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#### FROM THE PRESIDENT

Peter Forey, Department of Palaeontology, The Natural History Museum, South Kensington, London, SW7 5BD P.Forey@nhm.ac.uk

I trust that you all our members have had happy and productive Summer, carrying out field work, attending conferences, musing upon the beaches. Hopefully some of this activity will sow the seeds of a meeting and volume in some of you. Our main activity of publishing has been stifled a little of late due to the takeover of our publishers (Chapman & Hall) by Kluwer Academic. The new deal we were offered was not acceptable and we were left temporarily in limbo. However, after doing the rounds of the publishers we have now signed a contract with Taylor & Francis, an old firm hitherto specialising in medical and toxicology books but now wishing to enter mainstream biology, especially systematics. They have recently taken over the publishing of Systematic Biology which should give our publications a great deal of exposure to exactly the people we would like to interest.

Sadly, I have to report that Ken Johnson, our membership secretary is forced to relinquish his post because his contract at Glasgow comes to an end and he has taken an appointment in the US which he starts February of next year. Of course we wish him well and offer our thanks for all the work he has done. I appeal to someone to come forward as a replacement: if you want to know how easy / difficult it is, I invite you to ask Ken (K.Johnson@geology.gla.ac.uk).

Peter Forey

#### FROM THE EDITOR

Neale Monks, Department of Palaeontology, The Natural History Museum, South Kensington, London, SW7 5BD N.Monks@nhm.ac.uk

After a long summer filled with field trips and other recreational activities, what better way to see the autumn in that to settle down in a favourite armchair with something good to read? Or, failing that, this season's issue of the Systematics Association newsletter.

As with previous issues, there are the usual reviews of books and announcements of impending meetings, but in addition I'm pleased to include a new feature: a little bit of actual science. Sort of. Turn to the back pages, don't take it too seriously, and enjoy!

Finally, an appeal to recipients of SA awards, great or small. In each issue we list the awards, but besides the title of the project, it isn't always obvious what the award was for. Why not write a few lines to tell the Association exactly what is was the award enabled you to do.

Neale Monks

#### **GRANTS & AWARDS SUBCOMMITTEE**

Richard Bateman, Chairman, Grants and Awards Subcommittee Royal Botanic Garden, 20A Inverleith Row, Edinburgh EH3 5LR R.Bateman@rbge.org.uk

The 39 applications for grants received during 1997/8 totalled £28,100, both figures comparable with 1996/7; we can now safely conclude that there is a reliable constituency for SA grants. The majority of applications were again prompted by word of mouth. There were gratifying proportional increases in applications from the young and retired versus the middle-aged, though still a dearth of applications from bona fide amateurs and poorly endowed institutions. Molecular zoological projects increased in frequency at the expense of molecular botanical proposals, and £600-700 became the (more realistic) modal category for requests. Applications represented 12 countries, including for the first time Belgium, Germany, Austria, Finland, Slovakia and Vietnam.

The six-strong panel carried forward from 1996/7 five members (Bateman, Curry, John, Page, Williams) but the late Gilbert Larwood — co-instigator of the grants scheme — was replaced by Peter Hollingsworth. Ranking the proposals was even more challenging than in previous years, as the previous supply of poor or clearly inappropriate proposals appears to have been exhausted, leaving a remarkably high proportion of fundable projects.

After some debate and at the Treasurers request, the council formally voted an increase in the official annual grants allocation from £5000 to £6000. Once again, council then agreed to fund the top ten proposals (26% of applications) at a total cost of £6035 (21% of the total requested); similar figures to 1996/7. The successful proposals were as follows:

Digital image capture and computerised plate reconstruction in palaeobotany; Dr Jason Hilton, Chinese Academy of Sciences, Beijing, China (£660).

Heirlooms or souvenirs: have avian lice cospeciated with their hosts?; Mr Vincent Smith, University of Glasgow, UK (£700).

Interactive guide to the identification of ciliated protozoa in sewage; Dr Alan Warren, Natural History Museum, UK (£500).

Psyllid sound: the role of insect communication in mating, speciation and host specificity; Ms Diana Percy, University of Glasgow, UK (£745).

Biosystematics of *Tarenna* (Rubiaceae) on Madagascar; Dr Petra De Block, National Botanic Garden of Belgium (£565).

Phylogeny and biogeography of fossil sparids (Pisces: Teleostei); Ms Julia Day, University College London, UK (£585).

Phylogeny of Mesozoic cockroaches based on microstructures; Mr Peter Vrsansky, Comenius University, Slovakia (£560).

