Pander Society Newsletter

Compiled and edited by P.H. von Bitter and J. Burke

DEPARTMENT OF NATURAL HISTORY (PALAEOBIOLOGY SECTION),
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Introductory Remarks

Almost a year has gone by since I assumed the duties of Chief Panderer, and one of my very pleasant initial duties was to thank the outgoing Chief Panderer, Dick Aldridge, for looking after our interests in conodont matters so capably & cheerfully. I did so by sending the following letter on behalf of all Panderers:

Professor Richard J. Aldridge Toronto, May 27, 2004

Dear Dick:
At a business meeting of the Pander Society, held during the Pander Society Symposium the week before last at Brock University in St. Catharines, Ontario, the assembled members unanimously expressed their gratitude for the very capable scientific leadership, humour and humanity with which you led the Pander Society during the past few years. Our Society has prospered under your strong scientific guidance, and it is a very great pleasure to thank you for having looked after the interests of the Society and conodonts so conscientiously and well. It will be a hard act to follow.

I join with all Panderers in wishing you all the very best, both scientifically and personally; may you have many more successes, and may you have a long, healthy and happy life.
Peter
Peter von Bitter
Chief Panderer

Mrs. Alison Thomas assisted Dick very capably for several years in preparing the Newsletter. I have corresponded with Alison during the last year, retrieving and discussing membership lists etc., and this Newsletter gives me the opportunity, on your behalf, to thank Alison for her capable work for the Pander Society, both during Dick's tenure and at the start of mine.

Mark Purnell has agreed to continue to be our 'Webmaster' and our connection with the www server at Leicester, U.K. will also continue. Joan Burke, after retiring last year from the ROM, came back this spring on a part-time basis to help assemble this Newsletter. My thanks to both Mark and Joan.

Peter von Bitter, Toronto, Canada peterv@rom.on.ca May 12, 2005

Obituary:

ALAN CHARLES HIGGINS
1936 – 2004

Just as the 2004 Newsletter was going 'to press', Panderers were saddened to hear of the sudden death of Alan Higgins. Alan had a relaxed, quiet, kind and friendly personality with a thoughtful, dignified and polite manner. His advice, encouragement, guidance, diplomacy and other leadership qualities, especially his concern for the welfare of students and colleagues, were much valued in the workplace. He was popular, with a sense of humour and a ready smile. He was industrious, perceptive and highly-motivated during his career. A career which spanned 40 years of achievement - 20 years in the University sector, as a conscientious teacher, able administrator and keen researcher, and 20 years in the commercial sector, mostly in the oil-related industry at a senior managerial level. He was quick to grasp the significance of new techniques (often non-geological) and their potential application to biostratigraphy in particular.

Alan was born on 16th December 1936, the youngest of three children. He was brought up in Stoke-on-Trent and in 1956 went to Sheffield University to study geology. After graduation he continued at Sheffield University to undertake research for a PhD under the supervision of Professor Leslie Moore. In 1964 he joined the academic staff of Sheffield University. His expert knowledge of conodonts was much in demand and he was frequently hired as a consultant. His thorough, detailed and meticulous study of Carboniferous conodonts from the South and Central Pennines, which he commenced as a post-graduate

Alan Higgins in 1984 on Melville Island in the Canadian High Arctic, while sampling Pennsylvanian and Permian strata with John Utting & Peter von Bitter (photo: PvB)

was published in 1975. This research was later expanded into Europe. His early research described conodonts from Scotland, though Cumbria and Staffordshire into Spain, Portugal and Belgium. He was also involved in a team project relating to the stratigraphy of rocks in Greenland. For his research undertaken at Sheffield University, Alan was promoted to a readership and was awarded a DSc.

In 1983, Alan left the University of Sheffield and moved to Canada when he was hired by the Geological Survey of Canada (GSC) to work on conodonts. Previously (1978), he had worked for Pan Arctic Oils undertaking Carboniferous consultancy and field work, particularly on Melville Island in the High Arctic, and a sabbatical in 1981 was spent at the GSC in Calgary. In 1984, he became Head of the Palaeontology Subdivision at Calgary, and later that year became Chief Palaeontologist of the GSC. In mid-1986 Alan returned to England. Between 1986 and 1992 he worked as a Research Associate in the Stratigraphy branch of the BP Research Centre at Sunbury on Thames, Middlesex. Whilst at BP he developed strontium isotope databases and was able to fulfil one of his ambitions, namely to fund projects he considered worthy of support and in so doing to assist the development of the careers of younger scientists.

In 1992 Alan left BP and with John Athersuch and Paul Britton set up a company, StrataData, that developed biostratigraphic software and undertook biostratigraphic studies. Here Alan continued to develop strontium isotope databases for the Phanerozoic, and played a major role both as a bio- and chemostratigrapher. Most recently he was working on a project to calibrate the different Mesozoic and Cenozoic timescales. At StrataData Alan contributed to many oil-related reports on mainly Mesozoic or Tertiary strata from areas such as the North Sea, Trinidad, Papua and New Guinea. He was able to achieve what I am sure was another ambition, namely to do the research he wanted to do, when and where he wanted to do it.

Alan, throughout his career, was supportive of the work of the IUGS Subcommission on Carboniferous Stratigraphy. He was secretary to the Mid-Carboniferous Boundary Working Group and was involved in the production of many reports. He co-edited a special publication by the Yorkshire Geological Society on the Carboniferous of the USSR. Alan was an active participant of the Pander Society and when the Pander Society met in England in 1985, Alan co-edited the volume 'A Stratigraphical Index of Conodonts'.

Alan was a highly regarded, experienced and well-respected scientist, but besides geology, he had many interests including researching the Redford Pottery, since he had known the founders of that company. I had the privilege of Alan's friendship for almost 40 years. His advice and opinions given over the telephone, or when out walking, or over a meal and a glass of wine, I valued greatly. He had a passion for life and will be fondly remembered by his many friends within the Pander Society.

Ronald L. Austin, Swansea, Wales, January 2005.

(For a more comprehensive obituary, complete with selected references, please see R.L. Austin, B. Owens & E.G. Spinner *in* Journal of Micropalaeontology 23:191-192, 2004).

History of Conodont Research

Pander's Tooth

by Dr. Simon Knell

The last *Pander Society Newsletter* reported that I am working on a history of conodont studies. A year down the line, I now have a pretty good idea of the shape of the book and what it will cover. It has two aspects. The first is to produce a contextualised history of 150 years of conodont research. The second is to use this history to provide a high resolution analysis of the workings of science across its generations of workers – to examine partnerships and communities, objects and methods, technologies and opportunities, discoveries and change, and so on. Conodont research provides a unique opportunity for this kind of study. Along the way I shall also look at change in the wider scientific contexts of geology and palaeontology.

I currently have 13 chapters in various stages of completion but there may be fewer in the final book as a result of merger and reshaping. The subjects of the chapters are: 1. Everything from the 1840s-1914; 2. US biostratigraphy 1915-1952; 3. Palaeobiology 1915-1952; 4. Taxonomy and revision 1952-1964; 5. European biostratigraphy 1952-1970; 6. Assemblages and taxonomy 1952-1983; 7. Evolutionary studies 1950s-1983; 8. Palaeoecology esp. 1970s-1983; 9. CAI 1974-2006. 10. The animal 1968-1988. 11. Palaeontological events 1980-2006. 12. Palaeobiology 1989-2006. 13. Analysis and conclusions.

The topics may seem rather technical but the book itself will, I hope, be considerably more engaging and consist of more generally accessible themes. I am not writing a popular history of the kind you might pick up in an airport shop but rather a book that will say something new about the dynamics of science. The timetable for completion is governed by the UK's research assessment exercise, which essentially gives me 18 months to finish it. So I have something of a mountain to climb and many people to speak to and not much time to do it in. I also need to get the chapters into a fairly mature state before talking to those people who were actors or witnesses, and who will be able to fill those critical gaps that don't appear in scientific papers. Some chapters – such as that on palaeobiology in the 1930s and 1940s – are now very mature. Indeed, that chapter is currently with a US publisher along with the book proposal. Others are not too far from being in that position – such as that covering US biostratigraphy in the same period. Others are pretty much mapped in terms of workers, papers and sub-themes. The chapter on CAI is perhaps the least pinned down at this moment. The European biostratigraphy chapter will focus on the Marburg school but also on key developments in Silurian and Ordovician stratigraphy in the same period. The palaeontological events chapter will also focus on certain periods where there is a good deal of data (poss. Silurian and Devonian). I have other topics, such as graphic correlation, which have yet to find a home but which I do intend to cover along with other developments in stratigraphy. And aside from the particular areas of focus which enable deeper discussion of methods and thinking, there will be discussion of papers which show the development of new lines of research.

Finally, I should say something about my approach to writing this book as there are many different kinds of science history. Firstly, I am writing a history rather than a scientific review. Thus at no point do I

say who was wrong or who was right – my job is to report what workers understood and why, and what *they* considered correct. It is my intention to place the reader next to those workers active in 1932, for example, and enable that reader to understand why they saw what they saw in the context of their time and without the hindrance of hindsight. Clearly scientific ideas form the skeleton of the book but I am also asking who knew who? Who mentored which student? Where did that idea come from? What was that city like after the war? Where did he study? And so on. Along the way I have to make choices about the things to be covered and the things omitted, and sometimes these decisions reflect the need to show the full breadth and diversity of conodont studies, rather than chart every moment. Some chapters may show a linear development of thinking over time, others may survey some key studies to reveal the application and implications of a technique or approach. The book does not chart progress to a point of modern understanding, but rather leaves the reader understanding the richness, diversity and creativity of the field (and likewise the role of sheer good luck, chance encounters, dedication, private passions, academic nurturing, and so on, as well as differences of opinion, etc.).

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Recent publication of interest:

Pander Society members may be interested in the published volume arising from the Symposium on Bias and Completeness in the Conodont Fossil Record held at ECOS VIII in Toulouse during 2002.

Conodont biology and phylogeny-interpreting the fossil record. Special Papers in Palaeontology 73. The Palaeontological Association. Edited by Mark Purnell and Philip Donoghue. Publication date: March 30, 2005. Cover price £66; Member's price £33.
(Annual membership of the Palaeontological Association is only £28 or $58 (much less for students and retirees). Join online at http://palass.org - click on information)

Contents

Pander Society Meeting Reports:

PANDER SOCIETY SYMPOSIUM, BROCK UNIVERSITY, ONTARIO, CANADA, MAY 13-14, 2004

The Pander Society, having been conceived in a bar in Calgary in 1966, has had very successful meetings in Waterloo & Vancouver in the 1970s and the 1990s; thus, it was again time to have the Pander Society meet in Canada. Incoming Chief Panderer, Peter von Bitter, organized the 2004 Pander Society Symposium held jointly with the Annual Meeting of the Geological Association of Canada & Mineralogical Association of Canada at Brock University, Ontario. The broad symposium theme was "The A, B, C's of Conodonts (Autecology, Biostratigraphy and Conodont Paleoecology)"; all these aspects, and others, were covered to a varying degree in the meeting presentations.

Brock University, which offered modern and excellent facilities on a beautiful campus, is located above the City of St. Catharines and is near Niagara Falls. It is a region with excellent outcrops of marine Ordovician through Devonian strata whose rich conodont faunas have been the subject of many studies since Hinde's pioneer work in the 1870s. Hence, this region can be considered a classical one in conodont research and it was a most appropriate place for a Pander meeting.

