



#### MARK YOUR CALENDARS

10	NOV	MAPS MEE	ETING.	NOTE	CHANGE O	F
		WEEKEND.	Augus	tana	College,	Rock
		Island,	IL.		•	

- 1:00 Board & General Meeting combined. NOTE this is a change from having the board and general meetings at separate times.
- 2:00 Program: Show and Tell.

  Bring your favorite specimens from this year's field trips or your collection to share with others.

### 1 DEC MAPS MEETING. AUGUSTANA COLLEGE, ROCK ISLAND, IL.

1:00 Board & General Meeting combined.

2:00 Program: Tracks in Time. Tom Walsh will talk on his experience in helping to dig for trace fossil tracks in Las Cruces, NM, this past summer.

#### \*\*\* 90/11 DUES ARE DUE \*\*\*

Are your dues due? You can tell by checking your mailing label. The top line gives the expiration date in the form of year followed by month--90/11 means 1990/November. 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 on your *Digest*. We carry overdues for two months before dropping them from our mailing list.

Please include your due date and your name exactly as it appears on your mailing label (or just include a label).

Dues are \$15 per U.S./Canadian household per year. Overseas members may choose the \$15 fee to receive the *Digest* by surface mail or a \$25 fee to receive it by air mail. Library/Institution fee is \$25.

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

19 APF	1991	MAPS Nat	tional	Fossil	Expo-	
20		sition 2	KIIII	Lagerst	atten	
21						
	The	theme	for	EXPO	XIII	i

The theme for EXPO XIII is Lagerstatten, which means very special locations of fossils world wide. To contribute an article, contact Maggie Kahrs, EXPO Digest editor.

#### ABOUT THE COVER

month's This cover is a specimen of Archimedes reversa taken from (n.s.), Report on the Geological Survey of the State of Iowa by James Hall and J.D. Plate 1858, Whitney, XXII. Fig. According to the book the specimen was in the Warsaw limestone, Warsaw, "In two specimens of the species Illinois. from the Kaskaskia limestone, where the axis has been apparently broken, the growth has been resumed in a dichotomizing form; one branch being dextral and the other sinistral in its spire."

\*\*\*Since the source book is over 100 years old, some of the names may have been changed.

#### COVERS WANTED

This is a reminder to all members that the MAPS Digest needs your contributions. We are especially in need of covers at this A cover can be either a drawing or a with photograph a short identification and/or discription, or it may accompany an article that is featured in the month's Drawings and photos issue. can enlarged/reduced. The best results come from black on white drawings or black and white photos; however, color photos with good contrast also copy well.

If you have material suitable for a cover, please send it to the editor. Or if you know of someone who has suitable cover material, please encourage him/her to submit it. All material can be returned.

It's your contributions that make the Digest interesting!

#### TEXAS PENNSYLVANIAN BRACHIOPODS

The Paleontology Section of the Houston Gem & Mineral Society has written and published a guide to all Pennsylvanian Brachiopods found in Texas. Sixty-seven genera and 165 species are described and illustrated. The publication is written for both professionals and amateurs.

Texas Pennsylvanian Brachiopods is softbound, contains over 240 pages and is prided at \$15 (plus postage and 8.25% tax). For more information on this publication and others in the Texas Paleontology Series (covering t.he Clarborne Group-Eocene. Cretaceous Bivalves, and Cretatceous Echinoids--all ofcontact the Texas), 10805 Paleontology Section, HG&MS, Brooklet, Houston, Texas 77099

#### ROCKFORD FIELDTRIP

I was not able to attend the MAPS field trip to the Rockford Brick and Tile quarry IA. but several members at Rockford. hunting. According reported good reports, almost everyone found a specimen of Pacyphyllum coral along with the usual brachs, horn corals, pelecypods and clams. Houg also reported finding some microfossil teeth in the material he took Allyn Adams, who sort of home to search. specializes in microfossils, says he hasn't his microfossil material yet. processed we'll get to see some of the Perhaps specimens from the field trip at the November MAPS meeting.