Molecular evolution in eusocial snapping shrimps; Dr Cheryl Morrison, Duke University, Durham, USA (£520).

Intraspecific variation in the Sand Goby; Mr Sergio Stefanni, University of Bristol, UK (£600).

Morphological systematics of Tertiary mammals from Dorset; Dr David Harrison, Harrison Museum, Sevenoaks, UK (£600).

This list demonstrates that the zoologists have rebounded well from the botanical bonanza of 1996/7. This is probably the most diverse set of funded projects to date, encompassing the purchase of hardware and consumables, study visits and fieldwork (including the funding of a field assistant). Taxonomic groups under consideration range from broad-brush phylogenies to infraspecific differentiation, and primary goals from the conceptual to the strongly applied (including our first venture into sewage!). And for the first time we have funded

projects in five countries.

Reports have begun to arrive documenting progress in research projects supported by 1996/7 SA grants. The first three to be received all concern island endemic plants. Michael Moeller (RBG Edinburgh) reported successful collection and DNA sequence analyses of rare species of Streptocarpus and Saintpaulia collected on Madagascar, further elucidating the evolution of the latter from the former Similarly, Mark Watson (also RBG Edinburgh) reported successful sequencing of umbellifers from the arid island of Socotra, off the Horn of Africa, though the results have yet to be integrated into his pre-existing data-matrix of other taxa. Naomi Kingston (Trinity College Dublin) reported increasing the number of known populations of the Pitcairn Island endemic tree-fern Angiopteris chauli donta from one to six. All populations were examined morphologically in the field and sampled for subsequent DNA analysis to establish its conservation credentials.

In summary, the grants scheme is amply proving its worth, and a reliable stream of high-quality proposals seems assured for the foreseeable future. Although lower than ideal, the current success rate of 20-25% of applications is higher than in most competitive grant schemes, and the grants undoubtedly gain in immediacy what they lack in size.

Having chaired the Grants and Awards Subcommittee for three years, as of May 1<sup>st</sup> 1998 I am handing over the tiller to Dr Peter Hollingsworth, a colleague at RBG Edinburgh already familiar with the established system for processing the applications. I would like to take this opportunity to thank the various panel members who have given much time to assessing the proposals over the past three years, and the 115 applicants who have sought our support.

It only remains for me to remind readers that application forms can be obtained from October 1st onward by writing to the subcommittee chair (Peter Hollingsworth, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh, EH3 5LR, U.K.) or by downloading the form from the Associations' Website, which by then should have been updated and transferred from Chapman & Hall to the University of Glasgow. Completed application forms must be received by December 31st 1998.

Richard Bateman

#### Notes from Award Recepients

David Harrison, Chairman of Trustees, Harrison Zoological Museum, Bowerwood House, St Botolphs Road, Sevenoaks, Kent TN13 3AQ

Thanks to the kind support of the Systematics Association small grants scheme, we have now bought a drawing arm for our new Leica MZ8 stereomicroscope. The 'arm' – a series of mirrors allowing both the object and the drawing stylus to be seen simultaneously – is already proving invaluable for our Tertiary

Kent. Drawings of two new genera of Eocene snakes are currently in press as well as the petrosals (inner ear capsules) of Eocene small mammals, including *Microchoerus* (Omomyid Primate) hitherto unknown, as well as *Amphiperatherium* (Didelphid Marsupial) and *Gesneropithex* (Erinaceoid Amphilemurid), also unknown in Britain. The 'arm' is now being used for the illustration of rare mammal teeth from Creechbarrow in Dorset, a Robiacian (Upper Middle Eocene) site, about 41.5 million years old. All in all, the 'arm' is a great tool for taxonomic research and one that will be used in the Museum for many years to come. We thank the Systematics Association for their generosity.

**David Harrison** 

#### **MEETINGS**

## Pollen and Spores: Morphology and Biology, July 1998

Cynthia Morton, University of Reading, School of Plant Sciences, Department of Botany, Whiteknights, PO Box 221, Reading, RG6 6AS, UK c.morton@reading.ac.uk

The fourth in an occasional series of palynological conferences organised under the auspices of the Linnean Society, in collaboration with the Royal Botanic Gardens, Kew, the Natural History Museum, London and the Systematics Association, was held at the Royal Botanic Gardens, Kew and The Natural History Museum, London from the 6<sup>th</sup> — 9<sup>th</sup> July. The scientific programme included two special sessions: Pollen development, commemorating Prof. Jack Heslop-Harrison, and Pollen-pollinator and pollenstigma interactions, commemorating Prof. Bruce Knox. The other sessions represented a wide range of subjects within the range of pollen and spore studies: Experimental and living systems; Systematics and evolution (Pteridophytes, Gymnosperms and angiosperms); Evolutionary trends and phylogeny; Pre-Cretaceous; Cretaceous and Tertiary; Quaternary; plus a small session on pollen variability and anther development in the genus *Nelumbo*.