The symposium program included 15 formal presentations and 8 poster presentations, good numbers for a North American Pander meeting. The presentation topics included conodonts from every system from the Cambrian to the Triassic, as well as some general paleobiologic matters. The general distribution of topics is shown by the fact that 6 presentations dealt with paleobiology, apparatus reconstructions, and related matters; 2 with history of conodont research; 4 with condont communities, relations to sea level changes, etc.; 1 with conodont biofacies; 8 with biostratigraphy; and 2 with taxonomy. Because only three of the presenters had their home base outside North America, the relative numbers of talks on a specific subject may give an idea about current trends in North American conodont research. In view of the rather large number of presentations, it is not possible to deal with every single one, and only a few will be mentioned here. In two talks, Zhang, Barnes, and co-workers illustrated how conodonts and conodont communities could be used for recognizing Ordovician and Silurian sea level changes in Laurentia. In four presentations, Purnell, von Bitter, Nicoll, and Jones discussed aspects of conodont apparatuses and related paleobiologic matters. In view of their different published interpretations, many had been looking forward to a interesting discussion between Purnell and Nicoll, but it was less lively than anticipated! Among stratigraphic presentations, the most notable were those by Barrick and co-workers (conodonts and carbon chemostratigraphy round the Silurian/Devonian boundary in the southern Midcontinent); Orchard's discussion of conodonts from Carnian-Norian boundary interval; the poster by Kleffner et al. on the integration of Silurian isotope ages, and conodont, graptolite and chitinozoan biostratigraphy; and the discussion by Nowlan and others on Late Ordovician conodont biofacies and Nd and Sm/Nd chemostratigraphy in the western Midcontinent. von Bittter opened the Symposium with a review of G.J. Hinde's life and pioneer conodont research in Ontario in the 1870s and a poster presentation by Leslie and Bergström described the rediscovery of Branson & Mehl's long-lost Ozora locality from which these pioneer conodont workers described (1933) the first diverse Upper Ordovician conodont fauna in the world, including several well-known and geographically widespread taxa.

The symposium clearly showed that much new and diverse conodont research is still being carried out in North America despite the fact that most of the 'old-timers' are no longer active and the number of university departments where a student can get a PhD based on conodont research is now precipitously low, both in the USA and Canada.

Outside the formal symposium proceedings, there was an afternoon workshop with participation of about 20 conodont workers. In the evening of the first day, there was a well-attended dinner at the Hernden Winery. The following evening, Peter von Bitter and his wife Nancy Gahm hosted a delightful reception for all Panderers with abundant refreshments at the Four Points St. Catharines Hotel, followed by a fine dinner at The Epicurean Grill in the historic town of Niagara-on-the-Lake. It was planned to take place in the restaurant garden but a sudden strong rain shower forced us indoors; however, this did not dampen our spirits, nor prevent anyone from having a very good time.

Other commitments prevented me from participating in the Silurian-Devonian conodont field trip the next day, which was led by Mark Kleffner and Jeff Over, but all reports indicate that it was both enjoyable and instructive. All in all, this was a splendid symposium and the incoming Chief Panderer, Peter von Bitter, can take great pride in his and Nancy's expert arrangements, which made things flow smoothly throughout the meeting.

Stig M. Bergström, April 18, 2005.

Please note that Abstracts of conodont papers presented at Brock University (above) were circulated on Con-nexus on May 27, 2004; they are still accessible at www.gac.ca; click on Meetings & Activities, then on Program & Abstracts and then on St.Catharines 2004 Abstracts.

PANDER SOCIETY SYMPOSIUM, TRINITY UNIVERSITY, SAN ANTONIO, TEXAS, APRIL 2, 2005
The North American meeting of the Pander Society convened in warm and sunny San Antonio, Texas on April 2 2005 in conjunction with the Southcentral Section of the Geological Society of America. The GSA sectional meeting was relatively small, and talks in the two sessions of the Pander Society comprised 28% of the oral presentations for the day. Lance Lambert organized and chaired the morning and afternoon sessions that consisted of talks of topical nature, taxonomy, as well as biostratigraphic reports on Ordovician, Devonian, Carboniferous, and Permian studies. Sequence stratigraphy was a common thread in many of the presentations, starting with the first talk by Steve Leslie and others on using sequence stratigraphy as a tool for locating abundant conodonts. This was in contrast to the study by Katie Neal that used abundant conodonts to aid in identification of a Middle Devonian maximum flooding/starvation surface. The majority of talks addressed Carboniferous and Permian issues that included studies on the apparatus of *Gondolella*, refined stratigraphic work and recovery of the oldest Pennsylvanian conodonts in northeastern Ohio, and not-as-old Pennsylvanian conodonts in the Midcontinent. Definition and recognition of stages and boundary intervals in Carboniferous -Permian strata rounded out the sessions, pointing to the global nature of conodont work even at a small meeting.

Half of the presentations were authored and presented by students, graduates as well as undergraduates, an indication that mentors are active and work can be done at all levels of expertise. An informally organized Pander Society Luncheon was well attended; "Tomatillos" offered a fine selection of Tex-Mex cuisine that was promptly served and consumed. A short business meeting was held at the conclusion of the afternoon session where the Chief Panderer reviewed options for the 2006 North American meeting. While it was recognized that there will be strong North American attendance in England for ICOS in the summer of 2006, it was agreed that a formal Pander meeting should still be organized for North America. Two invitations had been tendered, one by the Northcentral Section of GSA meeting in Akron, Ohio and the other by the Northeastern Section of GSA meeting in Harrisburg, Pennsylvania. Jeff Over volunteered to organize a technical session for Harrisburg in March 2006, and John Repetski indicated, in abstentia, that he was prepared to organize a pre-meeting field trip. Collectively, the assembled Panderers agreed that a meeting in Harrisburg was appropriate.

The Sunday field trip was organized and led by Jim Miller of Southwest Missouri State University. Approximately 20 conodontophiles visited the classic Threadgill Creek sections of the Wilburns and Tanyard formations that span the upper Cambrian and Cambrian-Ordovician boundary interval in the central uplift region of the Texas Hill Country. The modestly inclined and faulted carbonate-dominated strata have been a major focus of Cambrian-Ordovician studies by Miller and colleagues for over 30 years. The exposures served as a focus for consideration and discussion of the Cambrian-Ordovician boundary stratotype and point, as well as the evolution of conodonts, to where beds containing protoconodonts, paraconodonts, and the first euconodonts were available for sampling. The descriptions and ranges of conodonts and strata were supplemented by studies of trilobites, stromatolites, and isotope stratigraphy that were convincingly tied into a sequence stratigraphic framework to other localities, demonstrating the global recognition of cycles and events as well as importance of conodonts for reliable correlation. The day proved glorious – sunny and warm with a moderate breeze – with the yucca and prickly pear in full bloom.The guidebook is to be published; please contact Jim Miller for details. Thanks are due to Lance Lambert and Jim Miller for this well-organized and smoothly-run meeting.

D. Jeffrey Over, April 2005

http://www.geosociety.org/sectdiv/southc/05scmtg.htm will link to the list of talks and abstracts.

Future Conodont Meetings:

March 20 -22, 2006. Pander Society Symposium, Harrisburg, Pennsylvania, U.S.A.

To be held in conjunction with the Northeastern Section of the Geological Society of America, in Harrisburg, Pennsylvania, U.S.A. Meeting will take place in Camp Hill, PA (just across the Susquehanna River from downtown Harrisburg). The meeting headquarters will be at the Radisson Penn Harris Hotel and Convention Center.

Meeting organizer: Jeff Over, SUNY at Geneseo, N.Y. (over@geneseo.edu)
Field trip organizer: John Repetski, USGS, Reston, VA. (jrepetski@usgs.gov). The field trip will likely (to be confirmed) depart from the Radisson Penn Harris Hotel at 8:00 a.m. Sunday, March 19, 2006; it will likely (to be confirmed) return to the convention center in time for the reception.

Symposium Theme: Conodonts in Sequence Stratigraphy – evolution, deposition, and correlation.

Conodonts are the primary biostratigraphic indicator for marine strata in the Paleozoic and Triassic. As such, their utility in correlation from region to region is a critical component. Within sequence stratigraphic models, recognition and correlation of sequence boundaries is essential for regional and global correlation and interpretations. Furthermore, conodonts are a potential tool for recognition of marine systems tracts due to changes in abundance and biofacies resulting from sea-level changes. These factors are important enough for further study and to be the focus of a symposium on conodonts in sequence stratigraphy as well as a proposed special volume on the topic.

July 12 – 30, 2006. The First International Conodont Symposium (ICOS 2006) University of Leicester, Leicester, U.K.

Announcement and call for pre-registration

Following from the highly successful series of meetings held under the ECOS banner, ICOS 2006, the first International Conodont Symposium will be held in Leicester, UK, in July 2006. At this stage we are seeking information to allow us to estimate how many participants to expect and their field excursion preferences. In order that we can do this, please complete and return the form below (preferably by email to ICOS2006@leicester.ac.uk). Among other things, this will ensure that you are included in future mailings about ICOS2006. We have yet to finalise costs for the meeting and the excursions, but we aim to keep charges for registration and accommodation in Leicester to a level that will enable broad participation.

Provisional itinerary
July 12 - 16, Excursion 1 - The Carboniferous of Ireland
July 17, Technical Sessions
July 18, Technical Sessions
July 19, Workshops and Day Excursions (see below)
July 20, Technical Sessions
July 21, Technical Sessions
July 22 – 27, Excursion 2 - Iapetus – from coast to coast

Registration
Registration, abstract submission and payment (by credit card) will be via online forms linked from www.conodont.net. These will be activated over the next few months.

Symposia
Talks and posters on any aspect of conodont related research are welcome, but in addition to open sessions the following thematic symposia are offered.

Pander's legacy, 150 years on
2006 marks the Sesquicentennial of Pander's monograph in which conodonts were described for the first time. This symposium will consider Pander and his scientific contribution, including his work on conodonts and other groups of vertebrates.

Conodont phylogenies – alternative approaches, implications, and applications
Hypotheses of conodont phylogeny underpin many areas of conodont research, including taxonomy, biostratigraphic zonation, evolutionary palaeobiology, and analysis of the quality of the fossil record. This session will explore alternative approaches to reconstructing conodont phylogeny, their assumptions, implications and applications.

Conodonts and Palaeozoic Palaeoceanography
Details to follow

Triassic Conodonts: Taxonomy and Time Scales
Organised by Mike Orchard. Conodonts play a primary role in Triassic biochronology and yet the taxonomic framework in which they are applied remains largely based on form taxonomic concepts. This symposium explores both the variability of taxonomic approaches currently in use in the study of Triassic conodonts, including their Permian forebears, and their application in biostratigraphy and time scales. Co-sponsored by IGCP 467, "Triassic Time and trans-Panthalassan correlations"

Constraining Conodont Palaeoecology
The classic work on conodont ecology, focussing primarily on patterns of distribution and pelagic versus benthic life habits, was largely conducted before we knew anything about the biology of conodonts. Is it time to reassess and constrain models of conodont ecology based on what we now know of their anatomy and physiology, and the nature of their fossil record?

Suggestions of more symposia and offers to organise gratefully received. Contact the organisers.

Workshops and Day excursions
No formal technical sessions are scheduled for Wednesday, July 19. Instead a number of day field-excursions, visits to collections, and workshops will be available, in addition to bench space and microscopes for informal specimen based discussion. To some extent availability will be dictated by demand, but provisionally the following will be on offer:
Short Field Excursion 1: Triassic – Jurassic boundary, East Midlands area . Leader: Andrew Swift. A visit to conodont-yielding latest Triassic sections in Long Itchington Quarry, and the overlying Jurassic (no conodonts).
Short Field Excursion 2: Lower Carboniferous, Derbyshire. Leader TBA. Visit classic Carboniferous sections in the beautiful Derbyshire Peak District.
Day trip to the Natural History Museum, London. Leader: Giles Miller. Visit one of the world's best known museums; an opportunity to go behind the scenes and examine conodont collections, including material deposited by Hinde, Higgins and large collections donated by Austin. For more information go to: http://www.nhm.ac.uk/palaeontology/micro/collections/conodont/index.html
Workshop 1 Conodont Bodies and Skeletons: an opportunity to examine and discuss specimens preserving conodont soft tissues and articulated skeletons, including much of the best material from around the world.
Other field trips or workshops to be announced

Venue, Accommodation and Travel
Leicester is centrally located in England and is easily accessible by road or rail, with good links to international airports. Maps and details of routes to Leicester are available online at http://www.le.ac.uk/maps/maps.html. For overseas participants, Birmingham and East Midlands airports

are within an hour of Leicester. There are direct trains from Stansted Airport (many budget flights from European countries fly into Stansted), and London (St Pancras Station; a little over 1 hour). For online train times, prices and booking, visit www.thetrainline.com.
Technical sessions will take place on the main University Campus, in lecture theatres adjacent to the Department of Geology. Posters will be displayed in the large foyer areas outside the lecture theatres. Tea, coffee and lunch will also be served here.
Accommodation will be in the University's Beaumont Hall residences, situated in landscaped grounds next to the University Botanic Gardens in Oadby, 3.5 km from the University Campus. Buses will be provided to transport participants to and from the University Campus at the beginning and end of each day.

