MARK YOUR CALENDARS

Apr 8-10, 2005: MAPS NATIONAL FOSSIL EXPOSITION XXVII – Bivalves
Western Illinois University, Western Hall, Macomb, IL
Fri., Apr 8 8 am - 5 pm—Keynote Speaker, Dr. Jack Bailey @ 7:30
Sat., Mar 27 8 am - 5 pm—Meeting & Live Auction @ 7:00
Sun., Mar 28 8 am - 12 noon
Information will be in the December issue.

Sep 18-19 FALLS OF THE OHIO FOSSIL FESTIVAL
At the end of West Riverside Drive, Clarksville, Indiana.
Take Exit 0 on Interstate 65 and follow the signs.

Sept. 18 – 9:00-6:00 Sept. 19 – 10:00-5:00

Their largest event with vendors and food, children's activities, Liter's Quarry fossil dig, fascinating speakers, free resources, door prizes, special fossil bed hikes, and more! Free rock, mineral and fossil identification, so bring in your unknowns! See the festival web site for details
http://www.fallsoftheohio.org/fossil_festival.shtml

A NOTE ABOUT THE EDITOR

Our newly elected editor was promoted to a more demanding job and has been unable to produce the *Digest*, so I'm back for a while. This triple issue for April & May is being mailed in August. Our sincere apology for the delay of issues. We hope to get back to a more regular schedule with the October issue.

Thanks for your understanding,
Sharon Sonnleitner

2004/04 to 2004/09 DUES ARE DUE

Are your dues due? You can tell by checking your mailing label. It reflects dues received by July 31, 2004. The top line gives the expiration date in the form of "year" followed by "month" – 2004/09 means 2004/September. Dues cover the issue of the Digest for the month in which they expire. We do not send notices but will let you know if you are overdue by highlighting your mailing label and stamping your Digest. We carry overdues for two issues before dropping them from our mailing list.

Please include on your check your due date and name exactly as it appears on your mailing label - or include a label.

Dues are $20 per U.S./Canadian household per year. Overseas members may choose the $20 fee to receive the Digest by surface mail or a $30 fee to receive it by air mail. (Please send a check drawn on a United States bank in US funds; US currency; a money order; or a check drawn on an International bank in your currency.) Library/Institution fee is $25.

Make check payable to MAPS and mail to:
Sharon Sonnleitner, Treas.
4800 Sunset Dr. SW
Cedar Rapids, IA 52404

2004 EXPO BIGGEST YET

Moving Expo to the Western Illinois University gym proved to be a big boost for the show. There was much more room both behind the booths and in the aisles. And best of all, everyone got the tables they wanted. Many thanks to Marc Behrendt for the terrific job he did in laying out the floor plan.

The EXPO *Digest* on Paleotechniques is a whopping 207 pages, thanks to the persistent efforts of Kathleen Morner. Her excellent skills as a retired writer/editor/English teacher are apparent in this publication. The quality and variety of articles is outstanding. Kathleen is already hard at work on both the 2005 (Bivalves) and 2006 (Insects) issues. See her note on the next page.

Friday night Neal Larson from the Black Hills Institute in South Dakota gave a lively keynote address on the Institute's recovery of a nearly complete T-rex found after Sue was confiscated.

Donations and the live and silent auctions brought about $3300 for the donations we make to the Paleo Society, Strimple Award, Paleontological Research Institute (PRI), and the University of Iowa.

Karl Stuekerjuergen presented the Presiden's award to Donna Burgess.

Donna Burgess was stunned when President Karl Stuekerjuergen presented her with the President's Awards for her many years of helping at the front desk at Expo. Julie Golden was awarded the Don Good Award for many years of helping the Board with both meeting space and programs and for her work on *Millie and Sam*, which MAPS funded with the David Jones grant. Julie, who is the retired curator of the University of Iowa repository, was unable to attend Expo.

And last, but not least, we once again had the opportunity to gather with many old and new friends in a setting where "a love of fossils brings us together."

PROCEEDINGS OF THE SOCIETY

Western Hall, Western Illinois U, Macomb, IL
March 27, 2004

OLD BUSINESS: Show chairman Gil Norris thanked everyone involved in making the 2004 EXPO a huge success. Sharon thanked the desk crew and Tom Witherspoon, associate publicity person, made a brief report. Randy Faeber was beaming at the work of his auction crew – both the live auction and silent auction. Several members expressed disappointment that more WIU students, expecially the geology classes, don't participate in the EXPO extravaganza.

A suggestion was made to purchase a banner to hang across the entrance door of the EXPO. President Stuekerjuergen stated that he would look into it.

Glen Kuban made a motion that MPAS get their own domain name. This idea was seconded and approved. The detiails of this will have to be worked out.

Kathleen Morner was recognized for outstanding work in editing the EXPO edition of the MAPS *Digest*.

2005 EXPO: Next year's EXPO will be held April 8-10. The theme will be Bivalves. Jack Bailey, from Western Illinois University, will probably be the keynote speaker.

DAVID JONES FOUNDATION GRANT: The Educational fossil booklet, *Millie and Sam*, was presented to the group, and members were asked for comments.

DON GOOD AWARD: The Don Good Award was presented to Julia Golden, retired curator of the repository at the University of Iowa.

PRESIDENT'S AWARD: The 2003 President's Award was presented to Donna Burgess.

At this time, members of the organization had put up with enough frivolity. The meeting was adjourned, and a lively auction followed.

Doug DeRosear, Secretary

PROCEEDINGS OF THE BOARD

Alberta Cray's Home, Cedar Rapids, IA
August 8, 2004
Present: Karl Stuekerjuergen, Marv Houg, Doug DeRosear, Gil Norris, Dale Stout, Blane Phillips, Alberta Cray, Sharon Sonnleitner

In lieu of the summer picnic, an impromptu Board meeting was called when several MAPS Board members were going to be in Cedar Rapids on another matter.

EXPO: Dr. Jack Bailey, geology professor at Western Illinois University, was confirmed as the 2005 Expo keynote speaker.

In discussion on the fact that rolls, coffee and bagels at Expo cost twice as much as we took in for them, it was noted rolls and bagels cost us $1.00 each and we are only asking 50¢ each. As a result, in 2005 we will ask for donations of $1.00 for rolls, bagels, and coffee. Gil will contact the baseball coach to be sure that we have grilled food at the food stand on Friday.

Dale will look into new signs, including one large one to put in front of the Expo entrance.

Since we moved the show out of the Union, we used only about half the Union hotel rooms in 2004. As a result, those who want to stay at the Union in 2005 will reserve their rooms directly with the Union. Most of the Board will stay at the Days Inn.

Expo flyers will be created and distributed in Macomb and surrounding areas. Gil will ask Steve Holly to assist in distribution.

Dale will send dates and other current information to Dave Board to get on our web site. We will also advertise our *Millie and Sam* book on the site.

DIGEST PUBLICATION: The number of *Digests* issued each year will be changed to six, to be issued October, December, January, EXPO, May, and August.