Approximately 140 delegates attended the meeting. Apart from about 20% UK residents, the gathering was impressively international with representatives from Argentina, Australia, Austria, Belgium, China, Czechoslovakia, Denmark, Egypt, France, Germany, Hungary, India, Iran, Israel, Italy, The Netherlands, Poland, Russia, South Africa, Spain, Sweden and the United States. Ninety two contributions were given, comprising 43 oral, and 49 poster presentations.

The conference was timed to coincide with the retirement from Kew of Keith Ferguson, founder and first Secretary of the Linnean Society Palynology Group (1974–1987), and founder and Head of the Palynology Unit of the Royal Botanic Gardens, Kew (1972–1998). The social programme included two receptions; the first was given by the Director of Kew

hosted by the Linnean Society of London. An optional tour of the gardens at Kew preceded a very successful conference dinner, in honour of Dr Ferguson, held at the Richmond Hill Hotel. An event which provided an ideal opportunity for participants to relax and further professional links established during the conference.

The Organising Committee (Madeline Harley; Paula Rudall, Lisa von Schlippe Hannah Banks (Royal Botanic Gardens, Kew) Cynthia Morton (Reading University); Stephen Blackmore (Natural History Museum, London)) is indebted to numerous colleagues and friends for their help including: the participants in oral and poster sessions, the chairmen, Peter Stafford (Natural History Museum, London), Kew student volunteers, Anne Morley Smith and Vivien Munday (Royal Botanic Gardens, Kew) the friends of Kew, and many others too numerous to mention for their contribution to the undoubted success of the Royal Botanic Garden, Kew 1998 Conference.

The Conference Proceedings: Pollen and Spores: Morphology and Biology, edited by Madeline Harley, Cynthia Morton and Stephen Blackmore, will be published by the Royal Botanic Gardens, Kew, with a pre-Millennium publication goal.

Cynthia Morton

### THE FLAGELLATES, SEPTEMBER 1998

Jeremy Young Department of Palaeontology, The Natural History Museum, South Kensington, London, SW7 5BD J.Young@nhm.ac.uk

Flagellates are notoriously indecisive organisms and turn up at meetings on protozoology, algology, and micropalaeontology. Nonetheless, there is a distinct community of flagellate specialists who get together for symposia every four years or so. This time round Barry Leadbeater and John Green were the hosts and the Systematics Association sponsored the meeting.

Holococcoliths, an example of the nanofabrication talents of flagellates



<sup>1</sup>The other great doyenne of protistology, Lynn Margulis, would prefer us to refer to undulipodiate protoctists, but this terminology has not proven popular.

THIS WAS ALSO THE HILL OLDER AND LEADUCATED Systematics Association Symposium, following previous successes, in Plymouth, with the Haptophyte Algae and the Chromophyta. Before these, in Easter 1985, Barry co-organised, with Rob Riding, another SAS, on Biomineralization in Lower Plants and Animals. I was doing my PhD then and left a fieldtrip in Arran to hear Irene Manton discuss possible functions of mineralised periplasts (coccoliths, silicified scales and such like). I am glad I did, since it was the only time I met her and her paper summarised most of what can usefully be said on the subject. Like almost everything she wrote, it is still well worth reading. She is most famous, of course, for discovering the 9+2 structure of the flagellum which constitutes one of the widest synapomorphies of the eukaryotic world. We are indeed all flagellates, as Jeff Salisbury reminded us at this meeting, by showing, in 12foot high projection and tasteful red, black and blue false colour, a sperm cell with flagellum firmly to the front. He also mentioned it was one of his. Higher plants and animals are, however, merely interesting backwaters in the great theme of flagellate diversity and attention was appropriately concentrated on the flagellate protists<sup>1</sup>. These include familiar friends from the classroom such as euglenids, haptophytes and dinoflagellates and then the rest, opalinids, crytomonads, eustigmatophytes, chrysophytes, retortomonads, diplomonads, heterolobosea, jakobids and others. All these are as different from each other as they are from the common or garden sperm cell. This splendid diversity is expressed in terms of, flagellar type and ultrastructure, mitochondrial presence or absence, biochemical pathways, cell coverings, plastid nature, and organelle membranes. Many talks reviewed diversity in one or more of these aspects, or probed particular key problems, whilst several more attempted to synthesise the diversity in re-arranged phylogenetic schemes - with Tom Cavalier-Smith rounding off the conference with his latest version. Diversity is lower in terms of species numbers, maybe only 10,000 but much of it is still undescribed. Several workers reported strange new or undescribed species and Laure Guillou announced an entire new class of free living nanoflagellates, the Bolidophyceae, a likely sister group of diatoms. On the ecological side we heard about flagellates living parasitically in an unpleasantly wide range of hosts and free living in every type of aquatic environment imaginable, including antarctic ice, and groundwaters hundreds of meters below the surface. Also of course flagellates can be autotrophic, or heterotrophic,