Excursions
Excursion 1: The Carboniferous of Ireland
July 12 – 16 (pre-meeting)
Leader: George Sevastopulo

This field trip will focus on Mississippian (Carboniferous) rocks of the Dublin Basin and Hook Head, County Wexford. The Dublin Basin provides sections (mainly coastal) of the late Tournaisian (in a shelf/ramp setting) and all of the Visean (in both basinal and shelf settings). The basin/shelf margin is preserved and the sedimentology of both shelf and basinal carbonates (and less abundant siliciclastics) is exciting. Conodonts occur at many horizons together with foraminiferans and macrofossils. Current research activity includes identification of the Tournaisian/Visean boundary in both shelf and basinal settings. Hook Head provides a spectacular section from early Tournaisian redbeds and shallow marine carbonates and siliciclastics through progressively deeper water limestones and shales (youngest part of the *Polygnathus communis carina* Zone in the highest preserved beds). Conodonts from Hook Head were described by Johnston and Higgins (1981; Conodont faunas from the Lower Carboniferous rocks at Hook Head, County Wexford, *Journal of Earth Sciences of the Royal Dublin Society*, 4, 83-96).

Outline Itinerary
Wednesday July 12: Arrive in Dublin. Tour of Trinity College and visit to the Book of Kells for those arriving by early afternoon. Introduction to the trip in the evening.
Thursday July 13: Hook Head. Drive to Hook Head (ca. 3 hour drive). Examine Tournaisian section. Lunch at and tour of the lighthouse (see http://homepage.tinet.ie/~earrings/hook-head.html for some touristic images). More Geology. Return to Dublin.
Friday July 14 – Saturday July 15: Dublin Basin. Drive to sections in north County Dublin including Tournaisian at Malahide and Waulsortian limestone at Feltrim, late Tournaisian - late Visean shelf succession south of Skerries, Visean basinal succession between Rush and Popeshall. Opportunity to examine substantial collections of Carboniferous conodonts from Ireland and also to drink some Guinness in the evenings.
Sunday July 16: Travel to Leicester (most convenient and cheapest flight is with Ryanair (http://www.ryanair.com) to East Midlands Airport).

Excursion 2: Iapetus – from coast to coast
July 22 - 27
Leaders: Howard Armstrong, Rob Raine & Paul Smith

The fieldtrip will take the form of a transect across the Caledonide mountain belt of Scotland and northern England or, in palinspastic terms, a coastline to coastline traverse across Iapetus. The trip will commence on the shoreline of Laurentia at the classic Cambro-Ordovician sections in Durness before driving southwards across the Moine thrust belt, where Neoproterozoic metasediments are thrust over the Laurentian foreland. South of the Great Glen fault and Loch Ness, the Neoproterozoic Dalradian Supergroup will be traversed as far as the Highland Boundary Fault, where obducted Ordovician ocean floor and islands with shallow water Laurentian conodont faunas can be seen at Dounans.
Crossing the Midland Valley of Scotland, the next stops will be at deep water Ordovician localities in the Southern Uplands, where current controversies over the tectonic interpretation of the Southern Uplands and Midland Valley terranes will be discussed. Crossing the Scotland–England border also marks the leap from Laurentian to Avalonian crust and the trip will conclude by looking at the Ordovician–Silurian succession

in the Lake District, including an examination of the Ashgill in its type area. In addition to providing the opportunity to sample conodont localities described by Higgins, Bergström, Ethington, Lindström, Armstrong and Orchard, the trip will also consider the history of geological exploration in this region, together with current interpretations and controversies regarding the margins of Iapetus, its constituent terranes and the final closure of the ocean in the Silurian.

The trip will traverse some of the most scenic parts of Scotland and northern England, and the majority of localities will be close to the road. Numbers will be limited to 25–30 participants and accommodation will be in a mixture of hotels and guest houses.
Come fishing across the Iapetus Ocean…

Outline itinerary
Saturday July 22, Participants fly into Inverness (from Luton). Drive from Airport to Durness (c. 2.5 hours).
Sunday July 23, Balnakeil Bay section, Durness. An t'Sron and Loch Eriboll. Drive to Inchnadamph.
Monday July 24, Loch Assynt roadside section. Stronchrubie cliff and Knockan Crag.
Tuesday July 25, Dounans.
Wednesday July 26, Southern Uplands.
Thursday July 27, Lake District. Drive back to Leicester.

Reply form:
If possible, please copy this text into an email message, deleting the parts that do not apply, and send to ICOS2006@leicester.ac.uk (digital version available at www.conodont.net). Please note that at this stage your answers are not binding.

1. Attendance
I will be attending ICOS2006 in Leicester, July 17-21, 2006
I might attend ICOS2006 in Leicester, July 17-21, 2006
I will not be attending ICOS2006 in Leicester, July 17-21, 2006

I will be presenting a talk/poster
I will not be presenting a talk/poster

2. Symposia
I am interested in attending the following symposia (delete those that do not apply):
A. Pander's legacy, 150 years on
B. Conodont phylogenies – alternative approaches, implications, and applications
C. Conodonts and Palaeozoic Palaeoceanography
D. Triassic Conodonts: Taxonomy and Time Scales
E. Constraining Conodont Ecology

I might present a talk in the following symposia:
A. Pander's legacy, 150 years on
B. Conodont phylogenies – alternative approaches, implications, and applications
C. Conodonts and Palaeozoic Palaeoceanography
D. Triassic Conodonts: Taxonomy and Time Scales
E. Constraining Conodont Ecology

I suggest the following symposium: ……..

……..……..…… …….

3. Workshops and day excursions:
I am interested in participating in the following (delete those that do not apply):
Short Field Excursion 1: Triassic – Jurassic boundary, East Midlands area
Short Field Excursion 2: Lower Carboniferous, Derbyshire

Day trip to the Natural History Museum, London.
Workshop 1. Conodont Bodies and Skeletons

4. Field excursions (delete options that do not apply)
I will participate in Excursion 1: The Carboniferous of Ireland
I might participate in Excursion 1: The Carboniferous of Ireland
I will participate in Excursion 2: Iapetus – from coast to coast (July 22 – 27, post-meeting)
I might participate in Excursion 2: Iapetus – from coast to coast (July 22 – 27, post-meeting)

Organisers:

Mark Purnell	and	Philip Donoghue
Department of Geology		Department of Earth Sciences
University of Leicester		University of Bristol
University Road		Wills Memorial Building
Leicester LE1 7RH		Queens Road
UK		Bristol BS8 1RJ, UK
Tel +44 116 252 3645		Tel +44(0) 117 954 5440
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Calendar of Meetings of General Interest

June 19-25, 2005. North American Palaeontology Convention (NAPC 2005), Dalhousie University, Halifax, Nova Scotia, Canada. Meeting chair: David Scott (dbscott@dal.ca); Web site: http://meguma.earthsciences.dal.ca/napc.htm
June 19-22, 2005. American Association of Petroleum Geologists Annual Convention Calgary, Canada. Will feature a poster session on Integration of Micropaleontology and Petroleum Exploration. Web site: http://www.aapg.org/calgary/index.cfm
July 25 - August 9, 2005. International Conference on Devonian terrestrial and marine environments: From continent to shelf (IGCP Project 499 / SDS joint field meeting), Novosibirsk, Russia. Web-site: http://petrol.uiggm.nsc.ru/DECONS; or contact Olga Obut (ObutOT@uiggm.nsc.ru)
August 10-12, 2005. II Latin American Congress of Vertebrate Paleontology, Rio de Janeiro, Brazil. Web site: http://acd.ufrj.br/mndgp/2clpv
August 22- 26, 2005. 6th Baltic Stratigraphic Conference, St. Petersburg, Russia; Parallel with the scientific sessions, there will be a business meeting of IGCP 491 Project " Middle Palaeozoic Vertebrate Biogeography & Palaeogeography. Contact Dr. Andrey Zhuravlev (stratigr@mail.wplus.net) or Dr. Alexander Ivanov (especially for IGCP 491 participants) (aoi@AI1205.spb.edu) for more information.
June 17-21, 2006. Second International Palaeontological Congress (IPC 2006) of the The International Palaeontological Association (IPA), Peking University, Beijing, China.
The conference theme is 'Ancient Life and Modern Approaches' and there will be a wide variety of plenary sessions, general and topical symposia, short courses, workshops and special group meetings. The program will also feature mouth-watering field excursions to the fossil sites that have helped Chinese palaeontology grab so many headlines in recent years.

The IPA is co-sponsoring the conference with the China Association of Science and Technology, the Chinese Academy of Science, the National Natural Science Foundation of China, the Palaeontological Society of China, the Geological Society of China, and the China Geological Survey. Many national paleontological societies are corporate members of IPA; individual membership is also available via subscription to Lethaia, the international journal of paleontology and stratigraphy.

Dick Aldridge, our previous Chief Panderer, is President of the International Palaeontological Association.

The deadline for returning reply forms to the first circular is 1 June 2005. Full details are on the website at http://www.ipc2006.ac.cn/

Pander Notes

Pander Society Archives
Dick Aldridge has very kindly offered to continue to build a Pander Society Archives at the University of Leicester. Any of you that have Pander Society memorabilia such as early photos, documents & other Pander items of interest, that you wish to donate, please get in touch with Dick at ra12@le.ac.uk .

Pander Society Commitment
Ray Ethington, our Chief Panderer between 1990-1998, has asked the Pander Society for help & commitment regarding the University of Missouri conodont collections. He indicated that such a commitment would be used to solicit funds for preparing information for an on-line conodont catalogue and to assure any potential granting agency about the long-term viability of the catalogue and of the collection. As a result of discussions with Ray, the following letter was sent on behalf of the Pander Society:

Dr. Kenneth MacLeod July 9, 2004
Department of Geological Sciences
University of Missouri-Columbia
Columbia, Missouri 65211

Dear Dr. MacLeod:

I am pleased to learn of the preparation of an on-line catalogue of the conodont collection at the University of Missouri. That collection was assembled by a succession of prominent conodont workers and includes type specimens on the basis of which numerous genera and species of conodonts have been defined. These specimens span almost the entire stratigraphic range of conodonts. The collection thus includes essential reference materials that will keep it in demand by all conodont workers.

The maintenance and security of the collection are of vital importance to present and future conodont students throughout the world. If you request it, the Pander Society, the international association of conodont workers, will support this effort by identifying appropriate specialists who can review and vet any future additions to the collection that are requested by conodont workers not affiliated with the University of Missouri.

Yours truly,
Peter H. von Bitter,
Chief Panderer, Pander Society

Finances
Because we are an informal society and our members do not pay dues, some of you may be surprised to learn that we have a small amount of money available from 'profits' derived from conodont meetings in years past. These funds were transferred to Toronto last year and are in an account with the Toronto Dominion Bank. The Royal Ontario Museum very generously contributed $1200.00 (Can.) toward the cost of assembling and producing this newsletter, with the remaining amount provided by Pander Society funds. If any Panderers wish to donate monies towards the production of future newsletters, or to similar projects, we would be only too pleased to put such funds into our 'rainy-day' account (contact peterv@rom.on.ca) .

Pander Society Medal
The Pander Society Medal Committee consisting of John Repetski, Cristina Perri and Cheng-yuan Wang, has deliberated on the nominations that were submitted for awarding the Pander Society Medal. They have reached a decision and the award will next be presented at the International Conodont Symposium 2006 (ICOS 2006) at Leicester. A good reason to be there!
The Committee has also been discussing the "young conodont worker" award that was approved in concept at the Society business meeting at ECOS VIII (please see Pander Newsletter Number 35, page 2, for background); they would welcome any ideas that members might have regarding the type of award (money; medal; plaque; etc.) and the requirements for an award (please contact John Repetski jrepetski@usgs.gov.)
The Committee has received no nominations to date, and, as far as the Chief Panderer & the Committee

members know, no specific donations have been received to fund such an award. Without some other actions, it appears that the nominator(s) would be responsible for this funding.

