk, on applying nannofossil techniques to the study of Bronze Age archaeological ceramics in the Aegean (again based on PhD research) centered largely on the preservation and extraction of nannofossil assemblages when subjected to the intense heat of the firing process in the production of ancient pottery. The problems inherent in attempting to correlate fragments of pottery in terms of archaeological history and provenance of the constituent clays based on nannofossil data and the presence of other microfossil groups were also discussed. The final talk before the break was given by Toby Tyrell (Southampton). Entitled '*Emiliania huxleyi*'s effect on light intensity, light intensity's effect on *Emiliania huxleyi*', the talk discussed the interaction between coccolith-bearing *E. huxleyi* and light intensity in surface-waters, along with seasonal effects and implications of this interaction, both biotic and chemical, for life in the photic zone and the underlying water-column.

After a general discussion and a short break, the second session commenced with freelance science illustrator Glynn Gorick (a former science teacher) giving a talk on 'Visualising calcification in coccolithophores: from molecular to global scales'. With a set of visually stunning and scientifically accurate diagrams, the illustrators (father and son team of Glynn and Jess Gorick) ambitiously set out to display, in one single diagram, the role of *E. huxleyi* in modern oceans, from the intracellular level, through the food chain, and on to global ocean cycles and atmospheric carbon dioxide, by operating on a logarithmic scale from bottom to top of the diagram. A variety of other diagrams were also displayed. The final talk of the meeting was given by Jeremy Young (NHM) and centered on 'Chirality in coccolith ultra-structure and its significance for classification'. Working at the ultra-structural level, chirality may directly influence the orientation and growth of calcite elements from the earliest stages of nucleation. The argument follows that, if this is the case, then chirality is an expression of the genotype and could therefore be an important taxonomic tool and/or an addition to existing taxonomic processes. Drawing on examples from Cenozoic Ceratolithaceae, Jeremy showed how similar forms display major differences in chirality and therefore crystallography. The implications for taxonomy and evolutionary history provided a lively debate.

The talks having slightly over-run the schedule, it was decided to carry on the discussion in the nearby Southside bar over some liquid refreshment. Thanks to all the speakers and all those who attended who helped make it a very diverse but interesting meeting. Thanks to Jeremy Young and Matt Hampton who did a good job organising things.

Andy Howard
a.howard@ucl.ac.uk

First International Conference on the 'Application of Micropaleontology in Environmental Sciences'
15th-19th June, 1997
Host: Tel Aviv University, Israel

This conference was organised in order to discuss the diverse applications of microfossils of various kinds with the aim of highlighting their importance and attracting a broader audience. Even though a number of colleagues did not attend due to shortage in travel funds, or for safety reasons (no problems here!), about 70 scientists from 18 nations did participate. The conference was organised by Prof. Valentina Yanko whose infective enthusiasm made this meeting possible. The topics were slightly dominated by talks about the application of benthic foraminifera but also a number of presentations dealt with coccoliths, including the following:

'*Coccolithophore fluxes in the Norwegian-Greenland Sea: seasonality and assemblage alterations*' (H. Andruleit), '*Holocene coccolithophore assemblages in the Greenland-Iceland-Norwegian-Seas: implications for paleoceanographic interpretations*' (H. Andruleit & K.-H. Baumann), '*Environmental significance of Holocene calcareous plankton assemblages from cores of the northern Gulf of California*' (R. Barbieri & V. Reale), '*Variations of Quaternary Coccolithus pelagicus coccoliths from northern North Atlantic sediments: paleoceanographic implication*' (K.-H. Baumann), '*Living coccolithophore communities in the Norwegian-Greenland Sea and their distribution in surface sediments*' (K.-H. Baumann & C. Samtleben), '*Coccolithophore and planktic foraminifera assemblages as a mirror of equatorial paleoceanography*' (N. Dittert & H. Kinkel), '*Using phytoplankton to decipher paleoceanographic environment conditions: examples from Upper Cretaceous sequences in Israel*' (Y. Eshet), and '*Response of northeast Atlantic coccolith floras to increased climatic instability since the last 5.2 million years*' (X. Su, C. Samtleben, K.-H. Baumann & J. Thiede). Topics from the conference should appear in a special edition of *Micropaleontology*. Anybody interested in the proceedings should contact Prof. Yanko.