SCHOLARSHIPS, ETC: A motion was passed to donate $2,200 to the Paleo Society scholarship fund, $700 to the Paleontological Research Institute (PRI), $300 to the University of Iowa geology department, and $100 to the Paleo Society Strimple fund.

FIELD TRIP: Marv will set up a field trip for October – the second weekend or later.

Editor

EXPO DIGEST ARTICLES WANTED

September, 2004

Dear Maps Members,

We are seeking articles relating to the theme Fossil Bivalves for the 2005 MAPS EXPO Digest. The deadline for bivalves articles is January 1, 2005. We will also be happy to receive articles on topics related to the theme Fossil Insects for the 2006 MAPS EXPO Digest. The deadline is Auguest 30, 2005 for Insects. We will be happy to receive articles for either theme well ahead of deadline.

If you are not able to write an article but know of someone who might, please let us know. Thanks to all of you for any help you can give.

Kathleen Morner
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ROBERT COOPER PASSES AWAY

sent by Gil Norris

Longtime MAPS member Robert Cooper died July 14 after a long illness. There were no services at his request. Bob helped at the front desk at EXPO for several years.

Our deepest sympathy to his sons and the rest of his family.

LONGTIME MAPS MEMBER ERNEST B. HAMMONS PASSES AWAY

by John Hammons

Ernest Hammons had a both long life and a lifelong love of fossils. Ernest passed April 17, 2004 at the age of 95. Before he left us, he had inspired and taught lessons in geology and generosity to several generations of fellow collectors.

Ernest lived in Lincoln County, Tennessee, and became a specialist in the invertebrate fossils from the Middle Tennessee area. His collection, assembled with his late wife Onsby and later with his companion Sue Watson, was recognized as the most complete assembly of invertebrate Paleozoic fossils found east of the Mississippi. Their findings included several new species that were described to science, as well as spectacular display specimens.

Ernest donated fossil materials to many universities, including Middle Tennessee State University, and to the Smithsonian Institution. He also made donations and organized a display for the Lincoln County Museum in Fayetteville, Tennessee. He was a member of MAPS from the early years, and attended the Expo until he stopped driving.

Most importantly, Ernest loved fossils as well as other people who shared his interest. He would "carry" collectors, as he liked to say, to his special sites. He never had to keep directions, but remembered his way to sites all over the Southeast as well as the United States. He especially loved to talk to children and give them samples of fossils. I was one of those children. I can still remember visits with Ernest when I was about 6 years old. We collected fossils in the coal strip pits near my home in Grundy County, Tennessee. I'll never forget my awe (and envy) as he and Onsby found a huge section of a petrified tree trunk. Later, my own son collected blastoids with him at 4 years of age. Ernest is my uncle. I'm sure many of you love him as I do. He is responsible for the interest many of us have in fossils and earth science.

Ernest can be remembered in many ways. One way is to make donations in his name to the Fayetteville Lincoln County Museum Association, where many of his local fossils are displayed. Contact Treasurer Jane Pendergrass by phone at 931-433-1282 or at 931-433-1500. She can be reached by mail at Fayetteville Lincoln County Museum Association, P.O. Box 54, Fayetteville, TN 37334. Donations are tax deductible.

(Ed. Note*: Ernie and his late wife Onsby were awarded the Paleo Society's Strimple award shortly before Onsby's death. MAPS promoted their nomination.*)

SCHIDELER REPORT DESCRIBES RICHMONDIAN FOSSILS AND ROCKS

From Dry Dredgers, Greg Hand, ed. 4/03

An unpublished manuscript, entitled *The Richmond Group of the Cincinnati Province*, compiled by the late William H. Shideler, has been made available by the Ohio Division of Geological Survey as Open-File Report 95-1. Dr. Shideler was a professor of geology at Miami University from 1910 to 1957. He died in 1958.

The information in the manuscript was compiled by Shideler over a period of 17 years. For 10 years, Shideler annually visited a series of classic exposures of highly fossiliferous Upper Ordovician rocks in southwestern Ohio and made extensive collections of fossils at these sections. From these data he was able to establish extensive faunal lists for each section and compile range charts for various species.

Shideler's typewritten manuscript was edited by Joe H. Marak, curator of the Carl E. Limper Geology Museum at Miami University. Marak notes that the manuscript is outdated, particularly in regard to the names of many fossil species, but will still be very useful to geologists and fossil collectors.

The 96-page report describes 26 exposures of Richmondian rocks in the Cincinnati area and includes an extensive index. Open-File Report 95-1 is available from the Division of Geological Survey for $3.00 plus $2.00 handling and $0.18 tax if mailed to an Ohio address. Credit-card orders may be placed by calling 614-265-6576.

A COMPOSITE CAN BE PRICEY AND CONTROVERSIAL

Summarized from National Post. ROM's Patchwork Fossil by George Kampouris. 8/21/02

In 2001, the Canadian Royal Ontario Museum (ROM) purchased a giant sea scorpion for US$100,000. At eight feet in length, the 400-million-year-old fossil is an impressive display piece. But less than a year after its purchase, it raised eyebrows when nonpaleontologists learned the meaning of composite.

The composite was the brainchild of MAPS member Zarko Ljuboja and Leon Theisen, preparators for Lang Fossils, Inc., near Herkimer, New York. Lang Fossils owner, Alan Lang, said *Pterygotus buffaloensis* are not common and he could have sold off the pieces years ago. But, he said, Ljuboya and Theisen made him keep them until they had enough of the right species and size to reconstruct a whole sea scorpion.

The tail section was collected about 20 years ago. Lang Fossils found the body section next, then the head, and finally in 1997, a claw that was the right size. The piecing together of the four parts began in the spring of 2001.

This large eurypterid was at Expo. The editor does not know if it was real, cast or composite.

In the fall, after about 1,000 person-hours had gone into the preparation, Lang convinced Desmond Collins, the ROM curator (and a MAPS member) to look at the work in progress. According to Ljuboya, the specimen looked pretty crude at that point and Collins tried not to laugh when he saw it.

Collins initial reaction was not to buy it because it might be perceived as a fake. But Lang, Ljuboya, and Theisen assured him they were only trying to represent what a complete sea scorpion would look like, and not trying to pass it off as a complete specimen. The group showed him their drawings and the dimensions they had carefully calculated and convinced him that the specimen they were preparing would truly represent a *Pterygotus buffaloensis*. From that point on the ROM worked with Ljuboya and Theisen, building clay models of the specimen and researching the attachments.

When Collins applied for funds to purchase the specimen, he described the specimen as a composite, but it was not clear that the committee that approved the purchase knew what a composite fossil was. Less than a year later, questions arose.

As every amateur knows, missing parts of dinosaurs that are prepared for display are made from plaster or plastic to make them attractive and representative of the whole creature. The usual practice for scientific specimens is to show what has been added by using a different color for the replacement. For the giant sea scorpion, however, great care was taken to match the different pieces of both the fossils and the matrix, creating an attractive specimen that might even fool an expert. Although it was not the intent of Lang Fossils to fool anyone, the precision of the preparation is what created the controversy.