Invitation

Would you like to study the conodont collections at the Natural History Museum in London, England? You are eligible for a grant if you are from one of the following countries: Austria, Belgium, Denmark, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom plus the Associated Countries of the EU: Switzerland, Iceland, Israel, Liechtenstein, Norway and Candidate Countries of the EU Bulgaria, Romania and Turkey.

http://www.nhm.ac.uk/palaeontology/micro/collections/conodont/index.html gives information about the collections including a list of type and figured references relevant to the collections and a searchable collections level database with images. For details of the grants see www.synthesys.info. Please contact Giles Miller (g.miller@nhm.ac.uk) if you would like to apply.

The Conodont Grinch That Stole Christmas, or new discoveries about the 'real' identity of conodonts. Office door decorating contest at the ISPG in Calgary, Christmas 2004 (creation and photo courtesy Godfrey Nowlan)

SUMMARY OF RESEARCH INTERESTS **(Mostly gleaned from incoming Reports)**

In future Newsletter questionnaires there will be an outline or menu of research interests/areas that each of you can check off, or fill in. This has not been done in previous years; hence we went through the reports & references and have, to the best of our abilities, put each of you into one or more research categories. **If you are listed in the wrong category, or should be under multiple headings, please accept our apologies.** As an experiment, we have broken down the topics a bit; some, such as apparatus reconstruction or apparatus architecture, are still missing but will be included next year. Most importantly, if you have suggestions for new or different categories that 'capture' a research area, please contact peterv@rom.on.ca .

1. Cambrian. Bagnoli, Bergström, Dong Xi-ping, Isozaki, Kozur, Lehnert, James Miller, Nakrem, Repetski, Sandberg, Spencer, Szaniawski
2. Cambro-Ordovician Boundary. Barnes, Spencer
3. Ordovician. Albanesi, Aldridge, Armstrong, Bagnoli, Barnes, Barrick, Bauer, Bergström, Dong Xi-ping, Ethington, Ferretti, Fordham, Furey-Greig, Hall, Harris, Izokh, Kleffner, Lehnert, Leslie, Lofgren, Luppold, Mannik, McCracken, Metzger, James Miller, Molloy, Nicoll, Nowlan, Obut, Percival, Reimers, Repetski, Sandberg, Sarmiento, Savage, Shaw, Spencer, Sweet, Szaniawski, Talent, Tarabukin, Viira, Wickstrom, Witzke, Yong Yi Zhen, Shunxin Zhang
4. Silurian. Albanesi, Aldridge, Bardashev, Barnes, Barrick, Belka, Bergström, Cole, Corradini, Furey-Greig, Garcia-Lopez, Gouwy, Izokh, Jeppsson, Kleffner, Lehnert, Mannik, Mathieson, Mawson, McCracken, Meco, Metzger, C. Giles Miller, Molloy, Nakrem, Norby, Nowlan, Parkes, Purnell, Sandberg, Sarmiento, Savage, Simpson, Slavik, Snegova, Szaniawski, Tarabukin, von Bitter, Wang Cheng-yuan, Wickstrom, Shunxin Zhang
5. Silurian 'Events'. Jeppsson, Kleffner, Molloy
6. Silurian-Devonian Boundary. Barrick, Kleffner, Szaniawski
7. Devonian. Alekseev, Bardashev, I.A., Bardashev, N.P., Belka, Boncheva, Bultynck, Corradini, Day, Dopieralska, Dzik, Garcia-Lopez, Gholamalian, Girard, Gouwy, Groessens, Hairapetian, Henderson, Izokh, Kirchgasser, Kirilishina, Kononova, Nazarova, Klapper, Kleffner, Luppold, Mathieson, Matyja, Mawson, McCracken, Meco, Morrow, Narkiewicz, Over, Perri, Piecha, Poole, Purnell, Randon, Sandberg, Savage, Simpson, Slavik, Snegova, Spalletta, Szaniawski, Tarabukin, Uyeno, Wang Cheng-yuan, Witzke, Zhuravlev
8. Devonian-Carboniferous Boundary. Groessens, Perri
9. Carboniferous. Alekseev, Bardashev, I.A., Bardashev, N.P., Belka, Blanco-Ferrera, Boncheva, Chen Jun, Dusar, Fordham, Garcia-Lopez, Groessens, Hairapetian, Ishida, Jones, Kononova, Mendez, Merrill, Nakrem, Nazarova, Nemyrovska, Norby. Soo-in Park, Perri, Piecha, Purnell, Randon, Spalletta, Swift, Talent, Tarabukin, Zhuravlev
10. Mississippian. Barskov, Corradini, Garcia-Lopez, Goncuoglu, Groessens, Hairapetian, Henderson, Johnston, Kononova, Lane, Mendez, Norby, Poole, Randon, Rexroad, Sanz-Lopez, von Bitter
11. Mississippian-Pennsylvanian Boundary. Blanco-Ferrera
12. Pennsylvanian. Bright, Brown, Garcia-Lopez, Heckel, Henderson, Ishida, Lambert, Lane, Marshall, Mendez, Merrill, Nemyrovska, Rexroad, Rosscoe, Sanz-Lopez, von Bitter
13. Permian. Amarjargal, Barrick, Chen Jun, Henderson, Hisaharu Igo, Ishida, Lambert, Metcalfe, Nakrem, Nicoll, Soo-in Park, Perri, Poole, Reimers, Ruppel, Shuzhong Shen, Wang Cheng-yuan, Yao Jianxin, Zhuravlev
14. Permo-Triassic Boundary. Aldridge, Isozaki, Metcalf, Nicoll, Orchard, Perri
15. Triassic. Aldridge, Alekseev, Goudemand, Harris, Henderson, Hirsch, Hisayoshi Igo, Hisaharu Igo, Ishida, Isozaki, Kilic, Koike, Kovacs, Kozur, Marquez-Aliaga, Mastandrea, Meco, Metcalfe, Nakrem, Narkiewicz, Nicoll, Önder, Orchard, Perri, Pevny, Plasencia-Camps, Purnell, Reimers, Savage, Shuzhong Shen, Swift, Talent, Yao Jianxin
16. Lower Palaeozoic/Palaeozoic. Goncuoglu, Yolkin; **Cambrian—Triassic.** Kozur; **Ordovician—Carboniferous**. Fordham; **Ordovician—Triassic**. Harris
17. Cladistics. Aldridge, Barnes, Donoghue, Purnell
18. Histology/Microwear. Armstrong, Buryi, Dong Xi-ping, Donoghue, Purnell, Rosscoe, Zhuravlev
19. Palaeoecology. Barnes, Shunxin Zhang

20. CAI. Albanesi, Belka, Boncheva, Garcia-Lopez, Harris, Königshof, Mastandrea, Mawson, Narkiewicz, Perri, Piecha, Pondrelli, Repetski, Sandberg, Sanz-Lopez, Sarmiento, Talent, Tarabukin, Zhuravlev
21. CAI & KI. Königshof, Mastandrea, Perri
22. Meteorite Impact. Miller, Morrow, Poole, Sandberg; **Kimberlite Pipe Xenoliths**. Tarabukin; **Chemostratigraphy/Ash Falls**. Bergström
23. Graphic Correlation. Gouwy, Sloan, Sweet
24. Morphomtrics/Shape Analysis. Girard, Purnell, Sloan
25. Geochemistry. Barnes, Belka, Day, Dopieralska, Kleffner, Lehnert, Nowlan, Perri, Ruppel, Savage, Trotter
26. Historical. Albanesi, Aldridge, Austin, Knell, von Bitter

Research Reports

Guillermo Albanesi. Continuing work on diverse projects regarding Lower Paleozoic conodont faunas from northwest Argentine basins. An integrated conodont-graptolite biostratigraphic chart is being assembled for the Ordovician and Silurian Systems of Argentina. Also cooperating with colleagues from universities in Argentina, Spain, UK, USA, and Canada, on related topics of historical geology and paleontology from the Lower Paleozoic. Likewise, together with several co-authors, we are preparing a final proposal on a global stratotype for the base of the Middle Ordovician Series in the Argentine Precordillera. A new project on high resolution biostratigraphy, sequence stratigraphy, events, and paleothermometry on the Lower Paleozoic of the Eastern Cordillera, NW Argentina, is going to begin this year, with participating colleagues from different universities, as well as post-graduate students. Editorship of "Ordovician News" continues (annual newsletter of the SOS, IUGS; www.ordovician.cn).
Dick Aldridge. Following my release in September 2004 from administrative strictures of being Department Head, the threads of a number of projects have been picked up, including some involving conodonts. So, at last, real progress has been made on research on Silurian conodonts from South China (in collaboration with Wang Cheng-yuan), and have returned to a manuscript on Ordovician conodonts from Saudi Arabia (in collaboration with Paul Smith). Work also ticks on on projects on the Permo-Triassic conodont turnover (with Lai Xulong, Mark Purnell, Mike Orchard and Andrew Swift) and on cladistic studies of conodont relationships (in part with Phil Donoghue and Mark Purnell). A paper (with Sarah Gabbot and others) on bromalites (coprolites) from the Soom Shale (Late Ordovician, South Africa) has been submitted – the conodont connection here is that some of these excreta contain the broken elements of *Promissum pulchrum*, so something in the Soom seas was eating the giant conodonts. Finally, an entry on conodonts for the *Encyclopedia of Geology*, due to be published by Academic Press in the very near future, was completed.
Alexander S. Alekseev. Investigations concentrated on Devonian—Triassic conodonts from the East European platform, Urals and Crimea. Now working on Moscovian—Gzhelian conodonts from the Moscow Basin and South Urals. New area is Don River in Volgograd Region.
Howard A. Armstrong. Over the past year returned to work on the histology of *Panderodus* with the aim of understanding adaptations required for life in the pelagic zone. This is the first stage in a project on the establishment and radiation of euconodonts in pelagic zone habitats. Work has also started with Tom Challands (graduate student) and the BGS on the tectonic and climatic controls on sedimentation and faunas in eastern Avalonia.
Gabriella Bagnoli. Actively working on Cambrian conodonts from China (with Qi Juping) and from Oeland. Middle Ordovician conodont biostratigraphy and biofacies from Oeland are compared with acritarch and chitinozoan successions.
Igor A. Bardashev. Actively working on Silurian and Devonian stratigraphy and conodonts from Central Asia. In the near future intend to finish the large work : "Stratigraphy, conodonts and zonation of Devonian and adjacent deposits of Tajikistan", in which the results of almost 30-years of research on biostratigraphy of Tajikistan will be generalized.
Nina P. Bardasheva. Actively working on Carboniferous stratigraphy and conodonts from Central Asia.
Chris Barnes. Extensive field-based Lower Paleozoic conodont studies in the Canadian Cordillera have produced a series of papers with Leanne Pyle, some in press. They involve four detailed platform to basin transects that have been sampled in the southern, central and northern Rocky Mountains. Work with

Shunxin Zhang is using my extensive conodont database to relate conodont biostratigraphy, biofacies and biogeography to the pattern of eustasy and tectonism that affected northern Laurentia in the early Paleozoic. Several joint papers have appeared recently with others in press that deal with conodont taxonomy, evolution, paleoecology, cladistic analyses and the response of the conodont communities to eustatic change. Other papers in press include one on Late Ordovician conodonts from the Mithaka Formation, Georgina Basin, Australia (with Tyler Kuhn) and one on Cambro-Ordovician conodonts from the Famatina Terrane, Argentina (with Guillermo Albanesi and Mario Hünicken). The geochemistry of conodonts is being pursued further in collaboration with Jule Trotter (Australia National University and CSIRO). Other work nearing completion includes: Ashgill-Wenlock conodonts from the Canadian Arctic with David Jowett, and Ashgill conodonts from the Whitland section, South Wales with Annalisa Ferretti.

