PRISCUM

The Newsletter of the Paleontological Society

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Volume 16, Number 1 Spring 2007

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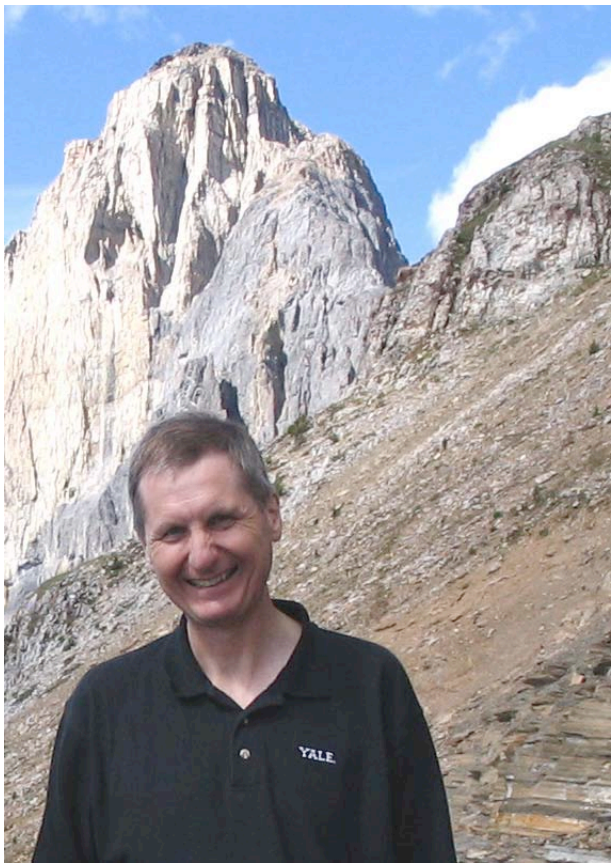
President's Column

by Paleontological Society President, Derek Briggs

Welcome to the second new-style electronic number of *Priscum* produced by the dynamic duo of Lisa Amati (Potsdam) and Susan Butts (Yale). I was honored to take over as President of the Society from David Bottjer at the annual luncheon (and General Meeting) in Philadelphia in October, having served a two-year apprenticeship as Vice



President. Fortunately the Society continues to be ably served by many individuals who play a more critical role than the President in its success, particularly the Secretary Roger Thomas, Treasurer Mark Patzkowsky and the editors of the *Journal of Paleontology* and *Paleobiology*. They, and all the officers, deserve your continued support and gratitude.

Most of you will be well aware of the challenges facing the Society. Funding for research in paleontology, in common with many other disciplines, is currently constrained. The future of the Paleobiology Database, for example, is threatened. We must all continue to be proactive in promoting the importance and excitement of what we do where it can make a difference - from government and funding bodies to the media and local level. Increasing our outreach is also important, of course, in combatting attempts to misinform and mislead the public on the nature of evolution and the importance of scientific rigor.

A major function of the Society is the publication of papers. Thanks in large measure to the efforts of former President Bill Ausich, the financial implications of electronic publishing have been well managed and the new subscription structure allows those who wish to continue to receive paper copies of our journals to do so. The new editors of the *Journal of Paleontology*, Richard Lupia and Stephen Westrop, are in consultation with Council to find ways to reduce the time from acceptance to publication (although this problem cannot be resolved over night!). But membership is not just about journal subscriptions; the Paleontological Society needs the mandate that a strong membership provides in order to promote our science. Just because you can download papers at your desk does not mean that the Society no longer needs your support.

The Geological Society of America meetings are the major platform for presenting papers in paleontology (as evidenced by our record presence in Philadelphia last year). I am gradually learning how to manage these gatherings, which are on a different scale to the annual meetings of our sister society in the UK! Council is committed to working with GSA to ensure that our activities are facilitated in the best way possible at those meetings. This year will see us in Denver, but plans are already taking shape under Mary Droser's leadership for our centennial celebration in Houston in 2008. Apart from organizing a party, the Society is devoting a great deal of energy with its Centennial Campaign to enhancing significantly its endowment for student grants. Supporting the innovative ideas of our graduate students is one way we can promote the future of our discipline. The Treasurer is happy to accept donations at any time!

Feature Article

Sea lilies on the move: evidence of rapid crawling by isocrinids

by Tomasz K. Baumiller

One of the more vexing questions in crinoid paleobiology relates to the ability to locomote. The crawling and, in some instances, swimming abilities of extant comatulids, a group of stalkless crinoids, are well known[1]. Using them as a model has led to the common inference that stalkless crinoids with a non-permanent mode of attachment to the substrate could actively locomote. On the other hand, the null-model for most stalked crinoids has been that they lack such abilities. However, because some groups of stalked crinoids bear cirri, specialized structures along the stalk that can be actively manipulated and used for attachment, these crinoids have often been thought to be able to free themselves from the substrate and thus be "free-living." While for some free-living implied active locomotion[2], for others vagility was thought to be caused

by current action, in other words, drifting due to the forces of hydrodynamic drag and/or lift[3]. While data from paleontology, functional morphology, and biomechanics provided some constraints on these interpretations, a group of extant stalked crinoids that use highly flexible cirri for attachment, the isocrinids, appeared to be ideal for directly testing these scenarios. Unfortunately, extant isocrinids live at depths greater than 100m and it was not until the

advent of research submersibles that they could be studied in their natural habitat.

Although submersible observations carried out during the 1970's provided a wealth of new data on stalked crinoid ecology[4], it took nearly two decades before observations relevant to the question of stalked crinoid locomotion began to emerge. By the early 1990's, the data unequivocally indicated that isocrinids were capable of active locomotion. Both *in situ* [5] and lab[6,7] observations revealed that isocrinids could crawl by aborally flexing their arms in a power stroke to pull themselves along the substrate, with the stalk dragging behind. However, data on crawling speeds were initially available only for isocrinids held in aquaria, and the results proved disappointing: crawling was excruciatingly slow, ~0.1 mm sec^{-1}. If such speeds also characterized *in situ* crawling, the biological role of this behavior would be quite limited. As it turns out, the laboratory data are not representative of the full scope of crawling behaviors in isocrinids: an approximately 5 minute video clip taken from a submersible near Grand Bahama Island at a depth of 420 m reveals *in situ* isocrinid crawling speeds nearly two orders of magnitude faster than had been measured in the lab. In this video sequence, a specimen of the isocrinid *Neocrinus decorus* is seen crawling over a distance of 3 m corresponding to an average speed of ~10 mm sec^{-1}, with spurts of more rapid crawling (~30 mm sec^{-1}) interspersed with intervals of slower crawling or no movement.

The paleobiological implications of rapid crawling abilities of isocrinids are many and include questions about (1) its biological role: whether it is stimulated by changes in physical environment or by interactions with benthic macroinvertebrates, (2) functional morphology: ascertaining what morphological and physiological traits are involved and can they provide tools for identifying this behavior in fossils, and, (3) the time of origin of crawling among stalked crinoids, specifically whether crawling characterized Triassic holocrinids and perhaps some Paleozoic taxa. Some of these issues are explored in an article in Volume 10, 2007, of *Palaeontologia Electronica* that also contains the video clip described above.

[1]Macurda, D.B., Jr., and Meyer, D.L. 1983. Sea lilies and featherstars. American Scientist, 71:354-365.
[2]Kirk, E. 1911. The structure and relationships of certain eleutherozoic Pelmatzoa. Proceedings U. S. National Museum, 41:1-137.
[3]Breimer, A., and Lane, N.G. 1978. Paleoecology, p. T316-T347. In Moore, R.C., and Teichert, C. (eds.), Treatise on Invertebrate Paleontology, pt. T1. Geological Society of America and University of Kansas, Lawrence.
[4]Macurda, Jr., D.B., Meyer, D.L., 1974. Feeding posture of modern stalked crinoids. Nature 247, 394-396.
[5]Messing, C.G., RoseSmyth, M.C., Mailer, S.R., and Miller, J.E. 1988. Relocation movement in a stalked crinoid (Echinodermata). Bulletin of Marine Science, 42:480-487.
[6]Baumiller, T.K., LaBarbera, M., and Woodley, J.D. 1991. Ecology and functional morphology of the isocrinid Cenocrinus asterius (Linnaeus) (Echinodermata: Crinoidea): in situ and laboratory experiments and observations. Bulletin of Marine Science, 48:731-748.
[7]Birenheide, R., and Motokawa, T. 1994. Morphological basis and mechanics of arm movement in the stalked crinoids Metacrinus rotundus (Echinodermata, Crinoidea). Marine Biology, 121:273-283.

Tomasz K. Baumiller is Curator in the Museum of Paleontology and Professor in the Department of Geological Sciences at the University of Michigan. His research interests include functional morphology and biomechanics, taphonomy, biotic interactions, and the evolutionary history of crinoids.

My Two Cents

by Mark Patzkowsky, Treasurer

Diversification, Extinction, and the PS Endowment

As a dirt poor graduate student in Chicago, I had no idea that my interest in fossils would lead to rich rewards.