Questions were raised because of *National Geographic's* recent embarrassment after reporting the discovery of the "missing link" between birds and dinosaurs. The specimen upon which the findings were based later proved to be a composite, assembled from parts.

However, the ROM's paleobiology collections manager, Kevin Seymour, said there are different reasons for acquisitions – for scientific value and for display value - and right now display value is a big thing.

Hans Dieter Sues, the ROM's director of research and collections, who reviews every major purchase before passing requests on to the collections committee, said the specimen was bought purely for display because no complete *Pterygotus buffaloensis* are found in Ontario. If it were purchased for scientific study, the preparation additions should have been clearly shown, and the fact that it is a composite would affect its

research value. But since it was bought specifically as an exhibit specimen, those factors were not issues. The purpose of the specimen is to show visitors what a whole sea scorpion looked like, and no one is trying to make people believe it is a single animal.

Accepting that explanation, people then wondered if a composite was really worth that much. According to Steve Hess, a U.S. fossil dealer (and a MAPS member) specializing in museum-quality specimens, the price "depends on the fossil, the quality, the rarity, and the demand." He felt the people at the ROM probably knew more about value than McDonald's Restaurants, which bought the T. rex Sue for $8.4 million and helped to drive up the prices of large fossils.

Ninety percent of the sea scorpion is real, albeit from four different parts. The addition of the other ten percent is masterfully done to portray one specimen from the four separate parts. Lang said he couldn't see what Ljuboya and Theisen could see when they started and he must have eaten 100 pounds of fingernails during the preparation. But, he said his "preparators did an excellent job."

Lang said he had another museum overseas that wanted to buy the scorpion for more than the ROM paid, but he considered more than the money. His wife had never seen any of his fossils in a museum, and he wanted to get his picture taken with this one. He felt the ROM got a good deal, and part of the reason they got a good deal was because they had supported his work over the years.

Composites designed to dupe others are fraud, but composites designed to educate nonscientist have a valuable place in displays in the fossil world, and their monetary value is based on the skill of the preparators and the uniqueness of the specimen. The giant sea scorpion is an excellent example of those facts.

CINCINNATI TRILOBITES 8

by Dan Cooper
from *Dry Dredgers*, Greg Hand, Ed., 3/04

PLATYCORPHIA

…Cincinnati is world famous for its beautiful fossils and has at least 12 different genera of trilobites. Probably the eighth most common Cincinnatian trilobite is *Platycorphia*. This trilobite is very similar to *Flexicalymene*. The biggest differences are the anterior margin (front of the lip) is thin and the axial cephalic furrow (grooves in the center of the head) are much shallower. Since this trilobite is found almost exclusively in Waynesville trilobite layers, they are often mistaken for *Flexicalymene*. There were several found at St. Leon's in the lower trilobite layer by Jerry Rush during construction on the new roadway. Also, Bruce Gibson found an enrolled *Platycorphia* at a construction site near Rumpke dump. The exception is a nice enrolled *Platycorphia* found at Oldenburg, Indiana. The best bet to find one is to split fresh shale in the Waynesville formation.

When collecting trilobites always take extra time to make sure there are no loose pieces missing. If you do find complete specimens, it is not a good idea to break the matrix down in the field as they commonly occur in pockets. If you do see missing pieces, take extra time to try to find them to repair the specimen once it is in a safe place. The best way to protect fragile specimens in the field is to wrap them in saran wrap to let them dry out slowly and preserve loose pieces.

See the Cincinnati Fossil Guide from the Natural History Museum or our web site at www.drydredgers.org for more information.

Always respect private property and get permission where appropriate.

EARLY HISTORY OF CZECH (BOHEMIAN) TRILOBITES AND THEIR DISCOVERERS

by Joe Kchodl

Today in the National Museum of Prague – a magnificent building at the end of Vaclavske Square houses a spectacular array of fossil specimens. Among these are the specimens collected by many of the pioneers in paleontology such as Ignaz Hawle (1783-1868) and August Carl Joseph Corda (1809-1849).

As you climb the grand staircase in the middle of the museum, you see around you an open atrium. Around the balcony of the top floor you begin to see the bronze busts of famous scientists and scholars. If you look to the left, just before you reach the final level, the first bust you see is that of Joachim Barrande (1799-1883), thought by some to be the father of Trilobite study. Just below the chest of the bust you see a bronze plaque with an example of the world famous *Paradoxides* trilobite.

The Oldest known record of Czech or Bohemian trilobites are those described by a Jesuit priest Franz Zeno, (1734-1781). He briefly sketched and described these unique creatures in some detail in 1770. Since then there have been several prominent people who attempted to study and record the trilobite finds around Prague in what was then called Bohemia, now a part of the Czech Republic.

Ignaz von Born (1742-1791), noted professor and mineralogist, published a book of his own private collection of minerals and fossils, which included several trilobites. Born's studies and papers aroused some interest in the study of fossils in Bohemia.

The Count Kinsky Frantisek Josef (1739-1805) presented a manuscript he had written describing several trilobite species in the Jince area. Today the area is still fairly rich in trilobite finds.

Johann Thadeus Lindacker (1768-1816), a miner and engineer, published a paper in 1791 describing several species of trilobites.

Franz Willibald Schmidt (1764-1796) in 1796 introduced four species of trilobites through his written works.

The Count Sternberg Kaspar Maria (1761-1838) originally a clergyman, later became the director of the Science Institute of Regensburg. In the beginning of the 19th century he was a founder and patron of the Museum Nationale Bohemiae, today the Czech National Museum. He teamed with A. Brongniart, one of the founders of paleobotany, collecting many species of flora and fauna from the fossil rich areas in Bohemia. Sternberg also assimilated several other major collections and published 3 papers, in 1825, 1830 and 1833 respectfully.

Heinrich Ernst Beyrich (1815-1896) a German geologist and paleontologist published a well-known monograph, on Bohemian Trilobites. Besides publishing the already well-known trilobite species, he also introduced several new species.

Ignaz Hawle (1783-1868), a native Czech, was born in Jince. He spent the better part of his life near Beroun and collected extensively near Skryje. All of these areas are well known to trilobitophiles. He teamed up with August Carl Joseph Corda to collect, document and study trilobites. Joachim Barrande acquired Hawle collection after Corda's death and the specimens now reside it the National Museum. Many of the trilobite specimens are still identified with labels written by Hawle and Corda. Barrande used many of those specimens in his landmark book *Systeme Silurien*.

August Carl Joseph Corda (1809-1849) is another pioneer whose name is recognized by trilobitophiles. Corda was a pupil of Count Sternberg and spent a great deal of time with Ignaz Hawle. Together they published a work on Bohemian trilobites. Corda's life was cut short when he was killed in the tragic sinking of the ship

"Victoria" in the Caribbean Sea, while returning from a collecting trip to Texas.

There is not enough time or space to begin to describe Joachim Barrande's contribution to the science of paleontology, so here is a brief recap of some of the important facts surrounding Barrande.