James E. Barrick. Working on Llandovery conodont faunas from the Oklahoma subsurface with Jim Derby, late Wenlock to Ludlow oceanic events and episodes on southern Laurentia with Mark Kleffner, Pennsylvanian and Early Permian conodonts from the Big Hatchet Mountains, NM, with Scott Ritter and Spencer Lucas, and on various Midcontinent Pennsylvanian conodont projects with Lance Lambert, Darwin Boardman, and Phil Heckel.

Igor S. Barskov. My recent researches are conodonts from Serpuchovian type section in the Russian Platform.

Jeff Bauer. Ordovician conodonts.

Zdzislaw Belka. In 2004 moved from Tübingen, Germany to Poland with an appointment to the office of the chief of the Paleontology Department at the University of Poznan. Work continues on Nd isotope composition of conodonts in order to use these data as a proxy in sea-level research and paleooceanography. Recent projects have also included stratigraphic studies of Silurian, Devonian, and Carboniferous conodonts from Iran, Algeria, Morocco, and Germany. A study on the thermal evolution of Devonian rocks in Algeria is in progress.

Stig M. Bergström. Although retired am working full-time on several research projects. The past year has been good in terms of productivity with 10 published papers and 11 abstracts. Currently, half a dozen papers are in press or review. Although much time is now devoted to chemostratigraphy, work progresses with Cambrian-Silurian conodonts, mostly from North America but also from China and Europe.

Silvia Blanco-Ferrera. Continuing work on my PhD project, "Conodonts and the tectonethermal evolution of the NE sector of the Cantabrian Mountains (NW Spain)". Actively working on Carboniferous conodonts, especially around the Mississippian/Pennsylvanian boundary at the Cantabrian Mountains (NW of Spain); stratigraphy, palaeontology, taxonomy and facies.

Iliana Boncheva. Working on: 1) New biostratigraphical data based on Paleozoic conodonts from Turkey and Bulgaria, correlations and palaeogeography of Palaeozoic Terranes in Bulgaria and NW Turkey;
2) Maturation patterns in Paleozoic rocks of northeastern Bulgaria based on conodont colour alteration index (CAI) data from six boreholes for hydrocarbon exploration in Moesian platform;
3) Devonian and Carboniferous conodonts in the Moesian and Balkan Terranes in Bulgaria; Paleozoic marine basin development, palaeogeography and tectonic evolution.

Dwight Bradley. A regional tectonicist who appreciates conodonts. In the summer of 2004, the USGS began mapping one of the most glaring unmapped holes in Alaska – the Taylor Mtns. region of southwest Alaska. The area includes the never studied suture zone between the Neoproterozoic to Jurassic Farewell terrane (evidently of Siberian origin) and the Triassic to Cretaceous Togiak-Goodnews arc and subduction complex. Anita Harris is doing the conodonts.

Camomilia Bright. On hiatus from Pennsylvanian conodont work and currently examining climate changes using Holocene foraminifera.

Lewis Brown. Continuing research on Desmoinesian projects in collaboration with Carl Rexroad, Glen Merrill and others.

Pierre Bultynck. Although retired since July 2003 am continuing to work on conodonts at the Royal Belgian Institute of Natural Sciences in Brussels. Research on Emsian, Middle Devonian and Frasnian conodonts from western Europe and south Morocco continues. In collaboration with O.H. Walliser and K. Weddige the study the conodonts from the Eifelian-Givetian boundary interval in the GSSP for the base of the Givetian continues.

Galina I. Buryi. Research on main morphological structures of euconodonts continues.

Ronald R. Charpentier. Although interested, not currently active with conodonts.

Jun Chen. Research on Carboniferous and Permian conodonts in South China and Tibet continues.

Damian Cole. Completion of my MSc on Silurian conodonts from various localities west of Sydney. A manuscript (with Andrew Simpson and James Valentine) on conodonts and inarticulate brachiopods from the Ludlow of Muruin Creek is in press in the Proc. Linnean Soc. of NSW.

Carlo Corradini. Researches in Sardinia and in the Carnic Alps continue. Two papers on Famennian-Tournaisian conodonts from the Clymeniae limestones in Sardinia have been published, and currently studying conodont faunas from a couple of upper Lower to Upper Devonian sections; a research project on graphic correlation in the Silurian, based on sections from the south-eastern part of the island has just started (with S. Gouwy). Investigating the Silurian *Orthoceras* limestones in several areas of the Italian side of the Carnic Alps chain.

Jed Day. With Mike Whalen, have been engaged in long-term integrated conodont-brachiopod biostratigraphic, sequence stratigraphic, and magnetic susceptibility study of the late Givetian-Famennian age (Middle-Upper Devonian) carbonate platform, and platform-to-basin transition, and basinal facies in the Rocky Mountains of Albert and British Columbia in western Canada. We are presently in the process of publishing results of our work from the 1997-1998 field seasons work at and near the Miette and Mancient Wall detached reef platforms, with substantial new data on Givetian-early Famennian brachiopod and conodont sequences. Jeff Over joined the team and participated in field operations in Alberta in 2003 and British Columbia in 2004. We are also planning to develop stable oxygen istope data for the late Givetian, entire Frasnian, and Famennian to develop a long-term record of paleo sea-surface temperature record of the western Laurussian near equatorial Devonian ocean from our Rocky Mountain conodont sequences.

The aforementioned project will compliment the recently published stable oxygen isotope based sea-surface temperature record spanning most of the Middle and Upper Devonian for the subtropical ocean record by Joachimski, et al. (2004, see citation). In our recent paper we developed and compared stable oxygen isotope records of brachiopod calcites and directly associated conodont apatites. Our findings indicate that conodont apatites appear to provide more realistic sea surface temperature records, with brachiopod calcite oxygen out-of-equilibrium, and giving unrealistically high sea surface temperature estimates for much of the Givetian, Frasnian and the part of the Famennian (lower half) that we were able to sample for the study. The results also support two short term sea surface cooling events directly coincident with the Lower and Upper Kellwasser bioevents, collectively referred to as the Frasnian-Famennian Mass Extinction.

Xi-ping Dong. Continue to study Cambrian through Lower Ordovician conodonts from Hunan, Anhui, Zhejiang, south China and Liaoning, Shandong, north China, and Xinjiang, northwest China. Also have been collaborating with Stig Bergström and John Repetski on the Cambrian through Lower Ordovician conodonts from western Hunan. Since 2000, have been working with Phil Donoghue on the histology and comparative histology of protoconodonts, paraconodonts and the earliest euconodonts from China.

Philip C.J. Donoghue. Analysis of the intrarelationships of complex conodonts is now complete after seven years of hard slog and waits now only for Mark Purnell to complete his section of manuscript. Thus, publication is anticipated for sometime during the second or third decade of the 21st Century. Mark and I have also completed editing of the ECOS VII symposium that we organised on the topic of bias in the conodont fossil record. This appeared in March 2005 as an issue of *Special Papers in Palaeontology*, published by the Palaeontological Association. The volume contains a number of very interesting and provocative contributions that should inspire and enrage in equal measure. Work also continues on the histology of paraconodont and early euconodont elements with Xi-ping Dong (Peking University) attempting to resolve the evolutionary relationships of the organisms. This is proving extremely problematic because various taxa have been misidentified as belonging to one grade or the other.

Jolanta Dopieralska. Work continues on the Nd isotopic composition of Devonian conodonts in order to use these data as a proxy in sea-level research and paleoceanography. Several projects are in progress. Early in 2005 a move from Germany to Poland will mean a very busy year completing equipment and opening a new isotope laboratory at the University of Poznan.

Michiel Dusar. Carboniferous stratigraphy in north Belgium.

Jerzy Dzik. Completion of a monographic description of conodont apparatuses from the Famennian of Poland. It will be submitted for publication this year (hopefully) together with a part on the co-occurring ammonoids.

Raymond L. Ethington. Continuing projects reported last year, but not yet finished; you don't want to know the reasons!

Annalisa Ferretti. Works on Late Ordovician conodont faunas from several European sections are continuing.
Barry Fordham. Research continues on the Ordovician—Carboniferous of Queensland.
Terry Furey-Greig. Continue to work part-time on previously neglected Late Ordovician-Early Silurian conodont-bearing sequences (autochthonous and allochthonous) in easternmost Australia with Ruth Mawson, Andrew Simpson, John Talent (all on conodonts), and with Masaki Umeda (Kyoto – radiolarians) who is providing matrix ages for such occurrences.
Susana Garcia-Lopez. Working on conodonts from the Silurian to lower Carboniferous, mainly focusing on biostratigraphy and biofacies topics. Also actively working in projects dealing with CAI research in the Cantabrian Zone and Pyrenees (NW and NE of Spain).
Hossein Gholamalian. Continuing research on Late Devonian conodonts that have been collected from three sections north of Kerman (southeast Iran).
Catherine Girard. Studying Late Devonian conodonts, especially the genus *Palmatolepis*. Working on *Palmatolepis* morphological changes through the Famennien continues in collaboration with Sabrina Renaud (using morphometrical analyses). Correlations between these morphological changes and geochemical data are in progress in collaboration with Michael Joachimski.
Yakut Goncuoglu. Continued research on Lower Palaeozoic carbonates in NW Anatolia.
Nicolas Goudemand. Started a PhD on Lower Triassic conodonts under the co-supervision of Hugo Bucher (Zurich, Switzerland) and Mike Orchard (Vancouver, Canada).
Sofie Gouwy. Finished my PhD last June; now working on Devonian of the Ardennes (Belgium), Devonian of Sardinia, graphic correlation of the Silurian of Sardinia (in co-operation with C. Corradini).
Eric Groessens. Continuing with research on uppermost Famennian-Lower Carboniferous conodonts from Belgium and surrounding countries, as well as the Devonian-Carboniferous boundary in China.
Vachik Hairapetian. Continue working on Late Devonian and Early Carboniferous conodonts and fish micro-remains from central and northern Iran, and also Armenia. Visited Devonian and Early Carboniferous sections (Kowala railroad cut, Kadzielnia quarry, Lagow, Ostrowka quarry, Plucki, Slichowice, Wietrznia) in central Poland with M. Ginter (Warsaw University).
Jack C. Hall. Conodonting has been a bit slow this year. With being Chair of the Department of Environmental Studies time is a bit limited for research (Gee, what a surprise!). Hope to make some progress on using a biostratigraphic framework of conodonts to determine the time of depositional events and environments in the Ordovician of the southern Appalachians.
Anita Harris. Continue to work on conodonts from the US Cordillera (mainly Nevada and Alaska) with studies focused on biostratigraphy, biogeography, and isotope geochemistry and color alteration in conjunction with several USGS regional mineral assessment programs. Detailed CAI maps based on thousands of conodont localities plotted on updated geologic county maps of Nevada will be available for downloading on the U.S. Geological Survey web site by late 2005.
Phil Heckel. Studies involving Pennsylvanian conodonts continue at various paces. Along with several co-authors, currently constructing correlation frameworks across the Moscovian-Kasimovian and Kasimovian-Gzhelian Stage boundaries in the classic areas of the world, using scale of glacio-eustatic cyclothems in conjunction with conodont faunas and aspects of fusuline and ammonoid faunas where appropriate. This is oriented toward facilitating the official selection of these global boundaries.
Charles M. Henderson. Continuing sequence biostratigraphic research on Upper Paleozoic to Triassic strata from western and Arctic Canada and China primarily. A collaborative research program with the Nanjing Institute of Geology and Paleontology is underway with investigations of Kungurian, Lopingian and P-T boundary strata in south China. My research focuses on the development of refined biozonations by investigating evolutionary models for conodont speciation, the extent of conodont provincialism, and the recognition of geographic clines. As Chairman of the Subcommission on Permian Stratigraphy am focusing on completing GSSP definitions for the Permian System. Most of the six graduate students in the Applied Stratigraphy Research Group (www.geo.ucalgary.ca/asrg) are conducting sequence biostratigraphic/petroleum geology studies in the subsurface of southern Alberta to northeastern British Columbia on uppermost Devonian to uppermost Triassic rocks, as well as the dynamics of recovery from the P-T extinction and Upper Paleozoic comparisons between the Wrangellia and Alexander terranes. Finally, David Johnston is working with me on Mississippian conodonts from the Exshaw and Banff formations.
Francis Hirsch. Working on Triassic conodont palaeo-bio-geography. With Keisuke Ishida (Tokushima University), involved in Triassic conodont research in NW Thailand.

