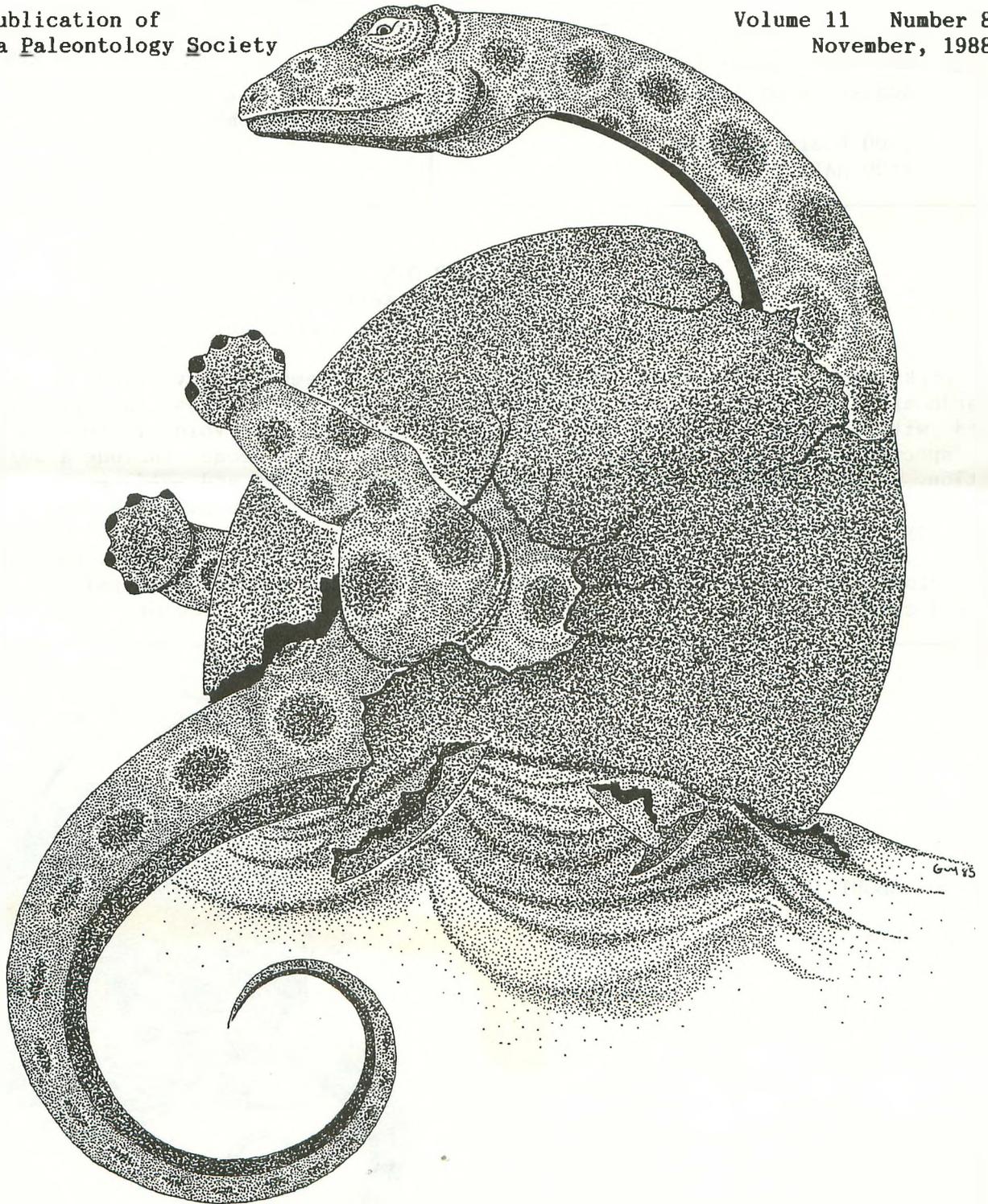


M.A.P.S. *Digest*

Official Publication of
Mid-America Paleontology Society

Volume 11 Number 8
November, 1988



A LOVE OF FOSSILS BRINGS US TOGETHER

MARK YOUR CALENDARS

<p>5 NOV MAPS MEETING at Fryxell Museum, Augustana College, Rock Island, IL</p> <p>1:00 Board Meeting 2:00 MAPS Meeting</p>	<p>14 JAN MAPS MEETING at Fryxell Museum, Augustana College, Rock Island, IL</p> <p>1:00 Board Meeting 2:00 MAPS Meeting</p>
<p>3 DEC MAPS MEETING at Fryxell Museum, Augustana College, Rock Island, IL</p> <p>1:00 Board Meeting 2:00 MAPS Meeting</p>	<p>1989 APRIL 14, 15, 16--EXPO XI Macomb, IL</p>