#### ADVERTISING SECTION

Ads are \$5.00 per inch (6 lines x 1 column--43 spaces). Send information and checks payable to MAPS to: Mrs. Gerry Norris, 2623 34th Avenue Ct., Rock Island. IL 61201. Phone: (309) 786-6505. This space is a \$5.00 size. Pleistocene Buffalo Teeth (Bison antiques)

Pleistocene Buffalo Teeth (Bison antiquus) \$2.50 and \$4.50; Jaws \$12.00 to \$40.00. Horn, Skull Caps, Skulls, Post-cranial material available: 8.000 to 25,000 years old. Send S.A.S.E. for list of Pleistocene fossils. Rib River Fossils, 1014 W. Hwy C. Mosinee, WI 54455 (715-457-6634). FOSSILS, FOSSIL CHARTS, T-SHIRTS, INDEX to NYS Guidebooks (1956-86: \$15.00) and many more items. Send \$1 for 26 page catalog.

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Join us in promoting and advancing the Earth Science industry. Individuals and business owners are now eligible for supportive memberships. For more information, please contact Linda Ross, AAPS Membership Chairperson, 913 Clairion Drive, Gillette, WY 82716.

LOCALITIES: Reports on hundreds of exposures in Iowa region and some Arizona. PreCamb-Perm., Jeras.. Cret., Tert., Quat. Directory of reports and other services \$6.50 p.pd. Free fossil sent with every order. Midwest Rockhound Services, 3521 10th Ave. N., Fort Dodge, IA 50501.

# METHODS USED IN PREPARING AND PRESERVING FOSSILS by Eric Kendrew, 4436 Tevalo Drive, Valrico, FL 33594 about preparing fossils Of course, all these fossils will probably

Many people ask me about preparing fossils and how to preserve them. There are a few techniques used. But whatever works for you is what you should stick with.

First, we must look at the state of preservation in which a fossil is preserved. Ask yourself, "Is the fossil you found hard, porous, disarticulated, or brittle? What type of minerals have replaced the structure of your fossil?"

Listed below are six different **EXAMPLES** dealing with different states of preservation. Hopefully, this will help you handle most situations.

#### EXAMPLE I:

Certain mineral replacements react certain ways when exposed to the air and sun. The most violent reaction I have seen is in fossils found in rivers where there is a lot of salt water intrusion. Once these fossils start drying out, they will start cracking and sometimes explode.

The best method here, of course, is to carry jars of fresh water with you. Then place your fossils directly in the jars once you have brought them out of their natural resting place. You should also change your water every day and rinse your fossils well with fresh water. Do this for about a week. Then since your fossils are water soluble, use a water soluble solution for treating them. The best one is Elmer's Glue in a 50/50 mixture with water. Make this up in a vat and place your fossils directly in it. Leave them for a few days. Then you can remove your fossils and let The Elmer's glue will dry clear them dry. and your fossils will be well preserved.

#### EXAMPLE II:

Porous fossils, as well as disarticulated ones, require a lot of tender loving care.

POROUS FOSSILS means very brittle and crumbly

DISARTICULATED FOSSILS means broken but in place (in situ), and a jaw or skeleton that may be separated.

Of course, all these fossils will probably require a plaster jacket. Several methods can be used to seal these fossils in the field, before a plaster jacket is applied.

#### <u>Method 1</u>: (The old method)

Used in many parts of the world today; a 50/50 mixture of Shellac and Alcohol.

#### Method 2:

A 70% solution of Acetone and 30% Butvar B-76.

#### Method 3:

A 50/50 mixture of Elmer's glue and water.

#### Method 4:

An Agat sealer.

#### Method 5:

A can of clear Acrylic Krylon spray.