There was agreement that the title of the conference should be changed to 'Application of Micropaleontology to Environmental Changes' to more-precisely express the contents and to gain more attention. At the end of the conference, everybody was asked to give suggestions and recommendations for further improving the conference. Everybody interested in supporting micropalaeontological studies is therefore requested to send ideas about topics and needs for the second conference to Prof. Valentina Yanko (*valyan@post.tau.ac.il*). I would like to express my thanks to Prof. Yanko for this successful meeting. Everything was well organised and the social program was excellent.

Harald Andruleit
h.andruleit@bgr.de

CALL FOR CONFERENCE REPORTS

Since no one these days can afford to attend every conference concerning nannofossils, oceanography, regional geology, *etc.*, please can you bear in mind when you *are* fortunate enough to be able to attend any such meeting that there are many workers who would appreciate some kind of report/feedback. This journal is an excellent place to report on nannoplankton-related conferences, and it doesn't take long to write a one-page summary, especially after a stimulating day of discussion, and with a glass of beer or wine nestling by your writing arm!

NANNOFOSSIL SYMBOLISM

There has been recent discussion on the *coccolith.list* concerning the use (and non-use) of a nannofossil symbol, signyifying the presence of nannofossils, on lithological logs. In summary, the concensus is that in the 'Standard Legend' which is published by Royal Dutch Shell, the symbol for calcareous nannoplankton is an 'N' with a circle around it, and this reference is pretty much the industry standard. There is a general feeling that this symbol is not "personally satisfying" but, since it seems that this is all that is available, the circled 'N' is as good as anything else we are liable to come up with, and it is easy to draw. So, if we have to live with it, then let's use it - it is a useful form of publicity for nannofossils!

However, another suggestion has been made (by Nicola Perilli) - an 'N' with a 'C' around it. As Katharina remarked, this is simple and says it all. Shirley added that, although the 'N' with a circle is indeed Shell Standard Legend, there is no reason why the rest of the world should follow it if we don't like it. She also liked Nicola's suggestion. Perhaps we should put it to a vote at Puerto Rico?

Whichever you prefer, I hope you will make the effort to ensure that all lithological logs appearing in the *JNR* in future bears one or other of these symbols, and we should all remember to include it in industry reports, theses, and articles for publication elsewhere. Thanks to Mike Styzen and Katharina von Salis for clarifying the situation.

COMPUTER NEWS #1

We have set up a Nanno-Chatroom on our web site (*http://wwei.ucsd.edu/chatroom/chatroom.htm*) that allows real-time chat. Currently we have two unidentified nannofossil species on the chatboard for comments. We would appreciate any input you may have. If you have any unidentified coccolith-looking specimens that you would like experts around the world to help you identify, you may e-mail us the image files or send us the photos and we can post them on the chatboard. You are also welcome to use the chatroom to chat on any nanno-related topics in real time! Please note that you need a web browser that supports frame in the chatroom to view frames, *e.g.* Netscape Navigator 2.0 (or Microsoft Internet Explorer 2.0) or later versions. You can easily download the latest web browsers free of charge from *http://www.netscape.com orhttp://www.microsoft.com/ie/*

We have also updated the nanno references by searching BIOSIS, thelargest biological bibliographic database - see*http://wwei.ucsd.edu/nannoref/bio-nanno.htm*

Alyssa Peleo-Alampay & Wuchang Wei
apeleoal@sdcc3.ucsd.edu & wwei@ucsd.edu

COMPUTER NEWS #2

I've set up a searchable nannofossil reference database on my web site (*http://wwei.ucsd.edu*). The database currently contains about 6000 references (most nanno-related papers should be here already). It can be searched by author, year, title word, publication, or any combination of these. The most distinguished feature of this system is that you can also add references to the database online or by e-mail. This automatic database thus can potentially contain more complete and timely references than those managed in any other way. Please check it out (and pass the word to those not on the mailing list) to see whether all of your papers, or your colleagues' papers, are in the database. If not, please do yourself and others a favor by submitting them to the database online (*http://wwei.ucsd.edu*) or by e-mail.