TIPS FROM TONY

by Tony Estevez

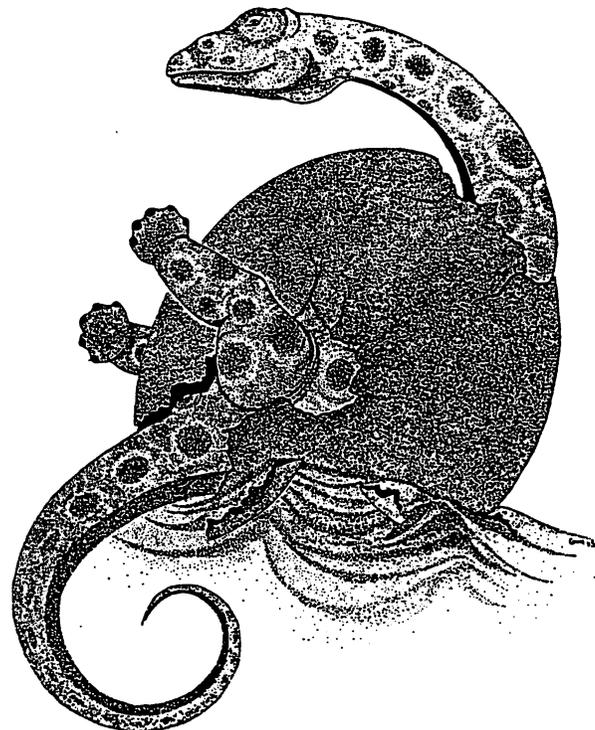
from: Tampa Bay Fossil Enquirer, Mar. & Apr. 88, Nancy Howe, Ed.

When working on or studying a fossil, I use a cardboard box top approximately 2" deep filled with a layer of clean sand to keep the specimen steady and firm in one position. The specimen can be placed in the sand in any position or any angle simply by rearranging the sand around it. If you don't want to use loose sand, you may enclose small dried beans or sand in an enclosed cloth cover.

Some members have asked me about preparing their fossils that have pieces missing. To fill gaps or voids in fossils I use several materials; some include a 50/50 mixture of paper mache and molding plaster. It's easy to work (sculpt) with and it dries slowly. Wood putty (acetone based) also works well. It dries fast, has a tan color and can be sanded and painted to match the original fossil color.

ABOUT THE COVER

This month's cover drawing of a baby dinosaur hatching from its egg is by Guy Darrough, Arnold, MO.



EXPO XI--MAMMALS

Thoughts of and preparations for MAPS EXPO XI are already underway even though the actual show doesn't take place until April 14-16, 1989. The theme for EXPO XI is Mammals. Madelynne Lillybeck, the EXPO Digest editor, is already planning for articles for the EXPO issue, so those of you who are planning to write an article or know of someone who could contribute, please let Madelynne know:

Madelynne Lillybeck
1039 33rd Street Court
Moline, IL 61265

COVER QUESTION

Denny Sutherland, Bishop, CA, called to state that he disagrees with the identification of last month's cover drawing by Mark McKinzie. Mark drew an echinoid which he identified as Selenia texana. Denny thinks it's a Phymosoma. I was unable to reach Mark for his comment and would welcome comments from those of you who are echinoid experts.

DUES WILL SOON BE DUE

It's getting close to the end of the membership year and time to start thinking about renewing your dues for another year. The date on your Digest label indicates when your membership expires. Dues are \$10 per household for U.S. and foreign surface mail, \$25 for institutions/libraries or for air-mailing of overseas subscriptions. Please don't wait until EXPO to pay your dues.

Also please let me know of any address changes; every month we have Digests returned because members have moved and forwarding orders are no longer on file with the Post Office.

