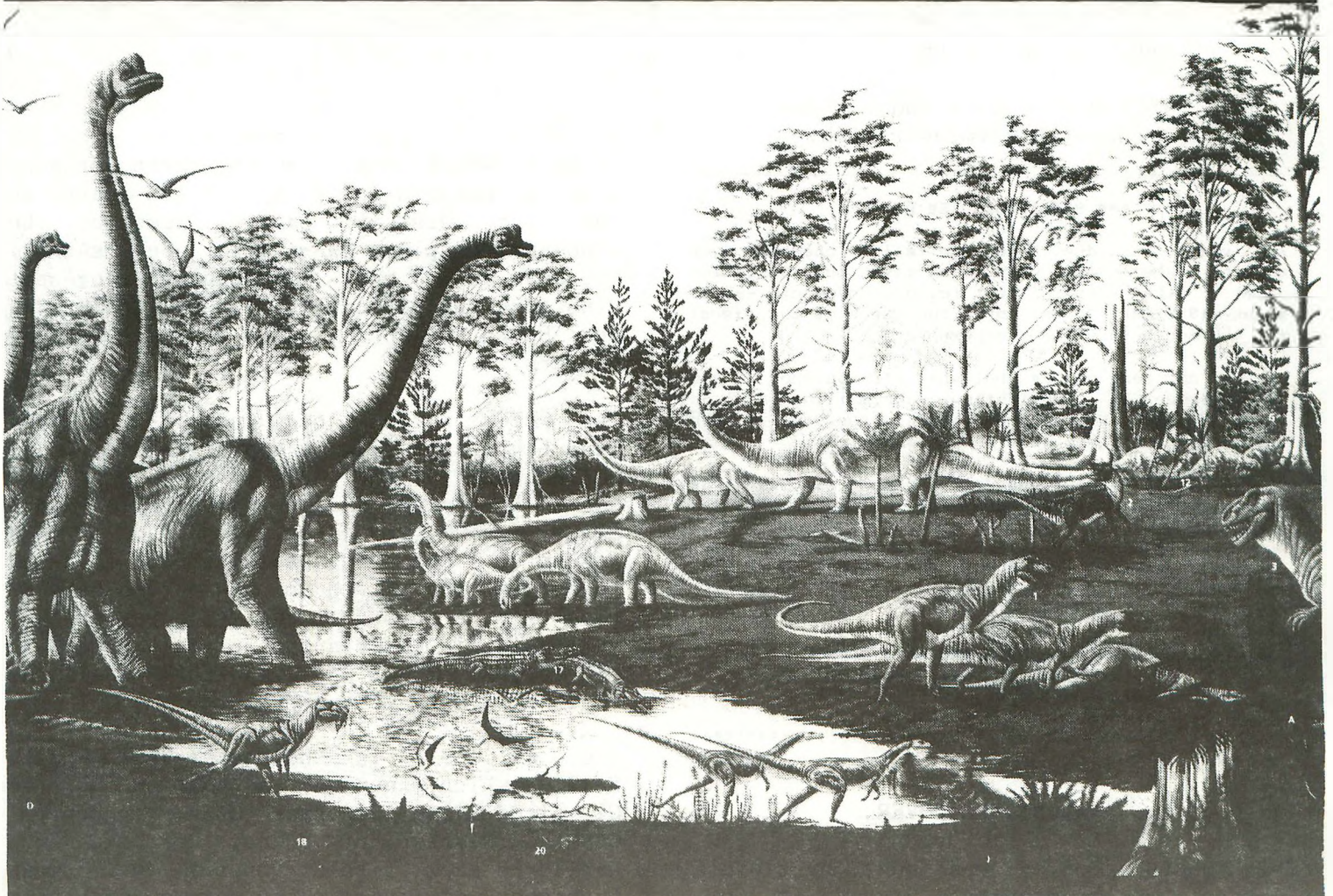


M.A.P.S *Digest*

Official Publication of
Mid-America Paleontology Society

Volume 15 Number 3
March, 1992

LAND OF THE DINOSAURS



A LOVE OF FOSSILS BRINGS US TOGETHER

MARK YOUR CALENDARS

21 MAR TAMPA BAY FOSSIL CLUB 5TH ANNUAL
 22 FLORIDA FOSSIL FAIR

Ft. Hesterly Armory, 504 N. Howard Ave., Tampa, FL

Saturday: 9:00am - 7:00pm
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Contact: Tampa Bay Fossil Club
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28 MAR 1992 BUFFALO GEOLOGICAL SOC. SHOW
 29 Agriculture-Grange Building
 Erie County Fairgrounds
 5600 McKinley Parkway
 Hamburg, New York

Sat. 10 am - 8 pm
 Sun. 10 am - 6 pm

Includes fossils and a fossil preparation demonstration.

24 APR 1992 MAPS NATIONAL FOSSIL
 25 EXPOSITION XIV--MOLLUSCS
 26

Fri., Apr. 24: 8am - 6pm
 (Dr. John Pojeta, Smithsonian Institute, will give the keynote address at 7:45 on "Early Molluscan Evolution as Shown by Fossils.")

Sat., Apr. 25: 8am - 5pm
 (Business meeting and auction following)

Sun., Apr. 26: 8am - 3pm
 (Seminar by Dr. Bruce Stinchcomb: 9 - ?)

****The next Digest will be the EXPO edition, handed out or mailed from EXPO. Maggie Kahrs says this expanded issue on Molluscs will be 165 pages.**

***** 92/03 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--92/03 means 1992/Mar. 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 name exactly as it appears on your mailing label--or 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 Sonneleitner, Treas.
 4800 Sunset Dr. SW
 Cedar Rapids, IA 52404

ABOUT THE COVER

This month's cover was sent by Lloyd F. Gunther, Brigham City, Utah. It is a portion of a sample poster (reduced in size) created to portray as accurately as

possible the life of some of the exciting animals which dominated the earth for more than a hundred and sixty million years, in the far distant past. Some of the dinosaurs pictured--namely Supersaurus, Ultrasaurus, and Torvosaurus--represent dinosaurs known only in the collections of the Earth Science Museum at Brigham Young University.