To submit references by e-mail, please use the following example as a guide:

Mail to: gsi@wwei.ucsd.edu
Subject: nannoref

Au: Backman, J. and Shackleton, N.J.
Yr: 1983
Ti: Quantitative biochronology of Pliocene and early Pleistocene calcareous nannoplankton from the Atlantic, Indian and Pacific oceans
Pu: Marine Micropaleontology, v. 8, p. 141-170

Au: Smith, J.H., Lightfoot, P.C., Leeman, W.A., Perce, J.A., Weaver, H.B., Stanton, R.L., Langmuir, C.H., Wager, L.R.
Yr: 1901
Ti: The importance of coccoliths and other microfossils for the well-being of the building industry in the Western world
Pu: In: Smith, J.H. and Lightfoot, P.C. (eds.), Engineering Geology, Cambridge Press, p. 101-202

All the e-mails sent to *gsi@wwei.ucsd.edu* with 'nannoref' in the subject field will be automatically filtered and appended to a file. Once in a while I will feed this file to a program to import the references to the searchable reference database. So please use the above format when submitting references by e-mail so that they can be automatically processed by computer. A computer is not as smart as people but it can work around the clock at lightning speed!

Thank you for your input and for making the searchable reference database more useful for you and your colleagues around the world.

Wuchang Wei
wwei@ucsd.edu

RECENT PhD ABSTRACTS

Please submit abstracts of no more than one page long, preferably by e-mail.

Study of Albian rocks from the Cretaceous of Trichinopoly District, Tamil Nadu, India. University of Pune, December 1995

Anowshiravan Lotfalikani, PO Box 19395-5877, Tehran, Iran

This thesis contains the results of systematic palaeontology, and biostratigraphical, lithostratigraphical, sedimentological and chemical studies on Albian rocks from the Cretaceous of the Trichinopoly District, Tamil Nadu, South India. The Albian is exposed over an area of *c.* 300km^2, and includes outcrops of marls and clays from the Ariyalur and Perambadur Talukas, and grey shale and reefoid limestone from a quarry in Dalmiapuram town.

The Albian is well represented in the Trichinopoly Sub-basin of the Cauvery Basin, as indicated by nannofloral, micro- and macrofossil evidence. In the Albian part of the Utatur Group, calcareous nannofossils are diverse, abundant, and well-preserved, constituting the most-consistently occurring group of fossils. Four nannofossil zones could be determined. The Dalmiapuram Gray Shale Formation, previously thought to be older then the base of the Utatur Group, is proved to be younger than that sequence in the Karai section. The nannofloras and biostratigraphy of the Utatur Group, the Dalmiapuram Gray Shale and Dalmiapuram Reefoid Limestone Formations are correlated with the Albian of the Indian Ocean. Based on these, and other, results, a sedimentary depositional model is proposed. A lagoonal model with a physical barrier best describes the depositional environment of the Utatur group, with an original shallow transitional environment (Plant Beds) becoming marine (Utatur Clays) due to a transgression. Local anoxic conditions were prevalent in parts of the basin (Gray Shales) as a result of restricted circulation and water stagnation. A series of reefs grew on the shallower ridge portion (Reefoid Limestone). Stormy conditions (sandy layers) were experienced occasionally in the interior parts of the basin, which otherwise was quiet and calm.

Chapter I: introduction and background to the sediments. Chapter II: introduction to Mesozoic nannofossil taxonomy and biostratigraphy; review of previous work on South India and the Albian of elsewhere. Chapter III: systematic nannofossil palaeontology (32 genera, 55 species). Chapter IV: lithostratigraphy (including clastic ratio analysis, major oxide chemistry) and biostratigraphy (Nannofossil Zones CC7 to CC10) of the South Indian Cretaceous. Chapter V: discussion of the recognition of the base and top of the Albian in South India; correlation between South Indian sediments; depositional model for the Albian. Chapter VI: comments on palaeoecological, palaeogeographical and palaeoenvironmental implications of the depositional environment. Appendix: extensive synonymy, and sedimentological data. Conclusions: further study would refine understanding of the stratigraphy of the Albian, the evolution of the Cauvery Basin, and austral nannofloral palaeobiogeography.

ICBN - THINGS YOU NEED TO KNOW INDEX

Compiled by Jackie Burnett from the articles (1990-1996) by Shirley E. van Heck

Taxonomy can be fraught with hidden rules, and this is why Shirley laboured so hard over getting us to take notice of the *International Code of Botanical Nomenclature*. An index of her articles appears below for rapid reference. If you don't have access to the latest copy of the *ICBN*, these are the next best thing. One still-recurring problem with taxonomy, however, is the construction of endings for new species which are based on Latin nouns and adjectives. Perhaps one or two members might like to volunteer as e-mail ending-checkers for new taxa? If so, please let us know either through myself or on the *coccolith.list*.