Make checks payable to MAPS and send to:

Sharon Sonnleitner, Treasurer
4800 Sunset Dr.
Fairfax, IA 52228

TAPE PROGRAMS AVAILABLE

Gil Norris has put together four VHS tape programs which were first released at EXPO X and are still available by mail order. Each program comes with a study guide. The programs available are:

Arthropods & Crustaceans.....34 min
Brachiopods, Bryozoans, Sponges..44 min
Cephalopods & Mollusks.....55 min
Echinoids.....48 min

The programs may be ordered as stated on separate tapes; or any combination of programs up to a total of 2 hours long may be ordered on one tape. The price is \$20 per program for each program ordered on a separate tape. If you want more than one program on one tape, the price is \$20 for the first program and \$15 for each additional program on that tape. Add \$2 per tape for postage. Make checks payable to MAPS and send to:

Tom Walsh
501 East 19th Avenue
Coal Valley, IL 61240

PLEASE USE THE ORDER FORM (or a reasonable facsimile of it) FOUND ON PAGE 8.

MAPS MOVIE & SLIDES AVAILABLE FREE

A movie and four slide programs are available for rental from MAPS--free! MAPS pays the postage to send them out, and the renter pays the return postage. The programs are:

THE FOSSIL STORY--16mm sound movie by Shell Oil-20 min.
FOSSILS & THE STORY THEY TELL--98 slides--written text only
THE BRACHIOPODS--100 slides--cassette tape and written text
THE SPONGES--100 slides--cassette tape and written text
CANADIAN PLANT FOSSILS--84 slides--cassette tape only

Allow at least two weeks' notice and order from:

Jim & Sylvia Konecny
3036 Geronimo Road
Prescott, AZ 86301
(602) 445-0077

MICROFOSSILS II - - HOW ?

by Harold Tichenor
2440 W. Estes
Chicago, IL 60645

(This is the second of a four-part series.)

MATERIAL PREPARATION

TO FIND 'EM

Your eyes need help, no matter how good they may be. Ideally you should have glass hand magnifiers (plastic is OK initially, but the lens centers, the high spots, will scratch up and become unusable), about 3x, 7x, and/or 10x clip-on glasses, and a higher power, either a doublet lens or a 20x-30x microscope. The Bausch & Lomb combination 3x and 7x single lenses (10x used together) is not sharp enough at 10x.

The Japanese 10x doublet, rotating out of its protective cover, about \$5 for years, may no longer be available; in its place I recently (March) bought a Japanese doublet, 17x, for \$8 (American Science Center, 5696 N. Northwest Highway, Chicago, IL 60646; they have a wide selection).

The lower 3x is good for rapid scanning, to find attractive areas; higher powers, as needed, are later used to find the most desirable specimens.

ABOUT MAGNIFIERS

All of those mentioned above are short focus--less than an inch from the object; accordingly, the lens should be held up to the eye and the specimen brought up to the lens. Lighting from the side presents some problems, but the knack becomes a habit in short order.

Also, as a matter of the rules of optics, you don't want a 200x 'scope: the depth of focus is practically zero; you'd see the highest part of the specimen and have to refocus to see lower. For special cases you can get higher magnification with supplementary objective and/or eye lenses. See the SUPPLEMENT below regarding microscopes.

Rock which is mostly fossils is a matter of experimentation, with a few exceptions. One of the latter is Salem limestone from Spergen Hill, Indiana. I was introduced to this in 1963 by Bert Heiser of Norwalk, Ohio, at the Medusa Quarry in Sylvania, Ohio. He told me that the small pieces had to be boiled in water with a strong solution of "washing soda" (still available?). [Ed. note: Try laundry detergent areas of grocery stores.] I did it and it worked; but it didn't work on other Mississippian material, including Salem Ls from a different location.

After one boils as above, closely woven material such as from a bed sheet is used to line a kitchen strainer, then the fossils and water are dumped in and rinsed with several loads of fresh water. The fossils and cloth are spread out on paper or another medium to dry.

For such highly fossiliferous material there are tricks in breaking it up. This material should be enclosed in heavy cloth or canvas for bashing, then all of the product (including "dust") should be reverse-flushed into a washing process as above.

The general procedure for separation of other highly fossiliferous stuff from matrix is alternate freezing and thawing in shallow water.