The BYU museum has one of the most important and largest and diverse dinosaur collections in the world, mostly in plaster casts in storage awaiting preparation and a large museum for display and study. This poster is but one small effort to raise funds by the Earth Science Museum Foundation for a future museum. The posters are available in color and beautiful, according to Lloyd. He believes they would be desired by many of our members.

Also available is the poster **Where Giants Fell**, which depicts a portion of the Cleveland-Lloyd Dinosaur Quarry in central Utah. Redrawn by Rodney Horrocks from earlier maps, this quarry map shows thousands of fossil bones, drawn roughly to scale, in the exact position in which they were found. (Order Form on page 2)

EXPO XIV - MOLLUSCS

LETTERS

EXPO XIV is barely a month away. The show opens at 8:00am Friday and sales, trades, etc., start as soon as people are set up. Although the show runs through 3:00pm Sunday, most people leave by noon because of travel time, etc.

Doug DeRosear reports that 183 tables inside the ballroom and 2 outside have been sold. The only tables still available are outside the ballroom. He also has reservations for 72 feet of display, and The Paleo. Society will have a table at the show.

PLEASE BE GENEROUS IN DONATING GOOD MATERIAL FOR SATURDAY'S AUCTION. REMEMBER THAT THE PROCEEDS SUPPORT A PALEONTOLOGICAL SOCIETY SCHOLARSHIP FOR GRADUATE GEOLOGY STUDENTS.

EXPO Digests and Directories will be available for pickup for those in attendance at the show. Others will be mailed from the EXPO postal station on Saturday.

So get your fossils ready, bring your appetites (especially for ice cream), and join in the fellowship of another great show.

Yes, I want to help support the growth of BYU's Earth Science Museum. Please send me the following posters.