#1 - **12**(1) 1990 - FORMATION OF SPECIFIC EPITHETS
#2 - **12**(2) 1990 - FORMATION OF SPECIFIC EPITHETS
#3 - **12**(3) 1990 - NAMES & SUBDIVISIONS BELOW THE RANK OF SPECIES
#4 - **13**(1) 1991 - NAMES & SUBDIVISIONS OF GENERA
#5 - **13**(3) 1991 - NAMES & SUBDIVISIONS ABOVE THE RANK OF GENUS
#6 - **14**(1) 1992 - GENERAL PRINCIPLES & DEFINITIONS OF THE ICBN
#7 - **14**(3) 1992 - EFFECTIVE & VALID PUBLICATION
#8 - **15**(1) 1993 - VALID PUBLICATION, especially NEW COMBINATIONS

#9 - **16**(1) 1994 - VALID PUBLICATION
#10 - **16**(2) 1994 - VALID PUBLICATION & TYPIFICATION, especially SPECIES
#11 - **16**(3) 1994 - TYPIFICATION, especially GENERA & FAMILIES
#12 - **17**(1) 1995 - NEW ICBN; VALIDITY
#13 - **18**(1) 1996 - REVIEW OF NEW ICBN RULES
#14 - **18**(2) 1996 - VALIDITY *vs* LEGITIMACY; REJECTION OF NAMES

INA MEMBERS' E-MAIL ADDRESSES

Compiled by Jackie Burnett from members who responded to a call for addresses

This list will be updated fairly frequently. If there are any mistakes on the list below, or if you want to be included on the next list or have your website included, please e-mail the Editor.

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COCCOLITHOPHORES IN TRAPS: GLOBAL COCCOLITH FLUX DATA

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The ocean is the major reservoir of carbon in the global carbon system, containing about 60 times as much carbon as the atmosphere. It is fundamental to understand the way in which this reservoir influences the steady-state partial pressure of CO_2 in the atmosphere, and the manner in which it has responded to increases in pCO_2over the past 200 years (as a result of human activities). The biological pump exerts a powerful influence, drawing down CO_2 into the deeper ocean. Coccolithophores are an important component of the biological pump for both organic and, particularly, for the inorganic carbonate system. Even if the carbonate system represents a small part of the global carbon cycle, its production and dissolution (mainly controlled by biogenic processes) is intimately related to the atmospheric CO_2 changes (Broecker & Peng, 1982).

Live, shell-bearing planktonic assemblages in the upper water-column will, sooner or later, become sinking assemblages, regardless of their passive or active sinking mode. Sediment-trap sampling has become one of the indispensable methods of collecting flux samples, so that the fate of a given species from production to burial can be quantitatively traced. The monitoring of the carbonate flux into the deep sea, and the quantification of the different planktonic and benthic carbonate production and accumulation components, will improve our understanding of the processes that regulate the oceanic carbon cycle.

Our group at the Geomarine Center at the Vrije Universiteit in Amsterdam is working on the compilation of available coccolithophore sediment-trap data in order to show the current state of coccolithophore flux work, and to list the researchers involved in each project. The major purpose is to calculate, or recalculate, coccolith carbonate export production/transformation, to refine the coccolithophore biogeography map, and to describe the seasonal trends. Sediment traps at different depths are