Joachim Barrande (1799-1883) published many monographs and papers but the one he is best known for is *Systeme Silurien*, a veritable bible for paleontologists, published in 1852 with a supplement in 1872. It contains over 1300 exceptionally detailed plates and drawings describing trilobites in exacting detail.

He accepted a post as chief engineer for a horse railroad project in Bohemia in 1833. The project was to clear a railway from Krivoklat to the Radnice coalfields. This brought him in close proximity to the now world famous Barrande cliffs and other geological outcroppings filled with fossils. Already known for fossil collecting and having knowledge of trilobites from finds in France and Britain, he began to collect and study trilobites in Bohemia. During his life he published many papers and monographs dealing with systematic paleontology, morphology stratigraphy and more. He began publishing his works from 1846 through 1872. "The high quality of work, both scientific and technical, ensured for Barrande world priority and influenced trilobite research for at least a century." (Type Specimens of Fossils in the National Museum Prague Volume 1 Trilobita by Radvan Horny and Frantisek Bastl, Museum of Natural History, Prague 1970.)

Barrande spent the latter part of his life devoted to the study of Bohemian trilobites and helped to establish the emerging science of paleontology. Having described over 300 trilobites, his scholarship and work were the beginning of the modem study of trilobites. There are over 1300 "Barrandian" trilobites, which refer to the trilobites located in the Bohemian countryside, an area of only a few hundred square miles, the area in which Joachim Barrande lived and worked.

There are so many great European and Czech paleontologists of which these are but a few. Since the late 1800's many more people have stepped forward to keep the science alive. Czech paleontologists Snajdr, Prybyl, Prantl and many others continued the study of trilobites, further refining the work of their predecessors and making discoveries of their own. Many trilobitophiles reading this brief article will undoubtedly recognize many of the collecting locations, cities as well as the names of these paleontologists. Many of the trilobites we own today carry the name of these fine discoverers.

Compared to the age of the fossils we find – the science of paleontology is but a babe. As amateurs and professionals alike - keep diggin' - you never know what you may find.

DINOSAURS AT THE BIRD FEEDER

by: Erik Brandlen
from The Fossil Record 1/03
via Paleo Newsletter, Jean Wallace, Ed. 1/03

The common convention of dinosaurs becoming extinct at the end of the Cretaceous may not be entirely true. No one would argue the extinction of familiar dinosaurs from the Mesozoic, such as *Tyrannosaurs rex* or *Velociraptor*. However, their legacy has presumably lived on into the present in the form of birds. The "birds are dinosaurs" theory, is not new to science. in fact, the famous biologist Thomas H. Huxley argued the point as early as the late 1860's. Later in 1926 the anatomist Gerhard Heilmann concluded that coeluosaurs were the best contenders for being relatives of birds. Heilmann noted the similarities between key anatomical features of the two groups. Unfortunately, Heilmann never made the leap of faith from dinosaurs to birds. He came to believe birds were descendants of archosaurs, and that

the resemblance to coelurosaurs was due to convergence not evolution.

Had it not been for an amazing discovery in 1861, the bird-dinosaur evolutionary connection would still be in debate. On that date, miners at an Upper Jurassic limestone quarry near Solnhofen in southern Germany uncovered a fossilized birdlike skeleton. The skeleton was eventually named *Archaeopteryx lithografica,* and at present less than ten exist, all from the same area. What makes the fossils of Archaeopteryx so special is not only the finely detail skull and skeletal parts, but also the preservation of feather impressions. Because of the feather impressions, many believe *Archaopteryx* to be the first true bird. In 1973, German paleontologist Peter Wellenhofer, and John Ostrom from Yale both came to the conclusion *Archaeopteryx* bore an uncanny resemblance to coelurosaurs. In fact, Ostrom found at least twenty anatomical features linking the two.

One of the features birds share with maniraptors is a crescent-shaped wrist bone called a semilunate carpal. Other common anatomical features are the development of a large airspace in the skull, relatively large brain case, pygostyle and similar construction of the pelvis. The pygostyle is formed by the fusion of the last few caudal vertebrae. In birds this holds the tail feathers, which serve as flight control surfaces. This comparison has been expanded to include other theropods and Mesozoic bids such as *Patagoperyx* and *Ibemomesomis.* However, small minorities of scientists claim *Archaeopteryx* is not a relative of dinosaurs at all, and would not have had the ability to fly. It may have been true *Archaeopteryx* was incapable of sustained flapping flight, but almost all researchers agree it was able to fly.

Recently, Magnolia and China have been the focus for many paleontologists interested in the origins of birds. In 1984 paleontologists Bardhold and Perle discovered *Harpymimus,* later described as part of the theropod group omithominid. *Harpymimus* has birdlike features, including a long slender toothless jaw, and large eye sockets with a circle of bone (sclerotic ring). In 1996 *Sinornithosauarus millenii,* meaning "Chinese bird-reptile for the millennium", was found in the Gobi by paleontologist Xu Zing. Sinomithorsaurus is a small, feathered dromaeosaur, with a shoulder girdle-scapula, coracoid and furcula more closely resembling a bird's than a dinosaur's. This is the same arrangement found on *Archaeopteryx,* however *Sinornithosaurus'* arms point forward and are not wing-like. In addition, the fossil of a seven foot long theropod known as *Beipiaosaurus inexpecus* from China, has small comb- like impressions that suggest stiff narrow protofeathers, further linking birds to theropods,

Biologist Mary Schweitzer of Montana State University has studied the fibrous structures found on a birdlike theropod from Mongolia known as *Shuvuvia deserti.* Schweitzer has concluded the chemical composition and framework of the fibrous structures are similar to modem bird feathers.

In 1999 a new oviraptorosaurus was discovered in Mongolia, which has its last five vetrebrae fused into pygostule. Not only does the tail end of a pygostyle, but also is too short to be used as a counter balance. The pygostyle of this oviraptor may have supported feathers used for sexual display, not flight.

So exactly what did birds evolve from? To answer that question, the search for the origins and evolution of birds must include several theropod groups. These groups include manaraptoras, troodontids, dromaeosaurs and ornithomimds. Unfortunately this is not an easy riddle to solve. No single fossil answers the question.
So paleontologists will have to keep searching for the missing link between birds and dinosaurs. At the present the taxonomic classification reads as follows:

Dinosauria
-Saurischia
- Theropoda
-Coelurosauria
-Maniraptora
-Avialae
-Aves

Why did dinosaurs evolve into birds? This question is perhaps the hardest to answer. First we must solve the problem of feathers. When and why did some animals evolve feathers and others didn't. Were feathers for display, predation or themoregulation?

Feathers as display is an undoubted consequence, but why go to all the trouble of modifying scales into feathers? Why not grow horns or vary skin pigments as a way to differentiate between males and females of the same species. What about predation, could feathers have been of any help in

catching prey? We must remember, feathers came before wings; therefore animals had the benefit of feathers before flight. Could feathers in some way have made certain species more successful predators before the evolution of flight? If so, how? What about thermoregulation; are feathers synonymous with endothermy? Paleontologist Anusuya Chinsamy says they aren't. In 1994 Chinsamy and her coauthors published results of a study on the bone histology of Cretaceous birds. Their research suggests bone growth relating to ectothermy, "cold-bloodness", not as birds, so why do ancestral birds appear to be extothermic. Early birds may have had a metabolism somewhere between endothermy and ectothermy. Or it may be their metabolism was the root form of warm-bloodedness, which was lost when the non-avian dinosaurs became extinct.