Item	QTY	Cost	Total
#1001 Land of the Dinosaurs Full Color Poster		\$2.90 ea.	
#1002 Land of the Dinosaurs B/W Poster		\$1.25 ea.	
#1021 Cleveland-Lloyd Quarry Map 2-Color Poster		\$2.20 ea.	
Shipping and handling			\$1.25
Order total			

Please mail my order to:

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Sorry, checks only - no cash or credit cards. Please make checks payable to "Earth Science Museum Foundation." Allow 2-3 weeks for delivery.

Dear Mr. Houg:

At the beginning of this week I received the December and January issues of the MAPS Digest. The December issue contained a letter from C. Oldham--who like myself joined MAPS at its virtual inception--that struck a responsive chord.

My plan was to forget rejoining MAPS. Purchasing or selling fossils has always been distasteful to me. In my experience I have seen my collecting sites in IL, IN, and AL disappear because of individuals who were flat out mining the fossils to sell them. In one of these spots, I saw the kids--who lived on the property--grow from infants to 4th graders. The folks were always happy to see me, until one day the wife and I were collecting; the school bus stopped, out ran one of the children I had known for years on into the house and back with a pail. He ran around picking up any fossils he could find. Now we realized why this previously prolific spot had become barren. Inquiries revealed that he was being paid by the coffee can for fossils and by the piece for trilobites. There are more stories along this vein: let this suffice.

It is disheartening to learn that individuals in my area are stocking beer-flats for the next MAPS EXPO. Where is the fun of collecting?

Oldham's letter gives me hope; I am not alone. Walsh will get our membership dues for another year.

Sincerely,
Andrew A. Hay

FREE CATALOG OFFERED

Richard D. Hamell, 63 Knoll Top Drive, Rochester, New York 14610, is offering a free catalog of fossils and supplies from StrataGraphics to any members who write to him and request one. Mention MAPS. The catalog regularly sells for \$1.00.

MAPS BADGES AVAILABLE

MAPS name badges are available once again. The badge has a blue background with a white logo and your name, city, and state.

To order a badge send the NAME, CITY, and STATE that you want to appear on your badge along with your complete address and a check for \$5.25 (includes postage) to:

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Moline, IL 61265

BECOMING ACQUAINTED WITH STROMATOPOROIDS BY WAY OF THEIR SYSTEMATICS

by John M. Kelley, Milwaukee, WI

PART II OF TWO PARTS

In last month's issue John discussed four methods for identifying fossils: 1) Ask the experts; 2) Work from literature that deals with the formation; 3) Compare and contrast your specimen with catalogs of specimens; and 4) Use systematics. The article continues with the repetition of the last paragraph printed last month.

With all four methods of identification, you often find experts giving very different names to the same fossil. One reason this happens is that some systematists like to lump while others like to split. Even though the names differ, each rests on a solid scientific foundation. Sometimes, it's fun to see an author list all the names a fossil has had over a number of years and a number of experts.

Much of the problem with varying names in systematics comes from the perspective the paleontologist takes when starting the identification. That is, naming depends on the paleontologist's hypothesis concerning the taxonomic affinity of the organism being studied. Take the example of *Marrella* from the British Columbian Burgess shale. If a scientist starts with the assumption that *Marrella* is related to trilobites, then trilobites will form the background for the names and understanding of the fossils. But another paleontologist may have other assumptions and characterize the *Marrella* very differently.

The stromatoporoid brings up a similar problem. Some invertebrate paleontologists think it is a fossilized organism, but others think it is a fossil sedimentary structure, much like a stromatolite. The difference is between a creature fossilized as a body, such as a tabulate coral, and one that was laid down layer by layer, like organic material at the bottom of a lake or river.

If we think that a stromatoporoid is a fossilized organism, then we will look for

features which would facilitate its description as an organism. For instance, if we think of a stromatoporoid as a relative of the corals, then we will name and describe it in a way similar to the way we name and describe corals.