At that time, I was interested in estimating rates of diversification from the fossil record so I played around with a simple branching model of exponential growth. In exponential growth, the intrinsic rate of increase (r), defined as the difference between speciation and extinction rate, is held constant. The simplest way to think about exponential growth is with the concept of doubling time, the time it takes for the population to double in size. Increasing r decreases doubling time resulting in more rapid growth in species diversity. Because resources are limited, exponential growth cannot proceed indefinitely and eventually total diversity must level off. Whether life on Earth has ever approached such limits is a contentious issue, but because Earth has finite resources, there is some hard limit. One of the key lessons I learned about exponential growth was that changing r even by a small amount can have a dramatic effect on expected diversity at some time in the future.

This key lesson about exponential growth applies as well to money in the bank, where there presumably is no upper limit, and therefore it can guide us in a long-term saving strategy. In the case of a bank account, the analogy to r is the percentage rate of return on your investment. Increasing the percentage rate of return, even by a small amount, pays off many times over in the long run by decreasing the doubling time of your investment. The surest way to increase the percentage rate of return, while also minimizing the short-term ups and downs is through diversification. Diversification in this context refers to the number of different kinds of investments you have. Generally, it pays to have your money invested in several different areas (small and large companies, international companies, real estate, bonds, and money market accounts). Such a strategy tries to maximize the percentage rate of return while minimizing as much as possible short-term fluctuations in the value of your total assets. The ecological analogy is species that live in a wide variety of habitats and garner a large amount of resources tend to gain some protection from extinction if environmental conditions deteriorate, because they are more likely to occupy a refuge than are narrowly-distributed species.

In my last two years as Treasurer of the Society, my goal is to increase the percentage rate of return on our investments through diversification. You should not expect to see an immediate impact on the value of our investments, but because this is an exponential growth problem, increasing the percentage rate of return will decrease doubling time and it will make a huge difference in the long run. In my next column I hope to report back to you on an investment strategy for the Society that increases r and hedges against financial extinction all through diversification.
You can contact Mark at mep12@psu.edu.

Paleontology Portal

by Judy Scotchmoor and Dale Springer

THE PALEONTOLOGY PORTAL EXPANDS WITH NEW SERVICES FOR THE PALEO COMMUNITY

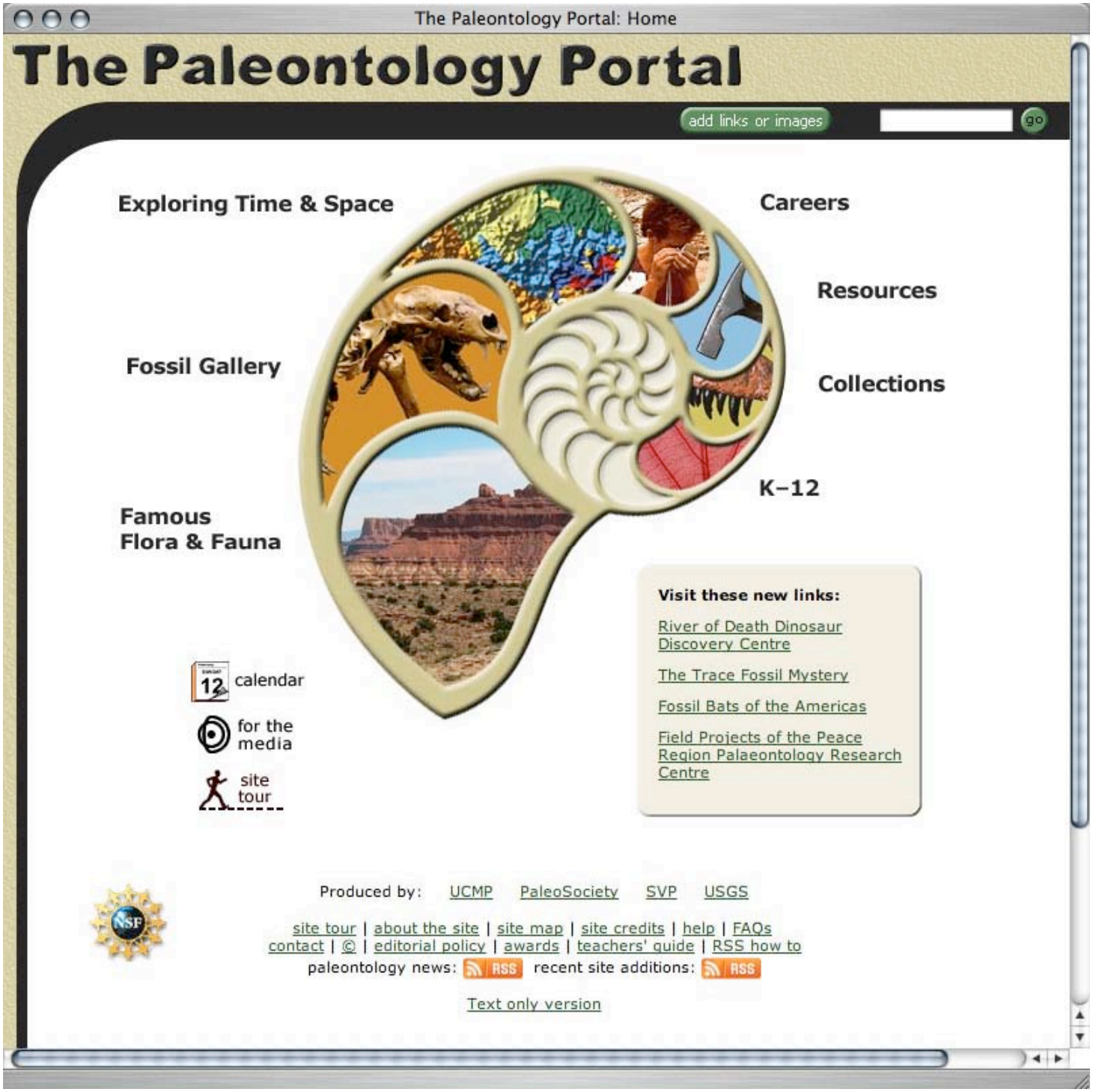
The primary functions of ***The Paleontology Portal***, http://www.paleoportal.org, are to share paleontological research and resources and to provide exposure to the geosciences in a format that integrates both biotic and abiotic components of Earth's history. It serves the broad paleontological community, which includes researchers, faculty, graduate students, undergraduate students, pre-college teachers, young people, and other non-scientist members of the public by providing access to data and information at different levels and through multiple interconnected pathways. These include interactive features that explore paleontology in North America by place and time period, provide information on famous fossil localities and assemblages, and provide access to data through a searchable collections database and a growing collection of fossil images searchable by taxon and time. In addition, the site provides links to high quality online resources dealing with careers, methodology, legal issues, and other related topics.

Content - Looking at history:
A visitor to the PaleoPortal can explore the history of life through geologic time or space – that is, they can investigate a particular period of time, such as the Cretaceous; or a particular state, such as Nevada; or more specifically the Cretaceous in Nevada. This is the primary content area in which users can access information about major geologic events, flora, and fauna of specific time and location. They can also connect to information at the global level, or focus on a particular locality in an added feature: Famous Flora and Fauna (http://www.paleoportal.org/famous_finds/famous_finds.php). These same visitor experiences have now expanded to include Canada and Mexico.

Distributed collections database - Accessing data:
Users can access data through a distributed collections data search, which currently includes the collections of the American Museum of Natural History, the Academy of Sciences Philadelphia, the UC Museum of Paleontology, the Yale Peabody Museum, and the Universities of Oklahoma and Florida. The technical approach uses the Distributed Generic Information Retrieval (DiGIR) protocol, which has been developed for use with biological collections data and is currently being deployed in mammal, amphibian and other taxonomic information networks. Each participating institution retains local control over data, while increasing the visibility of its collections by participating in a distributed search. Of significance to the research community is the ability to build a query to meet specific needs and the option to download or map the results. An 'interpreted' search is available for

the general public. The potential of this database is limited only by the availability and quality of the data coming into the network and the continued expansion of partner institutions represented in the distributed collections database. PaleoPortal has support to include five new partner institutions each year for two further years. If your institution is interested in sharing data through PaleoPortal, please contact Tim White at the Yale Peabody Museum tim.white@yale.edu.

Links and Images - Accessing resources:
Community members can submit links to online paleontology resources or fossil images using a simple "add to this site" form accessible throughout the site. Contributions relating to any branch of paleontology (e.g., micropaleontology, palynology, invertebrate paleontology, paleobotany, vertebrate paleontology) or related biological or geological discipline are welcome. All submissions are reviewed and selected for quality by one or more members



of the Editorial Board based upon criteria posted at http://www.paleoportal.org/footer_pages/editorial_policy.php.

New features in 2006:

An expanded Famous Flora and Fauna - In response to several requests from the community to include additional sites in our virtual exhibit of well-known fossil assemblages/localities, a submission form is now available through which such sites can be added.

Increased service to K-12 teachers and students - The site now includes a revised K-12 section, complete with Teachers Guide and three modules that provide examples of how to use PaleoPortal in the classroom.

RSS feeds - PaleoPortal now monitors RSS feeds from other organizations and highlights this information on the home page. These news items can be accessed through a PaleoPortal RSS feed for those who wish to subscribe to a vetted news service.