Unfortunately, the answers to these questions will only be answered through hours of relentless research and countless lucky breaks. What we do know is the blue jays and sparrows visiting our bird feeders are the descendants of animals like *Velociraptor* and *Oviraptor*. So next time you're out walking, take notice of the world of birds, it is a violent world filled with predators, prey, thieves and thugs. Then try to imagine a time when dinosaurs roamed the Earth and mankind was but a dream.

References:

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Shipman, Pat, Taking Wing, Archaeopteryx and The Evolution of Bird Flight, Phoenix, London England, 1999.

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by J. Alan Holman
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Cloth 0-253-34280-5 $79.95
Published January 2, 2004
Available at bookstores or by calling 1-800-842-6796

Fossil Frogs and Toads of North America was published on January 2 by Indiana University Press. This book consists of detailed systematic accounts of the known fossil frogs and toads (anurans) of North America and their localities. Extinct fossil frogs and toads are fully discussed and illustrated, and in some cases are re-diagnosed and re-described. For fossil taxa still living, the book gives the modem characteristics, ecological attributes, and modem ranges, and include illustrations of diagnostic skeletal elements. The volume begins with an overview of the anurans and anuran studies, a general account of the skeleton and bones, and a discussion of the early evolution of the Anura, along with the formal classification of anuran taxonomic groups found in the North American fossil record. The third part of the book presents an epoch-by-epoch discussion of Mesozoic, Tertiary, and Pleistocene anurans, the classification and phylogeny of the anurans, and a comprehensive list of references.

" . . . The present intense human interest in frog and toad depletion, I believe, falls into two categories. On the one hand, we have been informed by the media that the demise of these animals indicates great trouble in the environment. Needless to say, this is a situation of grave concern, which, of course, if true, will affect our lives quite adversely. On the other hand, many of us just like having frogs and toads around. Contrary to the opinion of the narrow-minded Linnaeus, they are mainly attractive creature, whose voices enrich the outdoors, not to mention the tremendous biological interest in them from the morphological, physiological, behavioral, ecological, and evolutionary standpoints. This book deals with frogs and toads from still another dimension, that of North American vertebrate paleontology. Oddly, no such comprehensive study exists: . ."

–from the Preface

Author Information: J. Alan Holman, Professor and Curator Emeritus of Vertebrate Paleontology at Michigan State University, has written seven books, including *Fossil Snakes of North America* (IUP, 2000).

Book Information:
http://www.indiana.edu/~iupress/books/0-253-34280-5.shtml

COPROLITE – or This Dung is for You

by Brett Whitenack

from *Post Rock* 8-97; to us via *Paleo Newsletter*, Jean Wallace, Ed. 6/03

This article deals with a subject that some people find rather offensive and vulgar. Others find it quite amusing. There are a few people who find it extremely fascinating and worthy of study. What could exhibit so many varied reactions? I'm speaking of petrified poop, Dino doo, fossilized er. . . ah, pardon me. I don't wish to offend anyone reading this article. I'm talking of the much maligned, the lowly, the humble, coprolite.

"What is a coprolite?" I'm glad you asked. Coprolites are fossilized feces, dung, scat! Yes, ladies and gentle-men, coprolites are the extruded remains of meals that prehistoric animals deposited.

"But how can these be fossils?" You must remember the definition of a fossil as the remains or traces of plants or animals that lived prior to historic times. As you can see, a coprolite is what is known as a trace fossil. I guess if you wanted to get technical, you could say that coprolites are the remains of plants and animals though they are somewhat altered.

The oldest coprolites date some 400 million years ago from the Silurian Period and are from fish. The most recent coprolites are from Ice Age animals and may still contain much original organic matter, a fact your nose may discover if the coprolite gets wet!

Coprolites form just like any other fossil. They must have been buried rapidly in fine grain sediment and kept away from biological agents that could destroy them, i.e., scavengers or the environment. Ground water percolating through a potential fossil must be of a correct nature, not too acidic, and full of minerals that can replace the soft materials. Of course, these requirements only pertain to those coprolites that are petrified. Some younger coprolites have been found desiccated in southwest caves and date from the last Ice Age.

Being of a soft nature, dung doesn't preserve as readily as bones, teeth, or scales. However, coprolites aren't exceedingly rare by any means, and you, too, can easily own a piece of this most interesting geologic wonder.

Given its detached nature, a coprolite can't be identified to the exact species of animal that left it. In some instances, coprolites from sharks can be determined from their grooves and markings on them, as sharks have distinctive spiral valves in their intestines. By studying the makeup of a coprolite, one can tell if the animal was a carnivore (meat eater) or herbivore (plant eater). It is interesting to note that carnivorous coprolites are more readily preserved due to their higher mineral content from the bones that the animal ate. Other things that can be told by studying coprolites are such things as the paleoenvironment, where the animal lived, what other organisms were associated with it, and how this animal interacted with its surroundings.

The name coprolite has two sources as to how they were named – one fact, the other fiction. During the great "bone wars" of Professor O. C. Marsh and Professor Edward Drinker Cope during the latter years of the last century, Professor Cope's men apparently stole an allosaur skeleton from a quarry of Professor Marsh's. This incensed Professor Marsh, and to "immortalize" Professor Cope, Professor Marsh named the fossilized fecal remains "coprolites" to get even with his arch enemy. A quaint legend, but entirely untrue.

The name coprolite has more humble and mundane origins. The English geologist, William Buckland, deduced their true nature and named them from the Greek kopros, "dung," and lithos, "stone," literally dungstone. Buckland thought they would be important in agriculture as a source of fertilizer due to their high calcium phosphate content.

In addition to the information they can tell us, coprolites have become fashionable as a cutting material. Believe it or not, some coprolites exhibit beautiful colors when cut and polished. It has been said that the reds are from the meat the animal ate, brown from nuts and seeds, green from plant material, and black from the juices of blackberries.

Actually these colors come from minerals deposited by ground water and percolated through them as they were fossilized.

For those of you interested in a career of aleontology. here's your chance to jump in with both feet and become paleoscatgologist – one who studies coprolites. Right now there is only one person studying them. Karen Chin of the university of California is studying the complex relationship between prehistoric dung beetles and dinosaurs. Or perhaps you would just like to have a nice bola or necklace made up. When you get compliments on it, just imagine the look on the person's face when you tell them what it really is.

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http://www.vcemp.edu.paleo/fossilscopfol.htmlFoss ils Windows to the Past Coprolites and Gastroliths.

http://www.dinosocidey.org/articlOp.html "This is Dedicated to the Dung I love": Paleongologist Karen Chin Studies Endangered Feces.