giving rise to interesting intermediate options such as mixotrophy, chemotrophy (including alcoholotrophy, first reported at the St. Petersburg flagellate symposium), auxotrophy, osmotrophy, and phagotrophy.

The routine stuff: About 80 delegates attended, from the usual wide range of nations but most noticeably the UK, Germany, Scandinavia, USA and Australia (not many Australians in fact but they were very noticeable). There was also a healthy age mix from lively PhD students to, still enthusiastic, senior scientists. Thirty seven talks, were given over three days, a mix of invited and open presentations, and about as many posters. The invited talks are being written up as a Systematics Association volume, which will almost certainly join its predecessors on the Chromophyta and Haptophyta as an essential benchmark volume. On the social side Barry organised use-

tui vai extensions and execuent evenings in the Birmingham Sea-Life Centre and the University Botanic Garden. I certainly enjoyed the meeting and felt quite tempted to redesignate myself as a flagellist, particularly if Mark Farmer of Athens Georgia fulfils his tentative commitment to host the next meeting.

Jeremy Young

MAJOR EVENTS IN VERTEBRATE EVOLUTION — PHYLOGENY, PALAEONTOLOGY, AND DEVELOPMENT — NATURAL HISTORY MUSEUM, LONDON, England, 8-9 APRIL 1999.

Per Ahlberg, Department of Palaeontology, The Natural History Museum, South Kensington, London, SW7 5BD P.Ahlberg@nhm.ac.uk

Our understanding of the origin and early evolution of vertebrates is advancing rapidly, not only due to new fossil discoveries and phylogenetic analyses, but also to discoveries in developmental genetics. This conference, sponsored by the Systematics Association and the Natural History Museum, will bring together leading workers from palaeontology, developmental biology and comparative anatomy to address the major questions in this field.

The story of vertebrate origins is the story of how the various vertebrate body plans, and the developmental cascades which generate them, were assembled by evolution. General problems include recognising homologous structures and gene expression patterns between groups and understanding the steps by which major morphological transformations were accomplished. Specific topics to be addressed by the meeting include the origin, patterning and early evolution of jaws, appendages and mineralised tissues, as well as the early diversification of vertebrates.

The meeting will be held at London's Natural History Museum, one of the foremost centres in the world for systematic and evolutionary research. All speakers are invited, but there will be an open poster session allowing non-speaking delegates to present their work.

PROVISIONAL SPEAKER LIST:

P.E. Ahlberg, W.E. Bemis, J.A. Clack, M.I. Coates, P. Donoghue, P.L. Forey, H.E. Gee, J. Hanken, J.R. Hinchliffe, R. Hitchin, N. Holder, L.Z. Holland, P.W.H. Holland, P. Janvier, R.P.S. Jefferies, J. Joss, J. Mallatt, J.G. Maisey, B.D. Metscher, R.G. Northcutt, M.A. Purnell, I.J. Sansom, H.-P. Schultze, M.M. Smith, M.P. Smith.

For further information, photocopy the form printed at the end of this newsletter, fill it in, and send to the Convenor, at:

Per Ahlberg, Department of Palaeontology, The Natural History Museum, South Kensington, London, SW/ 5BD fax: (UK) 171 938 9277

#### **BOOKS**

#### **New Publications Agreement**

Alan Warren, Editor-in-Chief, Department of Palaeontology, The Natural History Museum, South Kensington, London, SW7 5BD apw@nhm.ac.uk

As many of you are doubtless aware by now Chapman & Hall, the publisher of the Association's volumes for the past few years, has been bought out by the Dutch publishing group Kluwer. This has resulted in the closure of Chapman & Hall's offices in London and the transfer of all operations to Kluwer's headquarters in The Netherlands.