Rock with fewer small fossils or parts, e.g. Wheeler Shale, the "Elrathia-bearing matrix: When you have selected the specimens you desire, these areas should be cut from the matrix, allowing a margin on each side at least equal to specimen size. The cutting can be done with a standard rock saw or manually by a hack saw fitted with one of the round abrasive blades, or careful use of a chisel, or one of the vibrator tools.

(If preparation of the fossil is needed, the rock may be glued temporarily to wood. Any preparation should be done under higher magnification, to 30x; a darning needle is good if kept sharpened on an oiled Arkansas stone (wipe off oil before using the tool). ALWAYS work FROM the fossil toward the matrix.

When preparation is complete remove excess matrix with a file (a nail file is good and is less likely to contribute to loss of specimens).

SPECIMEN SELECTION

many, many tiny ones

Here you have to be able to look at one specimen at a time, with high magnification.

With a microscope. I use a small homemade wood tray about 1" x 5", 1/4" deep (1/4" molding around 4 sides), painted DULL black --NOT GLOSSY. A small quantity of the fossil material is spread in the center, and the tray is put under the scope. Previously I have placed a sheet of paper at the side, with small containers on it, labeled with each of the Phyla or other descriptions I expect to find; also some toothpicks are at hand.

Looking through the scope, I see a little beauty, pick up a toothpick and apply the tip to my tongue--NOT WATER--to moisten it and touch that point to the specimen, lift it to the appropriate container and tap it lightly with my index finger. WHOOPS! I tapped it too hard and the fossil went on the paper (that's what it's for) and will be salvaged later with others... I move the tray slightly and try again.

WITHOUT A SCOPE

The handling is basically similar to that above, except

- a small substitute for the tray could be a bottle cap, etc.
- use a support to bring the (cap) up to eye level, or place it on a low table and sit on the floor
- use side lighting as with a small hi-intensity lamp
- use a contrived support for the lens.

STORAGE

Material to be Worked: Unless you're dealing with commercial quantities, 35mm film containers are ideal, IF YOU LABEL THEM with Date, Status (washed/not, etc.) Location, Formation, etc.

Selected/Soft Specimens: The labeled containers into which you put them from the toothpick may well be micromount boxes (see next month's Digest).

SUPPLEMENT RE MICROSCOPES

If You Have a 20x/30x scope, fine; welcome aboard!

Otherwise: If your eyes are approximately equal as to focal length, definition, etc., you may want to consider a spectroscopic scope, but before you rush out to spend \$150 to \$600 read further. Otherwise, remember that your need is to view opaque fossils rather than transparent slides. Considerations should be:

- working space below the objective lens
- diameter of the field (how big an area is covered in focus)
- ruggedness of construction
- standard diameter of main tube

When I was about age 6, playing cowboys & Indians, I got an Indian's spear in an eye; I kept the eye, but it's no match for the other one. When I went shopping for a scope about 55 years later, I took a small specimen along, and went back and forth between a mono and a stereo scope. The view was exactly the same with either one--I've never really seen anything in stereo. I bought a one-eyed scope.

As near as I can figure it, some 8000 people have looked at some or all of 16 specimens on one of two disks in the course of 20 to 25 years. The simple 1-knob focus, without adjustment for two eyes necessary with a stereo scope, hasn't scared them away.

After my one purchase of a scope I learned that there is a secondary market in scopes: those bought by pre-med or biology students, etc., and sold at the end of term or school year. Prices are attractive,

when available. Take a tiny specimen with you and check exhaustively:

- no shake of the scope at a given setting. Run it up and down. There may be a small area where it moves more easily: wear. Ask where adjustment of focus can be made; if none, leave.
- focussed on your specimen, look carefully for any scratches visible

through the scope; then move the focus each way, varying amounts, looking for scratches at each setting. Also watch for any apparent change in position of the specimen.

If the scope passes all these tests without fault, it's probably satisfactory.

NEXT: Protection, Retention, & Display

CORALS FROM THE UPPER PENNSYLVANIAN PALO PINTO LIMESTONE OF PALO PINTO COUNTY, TEXAS

by Jim Cocke, Terry Berkland and Larry K. Johnson
Central Missouri State University, Warrinsburg, MO 64093

Last spring (1987) forty Central Missouri State University undergraduates took a field trip to north central Texas to collect corals and to make collections of other Upper Pennsylvanian invertebrates for classroom use when their teaching careers begin. The trip was led by me (Jim Cocke), and over a dozen localities were visited. From them a tremendous number of Texas fossils was whisked away to educate the darnyankees of Missouri. Of course, I confiscated all corals in the name of research! Actually, I only reserved the right to take research material.