And coming soon …

Research Profiles - These vignettes about current research in paleontology will highlight the importance of paleontology to our understanding of the world around us, illustrate the process of science involved in that research, emphasize science as a personal endeavor, and provide a venue through which researchers can share their science with a broader audience. For more information, contact Dale Springer, Bloomsburg University, dspringe@bloomu.edu.

Modules for Best Practices - Two modules will be developed as a pilot effort by the American Museum of Natural History. These pilot modules will focus on (a) best practices in fossil preparation and (b) the management of fossil collections. For more information, contact John Flynn, jflynn@amnh.org.

The Kiosk Generator - This will enable others (e.g., those at museums and science centers, school classrooms, and libraries) to construct and download custom PaleoPortal kiosk software tailored to their needs and suitable for use on any computer capable of running a web browser, with or without Internet access. For more information, contact Robert Ross, Paleontological Research Institution, ross@museumoftheearth.org.

PaleoPortal belongs to the paleontological community.

PaleoPortal is a joint project of the Paleontological Society (PS), the Society of Vertebrate Paleontology (SVP), and the US Geologic Survey (USGS), funded by the National Science Foundation and facilitated by the University of California Museum of Paleontology (UCMP). The Steering Committee includes representation from all geographic areas in the U.S., diverse expertise in research, collections, and outreach, and nine different institutions. More than 45 individuals representing an additional 37 institutions have served as authors in their areas of expertise and more than 1,200 links and images have been submitted by members of the community and reviewed by portal editors, creating an effective dissemination portal to paleontological research and educational resources. Currently, page accesses average more than 8,000 each month.

PaleoPortal provides an opportunity for you and your institution to share paleontology with a broader audience. We hope you will contribute your links, images, and ideas!

For additional information on PaleoPortal, please contact Judy Scotchmoor, UC Museum of Paleontology, jscotch@berkeley.edu or Tim White, Yale Peabody Museum, tim.white@yale.edu.

Funding: The site was funded by the National Science Foundation under award no. 0234594. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Teaching Paleontology

by Michael A. Gibson, Education Coordinator

The Education and Outreach Committee of the Society is working on several initiatives, some short term and others long term, to provide teaching materials and opportunities for K-16 students and teachers. You are probably familiar with the successful brochure series, which is one of the committee's earliest efforts, and one that is popular with K-12 outreach. Brochure topics range from Careers in Paleontology or the Oldest Life on Earth to information on

specific groups of fossils such as brachiopods, crinoids, and shark's teeth. The brochure series is being expanded and revised under the able guidance of Joanne Kluessendorf: (joanne.kluessendorf@uwc.edu) and Richard Davis: (r_a_davis@mail.msj.edu). The brochure series will retain the downloadable print format, which is favored by K-12 teachers, but also occurs in web page form which allows for more detailed information and color. For more information on the brochures and web site, please visit the society's web page: econtent-01.its.yale.edu/paleo/brochures.html. Do you have an idea for a brochure or would you like to volunteer to help write one? If so please contact Joanne Kluessendorf to get information on the basic format.

Elsewhere in *Priscum* you will be reading about PaleoPortal (www.paleoportal.org), in which Dale Springer and Judy Scotchmoor have been representing PS. This site is an ever-expanding resource with a wealth of information, activities, and resources for all paleontology educators and students, K-16. You can contribute to the site as well, especially at the state level for fossil resources and characteristics. Plans are in the works now to begin formal training sessions at state, area, and national National Science Teachers Association (NSTA) meetings to help bring this valuable resource to K-12 educators.

As you can tell from my first two paragraphs, the Committee has placed a priority on increasing society participation in K-12 education, especially at teacher development venues. This means that society members need to "reach out" beyond our traditional GSA meetings and attend state, area, and national TSTA, NESTA, and other public education gatherings. National TSTA meetings can have as many as 20,000 science teachers! Imagine the education audience and recruiting potential! Yes, it does require yet another professional meeting to attend, but the audience is large, they are hungry for anything paleontological, and the potential "bang for the dollar" is tremendous. Most of us probably do not attend these meetings as we are very busy with our own, but the Committee strongly encourages you to consider doing so. There is probably no better single place to impact practicing teachers, pre-service teachers, and to recruit for your paleontology program. All 50 states have a state-level meeting at which you can present a quick, easy, one-hour presentation (or longer if you are inspired), or organize a workshop on a paleontology topic of your choosing, or you can offer one of the society's programs such as "Learning from the Fossil Record". The PS Ed Committee, with monetary support from Council, has placed highest priority on increasing PS participation at the local teacher level. We anticipate a cooperative presence with PRI at the Boston 2008 NSTA national meeting and have already applied to present at the Birmingham Area meeting. Three area meetings occur around the country yearly; for more information on when a meeting is near you visit the NSTA website: http://www.nsta.org/conferences. Would you like to participate on behalf of PS at one of these well-populated science gatherings? We can help you design a program and are looking for other paleontologists willing to help us deliver these programs. Some limited funds for travel are available through this committee. Contact Michael Gibson for more information (mgibson@utm.edu).

Dealing with attempts to infuse creationism and intelligent design into education and trying to promote innovate and informative ways to teach evolution is a perpetual activity of the Committee. Berkeley's Understanding Evolution website: (http://evolution.berkeley.edu/), along with PaleoPortal are two excellent resources, but we recognize the need for training in how to deal with the political aspects of this problem at the local level. We have begun to develop a training program for membership that will hopefully provide you with useful and successful strategies that are used by Eugenie Scott's National Science Education Center. We have collaborated with NCSE to develop a workshop on "Practical Anticreationism", which the PS Council participated in at the Philadelphia GSA meeting as part of a Leadership Training program. This is the first step in a three-phase plan to eventually have traveling workshops and materials that will be available at the local level. Once the training manual, PowerPoint presentations, and other materials are finalized, we will sponsor section-level workshops for the membership. Second, we will be contacting section leadership and members to help organize a series of sessions on "How to teach ___fill in topic here_____ better" in paleontology and evolution. These "best practices" sessions can focus on any grade level and will ultimately be collected and made available to anyone who needs them. The SE GSA meeting this spring will carry the 1st of these sessions. The third phase is to identify paleontologists at the local level willing and trained to serve as "local response teams" to aid NCSE when issues related to teaching paleontology arise, such as when attempts to introduce creationism or ID arise in your area. These same response teams will hopefully be active participants in the NSTA development meetings discussed earlier. Ultimately these various programs should provide the society with a network of paleontologists that are con-

sistently active at all levels of education and provide us with a pipeline of students and pre-service teachers over the long term.

The PS Ed Committee has many more initiatives on its plate, but space will now allow me to share them all at this time. So, watch the next issue of *Priscum* for information on ways to use the Treatise and Short Courses in the classroom, how to conduct paleontology education within the Globe Program, workshops on paleontology and state and national standards, and much more.

2006 Stephen J. Gould Grant Awardees

Stephen J. Gould Grants are awarded annually to students and postdoctoral researchers who are members of the society. They provide $500 of support for paleontological research in any field.

Bradley DeLine (University of Cincinnati) Disparity and biogeography of Late Ordovician pelmetozoan echinoderms

Kirk Domke (University of Southern California) Paleoecology of the earliest Cambrian biomineralizing organism in western North America

Eric Ekdale (University of Texas, Austin) Phylogenetic implications of the inner ear of Eutherian mammals

Leigh Fall (Texas A&M University) The role of local and regional processes on diversity of fossil communities

Andrew Farke (SUNY Stony Brook) Evolution and functional morphology of the frontal sinuses in bovid mammals and ceratopsian dinosaurs

Matt Friedman (University of Chicago)

Austin Hendy (University of Cincinnati) Latitudinal diversity gradients and the Neogene fossil record of the western Atlantic: Consideration of spatial scale and sampling issues

Victoria Herridge (University College, London) Dwarf elephants on Pleistocene islands: natural experiment in parallel evolution

Melanie Hopkins (University of Chicago) The relationship between geographic variation and duration in Cambrian trilobites

Meaghan Julian (Texas A&M University) Benthic foraminiferal faunal changes during the Eocene-Oligocene climate transition at ODP sites 1209A and 1211A at the Shatsky Rise, Pacific Ocean

Elizabeth Landau (San Diego State University) Biotic response and stable-isotope systematics of deep-ocean ostracodes across the Paleocene-Eocene boundary

Jih-Pai (Alex) Lin (Ohio State University) From a fossil assemblage to a paleoecologic community? Time, organisms and environment based on the Kaili Lagerstatte (Cambrian), South China and coeval deposits of exceptional preservation

Marcela Martinez-Millan (Cornell University) Earliest representatives of the Asteridae (Magnoliophyta): a taxonomic revision

Kathleen McFadden (Virginia Tech University) High resolution lithostratigraphy and biostratigraphy of the Huangling Anticline, Neoproterozoic Doushantuo Formation, South China

Sterling Nesbitt (Columbia University)

Stephen Niedzwiecki (East Stroudsburg University) Morphometric variation in the skeleton of the woodchuck (Marmota monax) following the Wisconsin glaciation in the northeastern United States

Caleb Ray Osborn (Brigham Young University) Conodont sequence biostratigraphy of the Lower Ordovician Garden City Formation, northern Utah