In their book *Invertebrate Fossils*, Raymond Moore, Cecil Lalicker, and Alfred Fischer do just this. They begin by recognizing three classes of the phylum *Coelenterata*. These classes are *Hydrozoa* (8 orders), *Scyphozoa* (the medusae or jellyfish), and *Anthozoa* (the corals, in three subclasses). They assign stromatoporoids to their own order within the *Hydrozoa*, which may be solitary or colonial. The authors describe the organism as a colonial polyp which secretes laminated, calcareous deposits with pillars between laminae. They see structures within stromatoporoids which are supposedly similar to structures within hydrozoans such as the living *Millepora* and use this as supporting evidence for placing the stromatoporoids within the *Hydrozoa*.

But is the stromatoporoid is a fossil sedimentary structure, then pillars, laminae, and tubes are irrelevant and the scientist will seek instead to represent evidence of this reconceptualized nature. The scientist will describe stromatoporoid features in terms similar to those used for stromatolites. You can't classify stromatoporoids as fossil sediments while keeping some of the old characterization as hydrozoans. Reconceptualizing taxonomic affinity entails redescription.

In preparing a label for a specimen in your collection, if you find such a controversy regarding the specimen's proper taxonomy, you may want to record the "possibles," followed by the authority who made that attribution. For example, if you're describing a eurypterid in your collection, and you're sure of all names including that of species, you could write something like "Species *remipes* (after J. M. Clarke and R. Ruedemann, *The Eurypterida of New York*

[1912])." This shows that you know the identification is open to debate. The fact is, any systematist's description of a fossil is always open for challenge and change from a later worker.

Here's the label I finally developed for specimen A (see Feb. Issue):

Kingdom	<i>Monera</i>
Division (=phylum)	<i>Cyanophyta</i>
Class	<i>Cyanophyceae</i>
Order	<i>Stromatoporoidea</i>
	Nicholson and Murie
Family	<i>Actinostramidae</i>
	Nicholson
Genus	<i>Clathrodictyon</i>
	Nicholson and Murie 1878
<i>Clathrodictyon striatellum</i>	D'Orbigny
(after William A. Parks, <i>The Stromatoporoidea of the Guelph Formation in Ontario</i> [1907])	

This classification looks complete and straightforward. I should be willing to accept it because it looks scientific and took considerable research. But it's not quite right. The problem is that it includes classification information from two different sources which may not necessarily be in agreement with each other. The classifications of kingdom, division and class levels come from one authority, who views the stromatoporoidea as a cyanophyte (the blue-green algae). This authority is Jozef Kazmierczak ("Cyanophycan Nature of Stromatoporoidea", *Nature*, volume 254 [November 4, 1976], pages 49-51). The rest of the classification comes from the Parks book noted above.

The full classification as given above juxtaposes the information obtained from these two sources, without indication that it has done this. This is misleading because it appears to indicate that we have a much better understanding of the taxonomic relationships within the stromatoporoidea than is in fact the case. Labels like this mask the excitement of controversy among systematists about the nature of stromatoporoidea by means of their dispassionate descriptions of the specimens to which they are appended.

In trying to improve the taxonomic label accompanying the stromatoporoidea which is

specimen A, I would want to prepare a label which contained within itself a description of the structure of the taxonomic argument. One way I could do this would be by using color-coded arrows pointing in different directions and correlated with source information given below the list of names. For instance, a red arrow would point downward and would extend from the level of kingdom through that of class. It would be tied to Kazmierczak's paper. A blue arrow would point upward and would extend from the level of species through that of order. It would be correlated with the study by Parks.

Kazmierczak, in associating stromatoporoidea with cyanophytes, raises the possibility that they may be analogous to the stromatolites. Stromatolites are sedimentary structures formed by the life activities of filamentous cyanophytes, probably of the subclass *Hormogonea*. They are algal mats composed of successive thin layers of calcium carbonate. The filaments of these cyanophytes may be branched and/or interwoven and form a sheetlike net. Sometimes it appears that the filaments of a stromatoporoidea do likewise. Stromatoporoidea may indeed have been laid down as stages in the growth of algal mats. The mystery remains open for the systematist--professional or amateur--to continue studying.