As time passes perhaps Terry, Larry and I will expound on some of the other localities; however, some of these localities have species sufficiently rare that we covet them for research purpose, and we will not give locality information on those--No Not Never! The purpose of this article is to give fellow MAPS members information on a tremendous fossil locality near Mineral Wells, Texas, which is 60-70 miles west of Fort Worth, Texas, on U.S. Highway 180.

The locality is on the west side of Texas Highway 337 about 5.2 miles north of U.S. 180 west of Mineral Wells. The fossil-bearing rocks consist of about 40-60 feet of interbedded calcareous shales and thin limestones that appear from the highway to be rubble along the roadcut. The exposure extends nearly 1/8 of a mile along the west side of the road but is not exposed on the

east side. The entire section is composed of the Palo Pinto Limestone, which is equivalent to the Dennis Formation and perhaps part of the Cherryvale Shale of Kansas.

The fauna consists of a great variety of invertebrates, including fusulinids, sponges, corals (see below), bryozoans, brachiopods, pelecypods, gastropods, nautiloids, crinoids (including cups) and trilobite pygidia. To me, the fossils are abundant, but since that word is relative, I will add a small disclaimer--if one spends a few hours on the exposure, a great number of well-preserved Pennsylvanian fossils can be collected. But you must crawl across this exposure to find the smaller fossils!

I make no claims to being an expert at identifying any fossils other than tabulate and rugose corals, so you will be left to your own devices with those other organisms. The following coral genera have been collected there: Cladochonus, Syringopora, Michelinia?, Amplexocarinia, Lophamplexus, Stereostylus, Lophophyllidium, Amandophyllum, Oryomophyllum and large specimens of Caninia. Most of the corals are distributed relatively evenly throughout the Palo Pinto. The exceptions are Syringopora and Caninia, which occur mostly in the upper reaches of the formation; Michelinia, which is very rare; and Amplexocarinia, which is only questionably present.

I (Jim) will be happy to identify any corals for any MAPS member; I will be happy (read ecstatic) to be the recipient of any coral specimens that can be used in research. In the past I have been very

generous in naming new species for folks who donated research materials. If you collect any of the Palo Pinto specimens, please send them to me here at Central Missouri State University.

A BRIEF STOP AT FLORISSANT, COLORADO

by Alan & Debbie Goldstein
3123 Radiance Road, Louisville, KY 40220

Florissant, Colorado, is famous for its early to mid Oligocene freshwater lake deposits. Formed on the Precambrian Pikes Peak Granite, the lake deposits were preserved by a series of tuff and ash falls from a volcano thought to be located 15 miles southwest near the town of Guffey.

For many years scientists considered the lake deposits to be simple and horizontal. Rich (1936) studied the area and concluded the lake to be larger than originally considered and only certain sections located in down-dropped fault blocks were actually preserved. The remainder has been eroded away or buried under glacial drift.

MacGinitie (1953) points out that the beds containing the fossil plants and insects make up less than one-third of the total thickness and are of lacustrine (lake) origin. The remainder consist of mud flows and reworked fluvial (river) deposited tuffs.

Fossils found in the paper shales and other lake deposits include a variety of flora and fauna. Flora include mosses, horsetails, gymnosperms, angiosperms and cover leaves, seeds/nuts, flowers, stems, stumps, etc. There are hundreds of species of plants. MacGinitie has published the most thorough description of these. Fauna include insects, mollusks, arthropods, fish, and mammals. Insect fossils are, by far, the most common fauna preserved in the shales. Scudder has published numerous accounts of these from the 1880's through about 1900. The detail can be exquisite--including not just the wings, but the veins within the wings! Antennae, appendages and even color patterns on butterflies have been preserved!