Daniel Peppe (Yale University) Floral transition in the North American Paleocene: A reference for global change between mass extinction and thermal maximum

Brian Platt (University of Kansas) Neoichnological experiments with modern elephants to quantify properties of megafaunal footprint formation

Catherine Powers (University of Southern California) Onshore-offshore distribution of Permian to Jurassic bryozoans

Jennnifer Sawyer (San Diego State University) Effects of predation on the morphology of Pennsylvanian bellerophontid gastropods

James Schiffbauer (Virginia Tech University) Can organic-walled microfossils survive extreme metamorphic heating? Characterization of experimentally-heated Acritarchs using Raman spectroscopy

Ursula Smith (Cornell University) Evolutionary dynamics of Neogene turritelline gastropods in New Zeland: an intergrated approach

Jon Jay Smith (University of Kansas) Occurrence and distribution of ichnofossils, as proxies for soil organisms, across the Paleocene-Eocene Thermal Maximum, Paleogene Willwood Formation, Bighorn Basin, Wyoming: Response of soil ecosystems to a global warming event

Michelle Stocker (University of Iowa) Morphological description of new specimens of Leptosuchus (Archosauria: Parasuchia) from Petrified Forest National Park and an analysis of the phylogenetic relationships within the genus

Autumn Thompson (University of California, Riverside) Spatial Analysis of Morphological Variation in Flexicalymene granulosa (Trilobita) in the Cincinnatian Series

Yasemin Tulu (Michigan State University) Paleodiversity, Paleoenvironment, and Taphonomy of Late Cretaceous Chondrichthyans From Montana

Frank Varriale (Johns Hopkins Universit) Evolution of Diet and Jaw Mechanics in Marginocephalian Dinosaurs

James Zambito (University of Cincinnati) Recurrent Tropidoleptus Zones: The Fate of the Hamilton Fauna Through the Taghanic Bioevent

Congratulations!

Joint Meeting of North Central and South Central GSA

Alycia Stigall (North Central Section Chair)

Elizabeth Heise (South Central Section Chair)

This spring, the North Central and South Central sections of the Geological Society of America met jointly for their sectional meetings in Lawrence, Kansas April 11 to 13, 2007. A number of excellent paleontological symposia, theme sessions, field trips, and a short course were offered. There was a wide range of topics presented, and this proved to be an excellent meeting for paleontologists.

SYMPOSIA

1. **Roger L. Kaesler – Scientist and Editor: His contributions to paleontology through research and the Treatise on Invertebrate Paleontology**, Jessica Cundiff (Harvard) and Bruce S. Lieberman (Univ. Kansas).

2. **Mixed-Up Conodonts: Extracting Useful Information and Solving Geologic Puzzles Using Stratigraphic Leaks and Redeposited Faunas**, James Miller (Missouri State University) and Stephen Leslie (Univ.of Arkansas at Little Rock), also sponsored by the Pander Society.

THEME SESSIONS

1. **Fossils and Modern Analogs: Using Modern Organisms to Improve Paleontological Interpretations**, Daniel I. Hembree (Ohio Univ.), Brian F. Platt (Univ. Kansas), Jon J. Smith (Univ. Kansas).

2. **Paleontologic Deviates: Taphonomy versus Pathology**, Bruce Rothschild (NE Ohio Univ. College of Medicine) and Larry D. Martin (Univ. Kansas).

3. **Sequence Stratigraphy and Biostratigraphy of Pennsylvanian-Lower Permian Cyclothems in the North American Midcontinent**, Gregory P. Wahlman (BP) and Philip H. Heckel (Univ. Iowa).

4. **Systematic Paleontology in the 21st century: Analyzing evolution, diversity, and beyond**, Alycia L. Stigall (Ohio Univ.).

5. **Traces of Life: Micro- to Macroscopic Evidence of Past and Present Biogenic Activity and their Implications for Marine and Continental Settings**, Stephen T. Hasiotis, Jennifer A. Roberts, and David Fowle (Univ. Kansas).

6. **Strategies for Success in Bridging the Gap between Culture, Religion, and Science in the Geoscience Classroom**, Sadredin C. Moosavi (Walden Univ.) and Elizabeth Heise (Univ. Texas, Brownsville).

7. **The Legacy of Raymond Cecil Moore (1892-1974): The 20th Century's Paleontologist-Stratigrapher Laureate**, Daniel F. Merriam and Paul Enos (Univ. Kansas).

FIELD TRIP

The Weaubleau and Decaturville Impact Structures in West-Central Missouri: Sorting Out Their Ages Using Redeposited Conodonts and Crinoids in Breccias, April 13-14, James Miller and Kevin Evans (Missouri State Univ.), also sponsored by the Pander Society.

SHORT COURSE

Recognizing Continental Trace Fossils in Outcrop and Core, April 14, Stephen T. Hasiotis (Univ. Kansas) also sponsored by SEPM.

Report from Phoebe Cohen

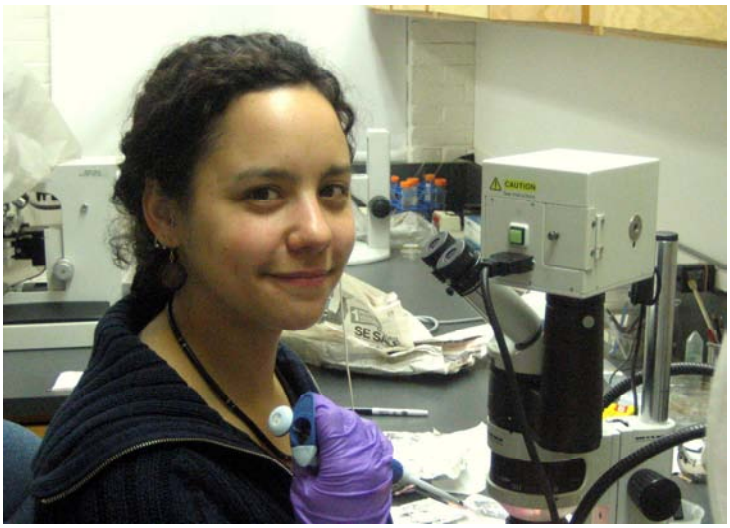
Paleontological Society Incoming Student Representative

As the new Paleontological Society student representative I would like to take this opportunity to introduce myself. I am a graduate student at Harvard University working on the taxonomic affinity and evolution of Precambrian acritarchs. I was interested in becoming involved with the Society because I feel that fostering a sense of community within our discipline is essential to all of our academic and scientific endeavors. The Society provides essential services to members through publications, student grants, and an ever-increasing involvement in the annual Geological Society of America meetings. This involvement provides a place where students entering the field can feel welcomed and can get to know their colleagues in both professional and social settings.

A few new initiatives we are working on this year that students should be aware of include:

- Building our $250,000 Centennial Fund honoring the Paleontological Society's 100th anniversary. This fund will endow future student grants, as well as allow us to increase the amount of student grants in the future.
- The first-ever Paleontological Society GSA Student Poster Award. This competition, to be held this fall at GSA in Denver, will be open to all undergraduate and graduate student members of the Paleontological Society. The winner of the competition, which will be judged by a panel of professional paleontologists, will receive a $250 prize. All current student members who submit posters to the conference will automatically be entered into the competition, as well as students who become members at GSA. See our add in the new Notices pages of *Priscum*.
- A Paleontological Society sponsored student and postdoc social event at GSA - details to follow!

If you have any questions, concerns, or suggestions regarding student activity in the Paleontological Society, please do not hesitate to contact me at pacohen@fas.harvard.edu. Thanks!



Student Poster Award

@ GSA Denver 2007

Book Reviews

Editors Note: In order to reduce the backlog of articles in the *Journal of Paleontology*, book reviews will now be published in *Priscum*. Book reviews that were not included in previous issues of the journal are included here, although not all are recent.

DINOSAURS-The Encyclopedia; Supplement 4, 2006

Donald Glut
McFarland & Company, Jefferson (North Carolina), and London; 749p. ($95.00 library binding)
ISBN 0-7864-2295-5

Reviewed by Robert M. Sullivan

In the foreword of this latest supplement to Dinosaurs –The Encyclopedia by Donald Glut, Peter Makovicky writes "…it requires an almost superhuman effort to keep abreast of current developments in dinosaur science." I would like to nominate Don Glut as superhuman of the decade.

Dinosaurs-The Encyclopedia Supplement 4 continues what has become the mini-series of the dinosaurs, the first installment of which was published almost 10 years ago. The Introduction follows the format of previous supplements and highlights the recent fieldwork of Luis Chaippe (in Argentina). The transformation of the Los Angeles County Museum's exhibition program, shifting from an institution that once focused on Cenozoic vertebrates (mostly Pleistocene mammals) to one that is now more anchored in Mesozoic dinosaurs is discussed. A new dynamic exhibition, Dinosaurs in Their World, is scheduled to open by the end of the present decade in the Carnegie Museum of Natural History's dinosaur hall. Lastly, Glut writes about the long-awaited publication of the second edition of The Dinosauria, edited by D. B. Weishampel, P. Dodson and H. Osmólska.