Speed love, E. 1996. "Coprolite. A Nice Word for an Indirect Fossil." Rock and Gem, August 72-74

CLUB MEMBER REMAINS ACTIVE TEACHING OUR YOUTH ABOUT FOSSILS

Club member **Donald Baumgartner**, an avid fossil enthusiast, has been actively spreading the word about the **Fun of Fossils** through the presentation of several family and youth programs this year at the Lizzadro Museum in Elmhurst, Illinois, and through the High School District 211 (Northwest Cook County) continuing education program. This is not an easy feat, considering that Donald works full-time at the U.S. Environmental Protection Agency in Chicago and also teaches three biology courses at Harper College in the Chicago suburbs.

On the fossil front, most recently, Donald completed the course "**Fossil Discovery II – Advance Class**" at Lizzadro Museum last July 10 to a full house of children and parents. This course was a follow-up to his introductory course entitled **"Fossil Discovery**" which was offered to some 30 youngsters last March 6, 2004. At the High School District, Donald offered a course called "**Fossil Beasts**" starting last March 2, 2004. This latter three-week course was an intensive crash course on fossil collecting in northern Illinois, introducing parents and children to the diversity of fossils in Illinois, clubs to join, where to go field collecting, equipment and safety precautions in collecting, rock shows to hit, and much more.

On July 24, 2004, Donald co-led a field trip to Lone The bus-load of 44 families and future adult rock hounds took advantage of this special trip arranged through the Lizzadro Museum (Elmhurst, IL) to explore the quarry in search of fossil treasures. The Pennsylvanian fossil invertebrates collected included many *Composita* brachiopods and crinoid stems, some *Neospirifer* and *Punctospirifer* brachiopods, a few *Lophophyllidum* horn corals, gastropods, and bryozoans, and three chunks of *Glaphrites* cephalopods. The prize of the day was a crinoid calyx found by a young boy. Although all searched intensely, no shark teeth were to be found.

Future courses "in the fire" are "**Family Fossil Discovery**" to be offered hopefully at the Chicago Field Museum in 2005 and a course geared towards older (55+) adults at Harper College entitled "**Fossil Exploration – an Exciting Outdoor Hobby with Grandchildren**". Donald is in the process of developing more fossil courses for the future, such as "Mammoth Hunt", "Fossil Casting", and "Fishing for Fossils (Green River's legacy)".

Donald remains available for fossil children programs at libraries, schools, and theme birthday parties. He may be contacted at blowfly@worldnet.att.net

HUNTERS AND COLLECTORS

by Mark Farmer
from APS Bulletin, Alberta Paleo Society, 3/01
via *Paleo Newsletter*, Jean Wallace, Ed. 3/03

I've been an Alberta Palaeontological Society member for the last two or three years, and in that time I've noticed something about fossil collectors in the club: they seem to fall into one of two categories, which I call "hunters" and "collectors."

The hunters appear to enjoy collecting mainly for the thrill of the hunt, just like any game hunter. They are inevitably the first out of the blocks on field trips, and seem to come back with packs bursting at the seams. The sizes of their collections are truly impressive: some so big, they have to be housed in crates, sheds or even bungalows!

Then there are the collectors, who don't seem to be in quite the same rush. Most take things at a slower pace. I often see them writing down notes as they collect, such as the formation or matrix a specimen is found in or its position. Collectors aren't the kind to go scrambling over a scree slope just to beat everyone else to the good stuff.

I've noticed that hunters don't always discriminate in their finds. When I look at what they're picking up, there's a lot of shattered bone which would require a forensic pathologist to reconstruct, badly-weathered pieces, incomplete fossils, dime-a-dozen specimens. . . The quality often isn't there, but the quantity sure is.

Collectors are usually a little more discriminating. They don't seem to pick things up just because they can. I see them throw most of their finds back on the ground because they just aren't that interesting, like a fisherman who knows it's not worth keeping every small fry. Collectors know what they're after, maybe because a specimen isn't in their collection, or it's of special interest to them. It might mean a smaller collection, it also means a more interesting one.

I've seen how these two types curate their collections. Often, the only attempt hunters make at organization is to put thins in boxes or drawers, bones heaped on bones. The collectors seem to take more care with their finds, making some effort to mount lots of specimens and label them. These fossils are usually cleaned, they're pleasing to look at, and they can be shown off to people. By contrast, the backlog of unidentified, unlabeled, unprepared specimens in many hunters' basements makes the Tyrell's warehouse look small.

I realized the difference between hunters and collectors when I was working at the Tyrrell Museum. I volunteered there a few days over the summer, including work in their preparations lab. One day I looked up from my toil at the material around me, paused, and for the first time really appreciated the incredible specimens I was surrounded by: a nearly-complete juvenile *Albertosaurus*, the skull of the largest icyhyosaur ever discovered, a fossil mammal and a nearly-complete ceratopsian skull.

I thought to myself, "How many people get a chance to do this kind of work?" I knew I was never going to take a single bone out of there and call it my own. They' never be mine – I had to let them go at the end of the day. But how many people will ever get to handle and work pieces like those, which might be displayed in front of hundreds of thousands of visitors? How many will ever get to handle that kind of specimen?

It struck me then, what the palaeontology game is all about: collection, not kleptomania. It's not about who has the most fossils, it's about preparing them, studying them, sharing them and educating people about them. In the end, it doesn't matter how many you have, it matters what you do with them.

Owning stacks and stacks of specimens might be impressive in and of itself – I can't say. But what can be done with them: The vast majority are never going to be studied, never going to be examined, never going to be enjoyed. Is the joy of ownership that great? Do people go to sleep at night feeling warm and fuzzy because they have a small mountain of material they're never going to look at again?

It's a fair question, not an accusation. No one can make people give up their collection, nor would they want to. I'd just like to see more people ask themselves what they get out of collecting. I'd like to see more people in the APS switch from hunting to collecting. They might enjoy it.

NEW MEXICO MUSEUM OF NATURAL HISTORY & SCIENCE
Albuquerque, New Mexico

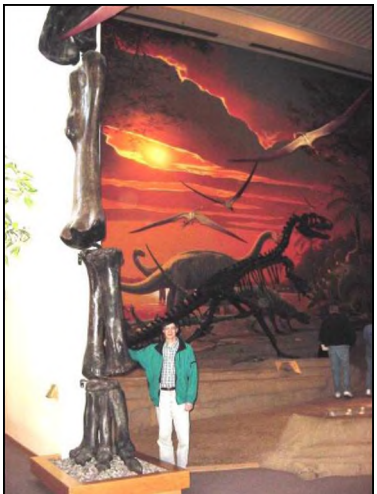
by Donald Phillips

from NYPS *Newsletter* 3/03

A major urban natural history museum, this museum opened in 1986. It is a bit difficult to describe the fossil exhibits by themselves in this museum, since they are integrated into a holistic exhibit covering earth history and life, with special emphasis on New Mexico. This can also be a plus, since fossils and paleontology are presented as part of the story of earth history and the evolution of life, rather than a subject in itself. The exhibit is called a "Journey through Time".