SITE #	LATITUDE *approximately	LONGITUDE *approximately	AREA	TRAP DEPTH (km)	DATE start-end (d/m/y)	SAMPLING PERIOD (days)	REFERENCE
ATLANTIC OCEAN							
1	78°52'N	1°24'E	Fram Strait	2.0	20/08/84 - 15/08/85	27.6	Samtleben & Bickert, 1990
2	75°51'N	11°28'E	Bear Island	1.7	12/08/84 - 10/08/95	30.3	Samtleben & Bickert, 1990
3	72°23'N	7°42'W	Greenland Sea	0.5, 1.0, 2.3	07/09/90 - 10/07/92	7, 14, 30	Andruleit, 1997
4	69°41'N	00°27'W	Norwegian Sea	0.5, 1.0, 3.0	06/08/91 - 07/07/92	7, 14, 30	Andruleit, 1997
5	69°11'N	10°59'E	Lofoten Basin	2.6	15/08/83 - 01/08/84	29.3	Samtleben & Bickert, 1990
6	48°N*	21°W*	Northeast Atlantic	1.0	03/04/89 - 16/04/90	14	Broerse *et al.* , in preparation
6	48°N*	21°W*	Northeast Atlantic	2.0, 3.7	03/04/89 - 16/04/90	14	Ziveri *et al.* , in preparation
7	47°40'N	20°50'W	Northeast Atlantic	0.7, 1.0	18/05/90 - 10/06/90	2	Knappertsbusch & Brummer, 1995
8	45°N*	3°W*	Bay of Biscay	1.9	01/06/90 - 10/08/91	5, 7, 4	Beaufort & Heussner, submitted
9	34°N*	21°W*	Northeast Atlantic	1.0	03/04/89 - 16/04/90	14	Broerse *et al.* , in preparation
10	31°50'N	64°10'W	Sargasso Sea	3.2	01/02/92 - 31/01/93	14	Haidar, 1997
11	29°09'N	26°7'W	N of Gran Canaria	0.9, 3.1	09/06/94 - 02/09/94	8	Sprengel, in progress
12	21°08'N	20°41'W	Cap Blanc	0.7, 3.6	05/03/91 - 19/11/91	10	Baumann, in progress
13	13°30'N	54°00'W	Equatorial Atlantic	0.4, 1.0, 3.8, 5.1	11/77 - 02/78	98	Steinmetz ,1991
14	10°35'N	64°40'W	Cariaco Basin	0.2, 0.4, 0.9, 1.25	08/11/95 - present	14	Ziveri, in progress
15	00°01'N	23°27'W	Canary Islands region	0.7, 3.2	25/08/94 - 29/02/96	20	Kinkel, in progress
16	20°02'S	9°09'E	Walvis Ridge	0.6	18/03/89 - 13/03/90	18	Cepek & Wefer, submitted
MEDITERRANEAN SEA							
17	34°18'N	20°01'E	Bannock Basin	3.2, 3.4	10/11/91 - 15/05/92	8 sampling programme day averages	Ziveri *et al.* , 1995a
17	34°18'N	20°01'E	Bannock Basin	3.2, 3.4	01/06/92 - 19/08/94	11 sampling programme day averages	Ziveri *et al.* , 1996
PACIFIC OCEAN							
18	58°01'N	179°59'E	Bering Sea	3.0	16/07/91 - 18/07/92	17	Ziveri, in progress
19	53°30'N	177°W	Bering Sea	3.2	8/90 - 8/95	?	Takahashi *et al.* , 1996
20	53°19'N	149°50'E	Okhotsk Sea	0 .3, 1.1	12/08/90 - 12/08/91	17	Broerse, in progress
21	49°N	174°W	Bering Sea	4.8	8/90 - 8/95	?	Takahashi *et al.* , 1996
22	34°09'N	141°59'E	Japan Trench	1.0, 3.5, 5.5, 8.5	05/03/91 - 02/03/92	28	Okada, 1994
23	33°33'N	118°30'W	San Pedro Basin	0.5	07/01/88 - 26/07/88	7	Ziveri *et al.* , 1995b
24	34°18'N	120°06'W	Santa Barbara	0.5	12/08/93 - 11/08/94	14	Ziveri, in progress
25	27°33'N	111°40'W	Gulf of California	0.5	08/07/90 - 21/11/92	14	Ziveri & Thunell, submitted
26	15°21'N	151°28'W	Central Pacific	0.4, 1.0, 2.8, 4.3, 5.6	09/78 - 11/78	61	Steinmetz, 1991
27	5°21'N	81°53'W	Panama Basin	0.7, 1.7, 2.3, 2.9, 3.8	07/79 - 11/79	112	Steinmetz, 1991
28	4°57'S	139°44'W	Equatorial Pacific	1.2, 2.2	02/02/92 - 14/01/93	17	Broerse, in progress
29	11°58'S	135°02'W	Equatorial Pacific	1.2, 2.2	02/02/92 - 14/01/93	17	Broerse, in progress
INDIAN OCEAN							
30	10°45'N	51°56'E	Somali Slope	1.0	07/06/92 - 14/02/93	14, 7	Beaufort, in progress
31	10°43'N	53°34'E	Somali Basin	1.0	07/06/92 - 21/02/93	14, 7	Broerse & Brummer, in preparation
31	10°43'N	53°34'E	Somali Basin	3.0	07/06/92 - 21/02/93	14, 7	Ziveri, in progress

Table 1: Position, geographical location, trap depth, duration of the trap sampling, interval of sampling, and author(s) of the published, in preparation and in progress coccolithophore sediment trap studies. The sites of the sediment trap arrays are shown in Figure 1.

also used to quantify and model export production and assemblage transformation occurring during the sinking process.