Hisayoshi Igo. Working on Triassic conodonts from Thailand and Sikhotalian, Russia. Retired from the University of Tsukuba and the National Science Museum but now working at the Institute of Natural History.

Hisaharu Igo. Working on Permian and Triassic conodonts.

Keisuke Ishida. Working on Triassic, Permian and Late Carboniferous faunas from the Jurassic and Permian accretion complexes of SW Japan. Lithology and biostratigraphy of conodont-bearing Upper Triassic limestone of South Chichiu Terrane is under investigation. The project is related to a national project of the discovery of the sources of the building stones used in the National Diet Building in Tokyo. Also working on the Triassic materials that were found in the Jurassic basal conglomerate in NW Thailand. The project will further determine the time constraints of the orogenic activity that led to the assemblage of the allochthonous elements forming the Shan-Tai basement and the provenance of the Triassic elements found at the base of the autochtonous Jurassic cover. Other research commenced on Permian materials from China.

Yukio Isozaki. Currently working on the Permo-Triassic boundary interval, using microfossils (conodonts, radiolaria, and fusulinids) and geochemistry. Also started a new project on the boundary event between the late Neoproterozoic and Cambrian.

Lennart Jeppsson. During 2004 submitted the first manuscript about the Lau Event, including a revision of the *P. siluricus-O. snajdri* zones and of the local subdivisions on Gotland. All zone fossils appeared long before their zones, necessitating redefinition of the zonal boundaries. The zones are split in subzones. Hopefully, two joint papers identifying these zones and subzones in other areas will follow during 2005.

Application of the subzones of the *Ozarkodina sagitta sagitta* Zone to the stratigraphy of Gotland will result in major changes in the correlations along the belt of outcrops. The ranges of other fossils fit well with the conodont-based results and with their ranges, as known elsewhere. If all goes as planned one or two manuscripts will be submitted during 2005.

Silurian events continue to yield surprises. There was evidently an as yet undescribed secundo-secundo event during the early Sheinwoodian. Faunal changes were considerable and a strong, very brief sea level drop occurred, followed by a protracted recovery. These characters occurred also during the Mulde Secundo-Secundo Event. In contrast to that event, nearly all effects were transient and as yet, only one taxon seems to have become extinct, at least on Gotland.

David Ian Johnston. A paper on disrupted conodont bedding plane assemblages from the Mississippian of western Canada by Charles Henderson and myself has been accepted for publication. We also presented a poster on this topic at the GAC-MAC Annual Meeting at Brock University last year. This year, also doing some biostratigraphic service work involving conodonts but am now embarking on a new career(?) as wellsite geologist.

Gareth Ll. Jones. Working on Irish and European Carboniferous faunas. Due to the collapse of the zinc exploration industry in Ireland in 2003, I received no conodont samples for processing, however, in the second half of 2004 these began to reappear and I am back in business on this front. I am experimenting with panning for conodonts with a small gold pan. Has anybody else any experience in this form of safe heavy mineral/conodont separation technique?

Ali Murat Kilic. In 2004 my PhD thesis was completed. Now, mainly working on the Lower-Middle Triassic conodont faunas from the Kocaeli-Karaburun peninsulas, and Western Taurids with Profs. K. Budurov and F. Hirch. Presently preparing manuscripts of two papers from my PhD.

William Kirchgasser. Working on final edit of monograph on late Devonian goniatites of New York State written with the late Michael House. In the work, to be published in the Bulletins of American Paleontology (Paleontological Research Institution, Ithaca, NY), the late Givetian and Frasnian conodont and goniatite zonal sequences in New York are aligned. Work continues on the dating of microvertebrate and conodont lag deposits, including Hinde's Conodont Bed, in the late Givetian and early Frasnian in western New York. Also finishing a paper with Gil Klapper on the Frasnian conodont sequence in New York. I am now retired from teaching, but maintain an office and laboratory.

Elena M. Kirilishina. My recent interests are the Frasnian-Famenian conodonts from the central regions of the Russian Platform. Work is focused on the field of biostratigraphy and phylogeny of *Palmatolepis*, *Polygnathus*, and *Ancyrodella*. Also studying the conodont biofacies, paleoecology, and paleobiogeography of the Late Devonian. The research will be included in my PhD thesis (supervised by Dr. Ludmila I. Kononova).

Gilbert Klapper. Research continues on Frasnian and Famennian conodont taxonomy and biostratigraphy.

Mark A. Kleffner. My research is focused on Silurian conodonts and Silurian stratigraphy, primarily in the Midcontinent outcrop area, North America. Presently actively involved in several projects: Lower Silurian of Ohio and Kentucky; a revised conodont-, graptolite-, and chitinozoa-based Silurian chronostratigraphy; 13C chemostratigraphy of Ordovician/Silurian boundary strata of the North American Midcontinent (with Stig Bergström); conodont biostratigraphy, oceanic episodes, and 13C chemostratigraphy of Silurian/Devonian boundary strata of Cherry Valley region, New York (with Jim Barrick and James Ebert); oceanic episodes, 13C chemostratigraphy and updated Homerian, Gorstian, and Ludfordian (Silurian) conodont biostratigraphy of North America (with Jim Barrick); Ireviken Event and post-Ireviken 13C excursion in the Niagara region, New York (with Brad Cramer); an integrated conodont, graptolite, and chitinoza biostratigraphy for the Williamson Shale, Rochester, New York (with David Loydell and Gary Mullins); and Lower Silurian conodonts of central Nevada (with Mike Murphy).
Toshio Koike. Concentrating on reconstructing species of *Neospathodus, Ellisonia*, etc. from the Lower Triassic of the Taho Limestone, southwest Japan.
Peter Königshof. Continuing work on endolithic organisms in conodont elements and also research on colour alteration, with a special focus on comparison with KI and vitrinite reflectance.
Ludmila I. Kononova. Continuing studies on Middle-Late Devonian and Early Carboniferous conodonts. A paper (with N.S. Ovnatanova) was published on polygnathids of Central Regions of the Russian Platform (2001). In addition, the monograph with N.S. Ovnatanova on "Frasnian conodonts of the East Russian Platform (biostratigraphy, biofacies, morphology, ontogeny and phylogeny of conodonts)", will be published soon.
Sandor Kovacs. Middle to Late Triassic conodont biostratigraphic dating in Hungary; metamorphism and ductile deformation of conodonts.
Heinz W. Kozur. Cambrian to Triassic conodont stratigraphy, Carboniferous to Triassic conodont taxonomy, palaeoecology and provincialism.
Richard J. Krejsa. My conodont research activities are dormant at present. I retired over 10 years ago from Cal Poly, and have renewed my involvement as a musician.
Lance L. Lambert. Continuing the Pennsylvanian and Permian projects mentioned in the last newsletter. The move to UTSA has kept me quite busy, but now that I am (almost) settled in, things are progressing nicely.
H. Richard Lane. Continued interest in working on Mississippian and early Pennsylvanian conodonts, although with current responsibilities, little time is available to devote to conodonts. I have one publication on Osagean conodonts slated to be published before the Pander Society annual meeting and also am involved in editing two volumes, one a special issue of BAP and another on the assembly of Pangaea with the Utrecht Carboniferous and Permian Congress in August 2003. Also involved with the funding of a number of paleo database systems [CHRONOS (chronos.org); Paleostrata, (paleostrat.org); Paleobiology Database (www.paleodb.org)]; time series analaysis [Earthtime (www.earth-time.org)] efforts; paleo educational sites [Paleoportal (www.paleoportal.org)], deep time paleoclimate community organization [Geosystems (geosystems.org)], and establishment of SESAR [Solid Earth Sample Registry (geosamples.org)], a system for establishing a globally unique number for all geological and paleontologic samples.
Oliver Lehnert. During the last two years and my stays at the Charles University/Prague and the University of Lille in N. France, have meant involvement in several projects on other topics such as stable isotopes & hydrothermal vents, but now will concentrate more on conodonts again. Presently working on some interesting Ordovician conodont faunas from Iran, Saudi-Arabia, Czech Republic and, with several colleagues, still describing conodonts and associated microfossils from previously investigated areas. After a short stay in Prague (until end of March 2005) with a Humboldt grant I want to continue with a project on oxygen isotopes from Cambrian through Silurian conodonts (from different paleogeographic areas) to calculate sea-water temperatures. Goal is to get a good data set with respect to paleoclimatic changes and connected extinction events. First data from the Silurian of the Prague Basin are quite promising.
Stephen A. Leslie. Research continues on Middle and Upper Ordovician conodont biostratigraphy, sequence stratigraphy, and event stratigraphy. A main focus of my work is now being devoted to looking for conodonts on shale surfaces. This is an outgrowth of a project looking at the conodonts from the Womble Shale and Big Fork Chert in Oklahoma in connection with Dan Goldman's recent graptolite biostratigraphy of this interval. We have submitted the Womble-Big Fork succession at Black Knob Ridge, near Atoka, Oklahoma, to be considered as a GSSP for the base of the middle stage of the Upper Ordovician. Stig Bergström and I continue work on Branson & Mehl's classical Ozora, Missouri locality.

Much of my attention this past year has been on projects other than Ordovician conodonts. Among other projects, I am working with Loren Babcock and Alycia Rode on exceptionally preserved faunas from the Cambrian of Nevada, and on Jurassic lake sediments in Antarctica.

Anita Löfgren. Currently working with Tatiana Tolmacheva (St. Petersburg) on a monograph of *Microzarkodina*, with Viive Viira and Kaisa Mens (Tallinn) on biostratigraphic and sedimentologic topics in Estonia; with Stig Bergström (Columbus, Ohio) on biostratigraphic correlation at the base of the Middle Ordovician in Sweden; and with Sven Laufeld and Yngve Grahn on early Palaeozoic rocks of the Bothnian Sea. I hope to be able to continue with this for a few more years, although my teaching duties will formally end in 2005.

Friedrich W. Luppold. Geology and conodont research of middle-Upper Devonian sections in the Okertal region of the Harz Mountains, with P. Buchholz. A paper on Ordovician conodonts at the SW Harz Mountains, together with E. Trapp, is in preparation.

Peep Mannik. Work continues on the evolution, ecology and taxonomy of Ordovician and Silurian conodonts from the Baltic, Arctic regions and Siberia, and on conodont-based high-resolution stratigraphy.

Ana Marquez-Aliaga. Working on conodonts from the Middle Triassic of Spain with my PhD student Pablo Plasencia, with the help of Dr. Nacho Valenzuela-Rios.

Richard T. Marshall. Collecting Pennsylvanian conodont locations and specimens in the Kansas, Missouri, Arkansas and Oklahoma areas. Mainly attempting to get up-to-date on new conodont findings and literature for and in the Arkansas/Oklahoma area. Being retired, my conodont activity is advocational.

Adelaide Mastandrea. Finishing up on a paper on the Carnian/Norian boundary of the Pignola section (Basilicate, southern Italy); also involved in conodont biostratigraphy of the Carnian-Rhaetian of Northern Calabria. Continuing with a project dealing with Kubler Index (KI) and CAI.

David Mathieson. Working on a manuscript on conodonts from limestone intervals in the predominantly clastic Late Silurian-Early Devonian (pre-Emsian) sequences of western New South Wales.

Hanna Matyja. My work on Middle Devonian and Frasnian conodonts from the shallow water succession of north-western Poland continues. Currently working on a number of projects, with co-workers, concerning Middle Devonian to Frasnian conodont and miospore biostratigraphy and Middle to Late Devonian conodont event stratigraphy, extinctions, paleoecology and taxonomy.