The exhibit emphasizes the geology and fossils of New Mexico throughout – a good primer for those traveling around the state. Although many specimens are casts from elsewhere, there are many original specimens from the state also on display.

The exhibit begins with a reconstructed stratigraphic section of the ages in New Mexico – from the Precambrian through formations in the Quaternary. Hovering above are reconstructions of different pterosaurs, including *Quetzalcoatlus.* It discusses the origin of the universe (astronomy) and of life, with some restorations of the Ediacaran fauna, early amphibians and reptiles. There are also casts of dinosaur skeletons – *Stegosaurus, Allosaurus* and *Camarasaurus,* etc. An exhibit of original Permian fossil plants from the Abo Formation (Fm.) of New Mexico is located in this area. There is a fairly large botanical exhibit consisting of living plants similar to those living in the Cretaceous (including cycads, etc.), among which are placed full size models of dinosaurs and other creatures present at that time. Nearby is a hands-on exhibit illustrating evolution – a question-and-answer game by which the viewer can guess which species in the past evolved into what group living today. There is also a reconstructed Cretaceous seacoast complete with Mosasaur and ammonites. Near this is a small tank exhibit of living seashore creatures as a comparison.



Bill Sonnleitner next to a dinosaur leg at NMMNH

There is also an "Age of Volcanoes" – a walk-through with simulated lava flows below. The exhibit also contains fossils of the Tertiary and Quaternary, including mural restorations by Mattemes and assorted skeletal casts, and a "cave experience" exhibit. There is also a fossil preparation area where one can see fossils in preparation.

Main Strengths of Exhibit: There are many original specimens from New Mexico on display, including the skull of the "duckbill" dinosaur *Naashoibitosaurus,* a *T. rex* jaw section from the McRae Fm., jaws of *Coryphodon* from the San Juan Basin, a jaw from a Titanothere (Rubio Peak), fossil plants from the Raton Basin, a Permian log from the Robledo Mountains, and a Miocene camel and cat trackway from near Albuquerque. These original specimens are no surprise, since this is a state museum with major research underway on paleontology in New Mexico.

Comments: The exhibit is largely educational – excellent for young people or adults just learning about fossils and paleontology. The integration of the fossil exhibits with others in earth science and astronomy helps to facilitate this. The exhibit is "low density" paleontologically; providing lots of space for educational exhibits but less for fossils themselves. Restorations and casts are common. Those interested primarily in the fossils themselves may be somewhat disappointed.

Further Information: The museum is located at 1801 Mountain Road N.W., Albuquerque; phone 505-841-2800; www.museums.state.nm.us/nmmnh

DINOSAUR NATIONAL MONUMENT - Utah/Colorado

by Donald Phillips
from NYPS *Newsletter* 8/03

This is the granddaddy of them all! When trying to decide which site-specific exhibit should lead off …, this National Park Service monument comes first to mind.

In August, 1909, Earl Douglass, working for the Carnegie Museum in Pittsburgh, discovered 8 tail vertebrae of *Apatosaurus* (ex. *Brontosaurus)* on top of a ridge near Split Mountain in Eastern Utah. He and helpers worked the quarry, eventually sending many dinosaur skeletons back to the Carnegie museum, and later, others went to the Smithsonian Institution in Washington D.C.

From early on, Douglass argued that "I hope that the government for the benefit of science and the people, will uncover a large area, leave the bones and skeletons in relief and house them in. It would make one of the most astounding and instructive sights imaginable." The site became a National monument in 1915 – mainly to protect the site from development. In 1938, a huge tract of land including the confluence of the Yampa and the Green Rivers, including the Canyon of Lodore of the Green, was incorporated into the Monument. Although more fossils were removed from the site, it was decided, as Douglass had hoped, to excavate many fossils *in situ* and to build a museum around the site.

The site is part of the extensive Morrison Formation, about 145 million years old. At that time, the carcasses of many dinosaurs were washed into a river, only to be concentrated in the shallows. As the sandy sediments were buried for millions of years, silica permeated the sand and formed a hard sandstone entombing the fossils. Later, erosion and uplift exposed the fossils. Although the fossil "bonebed" was formed on a river flat, later uplift of the area tilted the formation at about 70 degrees above the horizontal. This almost vertical wall forms one "wall" of the museum. The Park Service exposed more skeletal parts as they excavated down the formation, but, instead of removing them, left them exposed in place. The result is a fossil-filled slab of rock at least the size of a baseball diamond – probably larger. Exposed are many dinosaur bones, some loose, others articulated, including bones of *Apatosaurus, Camarasaurus, Stegosaurus, Camptosaurus* and the carnivorous *Allosaurus.*

The rest of the medium-sized museum is also filled with displays, including a cast of an *Allosaurus* skeleton and a skull of the same. Displays also describe the possible paleoecology of the site and other fossils found at the site (including scouring rushes and fossil tree wood), as well as the geological setting. A small fossil preparation area is also displayed. There is also a good amount of dinosaur art, near life-size, painted in bright colors and striking line patterns (all speculative, of course). One mural of a group of Camarasaurs seems to be placed so that you can use it as a backdrop for a photo – a necessity for tourists. Visitation is high, especially in summer, so you must leave your car in the parking lot and take the free shuttle up to the museum quarry.

Main Strengths of Exhibit: The "wall" itself is the focus of the museum. Among the hundreds of fossils exposed are legs of sauropod dinosaurs, some Allosaur bones, and a magnificent neck and extremely rare skull of *Camarasaurus.* You can view the "wall" from ground level or a special mezzanine – both include diagrams keyed to the bones on the rock wall to help identify what you're looking at.

Comments: One of the largest *in situ* displays, this is a must, especially for dinosaur lovers.

Other Exhibits/Trails: The quarry, the only place where fossils are visible in the park, is only a very small part of this huge park. Nearby, one can take a self-guided trail (Red Rock) which describes the geology of the area. Split Mountain, one of those rare places where a river cuts through a mountain range, is nearby – and vistas are spectacular. The main part of the park, accessible from Harpers Corner Road and Jones Hole Road, include the deep canyons of the Green and Yampa Rivers. Few hiking trails are available in this rugged terrain, but you can hike those that are there or "bushwack" your way around. River running trips are available from local concessionaires. There are also Native American Petroglyphs in the park, as well as some early, pioneer cabins.

Further Information: The Dinosaur Quarry Visitor Center is located 7 miles north of Jensen, Utah. Call 435-789-2115 for more information on the quarry site. For general park information, call the Park Headquarters Visitor Center near Dinosaur, Colorado at 970-374-3000. The Monument's website is www.nps.gov/dino

Readability - Undergraduate level. Use of phylogenetic terminology may confuse readers with no biological background. Non-biology majors will still be impressed with the book. Other than this, *Exceptional Fossil Preservation* also contains sedimentological terms that will be unintelligible to non-geology buffs.

On the Upside – High quality publication on acid-free paper. Good quality black & white photographs of outstanding fossils. Presentation of materials not easily accessible to amateurs. Excellent list of references at the end of each chapter.