The Mesozoic Era portion of the Introduction is very brief and once again presents the three geologic periods of the Mesozoic Era in reverse stratigraphic order (from youngest to oldest). New Discoveries, Ideas and Studies highlights current research on the major groups of dinosaurs and covers a wide range of subjects from gastroliths and gastralia to pneumaticity in sauropods to histology and phylogenetic significance of ankylosaur dermal armor. The Continuing Ectothermy/Endothermy debate, or as I characterize it, "brooding over brooding," is of interest, but frankly, it strikes me as analogous to the debate about birds not being dinosaurs. Then there is a section called Dinosaurs and Birds that highlights the latest discoveries and interpretations of the phylogenetic relationships of various non-avian theropods (mostly from China). Finally, Dinosaur Extinction closes this introductory chapter but with nothing worth commenting on in my opinion.

The section titled Dinosaurian Systematics is much the same as in previous volumes and Dinosaur Genera highlights 40 new genera plus a number of previously reported taxa. Two genera (Procompsognathus and Shuvosaurus) are excluded (i.e., genera no longer considered to be dinosaurian). Although not dinosaurs, the pterosaurs have been included in this volume in Appendix One and Mesozoic birds are the subject of Appendix Two.

The quality of figures and photographs in Supplement 4 follow that of the other supplements and anchor volume. Some of the photos are of good quality, whereas others are substandard or blurry. But, again, as I have indicated in my other reviews of this series, the primary strength of these encyclopedias continues to be the figures and photos of original material. There are, of course, a few snafus. For example, the photos of the holotype of Feganocephale adenticulatum (p. 341) reappear on page 513 labeled as the holotype tooth of Tecovasaurus murryi. The photos are of Feganocephale, not Tecovasaurus; not that it matters because F. adenticulatum is a nomen dubium. Unfortunately, the reader cannot see the teeth of Tecovasaurus murryi (back to the primary literature!).

Despite these and other shortcomings, Supplement 4 is another "must have" for dinophiles and anyone working on dinosaurs.

THE GREAT ORDOVICIAN BIO-DIVERSIFICATION EVENT

edited by Barry D. Webby, Florentin Paris, Mary L. Droser and Ian G. Percival, 2004
Columbia University Press, New York, x+484 p.: $99.50 (hardback)

Reviewed by Stephen K. Donovan

What a monster of a volume! Almost 500 pages, measuring 220 x 287 x 32 mm and bending the scales at about 1.4 kg, the only problem I had with *The Great Ordovician Biodiversification Event* (*GOBE*) was its size!

The work of ninety-six contributors is assembled into 35 chapters. Papers are well written, although a little verbose in places, even ponderous or lugubrious. Ordovician time is not uncommonly referred to in the present tense, but the papers generally follow criteria defined in the early chapters, giving most contributions an admirable consistency of approach. In rare instances I suspect that heavy handed editing for style has altered the intended meaning of sentences. Illustrations are commonly limited to graphical or tabular analyses of data, which is a pity because some of the groups discussed at length by authors are obscure, will be poorly known to many readers and beg illustration. One of the most impressive features is the reference list, spanning 72 pages and including about 2,000 entries.

The introduction by Webby is far too long, about 10% of the total text. Ten pages or less would have set the scene succinctly and freed up space for more authors to actually illustrate the organisms that they discuss. The concluding chapter (Miller, Ch. 35), at only nine pages, is short, sharp and to the point, and could have been effectively used as the introduction. The introduction expands on the title in stating (p. 2) that *GOBE* "... is devoted primarily diversification of Ordovician biotas, in both global and regional context, and to firming up the timing of the most important diversification events." In this the book is generally successful, although still too 19th century in places, such as where stratigraphic ranges of taxa are plotted from the base of one stage to the top of the same or another.

Contributions in Chapters 2-4 (Scaling of Ordovician time and measures for assessing biodiversity change) define the detailed stratigraphic framework used in *GOBE*. A basic concept of the book is to divide the Ordovician into 19 slices of time; thus, the average duration of each division is a little over two million years. Of more general applicability is Cooper's brief chapter, which critically examines the statistical treatment of biological diversity through time. 'Conspectus of the Ordovician world' (Chapters 5-10) examines critical features of the Ordovician, defining terranes, interpreting paleooceanography, climate and sea levels, and revisiting the Hirnantian mass extinction. The table is set for the organisms.

'Taxonomic groups' (Chapters 11-33) rightly occupy center stage; it is the organisms that provide so much of what we know of the Ordovician, from 'Radiolarians (Chapter 11) to 'Miospores and the emergence of land plants' (Chapter 33). Chapter 34 discusses the trace fossil record. Many papers include curves that show the broad pattern that we would all expect, with an increase in taxonomic diversity through the Ordovician and a decline to the Hirnantian extinction; however, the interest is in the details. They also serve to emphasize the two cultures in the life sciences; in biology, the 'basic unit' is the species, whereas in paleontology it is the genus.

These chapters have a uniformly high standard, although it is unlikely that many will read all of them. This is appropriate, although many chapters are rewarding to read for no other reason than they are excellent introductions to Ordovician groups with which I otherwise do not work. To choose one among many, 'Bryozoans' by Taylor and Ernest is succinct and a pleasure to read; further, the authors invite interested readers to request their electronic database of Ordovician bryozoan occurrences. I particularly applaud Frýda and Rohr ('Gastropods'), who illustrate examples of their organisms and, in doing so, immediately make their chapter available to more than just a specialist audience. It is also interesting to note how many authors note the taxonomic problems caused by incomplete preservation; not just in groups with obvious multi-element skeletons such as vertebrates, polyplacophorans and sclerite-bearing 'worms', but even nautiloids. One more quibble; surely our knowledge of the fossil record of conodonts must be one of the best there is, yet Chapter 29 focuses on the Lower and Middle Ordovician only.

My final assessment? Only editors and book reviewers read such compilations from cover to cover, but any Ordovician worker, whatever their focus, will want to read more than a few chapters. They should invest in a copy for their own bookshelf and make sure there is a second in the library for their students. This is an excellent summary of the Ordovician as we now know it.

THE NEW ZEALAND GEOLOGICAL TIME SCALE

Edited by R. A. Cooper
Institute of Geological and Nuclear Sciences
Monograph 22, 2004, 284 p.
$40 paperback, NZ $10 wall chart

Reviewed by Gregory Retallack

As an Australian Ph.D. student doing fieldwork in New Zealand in the 1970's I was envious of this hip-pocket-sized country a short flight across the sea. For a start, they had topographic and geological maps of the entire country, and a nationwide quasi-computerized fossil database. Then there was the panache of Sir Charles Arthur Fleming, the bow-tied director of the old geological survey and the artistic daring of a full time employee, D. Lloyd Homer, whose job it was to take pictures to beautify survey reports. The technocratic, mission oriented and underfunded geological surveys of Australia and the United States seemed so disorganized, colorless and bureaucratic by comparison. Sadly the old New Zealand Geological Survey was reorganized to the more practical Australian and North American model, but the bigger surveys are again upstaged by this wonderful new reference work "The New Zealand geological time scale".

There is a need for such a book because New Zealand has its own chronostratigraphic time scale as far back as the Permian, which is not featured in the 2004 global time scale of Gradstein and colleagues. The local time scale is also laden with Maori names that seem to march to a different drum than familiar English or Greco-Roman names: try saying Tongapurutuan three times fast. Like all chronostratigraphic schemes these are tied to localities, including local stratotype sections. The names have persisted because they work. In some cases they are based on truly international events, such as the iridium anomaly used to mark the base of the Paleocene and the Teurian and the carbon isotopic excursion at the base of the Eocene and the Waipawan. Selected fossil ranges and international tie points are given for all geological periods.

The Paleozoic rock record of New Zealand is very incomplete compared with then connected Australia, so Queensland trilobite zones are used for the Cambrian and Victorian graptolite zones for the Ordovician. International stages from the Welsh Borderland are applied to the Silurian, and classical Belgian stages for the Devonian, but the Carboniferous is barely present in New Zealand. The endemic chronostratigraphy begins with the Permian, with a coherent sequence in rocks correlative with the late Early to Middle Permian (Artinskian to Capitanian). Structural complexities diminish the accuracy of Late Permian stages. Triassic stages now show a curious gap in the fossil record of the Carnian, but this may be an artifact of taking the Norian-Carnian boundary at 227 Ma, rather than 216.5 Ma as in the Gradstein time scale. There are also differences in the base of the Callovian at 160 Ma and basal Oxfordian at 157 Ma, compared with 164.7 Ma and 161.2 Ma of Gradstein. Fossil plants, including leaves and pollen, are used from the Permian on, including the proposal of new Eocene and Oligocene palynozones. The Jurassic and Cretaceous zones are based on ammonites and inoceramids, and the Cenozoic time scale mainly on foraminifera with added data including magnetostratigraphy, from the Deep Sea Drilling Program. The calibration models for the Cretaceous and Cenozoic show how far we have come since Harold Wellman's subdivision of the Cretaceous in 1955.