The implications of these events for the Association were discussed at a meeting earlier this year with one of Kluwer's representatives. It was evident that the terms being offered by Kluwer were very different (i.e. in terms of royalties, print runs, pricing policy etc.) from those which we had enjoyed with Chapman & Hall, prompting us to search for a new publisher.

Following the July Council meeting it was agreed that we would offer our publishing contract to the London-based firm Taylor & Francis. Although they do not have a particularly strong background in the field of systematics, Taylor & Francis are expanding into this area as evidenced by their recent acquisition of the North American journal "Systematic Biology", and they expressed a strong desire to continue this expansion further.

At the time of writing, the contract for our volume series is about to be signed. The terms of this contract do not differ radically from those of our previous contract, although the royalties are slightly lower at 12% (compared to 15%). Importantly for the Association, Taylor & Francis have agreed to retain the 25% discount on SA volumes for members.

Further details about Taylor & Francis can be found on their web site address (http://www.tandf.co.uk). I am very optimistic that this will prove to be a successful venture for the Association.

Alan Warren

#### Review —

GEOFFREY TRESISE WITH WILLIAM A.S. SARJEANT (1997). THE TRACKS OF TRIASSIC VERTEBRATES: FOSSIL EVIDENCE FROM NORTH-WEST ENGLAND. HMSO, 204 PP, £65.

Jo Wright, BBC,

Broadcasting House, London jo.wright.01@bbc.co.uk

The Tracks of Triassic Vertebrates is essentially an historical account of the discovery of fossil footprints (mainly *Chirotherium*) of Triassic tetrapods. It contains short biographies of the main collectors and scientists who studied the footprints, as well as accounts of the history of local societies which played major roles in the collection of these specimens.

The book is laid out generally chronologically, and then divided up into sections on different quarries or societies. The Prologue deals with the way in which footprints are made and preserved as fossils. The first chapter reviews the first ever discoveries of fossil footprints. A later chapter deals very briefly with the rock strata in which the footprints were found. This puts the footprints in context, and perhaps should have been placed earlier in the book. The rest of the book is a straightforward description of the discovery and study of the specimens now held in museums, heavily laced with quotations.

The book is lavishly illustrated, with both black and white and colour photographs as well as diagrams and sketches. The photographic reproduction is of a very high quality. Specimen numbers are given for nearly all the photographs, either in the captions or the footnotes. However, there are no scales on any of the photographs making its use as a reference source for the study of these footprints very limited. The scientific part of the book is very restricted. The section on the formation and preservation of footprints could easily have been expanded and the chapter on the geology of the footprint bearing beds would have benefited from some discussion of the palaeoenvironments represented by these rocks which would have allowed the reader to better understand the overall setting in which the footprints were made. There is also no discussion on how footprints are or should be named or classified. This is a thorny problem and a discussion of this issue might have allowed the reader to better understand the problems and the way in which the study of fossil footprints is different from that of body fossils.

It is difficult to follow the thread of the book — it jumps around from biographies, historical accounts and slab descriptions. It is very repetitive in places with both information and even quotations. The Beasley archive information has been previously published several times and perhaps need not also have been reproduced here. The book was further marred by a few careless errors, such as the description of a reconstruction of a Triassic landscape "with Chirotherium leaving its footprints" (p. 148). *Chirotherium* is the ichnogeneric name applied to the footprints not the trackmaker - even if the bones of the trackmaker were found at the end of the trackway, they would have to be placed in an osteological genus with a different name. This book is obviously the result of a great deal of painstaking research, however it is difficult to come away from it without feeling that it was an opportunity wasted. It is very rare to be able to publish such a well illustrated book with high quality photographic reproduction. The inclusion of scale bars in all the photographs would have been a great improvement. The book doesn't seem to live up to its name - the fossil evidence is not examined and

weigned. A few diagrams summarising the different footprint types, and relating them on morphology to their probable trackmakers would have made the account much easier to follow.

A little more analysis and comment would have put the tracks in context and made the whole book feel more rounded, because as it is the reader is left with no real feeling for the types of animals that were around in the Triassic, or indeed the kind of environment in which they were living.

Jo Wright

# CORALS, LIFE & GLOBAL CHANGE, MORE OR LESS SINCE THE START OF THE CRETACEOUS

G.O. Rubble Department of Palaeoblobology The Notional Mystery Museum South Kennington London SE4

Submitted to:

Gulliver & Rawhide (eds)

What goes up must come down: a history of nearly everything over the last 145 million years.