On the Downside – Quality costs money. The purchase price will limit the audience to book fanatics and library users. While the included photographs of fossils are outstanding, the reader will lament that the authors could not include photographs of even more spectacular sounding examples mentioned in the text. The technical terminology, while not extensive, may turn off the general reader.

Overall Rating – A recommended book for those willing to lay ou the cash or visit a well-stocked library. *Exceptional Fossil Preservation* can be read and appreciated by the general reader even without full understanding of the technical terminology.

AMAZING FIND ON A COLORADO GOLF COURSE

from *Dry Dredgers*, Greg Hand, ed., 3/04

Rare fossilized tracks of a small mammal dating to the age of dinosaurs have been found on a golf course in Golden, Colorado – named, oddly enough, the Fossil Trace Golf Course. Similar prints were also found about 10 years ago in western Colorado. The tracks were made about 68 million years ago by a mammal the size of a rat. This is the first time mammal tracks from the dinosaur age have been found in the Western U.W.

JURASSIC HALL OPENS IN ALBUQUERQUE

info from Kathleen Morner

A new Jurassic Dinosaur Hall opened on August 7 at the New Mexico Museum of Natural History and Science in Albuquerque. The exhibit offers the first face-to-face encounter with a full-sized cast of *Seismosaurus*, one of the largest creatures to walk upon Earth. The 110-foot-long small-headed, long-tailed herbivore is exhibited facing *Saurophaganax*, the largest meat-eater known.

Both dinosaurs were excavated from the Morrison formation – the only exposed Jurassic in New Mexico – In the Peterson Quarry northwest of Albuquerque. The site was found in the late 50s by a man named Peterson, who was hoping to make a little money mining uranium. His Geiger counter detected the dinosaur bones, which have uranium in them.

The quarry has been worked for at least fifteen years and is still yielding dinosaurs. Kathleen Morner noted that a 5-foot vertebra weighing 1,000 pounds was taken out in May, on a day she was volunteering there. A skull had been removed earlier.

The Jurassic dates from 202 to 144 million years ago. New Mexico's Dinosaurs are between 140 and 150 million years old. Both the bones and the full sized casts will be on display in Jurassic Hall.

EXCEPTIONAL FOSSIL PRESERVATION – A UNIQUE VIEW ON THE EVOLUTION OF MARINE LIFE

by David J. Botjer, Walter Etter, James W. Hagadorn and Carol M. Tang, eds.
New York: Columbia University Press, 2002. $100 cloth, $45 paper.
403 pp; numerous B&W photographs and illustrations.

review by Jack Kallmeyer
from *Dry Dredgers*, Greg Hand, ed. 1/03

*Exceptional Fossil Preservation*begins with an introductory chapter that explains the rarity and importance of exceptional forms of fossil preservation called "Lagerstätten." Two forms of Lagerstätten are defined: "Concentration Lagerstätten" in which fossils are preserved in abundance and "Conservation Lagerstätten" in which soft tissues are preserved or fully articulated vertebrate remains are preserved. Specific marine examples of the Conservation Lagerstätten type are the focus of this book. The introductory material includes discussion of the processes required to produce Conservation Lagerstätten and why some of these processes may no longer occur in modern seas. The authors point out the contributions that fossil Lagerstätten studies have made toward the understanding of evolutionary relationships.

The authors, who, with one exception, are also the editors of *Exceptional Fossil Preservation*, present the book as an overview of the topic. As such, the book does not contain extensive detail on any of the localities covered. The 20 chapters essentially cover 20 specific Lagerstätten localities worldwide. The sole exception is the fifth chapter that deals with worldwide Burgess Shale-type fauna. The coverage encompasses Lagerstätten from 600 million to 34 million years before the present.

The organization of each chapter is consistent throughout. A bit of the history of the Lagerstätten is presented first, followed by the geology of the locality, paleoenvironmental analysis, mode of preservation, and paleobiology and paleoecology. A conclusion and extensive reference section follow for those wishing to dig beyond the scope of this book.

While many of the localities discussed are readily recognized, thre will be some that are unfamiliar as well. Chapter-length coverage of North American Lagerstätten includes: The Cambrian Burgess Shale of Canada; the Ordovician Beeecher's trilobite beds of New York; the Mississippian Bear Gulch of Montana; the Pennsylvanian Mazon Creek of Illinois; the Upper Triassic Berlin-Ichtyosaur beds of Nevada; and the Cretaceous Smoky Hill Chalk of Kansas. Worldwide Lagerstätten coverage consists of sites in England, Sweden, Italy, Switzerland, France, Australia, China, and Germany. Sweden, Poland, Greenland, Australia, Canada, South Africa, Pennsylvania, Vermont, California, and Utah have sites briefly discussed within Chapter 5, "Burgess Shal-Type Localities: The Global Picture." The Burgess Shale and Burgess Shale-type fossils are discussed in three of the 20 chapters. [The Solnhofen Limestone, the Burgess Shale, and the Hunsrück Slate have each had entire boods written about them . . . and should be consulted for a more detailed presentation of these Lagerstätten]

Exceptional Fossil Preservation provides the reader with the opportunity to see and read about exceptional fossils that normally appear only in professional journals. One example is the illustration of newly hatched or larval trilobites and other arthropods 0.5 mm and smaller from Swedish Cambrian deposits. The Swiss site, Monte San Giorgio, contains Triassic marine vertebrates with preserved skin impressions. Cephalopod muscle patterns, color patterns in worms, the stomach contents of arthropods, and skin and stomach contents of a dinosaur have all been preserved at the Jurassic Osteno site in Italy. Another Jurassic site in France, La Voulte-sur-Rhône, exhibits the best specimens of cephalopods with soft part preservation.

The **M**id-**A**merica **P**aleontology **S**ociety (MAPS) was formed to promote popular interest in the subject of paleontology; to encourage the proper collecting, study, preparation, and display of fossil material; and to assist other individuals, groups, and institutions interested in the various aspects of paleontology. It is a non-profit society incorporated under the laws of the State of Iowa.

Membership in MAPS is open to anyone, anywhere who is sincerely interested in fossils and the aims of the Society.

Membership fee: $20.00 per household covers one year's issues of DIGESTS. For new members and those who renew more than 3 issues past their due date, the year begins with the first available issue. Institution or Library fee is $25.00. Overseas fee is $20.00 with Surface Mailing of DIGESTS OR $30.00 with Air Mailing of DIGESTS. (Payments other than those stated will be pro-rated over the 9 yearly issues.)

MAPS meetings are held on the 2nd Saturday of October, November, January, and February and at EXPO in March or April. A picnic is held during the summer. October through March meetings are scheduled for 1 p.m. in Trowbridge Hall, University of Iowa, Iowa City, Iowa. One annual International Fossil Exposition is held in April.

The MAPS official publication, MAPS DIGEST, is published 9 months of the year—October through April, May/June, and July/August/September. View MAPS web page at http://www.midamericapaleo.org/

CYATHOCHRINITES