Perhaps the greatest contribution of New Zealand to stratigraphic concepts is its cyclostratigraphic subdvision of the Plio-Pleistocene Wanganui Series. The Rangitikei Valley section in particular has a very detailed magnetostratigraphy and tephrostratigraphy that enables correlation with the oxygen-isotope stages in nearby deep sea cores. Milankovitch cycles of marine transgression and regression have allowed an unusually detailed record of the past 2 million years, and such concepts are beginning to be applied earlier in the record.

In summary, this is an unusually thorough and engaging account of a detailed regional chronostratigraphic scheme. It is an indispensable reference for those working in New Zealand, but also instructive as an index to truly global, as opposed to local events in our still very British time scale. Your library will need one, and so will you if you ever get a hankering for fossil collecting in a wonderfully hospitable and scenic country.

Research is what I'm doing when I don't know what I'm doing.
~ Wernher von Braun

A GEOLOGIC TIME SCALE 2004

edited by Felix Gradstein, James Ogg, and Alan Smith
Cambridge University Press, Cambridge, 2004, 589 p., $70.00 paperback, $140.00 hardback

Reviewed by Donald R. Prothero

The evolution of the geologic time scale is a testimony to hard work, trial and error, and surprising new sources of data. Prior to the 1960s, the relative time scale was well established, but the numerical time scale was calibrated by just a handful of U-Pb and Rb-Sr dates. During the late 1950s and early 1960s, the K-Ar revolution transformed the time scale so that numerical dates were available for much of the Phanerozoic. A series of papers co-authored largely by the Berkeley K-Ar lab (especially Jack Evernden, Garniss Curtis, and Brent Dalrymple) pinned down the ages of the North American and European land mammal and plant ages and marine stages of the Mesozoic and Cenozoic. These scientists calibrated many other geologic events as well, such as the many different lava flows that were both K-Ar dated and paleomagnetically analyzed to produce the first magnetic polarity time scale. By the late 1960s and 1970s, the Deep Sea Drilling Program microfossil record was beginning to yield an even more precise biostratigraphic time scale for the Mesozoic and Cenozoic, closely tied to the paleomagnetic time scale (first proposed by Heirtzler and others in 1969). This culminated in the first synthetic time scale by Berggren in 1972, which incorporated marine microfossil biostratigraphy, magnetic stratigraphy, and the K-Ar dates then available.

Those of us who were involved in the time scale debates of the 1980s remember it as a period of controversy and confusion. Calibration of the Cenozoic was particularly problematic, with estimates of (for example) the age of the Eocene-Oligocene boundary varying from as great as 38 Ma to as little as 32 Ma. Some time scales used different biostratigraphic criteria, or different methods of calculating the spreading rates of the seafloor anomalies. All of the time scales based on K-Ar dating of glauconites by Gilles Odin were systematically too young compared to high-temperature K-Ar dates. Then the $^{40}Ar/^{39}Ar$ dating revolution came along in the late 1980s, and we all had to rethink our time scales. These newer, more precise dates solved most of the conflicts. By the time of the 1995 SEPM time scale volume (Berggren et al. 1995, *Geochronology, Time Scales, and Global Stratigraphic Correlation;* SEPM Special Publication 54), the Cenozoic and Mesozoic time scales were pretty stable and have served well for a decade.

But refining the time scale is a never-ending effort of successive iterations. During the 1990s, the use of astronomical cycles ("Milankovitch" cycles) allowed an independent method of checking the timing of geologic events, especially for the Neogene. These new data, plus the accumulation of many more $^{40}Ar/^{39}Ar$ dates and new methods of calculating seafloor spreading profiles and the magnetic polarity time scale, led to another large group effort on the geologic time scale. This new volume, with 23 chapters by more than 40 contributors spanning 589 pages, dwarfs all previous efforts. Originally commissioned in 1997 with hopes of completion by the millennium, the writing and production dragged on for seven more years. Although the title and copyright reads 2004" it was not actually available until late 2005.

Part I (Introduction) provides the basic philosophical and historical background to the project. It is revealing to see how many "golden spikes" (GSSPs, or Global Stratotype Standard Sections and Points) have been decided for the Mesozoic and Paleozoic as of 2004—but the Cretaceous and Cenozoic ages/stages have not yet been formally defined. These chapters also discuss the recent suggestions by some scientists to eliminate the distinction between abstract geochronology and chronostratigraphic or "time-rock"units, since so much of the time scale is now well calibrated by well-dated GSSPs. However, as long as there are parts of the geologic column with significant discrepancies between the calibrated chronostratigraphy and the ideal absolute of geologic time, this distinction still has some value.

It is also troubling to see the inconsistent and often incorrect usage of "absolute" dating throughout the volume. As originally proposed in the 1983 North American Code of Stratigraphic Nomenclature, the use of the term "absolute date" for "numerical date" is misleading and not recommended, since most numerical dates are prone to error and no more "true" or "absolute" than relative dates. Since then, most North American geologic publications (even the introductory geology texts) have managed to make this change, although geologists are slow to unlearn what they heard in their first geology class. It would have been valuable if the editors had imposed some sort of standard with regard to this issue. There ARE instances of true absolute dating (e.g., counting back from present with tree rings or

varves, where the numerical age is not subject to the errors found in radiometric dating), but in this volume, the authors are not consistent in this usage.

Part II (Concepts and Methods) gives a review of the major techniques that contribute to making a time scale. They include biostratigraphy, orbital cycle stratigraphy, magnetic stratigraphy, radioisotopic dating, strontium isotope stratigraphy, and geomathematics. These chapters discuss all the latest advancements in their respective areas, such as the new developments in quantitative biostratigraphy, the recent recalibration of the magnetic polarity time scale using new spreading estimates and astronomical cycle stratigraphy, and the current problems in radioisotopic dating (such as the continuing controversy over the age of the lab standard, the Fish Canyon Tuff). The most dramatic new development is the discovery of Milankovitch cycles in rocks older than the Plio-Pleistocene. It is easy to see how these are important geologic forcing agents for the icehouse world of the Oligocene and Neogene, but the authors do not justify or discuss why these small changes in solar insolation can still be detected in an ice-free world (a topic with a long and controversial literature).

Part III (Geologic Periods) reviews the status of the time scale for each period and constitutes almost two-thirds of the book. Here, we begin to see the striking differences in the way each part of the time scale is constituted. For example, in the Precambrian (the chapter by Robb et al.), the absence of real biostratigraphy means that the time divisions are still arbitrary numerical ages picked for convenience and their correspondence to major geological transitions (e.g., Archean-Proterozoic boundary is set at 2500 Ma). An alternative approach (in a chapter by Bleeker) argues that there are "natural" phases and changes in the evolution of the Precambrian earth, and the time scale should be based on them.

The next six chapters review the status of the Paleozoic periods. It is striking how much progress has been made in some areas (Silurian through Permian) but how much remains to be done in others (e.g., Cambrian and Ordovician). Some portions of the later Paleozoic now have at least a partial magnetic time scale, and many time intervals are calibrated by geochemical events as well. Large uncertainties in the radioisotopic ages, as well as differences in approach have led to controversy over boundaries and lack of agreement as to how some periods should be formally subdivided. The Mississippian and Pennsylvanian (still widely used in the United States) are reduced to subperiods/subsystems of the Carboniferous. As noted by Berggren's review of this book (2005 *Stratigraphy* 2(3):277), these Paleozoic chapters are plagued by confusion over time versus time-rock versus time units, and the distinction between "definition" and "correlation."

By contrast, the Mesozoic and Cenozoic chapters show much less change from the 1995 SEPM volume. Here, the biostratigraphy, magnetic stratigraphy, and radiometric dates are much more mature and well established than they are for the Paleozoic, thanks to the existence of a seafloor spreading record since the late Jurassic, the smaller error bars associated with younger radiometric dates, and the excellent record of multiple deep-sea cores with planktonic microfossils since the Jurassic. The biggest adjustments have occurred with the addition of orbital cycle stratigraphy to the mix and recalibration of the seafloor spreading profiles. For example, the Eocene-Oligocene boundary has only changed from 33.7 Ma in 1995 to 33.9 Ma in the present volume.

As in other recent time scales, the authors of the two Cenozoic chapters advocate abandoning Arduino's ancient term "Tertiary" for the Paleogene and Neogene periods. Although this makes the Cenozoic subdivisions more symmetrical, it does not reflect any important global change (such as the mass extinctions that mark the ends of the eras), since the Paleogene/ Neogene (Oligocene/ Miocene) boundary is marked by only trivial changes in the biostratigraphy and possibly a pulse of Antarctic glaciation. As a practical matter, it is still useful to think of "Tertiary" mammals (as distinct from the ice age faunas of the Quaternary), or to map units of uncertain Cenozoic but pre-Quaternary age as "Tertiary" (found on thousands of geologic map symbols over two centuries). The authors of the Paleogene chapter included a mammalian paleontologist (Jeremy Hooker) so their summary time scale charts integrate land mammal biostratigraphy with the global time scale. Unfortunately, the authors of the Neogene chapter did not attempt to do so, creating some unevenness in the approach of this volume.

For a book of this size and complexity, it is relatively free of typographical and conceptual errors, although the reader will be surprised to find out (as Berggren, 2005, noted) that "mammals appear on earth" after the KT impact (p. 384)! All in all, however, this volume is a worthy successor to the 1995 SEPM time scale volume, and an essential reference that needs to be on every geologist's shelf.