I have tried all these methods. They all but I prefer the Acrylic Krylon It's already mixed and comes in a Of course, the other sealers spray can. Just make sure you premix are also good. going before out in the field. \*\*Caution: do not put your sealer in a glass jar--it might break!\*\* Most paint stores carry empty cans for your needs. You will also need a cheap nylon brush. Once you have finished your work, your brush will become hard. But do not worry. As soon as you put it back in the sealer you're using, it will become soft and pliable again. Another cautionary step is when sealing a porous fossil, do not have in contact with the brush come You will only pick up pieces of fossil. the fossil on your brush. Take your brush and use a slinging method when applying your sealer, or you can put your sealer in squeezable bottle and squirt your sealer on your fossil.

#### EXAMPLE III:

When collecting your fossils, leave the matrix (sand, clay, mud, rock, etc.) on your fossil. You do not have to leave a lot of matrix on your fossil. Just enough to help protect it. This is nature's preservative. All sealers mentioned in **EXAMPLE II** will either soak through to your

fossil or provide a coating on the outside of the matrix. The matrix will also be helpful in determining the formation in which you have found your fossil.

sure you write down all information you can on where you did your collecting--like how many feet or meters from what road or nearest town. (Using a Topo map, if possible, or a compass for direction is handy.) Remember information is more important than the fossil you have collected and without it. you really have nothing at all.

#### EXAMPLE IV:

Once you return home with your fossils, you are ready to start preparation. Fossils found in a wet matrix need to go through a drying stage. Do not attempt to remove any matrix at this time. You can wrap your fossil with newspaper or stuff newspaper into your plaster jacket. The newspaper will absorb the water and allow the drying time to be cut in half.

Do not attempt to pull all your pieces out of your plaster jacket at one time. Your fossil will become disarticulated, and you may forget where all the pieces went.

Step 1: Start at one end of your fossil and pull one piece out at a time. Clean the matrix off with a dental pick or any tool that works for you. Clean any excess sealer off with Acetone. Then set aside.

Step 2: Then pull out the next adjoining piece. Do the same with this one as you did with the first. Then glue the two pieces together. many glues work well. (Examples are: Butvar B-76 50/50 with Acetone, Duco cement, Elmer's glue, hot glue gun, super glue, etc.) Again, use what works for you.

Step 3: Using a sand box for holding your pieces together also works well. You can build the sand up around those odd shapes to hold them together while they are gluing. Then you are ready for your third piece. Continue Steps 1, 2, and 3 until your fossil is completed.

(Do not discard your matrix... You will be surprised sometimes when you look at it under a magnifying glass or microscope. Put it in a zip lock bag and label it with the same number as your fossil.)

**Step 4:** Now your fossil is ready for a good coat of sealer or several coats. But do not overdo it. Too much sealer will become discolored and gaudy looking.

Step 5: Label your fossil. Give your fossil a catalogue number. On white or tan colored fossils you can use a non-washable black ink. On black or dark fossils you can use white-out to make a small rectangle. Then use black non-washable ink over the white-out.

#### EXAMPLE V:

Many fossils that are found are not always complete. They may be missing a distal end of a leg bone, a tip of a tooth, or a large area on the bone surface, etc. These fossils can be repaired by using certain fillers. If you have ever done body work on a car, it's nearly the same thing.

Step 1: Recreating a distal end of a leg bone. You can use a molding clay or plaster of Paris, 50/50 with paper mache first. Then apply fiberglass cloth over the clay or plaster of Paris. Fill in rest of area, once dried, with more plaster of Paris, sculpture mold, bondo or a fiberglass filler or a water putty.

**Step 2:** Large surfaces. You can fill with plaster of Paris and fiberglass cloth and finish it off with bondo or a fiberglass filler or a water putty.

Step 3: Connecting large legs or jaws, as from a Mastodon. You will have to insert wire or some type of rod or pipe down the middle of the leg or jaw. I usually wrap fiberglass cloth around the wire, pipe or rod first. Then follow Step 2:

**Step 4:** Enamel surfaces. Bondo seems to work the best. A coat of primer, then a coat of enamel paint. The enamel paint will adhere well and give off a shiny look, just like the real tooth.