Published carbonate budgets vary widely depending on different data sets, and different estimations of production and preservation/dissolution (Emerson & Archer, 1990; Milliman, 1993; Wollast, 1994; Martin & Sayles, 1996). We would like to improve previous evaluations of coccolith contribution to the global carbonate budget, which have been estimated to be 20-75% of the biogenic carbonate production contributed by coccolithophores (Honjo, 1978, 1982; Deuser & Ross, 1989; Fabry, 1989; Fabry & Deuser, 1991)

The International Global *Emiliania* Modelling Initiative (GEM) investigates the coccolithophore-climate interactions by producing a nested suite of mechanistic models, operating at the molecular biological, organismic, ecological and global/geological levels of organisation (Westbroek, 1995). An important issue for the geological GEM branch is to relate the impact of coccolithophores to the oceanic carbon cycle. For this, a better understanding of coccolith particle fluxes through the water-column, and sedimentation onto the sea-floor, is fundamental.

The necessity to organise a data network of the available coccolithophore fluxes was discussed last year at the 6th GEM International Workshop in Blagnac, France (Ziveri, 1996). Recently, I sent a message to the coccolith-server in order to update the list of researchers working on coccoliths in trap samples.

Table 1 lists the coccolithophore studies using sediment traps. In Figure 1, a global view of the corresponding geographic locations is shown. More than one-third of the data are in preparation (ready to be published) or in progress. An initial goal of the International GEM Initiative will be to map out the seasonal and annual fluxes and, when necessary, (re)quantify the coccolith carbonate export production in order to model their fluxes at the studied locations in the world ocean today. This includes the $CaCO_3$ production in the surface-water, as well as the fate of this material as it sinks downwards and settles on the ocean-floor. Sediment traps deployed at different water-depths provide the samples which we investigate. The second goal is to use the model for the present ocean in order to interpret the geological record in the deep sea, so that we can study the evolution of the coccolithophore system over geological time, and in different climate regimes.

If you have worked and/or are working on quantification of coccolith fluxes please let us know, providing the following information: sediment-trap location, sediment-trap and water depths, period of sampling, resolution interval (weekly, biweekly, monthly), and mention which oceanographic parameters are available. Also, please indicate the status of your project(s) (published, submitted, in review, in progress). Of course, this will put you on the mailing list for the results.

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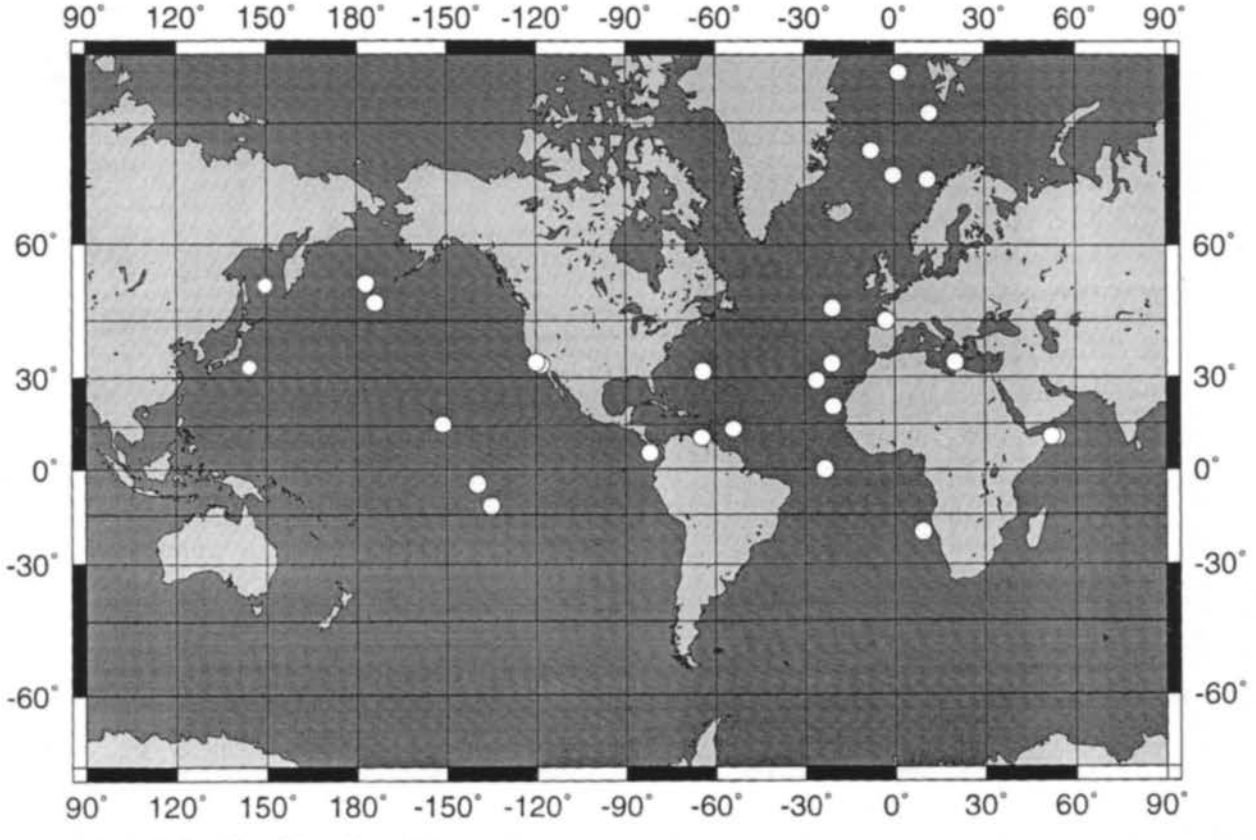