Books for Review

This section of the newsletter includes a list of books received by the Books Review Editor for the Paleontological Society. Volunteered reviews will be accepted if concisely written and of general interest. Books listed may be requested for review with the understanding that the resultant review will be ready for publication in the next issue of *Priscum*. Please contact the book review editor with books for review or to volunteer to review a publication: Lisa Amati, Department of Geology, SUNY Potsdam, Potsdam, NY 13676: amatilm@potsdam.edu.

Gasparini, Z., Salgado, L., and Coria, R.A., 2007, PATAGONIAN MESOZOIC REPTILES. Indiana University Press, 392p.

Hall, B.K., (ed), 2006, FINS INTO LIMBS: EVOLUTION, DEVELOPMENT, AND TRANSFORMATION. University of Chicago Press, 344p.

Hammer, Ø., and Harper, D., 2006, PALEONTOLOGICAL DATA ANALYSIS. Blackwell, Oxford, 351p.

Hodkinson, T.R., and Parnell, J.A.N., (eds), 2006, RECONSTRUCTING THE TREE OF LIFE: TAXONOMY AND SYSTEMATICS OF SPECIES RICH TAXA. Systematics Association Special Volume, 368p.

Miller, W., (ed), 2007, TRACE FOSSILS: CONCEPTS, PROBLEMS, PROSPECTS. Elsevier, 632p.

Murray, J., 2006, ECOLOGY AND APPLICATIONS OF BENTHIC FORAMINIFERA. Cambridge University Press, 426p.

Paterson, J.R., and Laurie, J.R., eds, 2006, CAMBRO-ORDOVICIAN STUDIES II. Association of Australasian Palaeontologists Memoir, v. 32, 422p.

Reed, L., Bourne, S., Megirian, G., Prideaux, G., Young, G. and Wright, A., eds, 2006. PROCEEDINGS OF CAVEPS 2005. Alcheringa Special Issue 1, 475p.

Rose, K.D., 2006, THE BEGINNING OF THE AGE OF MAMMALS. Johns Hopkins University Press, 428p.

Sinha, D.K., 2006, MICROPALEONTOLOGY: APPLICATION IN STRATIGRAPHY AND PALEOCEANOGRAPHY. Morgan and Claypool, 381p.

Wignall, P.B., Morrow, J.R., and Over, J., (eds), 2006, UNDERSTANDING LATE DEVONIAN AND PERMIAN-TRIASSIC BIOTIC AND CLIMATIC EVENTS: TOWARDS AN INTEGRATED APPROACH. Elsevier Science, 337p.

Text Books and Popular Press

Carroll, S.B., 2006, ENDLESS FORMS MOST BEAUTIFUL: THE NEW SCIENCE OF EVO DEVO. W. W. Norton, 368p.

Dawkins, R., 2006, THE GOD DELUSION. Houghton Mifflin, 416p.

Foote, M., Miller, A.I., 2006, PRINCIPLES OF PALEONTOLOGY. W. H. Freeman, 480p.

Jones, R., 2006, APPLIED PALEONTOLOGY. Cambridge University Press, 434p.

Konhauser, K, and Bertola, G., 2006, INTRODUCTION TO GEOMICROBIOLOGY. Blackwell, 440p.

Mikulic, D.G., 2007, FABULOUS FOSSILS: 300 YEARS OF WORLDWIDE RESEARCH ON TRILOBITES. New York State Museum, 248p.

Parks, J.M., 2006, BUSHELS OF FOSSILS. University of Wisconsin, Department of Geology and Geophysics, 338p.

Wittry, J., 2006, THE MAZON CREEK FOSSIL FLORA. Esconi, 154p.

Actions Taken by the Paleontological Society Council, Midyear Meeting, March 24, 2007

• The Editors of the *Journal of Paleontology* were authorized to spend up to $20,000 to add pages equivalent to one journal issue, divided between issues 5 and 6 of the current Volume 81 of the JP. This action is intended to make a modest but significant dent in the current backlog. The Editors had also taken steps to reduce the journal's acceptance rate, so as to avoid any further increase in the backlog.

• It was agreed that the 2009 Annual Short Course on Conservation Paleobiology will be held on Saturday, prior to the GSA Annual Meeting, and not on one of the regular GSA meeting days as had previously been decided.

• Council agreed to provide $1000 in support of speakers' travel expenses for a session on "Environmental Change, Extinction Risk, and Maintenance of Biodiversity Through Time", sponsored by PS, at the August meeting of the Ecological Society of America.

• Council voted to endorse a proposed change in the Constitution and By-Laws to appoint two student representatives, serving two-year terms that are offset by one year on the Council. The object of this decision is to develop more experience on the part of the student representatives and to facilitate more continuity of input from the student membership to the Council. This proposal will be put before the membership at the time of the annual election.

• An award for the best student poster presented at the Annual Meeting was established, with a $250 prize.

• Council endorsed the Boucot $10,000 Challenge Appeal letter to be sent to the membership, as part of the Centennial Campaign, including recognition of donors of $10,000 or more as Grand Patrons. Grand Patrons will be elected as Patrons as already specified by the Constitution and By-Laws. They will be further designated as Grand Patrons by Presidential citation.

• The Society's program of student grants will henceforth be known as Paleontological Society Student Research Grants. Individual grants will be designated as Lane, Yochelson, Caster, etc. and Gould grants, the last including all those grants that do not acquire a new moniker under the current fundraising effort.

• Council voted to enter into an agreement with McClarren Financial Advisors to provide financial planning and advice on the investment of the PS endowment. This entails a fee of 0.5% of investment assets in the first year and 0.25% per year thereafter. To meet this commitment, $10,000 had been assigned in the 2007 budget, as distributed.

• Council voted to endorse a straightforward Investment Policy prepared in consultation between the Treasurer and McClarren Financial Advisors.

• Council voted to move all future publication of Society Records and Activities, including minutes of Council and Business Meetings and Citations and Responses of Awardees from the *Journal of Paleontology* to *Priscum*.

• Council voted to set up options to create toll-free links from GeoScience World to articles published in *Paleobiology* and the *Journal of Paleontology,* at a one-time cost of $500 for each journal.

• Council voted to permit JStor to make articles published in *Paleobiology* and the *Journal of Paleontology* available on a pay-per-view basis.

• Council voted to endorse a proposed change in the Constitution and By-Laws to elect the Editor of *Priscum* to a three-year term as a member of the Council. This proposal will be put before the membership at the time of the annual election.

• Council voted to renew the Society's contract for membership management services with AM&M for a term of three years, for 2007-2009. This contract is identical to the existing agreement, except that it includes a 3% annual increase in the base fee and a 5% annual increase in the per record fee. This action was to be contingent on subsequent approval by the PS Treasurer and Secretary.

• Council voted to provide $250 for a student members' social/networking event to be held at the PS/GSA Annual Meeting.

• Council voted to maintain the same rates of individual dues for 2008 as had been established for 2007. Institutional subscription rates were set at $300 for the *Journal of Palaeontology* and $180 for *Paleobiology*.

• Council voted to combine the Outgoing and Incoming Council meetings that are held at the Annual Meeting, as of October 2007.

It has become almost a cliche to remark that nobody boasts of ignorance of literature, but it is socially acceptable to boast ignorance of science and proudly claim incompetence in mathematics.

~ Richard Dawkins

Mystery Fossil - Echinobite

This mystery fossil is only partly a mystery. It is obviously a trilobite (probably an odontopleurid) but of what genus - or family for that matter! This trilobite was collected by Charles Doolittle Walcott in the 1870's from his locality #101, Hudson River Group, Upper Ordovician, Cincinnati, OH. The mystery fossil and its associated fauna of bryozoa, brachiopods and other trilobites is preserved in lime mudstone. The only known specimen is currently housed at the Museum of Comparative Zoology at Harvard University and was submitted for identification by Curatorial Assistant, Jessica D. Cundiff.

If you would like to submit a fossil for the next issue or identify a previous submission, please send as much of the following information as possible to Lisa Amati at amatilm@potsdam.edu.

Information for Fossil Submission

When was the fossil collected and by whom?

Where is it housed currently?

Formation/Member/Horizon collected from

Age

Facies description

Associated taxa

Number of specimens in collection

Tentative identification

Information for Identification

Name

Affiliation

Identification

Characteristics used for identification

Comparison to similar and/or related taxa

Other known specimens and their location

Mystery Fossil - Whorls Identifications

Three tentative identifications were submitted for the mystery fossil "Whorls" featured in the last issue of *Priscum*. Our first suggestion came from John A. Harper, Chief of Oil, Gas and Subsurface Geological Services at the Pennsylvania Geological Survey. Based on the information provided in *Priscum*, he proposed that the fossil may be a chondrophore float.