#### EXAMPLE VI:

Now your fossils are ready for a sealer. Any of the sealers mentioned in this article will work. If you want to paint these filled-in areas, an acrylic paint is the one you should use. There are many colors on the market and you can mix them to your desired color. Also, stains work well for those darker colors you need to

match. If you use a lot of acrylic paint on large areas, make sure you use an acrylic sealer. All the other sealers will not soak through to your fossil and the paint will rub off. Enamel paint does not need a sealer.

These are all examples of how to prepare your fossils. There are a lot more ways than this. If you have a way of preparing your fossils that is different from any of these mentioned, and it works for you, please, by all means, stick with it!

One final point I would like to bring out to those new fossil buffs is that many of the fine quality fossils (at least 90%) that you see in museums, private collections and at fossil shows have taken many man-hours—and sometimes years—to prepare. You just don't find fossils that are not in need of cleaning and preparing.

### LEGISLATION UPDATE: BLM FOSSIL REGULATIONS DELAYED by John Boland, MAPS member

A progress check on the proposed regulations for fossil collecting on public lands indicated a slowdown of the review procedures. An influential Senator from Wyoming asked that the review be slowed until after the elections. This means that publication of the proposed regulations in the Federal Register for public comment may not be issued until December/January or later.

It is important that the amateur have a chance to comment on the consensus agreement reached at Boulder and Salt Lake City meetings by the BLM, Forest Service, professional paleontologists, commercial dealers and the amateur representatives. All sides were heard, and a consensus agreement was reached that satisfied almost all of the attendees. A summary of the proposed rules for the amateur/professional

and the dealers, has been written in past issues of the *Digest*. Now the special interest groups want to change some of the collecting rules for public lands before they are published for public comment. They feel that only a handful of people have the expertise to remove fossils-including fish, sharks' teeth, and any part of vertebrate animals--that are on the surface or below the surface of the ground.

The government people and paleontologists say their numbers are too small to have any effect on the politicians, and only the amateurs have the numbers to request that the proposed rules be released for public comment. Send your comments to your senator, Senate Office Bldg., Washington. DC 20510 and to Interior Secretary Manuel Lujan and BLM Director Cy Jmamison, Washington, DC 20240.

#### AS AMATEURS--WRITE YOUR SENATOR

#### CRETACEOUS EXPOSURES NORTH OF SIOUX CITY, IOWA Midwest Rockhound Services Report 169

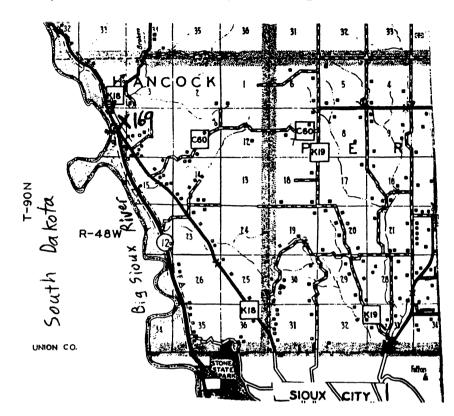
by Robert Wolf, Midwest Rockhound Services, 3521 10th Ave. North, Fort Dodge, Iowa 50501

The corner of Iowa north and west of Gilmore City offers very little for rockhounds or fossil collectors. One travel all of the way to the northwestern border of the state to find outcrops of bedrock. occur near the Big Sioux River. There are a series of exposures in and north of Sioux City that offer Cretaceous age fossils in a state not for Cretaceous material. Cretaceous (Dakota Formation) fossils can be found in the Sioux City area, but these are not abundant and are generally poorly preserved.