Ruth Mawson. Continuing to undertake conodont work (with John Talent) on various Late Silurian to Middle Devonian units, autochtonous and allochtonous, in the Yarrol tract of east-central Queensland, primarily to help underpin monographic work on corals by Paul Blake (Geol. Surv. Queensland). A paper on the repetition (and exploration implications) of the largely volcanic stratigraphy associated with the giant Mt. Morgan copper-gold deposit in the Dee Range, both in the Rockhampton region of Queensland, will appear in the first issue of Economic Geology in 2005. This will be the first paper with a plate of conodonts to be published in that journal. A manuscript (with Matthew Ng) on Pragian brachiopods and conodonts from the previously poorly known Mt. Etna limestone, a very prominent limestone olistolith in the Mt. Alma Formation north of Rockhampton, has been completed. Papers have been published this year on Tournaisian conodonts from the Chitral and Tirah regions of northwestern Pakistan with, respectively, Maurizio Gaetani et al. (Milano) and Fazl-I-Rabbi Khan et al. (Peshawar), and from the latest Silurian and Early Devonian Nowshera Limestone, NWFP, Pakistan (with John Talent, Andrew Simpson and Peter Molloy). Other foci of research continue to include CAI vs. illite crystallinity patterns for eastern Australia and northernmost Pakistan (with Covadonga Brime and John Talent), conodont biofacies in relation to carbonate mud-mounds of the Buchan Group of eastern Victoria, and documentation of conodont faunas from the Early Devonian Baton Group of New Zealand.

Alexander (Sandy) D. McCracken. Work continues on Middle to Upper Ordovician, Silurian and Devonian conodonts from various locations in Canada. Much of my time is now assigned to outreach and palaeontological databases.

Selam Meco. Silurian, Devonian and, chiefly Triassic conodonts and biostratigraphy.

Carlos A. Mendez. Working on Carboniferous (upper Mississippian and Pennsylvanian) conodonts in the Cantabrian Mountains (North Spain). Two main areas of interest are the levels close to the Moscovian-Kasimovian and Bashkirian-Moscovian boundaries.

Glen Merrill. Continue work on *Gondolella* with P.H. von Bitter; work in the SE Ohio Pennsylvanian, other smaller projects with others.

Ian Metcalfe. Work continues on conodonts from the Permian-Triassic boundary interval in China (with Bob Nicoll) and on Permian-Triassic conodonts from southeast Asia, and western Australia (with Bob Nicoll).

Ronald Metzger. Awaiting upcoming publication of a Silurian manuscript and co-authored paper on Ordovician conodonts from the Midwest with Brian Witzke. Future research involves multielement reconstruction of State Quarry faunas from Iowa.

James F. Miller. Besides continuing research on Upper Cambrian and Lower Ordovician conodonts, I am working on conodonts from a fallback or resurge breccia formed during a meteorite impact. The crater is up to 19 km across and is only 100 km north of where I live. The breccia contains conodonts from the Lower Ordovician mixed with taxa from various parts of the lower half of the Mississippian, indicating that breccia clasts derived from various strata are redeposited together. Insoluble residues contain many quartz grains that appear to have "shocked" structure. The impact may have occurred about the middle of the Mississippian.

C. Giles Miller. This year has seen the culmination of my ongoing project with Tiiu Märss (Tallinn Technical University, Estonia) on thelodonts and conodonts from British Silurian stratotype sections. The bulk of our data was published in two major publications (Märss & Miller, 2004 and Miller & Märss, 2004). The study identified a few stratigraphic gaps for further study. I carried out fieldwork with Ken Dorning on the Wenlock of the Much Wenlock area to try and fill one of these gaps. A website has also gone live that details the NHM conodont collections that were expanded this year with the addition of Alan Higgins' conodont collection. See website information elsewhere in this Newsletter.

Peter Molloy. Preparation of a manuscript on conodonts through the Ireviken Event (Early Silurian) at Boree Creek, New South Wales. Concurrently, continue to work with Ruth Mawson, Andrew Simpson, Terry Furey-Greig and John Talent on various Late Ordovician-Early Silurian carbonate sequences in eastern Australia.

Jared R. Morrow. Current interests are Late Devonian conodont-based event stratigraphy, extinctions, biofacies, paleoecology, and sequence stratigraphy. In collaboration with Charles Sandberg and Anita Harris, also studying the conodont-based evidence for the distal and offshore effects of the mid-Frasnian Alamo Impact Event, Nevada, USA, including documentation of conodonts ejected by the impact.

Hans Arne Nakrem. Carboniferous, Permian and Triassic conodonts from Svalbard (Arctic Norway), Cambrian and Silurian conodonts from the Oslo Region, Norway. Mainly systematic descriptions and biostratigraphy. My research also includes study of fossil bryozoans from the same localities.

Katarzyna Narkiewicz. My research on Middle Devonian conodonts from SE Poland continues. Also collaborating with Pierre Bultynck on European equivalent of the *subterminus* Fauna. Results of my research on Middle Triassic paleoenvironment around the salt structure from central part of Poland are in press. I also constructed the CAI datebase system for the Ordovician to Triassic strata in Poland.

Valentina M. Nazarova. Continuation of work on Middle-Upper Devonian and Carboniferous conodonts from the Russian Platform. Also studying conodont functional morphology.

Tamara I. Nemyrovska. Carboniferous conodont palaeontology, biostratigraphy, paleoecology, paleogeography.

Robert S. Nicoll. Working with Permian—Triassic boundary faunas, mostly from China. Have recently reviewed all of the published conodont faunas from New Zealand (should be published later this year). Still working on the Permian faunas from Western Australia and am trying to work in some Ordovician faunas in my spare time.

Rodney D. Norby. Current research includes biostratigraphy of the Silurian and Lower Carboniferous. My interests have not changed, but as of December 31, 2004, I officially retired from the Illinois State Geological Survey. I have been able to retain my office and lab for the time being and for now, I plan to come into the office a day or two a week. As time permits, will continue on some of my older projects.

Godfrey Nowlan. As noted in earlier newsletters, my work on conodonts has been severely curtailed. My main role with the Geological Survey of Canada is now geoscience outreach specialist and so only about 15 percent of my time is spent doing scientific work; however, I continue to work slowly on a few projects:

1. Conodont biostratigraphy and paleoecology of the Ordovician and Silurian rocky shoreline exposed on the shore of Hudson Bay near Churchill, Manitoba. Several cores were drilled in 2003 and these were recently sampled in detail. Work is joint with Graham Young (Manitoba Museum) and Bob Elias (University of Manitoba);
2. The Nd isotope ratios and Sm/Nd ratio and conodont paleoecology of late Ordovician strata in the subsurface of Saskatchewan. Work is joint with Chris Holmden (University of Saskatchewan) and Fran Haidl (Saskatchewan Industry & Research);
3. Early Cambrian embryos and small shelly fossils from the Wernecke Mountains, Yukon. Joint work with Leanne Pyle (University of Victoria) and Guy Narbonne (Queen's University);

4. Service reports for clients of the Paleontology Laboratory at the Geological Survey of Canada.
Nadezhda G. Izokh. I continue active study of conodonts from Ordovician, Silurian and Devonian of the Altai-Sayan Folded Area, West Siberia, Russia and South Tien Shan.
Olga T. Obut. Current interest is Ordovician conodont biostratigraphy.
Fuat Önder. Retired from Cumhuriyet University but still teaching/supervising post graduate students on the Tethyan Triassic conodonts. Training activities on Total Quality Management are also given at five universities.
Mike Orchard. My primary focus is on Triassic conodonts (multielement taxonomy, biochronology, biogeography, biofacies) and their application in Triassic time scale development (Triassic Subcommission; IGCP467). Currently revised Carnian-Norian boundary conodonts, with documentation of collections from the other four undecided Triassic boundary GSSPs waiting in the wings. The study of late Paleozoic-Triassic conodont biostratigraphy and paleogeography of Cordilleran terranes is ongoing, with an account of Yukon data is in press.
D. Jeffrey Over. Work continues on Upper Devonian conodonts in North America. Recent collaborative works and upcoming projects include Alberta Platform with Day and Whalen, Middle Devonian, especially around the Eifelian-Givetian boundary in eastern North America with Brett and the Cincinnati Group, and the Flynn Creek structure in central Tennessee with Schieber.
Soo-in Park. Continuing investigations on the conodonts of the Carboniferous and Permian strata in South Korea.
Ross Parkes. About to submit my PhD thesis on conodont biostratigraphy and sedimentary facies of the Quidong Group (Late Silurian) of southeastern New South Wales.
Ian Percival. Continue to concentrate on Ordovician conodonts, with emphasis in two regions. Locally, a number of projects studying conodont biostratigraphy of cherts in the Lachlan Orogen of central and eastern New South Wales are ongoing. New discoveries of Early Ordovician conodonts (*elegans* and *evae* zones) have assisted mapping in areas of otherwise monotonous turbidite successions. The other area of interest has been Early Ordovician conodonts of South China, where I am assisting Yong Yi Zhen (Australian Museum) with his taxonomic research. Relocation of my laboratory and office to Londonderry (outer Sydney), and restructuring of the Government Department where I work, has taken up a lot of my time this past year. Please note my new address and contact details as listed elsewhere in this Newsletter.
Maria Cristina Perri. Continuing research on Devonian-Early Carboniferous and Permian-Triassic conodont faunas. New Frasnian and Frasnian-Famennian sections are under study. A paper (with Anita Andrew, Enzo Farabegoli, Gilbert Klapper and Claudia Spalletta) on conodont faunas across the Frasnian-Famennian boundary, integrated with detailed sedimentological analysis and istotopic data, in a section from the Carnic Alps, is still in progress. Research on the Permian-Triassic succession of the Southern Alps has been resumed. A paper (with Enzo Farabegoli) on conodont faunas across the Permian-Triassic in the Southern Alps and one (with Peter Molloy and John Talen) on Earliest Triassic conodonts from Chitral, northernmost Pakistan, have been published. A study on the thermal evolution of Palaeozoic-Triassic sequences of the Carnic Alps utilising Kubler Index (KI) and CAI (with Covadonga Brime, Monica Pondrelli and Claudia Spalletta) is about to be submitted for publication, as is a paper (with Carine Randon, Claire Derycke, Alain Blieck and Claudia Spalletta) on cosmopolitan Late Devonian-Early Carboniferous vertebrate microremains from the Carnic Alps.
Jozef Pevny. Studying Triassic conodonts, Pelsonian to Cordevolian in age, from central Slovakia. I am retired but still go into the Institute.
Matthias Piecha. Working on Devonian and Carboniferous conodonts from the Rhenish Massif. Continued investigations on low temperature (CAI 1-2) Middle and Late Devonian conodonts from the Paffrath Syncline (Bergisches Land, West Germany) and also investigations on conodont biofacies and hiatuses around the Frasnian/Famennian boundary on the Rhenish shelf of northwestern Germany, especially on boreholes in the region of the city of Aachen.
Pablo Plasencia-Camps. Still working on my Master's Thesis on Triassic conodonts from Spain. Ana Marquez-Aliaga and Nacho Valenzuela-Rios are my research directors, with additional supervision from Francis Hirsch. I am a biologist and intend to study biological aspects of conodonts, with a special interest in Triassic genus *Pseudofurnishius* and also Triassic fishes.
Monica Pondrelli. Metamorphic zonation of the Carnic Alps (Austria-Italy) using CAI analysis. I have now changed institutions and my main research topic is related to Martian sedimentary depositional system analysis.

Forrest G. (Barney) Poole. Actively working on sedimentology and stratigraphy of Ordovician-Permian carbonate-shelf, Permian foredeep, and Permian Sonora allochthon (consisting of deformed Ordovician-Permian strata) in Sonora, Mexico with Ricardo Amaya-Martinez, Anita Harris, Charles Sandberg, Calvin Stevens, William Page, and Arthur Boucot. This work includes detailed stratigraphic and paleontologic studies, utilizing conodont, fusulinid and brachiopod faunas and zonation. Also actively working on Devonian and Mississippian stratigraphy and sedimentology in the Antler foreland basin of Nevada with Charles Sandberg, utilizing conodont faunas and zonation to record foreland evolution and depositional history.