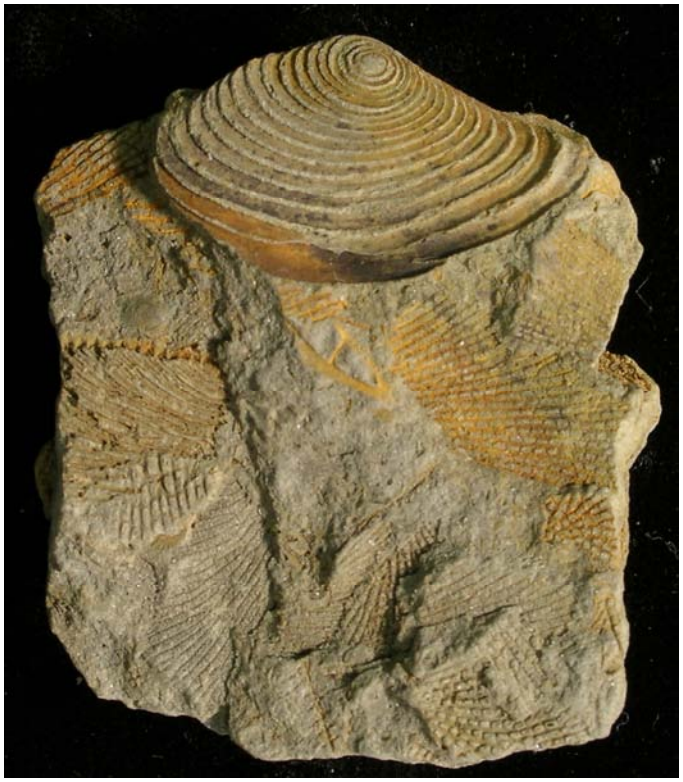
Dr. Harper describes chondrophores as "... members of an order of hydrozoans superficially resembling jellyfish. The fossil is a parachute-like float from which the animal is suspended. They are still around today, but the fossil record goes back at least until the Ediacaran."

Unfortunately, Dr Harper was unable to discern from the photograph that the whorls of the fossil are helical and not concentric, so he withdrew his identification.

The late Ellis Yochelson observed that the fossil resembled a gastropod operculum.

Paleozoic brachiopods often supported elaborate lophophores with a spirally coiled calcareous structure, the brachidium. Evidence of the size and shape of the lophophore in other groups can be preserved as impressions on the inside of the shell. I (L. Amati) would like to submit the suggestion that this mystery may be an internal mold of an asymmetrically conical valve. Impressions on the inside of the valve would appears as raised terraces on the negative.

At this point, the mystery of this fossil has not been solved. Please continue to ponder it's strangeness. Feel free to print the image and hang it on your office door. Take it to social gatherings as a conversation starter. Use it as a cover photo in a greeting card. We look forward to receiving more suggestions!



PRISCUM Photo Gallery

Una Farrell, Derek Briggs, Jakob Vinther, Erik Sperling and Erik Tetlie in the Walcott Quarry with Mount Wapta in the background (August, 2006).

Students and faculty participating in Trivia Night at GSA, 2006.
From left to right: Talia Karim (University of Iowa), Jeremy Stalker, Rene Price, Virginia Walsh (Florida International University).

NOTICES

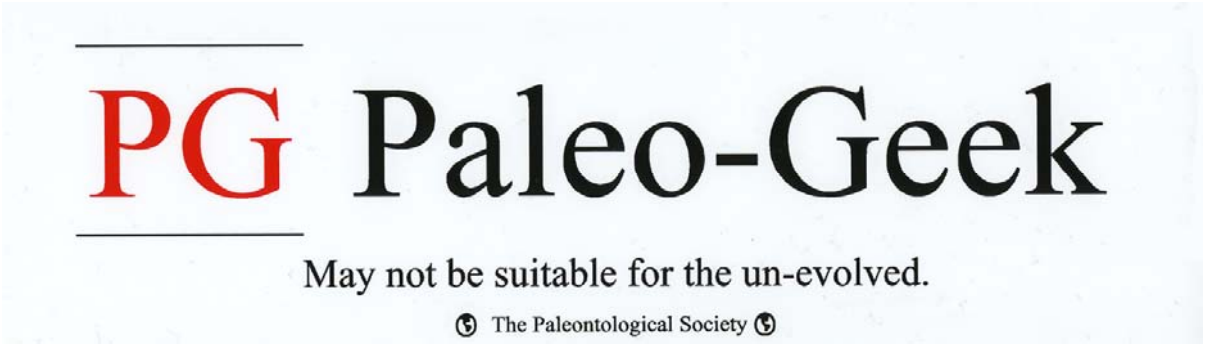
NOTICES is a “bulletin board” that allows members of the paleontological community to list events, grants, symposia and employment/internship opportunities. To place a posting, please submit a heading and short description accompanied by a web page or email contact to Lisa Amati at amatilm@potsdam.edu. All submissions will be subject to verification by the editors prior to inclusion.

Meet your new Program Coordinator for the Paleontological Society: Rowan Lockwood

Do you have ideas for paleo-oriented sessions (either Pardee or topical) that you'd like to develop for next year's GSA? Any thoughts on interdisciplinary sessions that the Paleontological Society could sponsor at other conferences? Any creative or new ideas regarding Society programming? If so, please email Rowan Lockwood (rxlock@wm.edu) as soon as possible and she'd be happy to help you organize your application and explore funding options.

Paleo Society Bumper Stickers

Over 200 of you voted in our Paleontological Society Bumper Sticker contest at GSA, Salt Lake City. Three winners were announced at the Paleontological Society Luncheon at GSA in Philadelphia. Two of the three winning entries are pictured below and all are available for purchase by society members for $5.00 each.



Announcing the Paleontological Society GSA Student Poster Award

The first Paleontological Society GSA Student Poster Award competition will be held this fall at GSA in Denver. All undergraduate and graduate student members of the Paleontological Society, including those who join at the meeting, will be automatically entered. Posters will be judged by a panel of professional geologist including representatives from every paleontological field. Posters will be judged based on criteria such as: overall poster appearance, effectiveness of communicating information, professionalism of the student, ability of the student to present the poster, etc. The winner will receive a $250 prize. If you plan to submit a poster but would not like to be entered in the competition, please stop by the Paleontological Society booth at GSA.

New Membership Fee Structure for Society

The Paleontological Society has introduced a new fee structure for 2007.
The new format can be viewed on the Paleontological Society website at: www.paleosoc.org.

Treasure Hunt!

The Paleontological Society has been offered a $10,000 Challenge Grant by Arthur J. Boucot, a former President and winner of the PS Medal. Art Boucot has long been a most generous benefactor of the Society. Now, he will give us $10,000 if we add $10,000 in new donations to the Centennial campaign fund by August 1. The PS Council sees this as a double challenge, not only to match Art Boucot's gift, but also to identify 10 additional donors with the capacity to make $10,000 gifts to the Centennial Campaign. These individuals will join Art Boucot as newly designated Grand Patrons of PS. You can help us here! If you know of any PS member or other person who might have the potential to make a large gift to the Society, please contact Tom Kammer at tkammer@wvu.edu or Roger Thomas at roger.thomas@fandm.edu

Paleo Society Lapel Pins

Stunning lapel pins illustrating the Paleontological Society logo are now available for all new and renewing members. If you have not received one of these beautiful pins please contact incoming Councilor at Large Jennifer McElwain (jmcelwain@fieldmuseum.org) who will arrange for one to be sent.

Publications for Sale from the New York State Museum

Fabulous Fossils: 300 Years of Worldwide Research on Trilobites

New York State Museum Bulletin No. 507 (2007)
Donald G. Mikulic, Ed Landing, Joanne Kluessendorf
248 pages., 120 figures, 10 tables
$19.95

Description:
Fabulous Fossils is a timely and significant contribution to the history of science and evolutionary paleontology. It details humanity's interest and developing understanding of trilobites from the recovery of these fossils at 15,000 year-old Paleolithic sites, to the 18th century appreciation that they were arthropod fossils. This volume elaborates on the development of modern trilobite research in Australia and a number of American, European, and Asian countries.

The Gilboa Fossils

Circular No. 65 (2003)
Linda Hernick
100 pages, 47 figures
$14.95

Description:
The Devonian Period was an interval of dramatic change in the history of life on Earth. Much of the evidence for what is known about terrestrial life during this period in North America has come from some extraordinary fossil discoveries made in Gilboa, New York over the past 150 years. The abundance and often superb preservation of fossils from Gilboa have made this area one of the most important Devonian fossil localities in the world! The Gilboa Fossils is a history of the famous forest fossil site from its discovery in the mid-nineteenth century to the present. Topics include the Devonian flora and fauna found at this locality, and the role of the New York State Museum in disseminating knowledge about this important site.

Silurian Lands and Seas: Paleogeography Outside of Laurentia

Bulletin No. 493 (2003)
Landing, E., and M.E. Johnson, Editors
400 pages, illustrations, maps, 28 cm.
$54.95

Description:
Silurian Lands and Seas is the only up-to-date synthesis of plate tectonics, paleogeography, biotic distribution, and geologic history of the 20 million year-long Silurian geologic period. In-depth contributions by 44 specialists recreate the geologic history of this important interval in earth history in eleven important regions world-wide. A product of the Silurian Subcommission, Silurian Lands and Seas is a profusely illustrated volume that will be a major addition to college and university libraries. It will be used in earth history research and courses for undergraduates, graduate students, and professionals in paleogeography, tectonics, stratigraphy, sedimentology, paleontology, and natural resources.

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