The best exposures occur along the east side of Highway 12 about six mile north of Sioux City. County (paved) joins Highway 12 here from the southeast, and after about half a mile, the county road curves northeast from the highway. Along this stretch is an excellent series οť roadcuts exposing The section was Cretaceous strate. even better exposed by a landslide in The Big Sioux River can be 1984. seen to the west of here. This is in the NW  $\frac{1}{2}$ /NW  $\frac{1}{4}$  sec. 15, and  $E^{1}/2$ sec. 9, T90N, R48W, Plymouth County, Iowa.

The tops of the roadcuts expose loess from Kansan Glacial Stage (Pleistocent). Below that is an estimated eighteen feet of brownish chalky limestone (Greenhorn Formation. Colorado Group. Middle Cretaceous). The limestone auite is fossiliferous in places, and the upper half is more thin-bedded that the lower half. The base of the Greenhorn becomes shaley and grayish in color, grading into the Graneros. The Graneros Formation (Colorado Group, Middle Cretaceous) is exposed in the lower part of the cuts. At least fifty feet of grayish shales with thin sandstones in the lower part are present but partially covered. The upper part of the formation is fossiliferous.

Clusters of pelecypods are common in the Greenhorn, but many of them are



fragmented. Some quite large specimens can be found, however. The species Inoceramus labiatus is the only pelecypod found here this collector. Fish fragments, mainly scales. are also numerous. Most of the fish fragment seem to 'nе from ichythyodectids. Collecting in Greenhorn is easy because the limestone is The Graneros also has fish scales fragile. Inoceramus pelecypods. Rare partial and skeletons have been reported, but don't expect to find one. Fossils are not as numerous in the Graneros and are not as well preserved as in the Greenhorn.

If you have any comments or information concerning this site, I would like to hear from you.

# TYRANNOSAURUS REX SKELETON UNEARTHED IN SOUTH DAKOTA source: Argus Leader, Sioux Falls, S.D., Sept. 24, 1990 sent by David Jones

This has been an exciting summer on the northern plains... The town of Faith, mentioned in the article, is about 100 miles northeast of Rapid city, South Dakota. Late Cretaceous Hell Creek beds are extnesive in Butte, Harding, and Perkins Counties in the northwest quarter of South Dakota. In recent years, also, local colleges and museums in the northern plains and Rocky Mountains are keeping the dinosaur skeletons and other spectacular fossils "at home" instead of allowing big institutions in Chicago, New York, and Washington, D.C., to carry them off. Another large and well-articulated T. rex skeleton from the Hell Creek area near Fort Peck Reservoir is now at the Museum of the Rockies, Montana State University, Bozeman.

David Jones

A team of fossil hunters from the Black Hills Geological Research Institute in Hill City, South Dakota discovered a Tyrannosaurus rex skeleton that may be the most complete ever. The bones were found August 12 imbedded in a cliff on a ranch nine miles north of Faith, South Dakota.

The find included a complete pelvis, a nearly complete torso, complete rear legs, bones from the dinosaur's "arms," a shoulder girdle and a nearly complete tail. But according to MAPS member Pete Larson, who is president of the institute, the most spectacular find was the skull, which included a lower jaw and a nearly complete set of "dangerously serrated, dagger-like teeth." Most of the bones are still in the limestone and siltstone matrix; the skull is in a 9 x 7 foot block weighing 9000 pounds.

Prior to this year, only seven Tyrannasaurus skeletons had been collected, but this one came just two months after the excavation of a *T. rex* in eastern Montana. All the finds have come from the Hell Creek formation, which covers much of Montana, Wyoming, the Dakotas and Alberta, Canada.

Larson said the skeleton was at least 70% and probably more than 90% complete. The Montana Tyrannosaurus is about 90% complete, while the one on display at the American Museum of Natural History in New York City is about 60% complete. The South Dakota skeleton is also the largest. Its femur, which is 54 inches long, is 3 inches longer than the femurs of the dinosaurs in Montana and New York.

This skeleton will remain in South Dakota as part of a new museum in Hill City.