Figure 1: Location of sites from which coccolithophore studies have been carried out or are in progress (see Table 1).

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Biscutum rotatorium (BUKRY 1969) KAENEL & BERGEN 1996, p. 42; (ex *Bidiscus*) A5451
Calcidiscus pataecus (GARTNER 1967) KAENEL & VILLA 1996, p. 123; (ex *Coccolithus*). A5452
Camuralithus KAENEL & VILLA 1996, p. 123. Type species: *Camuralithus pelliculathus* KAENEL & VILLA 1996. A5452
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Clausicoccus vanheckae (PERCH-NIELSEN 1986) KAENEL & VILLA 1996, pp. 123-124; (ex *Cruciplacolithus*). A5452
Clepsilithus maculosus RUTLEDGE & BOWN 1996, pp. 53-54, pl. 1, figs. 4-7. North Sea area; Hauterivian. A5472
Clepsilithus meniscus KAENEL & BERGEN 1996, p. 42, pl. 7, figs. 6, 14-16. Iberia Abyssal Plain; Tithonian. A5451
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Discoaster deflandrei (BRAMLETTE & RIEDEL 1954) var. *nodosus* KAENEL & VILLA 1996, p. 124, pl. 6, figs. 5 & 6. Iberia Abyssal Plain; lower Miocene. A5452
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Discoaster quinqueramus (GARTNER 1969) var. *A* KAENEL & VILLA 1996, p. 125, pl. 6, fig. 31. Iberia Abyssal Plain; upper Miocene. A5452
Ellipsolithus gomidei COSTA & ANTUNES 1994, p. 387, pl. 1, figs. 6a-6c, 7a-7c. Brazil: Paleocene. A5426
Ericiolus THOMSEN in THOMSEN et al. 1995, p. 30. Type species: *Ericiolus spiculiger* THOMSEN in THOMSEN et al. 1995. A5481
Ericiolus frigidus THOMSEN in THOMSEN et al. 1995, pp. 31-32, figs. 5-7. Weddell Sea; living. A5481
Ericiolus spiculiger THOMSEN in THOMSEN et al. 1995, pp. 30-31, figs. 2-4. Kattegat, Denmark; living. A5481
Ericsonia detecta KAENEL & VILLA 1996, p. 125, pl. 4, figs. 1-6. Iberia Abyssal Plain; Oligocene-Miocene. A5452
Helicosphaera limasera KAENEL & VILLA 1996, p. 126, pl. 10, figs. 12 & 13. Iberia Abyssal Plain; Oligocene. A5452
Homozygosphaera macropora (DEFLANDRE in DEFLANDRE & FERT 1954) KAENEL & VILLA 1996, p. 126; (ex *Discolithus*). A5452
Hughesius tasmaniae (EDWARDS & PERCH-NIELSEN 1975) KAENEL & VILLA 1996 p. 126; (ex *Ericsonia*). A5452
Nannoconus inornatus RUTLEDGE & BOWN 1996, pp. 54, pl. 1, figs. 8-12, 14-18. North Sea area; Upper Hauterivian-Barremian. A5472
Nannoconus pseudoseptentrionalis RUTLEDGE & BOWN 1996, pp. 54-55, pl. 1, figs. 20-22. North Sea area; Barremian. A5472
Palaeopontosphaera elliptica (GÓRKA 1957) KAENEL & BERGEN 1996, p. 44; (ex *Tremalithus*). A5451
Palaeopontosphaera salebrosa (BLACK 1971) KAENEL & BERGEN 1996, p. 44; (ex *Cruciplacolithus*). A5451
Percivalia arata KAENEL & BERGEN 1996, pp. 44-45, pl. 8, figs. 3, 12, 14, 15. Iberia Abyssal Plain; Tithonian. A5451