The writers had the opportunity to collect several flats of the lake deposits while in the area. Much of the known lake deposits lies within the confines of Florissant Fossil Beds National Monument, where collecting is illegal. (The museum and hikes to the giant sequoia stumps are well worth the visit.) We stopped at an outcrop about one mile east of Florissant on Highway 24. Please be warned that a "no trespassing" sign has been placed alongside the outcrop by the highway department. We poked around there for about 30 minutes and were not hassled. This location has rich insect and ostracod beds. In town (if one can call it that), some water lines had been placed recently and we were able to collect for another hour at a new (albeit temporary) location where we found leaves and seeds.

We have not made any serious attempts to identify either the insects or the leaves. We have been collecting references through interlibrary loans and photocopying the plates. The insects are especially difficult, as wing structure, very useful for identification, is almost invisible. Can anyone provide information on preparing these fossils?

For us, Florissant provided the best fossil collecting in Colorado. We found invertebrate fossils at a couple other locations during our ten day excursion. We did not get into "dinosaur country". We know there are other Colorado fossil locations, but they require time to research out. If you have collected fossils at obscure locations in Colorado, we would like to hear from you!

[See next page for Bibliography]

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**DINOSAUR EMBRYOS SHED LIGHT ON
DINOSAUR BEHAVIOR**

source: "The Tale Baby Dinosaurs Tell,"
U.S. News & World Report,
March 28, 1988.
sent by: Jim & Sylvia Konecny
Prescott, AZ

Last Spring paleontologist John Horner, of Montana State University, reported that the several dozen football-sized eggs he found in 1983 contained the first complete skeletons of dinosaur embryos. The calcified, rock-encased eggs were found in the hills of Montana and are 75 million years old.

The discovery reveals that the large, lumbering dinosaurs behaved more like modern-day birds than like reptiles. Analysis of the embryos and other fossils from the site indicates that the egg-laying dinosaurs were social animals that traveled in large herds, built their nests side by side, as pelicans do, and looked after their young.

The eggs were laid by two kinds of dinosaurs. One was the 30-foot-long duck-billed dinosaur Maiasaura, and the other was the 8-foot long Orodromeus ("mountain runner") a newly discovered species. Studies showed the bones of the Orodromeus embryos were completely formed, indicating the babies probably left the nest as soon as they hatched; however, the Maiasaura embryos' bones were not quite complete,

A D V E R T I S I N G S E C T I O N

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Checks payable to: Palaeo-enterprises Publications, 39 Drake Ave., Torquay Devon, U.K. TQ2 6JU.

suggesting they were more like baby birds--able to stand but not walk and needing to be fed.

Scientists hope further studies of embryo, juvenile, and adult skeletons will enable them to determine growth rate of the animals, which may indicate whether the dinosaurs were warmblooded or coldblooded. Although these studies may solve that longstanding question, the number of eggs and their arrangement in the nest will probably continue to mystify everyone: the eggs were laid in groups of 12 or 24, covered with vegetation, and arranged in a spiral with the center egg standing straight up and the others tilting toward it.

AN ARCHAEOLOGIST just back from Pompeii reports that he excavated an old prison in which there are many petrified prisoners. He noted that "This is probably the earliest evidence of hardened criminals."

from: Shawmish Roktawk, via Dinny's Doin's, May/June 88, Ella Fullbright, Ed., via Diggin's from Dakota, April 88, Gen Buresh, Ed.

The Mid-America Paleontology Society (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: January 1 through December 31 is \$10.00 per household. Institution or Library fee is \$25.00. Overseas fee is \$10.00 with Surface Mailing of DIGESTS OR \$25.00 with Air Mailing of DIGESTS.

MAPS meetings are held on the 1st Saturday of each month (2nd Saturday if inclement weather). September, October, May, July, and August meetings are scheduled field trips. The June meeting is in conjunction with the Bedford, Indiana, Swap. November through April meetings are scheduled for 2 p.m. in the Science Building, Augustana College, Rock Island, Illinois. One annual International Fossil Exposition is held in the Spring.

MAPS official publication, MAPS DIGEST, is published 9 months of the year--October through June.

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 1st Vice President: Peggy Wallace, 290 South Grandview, Dubuque, IA 52001
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CYATHOCRINITES

MID-AMERICA PALEONTOLOGY SOCIETY

Mrs. Sharon Sonnleitner
 MAPS DIGEST Editor
 4800 Sunset Dr.
 Fairfax, IA 52228

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