Mark Purnell. My conodont flavoured research has been mostly concerned with natural assemblages of Silurian and Devonian age, including an articulated prioniodinid from the Gogo Formation of Australia, an assemblage of *Distomodus* from Scotland (with Mark Williams) and various lovely things from the Eramosa Formation of Ontario (with Peter von Bitter). I am also working with David Jones on morphometric analysis of conodont elements. Recent work with Phil Donoghue considering the nature of the conodont fossil record resulted in a manuscript that, by the time this newsletter appears, will have been published in the volume arising from the ECOS VIII symposium in Toulouse (Purnell & Donoghue, eds., Conodont Biology and Phylogeny—Interpreting the Fossil Record. The Palaeontological Association Special Papers in Palaeontology 73). Cladistic analysis of relationships among complex conodonts (with Phil Donoghue, Dick Aldridge & Zhang Shunxin) is nearing completion, and an analysis of Permo-Triassic taxa (with Dick Aldridge, Lai Xulong, Mike Orchard & Andy Swift) should be moving forward over the next 12 months. Work on tooth microwear in aquatic vertebrates also continues. This is focused mainly on living and fossil actinopterygian fishes, but is relevant to understanding tooth wear patterns in conodonts. And if you want to find out what conodonts have to tell us about genome duplication and the evolution of vertebrate complexity, look out for a paper by Donoghue & Purnell in *Trends in Evolution and Ecology* in June.

Carine Randon. Currently doing a PhD on Upper Devonian to Lower Carboniferous conodonts from northern Thailand. Most of the sections containing conodonts are radiolarites deposited in a deep-oceanic basin. My main interests are helping understand regional geology and also to characterize deep-oceanic conodont faunas. My research also includes conodonts from several lydite sections in Europe.

Aleksey N. Reimers. I am continuing to study Permian, Triassic, and Ordovician conodonts from the Russian Platform, Urals and East Siberia. Recently collected samples from the Ordovician xenolites from the kimberlite pipes of East Siberia.

John E. Repetski. Most of my projects are still continuing: CAI maps for the central Apalachian and Michigan basins for energy-related projects; age-dating support for mapping in various Appalachian metamorphic and anchizone rocks; southern Midcontinent Cambrian to Middle Ordovician biostratigraphic studies; Cambrian and Ordovician systematic, CAI, and biostratigraphic studies from these and various other places. Numerous other projects, on aspects of Cambrian and Ordovician conodonts, some other phosphatic problematica, e.g., phosphatized embryos and larval arthropods, various biostratigraphic problems from many places, as well as some systematics, continue. Most of these latter efforts are collaborative with fellow Panderers, and other good colleagues.

Carl B. Rexroad. Continue to work on a variety of Pennsylvanian projects with Lew Brown, including work in Kentucky with Mike May, and some work in New Mexico. Also working with Mitch Blake and Jack Beuthin on the Chesterian of southern West Virginia and with Joe Devera on the Clore (Chesterian) of the Illinois Basin. I formally retired from the Survey at the end of June 2003 but continue to work at about the same level as before. The Governor of Indiana made me a Sagamore of the Wabash, a very high honor in the State.

Steven J. Rosscoe. Taxonomy, functional analysis. I am at Texas Tech University for both the Masters and PhD programs.

Stephen C. Ruppel. Finishing up a project of Leonardian strontium isotope stratigraphy in the Sierra Diablo mountains of West Texas, the subsurface of the Permian basin based on conodonts (collected by Lance Lambert) and whole rock samples.

Charles A. Sandberg. Current interests are primarily Middle to Late Devonian and Mississippian conodont event stratigraphy, extinctions, biofacies, paleoecology, paleobiogeography, and taxonomy. My major effort in 2005 is the selection of lower CAI conodonts from my Devonian conodont collections for laser-ablation and other geochemical analyses by Poul Emsbo. In connection with this effort, I am re-identifying many of my 30-year-old conodont collections with the help of Gil Klapper. In collaboration with Jared Morrow, I am adding to these collections by new sampling and gathering conodont evidence for

the wide extent of Alamo Impact mega-tsunami distal uprush and backwash deposits. With Anita Harris, I am continuing to identify blast-fallout Silurian, Ordovician and Cambrian conodont faunas, redeposited in lapilli beds within the Alamo Breccia, as evidence for the depth of crater excavation by the Alamo Impact in southern Nevada. For a geologic map with Barney Poole, I am completing a study of conodonts from the Devonian platform-to-basin transitional sequence in the southern Hot Creek Range, Nevada. Also, I am processing samples collected by Poole from northern Sonora, Mexico, and identifying Pennsylvanian and Permian conodont faunas.

Javier Sanz-Lopez. Working on conodonts and stratigraphy from the Serpukhovian to Bashkirian of the Iberian Peninsula. CAI research is focussed on the Cantabrian Zone and the Pyrenees.

Graciela N. Sarmiento. Ordovician and Silurian conodonts. Colour alteration index (CAI).

Norman M. Savage. Working on Ordovician, Silurian, Devonian and Triassic conodonts in Thailand. Also Frasnian-Famennian isotope variations in Thailand and Russia. Also Devonian conodonts from southeastern Alaska. My address is the same, but please note new e-mail address listed in Contact section.

Tom Shaw. Lower and Middle Ordovician of the Illinois and Michigan Basins.

Shuzhong Shen. Conodonts from Permian-Triassic boundary beds of Tibet.

Andrew Simpson. A manuscript (with Ruth Mawson, John Talent & Peter Molloy) on conodonts from the latest Silurian and Early Devonian Nowshera Limestone, NWFP, Pakistan has been published. Another (with Damian Cole and James Valentine) on Ludlow conodonts and inarticulate brachiopods from Muruin Creek, NSW, is in press.

Ladislav Slavik. Almost the entire year of 2004 was spent as a Humboldt Research Fellow at the Technical University of Braunschweig, Germany. Together with Peter Carls currently working on Ludlow, Pridoli and Lochkovian material from the Barrandian area and the Frankenwald. We are cooperating closely with Nacho Valenzuela-Rios of the University of Valencia, Spain.

Terry Sloan. I have not done any conodont research recently, but plans are to return to studying graphic correlation and shape analysis in 2005.

Lubov Sokolova. Studying Upper Silurian-Lower Devonian conodonts (biostratigraphy, evolution and taxonomy).

Claudia Spalletta. Continuing studies mainly on Upper Devonian to Lower Carboniferous conodonts from carbonatic units of the Carnic Alps (northern Italy), focusing on sections containing the Frasnian/Famennian boundary.

Lee Spencer. Currently beginning to look at the Cambrian-Ordovician boundary in the southern Appalachians.

Walter C. Sweet. Graphic correlation of Middle Ordovician sections in the Argentine Precordillera, using data supplied by Guillermo Albanesi. Although retired for some 16 years, I still keep an interest in matters conodont-related.

Andrew Swift. Interest is being maintained in Carboniferous-Triassic conodont studies.

Hubert Szaniawski. Very interested in Cambrian-Early Ordovician conodonts and in biology of conodonts. Also presently engaged in a project concerning the Silurian/Devonian boundary in Podolia (Ukraine) in cooperation with Daniel Drygant (Lviv, Ukraine).

John Talent. Continue to work on various Late Ordovician-Early Carboniferous conodont faunas, mainly from eastern Australia, with principal foci being comparison of the Late Silurian Lau Event between Gotland and sections in the Broken River region of northeastern Australia (with Lennart Jeppsson et al.), and CAI vs. illite crystallinity patterns for eastern Australia and northernmost Pakistan (with Covadonga Brime and Ruth Mawson). A paper (with Cristina Perri and Peter Molloy) on Early Triassic conodonts from northernmost Pakistan was published.

V.P. Tarabukin. Studies continue on Ordovician, Silurian, Devonian and Lower Carboniferous conodonts. Also working on CAI on Ordovician-Carboniferous rocks in some areas of NE Asia. Together with A.N. Reimers and I.V. Nefedova I am busy with conodonts from xenolits in kimberlite pipes and of Ordovician on the Nakyn Region (Siberian Platform).

Julie Trotter. My PhD research at RSES has been to better characterise the geochemistry of conodont apatite, with a particular focus on in-situ techniques including laser ablation ICPMS (elemental ratios) & MC-ICPMS (Sr isotopes), and ion microprobe analysis using SHRIMP II (oxygen isotopes). Investigations in the potential for oxygen isotope analysis of Po_3 using negative TIMS are ongoing. TEM analyses have also been pursued & provided new information on the porosity and ultrastructure of conodont crown tissues. Collectively, these data are providing new insights into the composition, physical structure, and

integrity of conodont apatite and consequently their potential as geochemical tracers for palaeoenvironmental studies. I return to CSIRO at Sydney in January 2005.

Tom Uyeno. My study on Beaverhill Lake (Givetian-Frasnian) conodonts continues. Manuscript coauthored with Jack Wendte has been submitted to the Bulletin of Canadian Petroleum Geology.

Viive Viira. Actively working on Lower and Middle Ordovician conodont faunas from several sections in Estonia.

Peter H. von Bitter. Refocusing on the Mississippian conodonts of Atlantic Canada: a recently revised, much-agonized-over three-authored manuscript by P.H. von Bitter, P.S. Giles & J. Utting on the age and correlation of these Mississippian marine deposits with Britain and Ireland, using conodonts, foraminifera and palynomorphs, has been resubmitted to the editors of the last ICC-P held in Utrecht, The Netherlands, in 2003. Work on Mississippian *Lochriea* (with Rod Norby and Rob Stamm), Pennsylvanian *Gondolella* (with G.K. Merrill) and Pennsylvanian *Diplognathodus* (with G.K. Merrill and Rob Stamm) still progressing slowly. Continue splitting and separating shale and limestone of the Silurian Eramosa Member of Ontario (working with Mark Purnell and David Jones of Leicester on this material). More than 200 bedding plane assemblages recovered so far. Mostly *Ozarkodina excavata* (?? the *Idiognathodus* of the Silurian) but a new locality yielded new bedding plane assemblages of (?only) *Ctenognathodus*. Another locality has yielded the earliest complete vertebrate from Ontario (a heterostracan jawless fish), as well as kannathelepid sharks that are associated with sea-scorpions, to the apparent exclusion of conodonts.

Wang Cheng-yuan. Retired, but still continue my work on conodonts. Presently working on a number of projects : 1. Silurian-Devonian conodonts from southeastern Mongolia; 2. Permian conodonts from south Mongolia; 3. Silurian conodonts from Baizitian section in southwestern Sichuan, China; 4. Processing conodont samples from the Central Mountains of Taiwan.

Linda Wickström. My work at the Geological Survey of Sweden takes a lot of time at the moment. However, my interest in the evolution and palaeobiology of Ordovician and Silurian conodonts remains strong and active.

Brian J. Witzke. Ordovician conodonts, new St. Peter Sandstone collections; upcoming Famennian processing.

Yao Jianxin. Working on Late Paleozoic and Early Mesozoic conodonts in South China, West Kunlun Mountains and Tibet.

Evgeny A. Yolkin. Continuing investigations on Paleozoic conodonts from West Siberia (Russia) and South Tien Shan together with N.G. Izokh.

Shunxin Zhang. My research has been focused on Silurian and Ordovician conodont paleoecology on the Appalachian, Cordillera and Arctic margins, that I have used as a tool to reconstruct sea level history; my other two ongoing projects are Late Ordovician-Early Silurian conodonts from Siberia and Hudson Bay areas.

Yong Yi Zhen. Working on the Ordovician conodonts from NSW and China. In 2004 I concentrated on Early Ordovician conodont faunas from the Honghuayuan Formation of Guizhou Province, South China in association with Ian Percival (Geol. Surv. NSW) and Jianbo Liu (Peking University). Two manuscripts describing the Honghuayuan faunas are currently under review, and a third is nearly ready for submission.

Andrey V. Zhuravlev. Working on the Upper Devonian and Lower Carboniferous conodonts from the north of Russian Platform, Urals; Upper Permian conodonts from the eastern part of Russian Platform, Trans-Caucasus and Far East of Russia. The main fields of interest are conodont histology, functional morphology (including 3D modeling), biostratigraphy, palaeobiogeography, and CAI.

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