## FOSSIL WHALE WITH FEET DISCOVERED source: The San Diego Union, July 13, 1990 sent by: Stephen Tomchek, Jr.

It may sound like a fish story, but scientists this summer reported finding a 40-million-year-old whale in Egypt with a complete set of bones of legs, feet and toes. The legs, with three-toed feet, are tiny, about two feet from hip to toe. That size compared to the 50-foot length of the whale's body indicates the legs were much too small for the whale to have walked on or even to have used for swimming.

Philip Gingerich, of the University of Michigan, first found a piece of leg bone and saw structures on that bone that indicated it had been attached to other bones. His wife, who was working with him,

found the toe bones.

Gingerich believes the feet may have been used in mating, but others think they may have helped the whale maneuver in shallow water.

According to Elwyn Simons of the Duke University Primate Center and a co-author of the report, "Paleontologists have been collecting fossil whales for at least 150 years without finding such structures." The ancestors of this two-footed whale, called Basilosaurus isis, had given up the land and become sea-dwellers 10 million years earlier so the discovery was a surprise. But Gingerich feels confident he can go back and find the legs and fet from other whales in Egypt's Zeuglodon Valley, about 95 miles southwest of Cairo.

#### Please ADD the Following NEW OR REJOINING MEMBERS to Your Directory:

Steven Anderson 18 Barker Ave. Toronto, ONTARIO CANADA M4C 2N3 416-467-4732 Floor sander. Will not trade at this time. Major interest paleontology; has a complete working lab at his home for study of paleo. Member Paleo. Studies of Ontario. Wants to meet other people with same interest and to correspond. Planning trips to States to do some digs with other members and to do same in Canada.

Richard A. Miller, MD 6833 Clovernook Rockford, IL 61107 815-398-2666 Eye Surgeon. Will not trade. Interested in fossil collecting.

Alan J. Weiss 1095 Ponderosa Ave. San Marcos, CA 92069-2129 619-471-6948 Pharmacist. Will trade some. Major interest eurypterids, trilobites, phyllocarios, crinoids, cycads and other plants. Has for trade some brachiopods (Sylvania, OH). Member Cleveland Fossil Soc, (Cleveland Mus. of Nat. Hist.); Buffalo Geological Soc. (N.Y.). Wants to collect and/or buy GOOD specimens. Also wants to know collectors at his new home in CA.

#### Please Note the Following CHANGES OF ADDRESS and CORRECTIONS.

Karen I. Cusani R.D. #1, Box 236 Alfred Sta., NY 14803

Alan, Debbie & Rachel Goldstein 1607 Washington Blvd. Louisville, KY 40242-3539 502-426-4399

Randall Quon

1990 grade 10 High School student. Will trade. Not much for trade now. Major interest invertebrate and vertebrate paleontology. Member of APS, FTMPF, and WIPS. Wants to learn more about paleontology in different areas.

### MEMBERSHIP DUES FOR ONE YEAR RENEVAL FORM

Most memberships expire in December--check your mailing label to find the year and month of expiration (90/12 means membership expires in 1990/December). Please send this form with your dues if you want to make changesin the Directory. Make checks payable to MAPS and mail to:

Sharon Sonnleitner, Treasurer 4800 Sunset Dr. SW Cedar Rapids, IA 52404

DUE DATE	
NAME	TYPE OF MEMBERSHIP
ADDRESS (if changed)	U.S./Canada Household \$15.00
	Library/Institu- tion \$25.00
TELEPHONE (if changed)	Overseas Surface Mail \$15
INDICATE ANY CHANGES YOU WANT IN YOUR NODULE IN THE DIRECTORY:	Overseas Air Mail \$25

The <u>Mid-America Paleontology</u> 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: One year from month of payment is \$15.00 per household. Institution or Library fee is \$25.00. Overseas fee is \$15.00 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). October & May meetings are scheduled field trips. The June meeting is in conjunction with the Bloomington, IN, Gem, Mineral, Fossil Show & Swap. A picnic is held the fourth weekend in July. 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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Dated Material - Meeting Notice