Originally to be published by Slaphead & Wart but due to a takeover, now lost in a warehouse somewhere near Bombay.

Introductory note:

This account was originally intended to be a normal scientific paper with things like data, facts, methods, results and references. After some lively discussion with the editors however, it was decided to dispense with these awkward conventions and retain only the interesting final discussion section.

(This is a contribution to the Whole Earth Research Programme Global Messes in the Biosphere)

#### **CHAPTER 1: THE CRETACEOUS**

#### **Achilles and the Tortoise**

Once upon a time long before the Daman, there were some naughty paucispecific bivalves called rudists (well, with a name like that, what would you expect?). To begin with, they didn't look up to much and kept themselves to themselves in back reef environments of the Late Jurassic when everyone else was far more interested in ammonites. After a while, though, they got a bit above their station and started to bully their neighbours, the corals. Soon they were boasting they could competitively displace the corals and beat them across the K-T boundary.

At first, the corals didn't do too badly. They spread themselves about in Urgonian pseudo-sub-bioconstructional lithosomes and generally kept the rudists in check. As they headed into The Albian Big Bend, however, things started to get rather out of hand. The rudists began to run much faster, and by the Cenomanian water jump, they were easily out-competing the corals, cheating as they went. One particularly nasty rudist, Toryites hamiltoni, took an Island-Hopping short-cut from the Caribbean across the Pacific and back again via a small university in Milton Keynes, having first received large cash donations to party funds in grubby brown envelopes. The rudists got further and further ahead and by the Toryonian they had hogged all the constratal hyperspace and drunk up all the nutrients. In fact they even pinched the symbiotic algae from the corals and got high on translocated alcohol. Some simply got bigger and bigger. The corals plodded along behind getting wearier and wearier, becoming ever more disconsolate.

But then Super-Tethys arrived and started to get incredibly hot. This was intended to put the corals off, but after a bit, the rudists found this jolly uncomfortable, too. There were no data anywhere. Sea levels rose to unprecedented levels and Chalk spread all over the world. Corals choked in it, and millions of geologists died of boredom trying to understand it. Elsewhere other corals started to show signs of Competitive Displacement Syndrome, some got BSE, while others just got Competitively Replaced into downslope ramp sites, but there wasn't much they could do about it, so they just kept plodding on, stoically.

It got hotter and hotter, with a lot of orbital forcing. Geologists panicked and Professor Holy Gale forced whole teams of weary NHM scientists down to Eastbourne to collect yet more broken bits of Chalk

Major Events in Vertebrate Evolution — Phylogeny, Palaeontology, and Development
[ ] Yes, I am interested in the meeting. Please send me the second circular. [ ] I would like to present a poster.
Provisional title:
Name:
Address:

everywhere out an the folling corais made the occans stagnant and anoxic. Even the dinosaurs started to feel uncomfortable, especially after some near misses with lumps of iridium coming in from outer space without prior warning. Life in the fast lane for the rudists however now started to take its toll, as the Greenhouse Effect rapidly started to turn into the Doghouse Effect. Superstratal elevators got the wilts. Other rudists clattered into some buried carbon anomalies or lost their way on hitherto unsuspected strontium excursions. Aragonite got turned into calcite, and then followed olistoliths, ophiolites, and worst of all, anoxic events. It was all proving too much for the naughty rudists. Unable to handle it any longer, they needed a rest and started to become constratal recliners, just for a million years or so, thinking the corals were so far behind they'd never catch up now. Previously inconspicuous rudist bouquets turned into immense social aggregations, building huge reefs, taking over the reef tops where the corals themselves should have been. (As is well known, all corals live in warm shallow tropical waters.) Lord Peter Skeleton of Evolution warned them at great length about the impossibility of rudist reefs, but they just wouldn't pay attention. The dispossessed and exhausted corals staggered along behind, totally unable find any spare ecological hypervolume. Their only option was to keep going, even though they had to go the long way round on either side of Super-Tethys. In the meantime, on land, dinosaurs aberrantly started to eat cycads instead of each other, while in the oceans, the ammonites became decadent and uncoiled themselves in their efforts to cool down.

Will the naughty rudists heed Lord Skeleton's dire warnings? Can the ploddy old corals ever catch up on the evolutionarily superior rudists? Will there ever be any data to support the idea of Super-Tethys? Wait to find out in the next compelling instalment.

Brian Rosen