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Rhagodiscus gallagheri RUTLEDGE & BOWN 1996, p. 55, pl. 1, figs. 1-3. North Sea area; Aptian. A5472
Rotelapillus pleoseptatus KAENEL & BERGEN 1996, pp. 45-46, pl. 9, figs. 14, 19-25. Iberia Abyssal Plain; Tithonian. A5451
Rucinolithus windleyae RUTLEDGE & BOWN 1996, pp. 55-56. pl. 1 figs. 24-29. North Sea area; Hauterivian-Lower Barremian. A5472
Sphenolithus akropodus KAENEL & VILLA 1996, pp. 127-128, pl. 11, figs. 1, 2, & 4-11. Iberia Abyssal Plain; lower Oligocene. A5452
Sphenolithus aubryae KAENEL & VILLA 1996, p. 128, pl. 11, figs. 16-18. Iberia Abyssal Plain; lower Miocene. A5452
Sphenolithus cometa KAENEL & VILLA 1996, p. 128, pl. 11, figs. 22-24. Iberial Abyssal Plain; lower Miocene. A5452
Sphenolithus disbelemnos FORNACIARI & RIO 1996, pp. 28-30, pl. 2, figs. 7-10; pl. 3, figs. 19,20; pl. 4, figs. 1-4. Equatorial Indian Ocean; lower Miocene. A5439
Syracosphaera lamina KAENEL & VILLA 1996, p. 128, pl. 14, figs. 21-22. Iberia Abyssal Plain; Oligocene-Miocene. A5452
Tranolithus incus KAENEL & BERGEN 1996, p. 46, pl. 7, figs. 1, 4, 7-8. Iberia Abyssal Plain; Tithonian. A5451
Vagalapilla parallela (WIND & ČEPEK 1979) KAENEL & BERGEN 1996, p. 46; (ex *Rhadolekiskus*). A5451
Watznaueria tubulata (GRÜN & ZWEILI 1980) KAENEL & BERGEN 1996, p. 47; (ex *Ellipsagelosphaera*?). A5451
Zeugrhabdotus scutula (BERGEN 1994) RUTLEDGE & BOWN 1996, p. 56; (ex *Reinhardites*). A5472

Calcispheres

Praecalcigonellum duopylum WILLEMS 1995, pp. 146-150, figs. 1-3. The Netherlands; Danian. A5490

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New Calcareous Nannoplankton Genera

Camuralithus
Ericiolus

New Calcareous Nannoplankton Species and Varieties

akropodus, Sphenolithus
arata, Percivalia
aubryae, Sphenolithus
circus, Reticulofenestra
cometa, Sphenolithus
covingtonii, Ansulasphaera
deflandrei var. *nodosus, Discoaster*
detecta, Ericsonia
disbelemnos, Sphenolithus
frigidus, Ericiolus
galicianus, Diazomatolithus
gallagheri, Rhagodiscus
gomidei, Ellipsolithus
incus, Tranolithus
inornatus, Nannoconus
lamina, Syracosphaera
limasera, Helicosphaera
maculosus, Clepsilithus
meniscus, Clepsilithus
parvulus, Crepidolithus
pelliculathus, Camuralithus
pleoseptatus, Rotelapillus
pseudoseptentrionalis, Nannoconus
quinqueramus var: *A, Discoaster*
sinespina, Conusphaera
spiculiger, Ericiolus
windleyae, Rucinolithus

New Calcisphere Species

duopylum, Praecalcigonellum

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compiled by Kevin Cooper

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