When I discovered that specimen A could be *Clathrodictyon striatellum* D'Orbigny, on the basis of information in the book by Parks, I wanted confirmation of this identification. I eventually found it under another name and in a work by T. C. Chamberlin. In his report on Wisconsin's fossils, published in volume 2 of the *Wisconsin Geological Survey Reports* in 1877, Chamberlin lists *Stromatopora concentrica* as *Clathrodictyon striatellum*. I also knew that the Niagaran is a middle Silurian formation. I had now come full circle from the early guess about the fossil's origin and age. I had confirmed that *Clathrodictyon striatellum* can be found within strata corresponding to the Racine formation or roughly contemporary with it.

Stromatoporoidea are very puzzling fossils. Hopefully, I have shed some light on using systematics to understand them. Phylogenetic-

ics and paleontological taxonomy are very active fields of investigation. The identification of collections both at the professional and amateur levels can greatly benefit from increased familiarity with and use of systematics.

ABNORMAL ECHINOIDS REQUESTED FOR STUDY
by Frederick H. C. Hotchkiss
26 Sherry Road, Harvard, MA 01451

I have started research that aims to examine the origin of 4-part (tetramerous) and 6-part (hexamerous) echinoids. I am writing to request the assistance of MAPS members in locating specimens and information that relate to this project.

My starting point is the descriptions and analyses on non-pentamerous echinoids given by Robert Tracy Jackson (1912, 1927). Jackson's interpretations of 4-part echinoids appear to show that the missing part can be any of amb I, II, III, IV or V. This supports the idea that the missing part is due to an early injury. Specimens with evidence of a transition from 5-part to 4-part symmetry in the test either above or below the ambitus, or on the peristomial membrane, support this view. It is my opinion, however, that at least some of the cases (perhaps most) may arise as the result of errors in the development of the hydrocoele crescent. This provides the working hypothesis that the affected areas occur in interradius IV/V (at the point of hydrocoele closure).

To investigate the matter further, I will critically analyze the methods by which Jackson and other authors have interpreted non-pentamerous echinoids. Preliminary review shows that not all of the readily available points of morphology (such as the arrangement of the basicoronal plates) were used by Jackson and others, and so there are possibilities for new interpretations.

To examine as much material as possible, I would like to hear from fellow MAPS members. I will be pleased to acknowledge the assistance of each of my correspondents in any publication that results from this research.

ILLINOIS STATE MUSEUM SEEKS DATA ON VERTEBRATE FOSSILS FROM ILLINOIS

MAPS member David Jones, Worthington, MN, sent the following information, which he received. Permission was granted from Julianne Snider to reprint the request for information in the Digest.

A rich legacy of the fauna, flora, and environments that existed in Illinois is reflected in fossil material. To better understand and interpret this legacy for the citizens of our state the Illinois State Museum Geology Section has been developing a database of vertebrate fossils from the state of Illinois. Thus far we have complete a literature search which has resulted in three products: 1) a draft of a bibliography of published works, 2) an information database of taxa, and 3) computerized maps of the site locations cited in the publications.

Collections of Illinois vertebrate fossil material, which we view as reservoirs of information, are widely distributed throughout North America. Therefore, we are enlisting your help with this survey. Please complete and return the enclosed forms by 1 March 1992 (*ed. note: or as soon as possible*). The information will be incorporated into our databases. We realize that you may be unable to supply much of the requested data, especially for donated and/or old collections, but any information that you can provide will be helpful.

We greatly appreciate your efforts in this project. In exchange for your information we will be happy to send you a copy of our catalogues when they are complete.

Julianne Snider
Illinois State Museum
Research and Collections Center
1920 South 10 1/2 Street
Springfield, IL 62703
(217) 524-7910

If you have vertebrate fossil material from localities in Illinois, please send the following information to Julianne:

Institution _____

Address _____

Phone number _____

Person(s) completing form _____

Estimate the number of Illinois vertebrate fossil specimens in your collection. (Circle one)

- 1-5 6-10 11-15 16-25 >25

Any detailed information (specimen identification, measurements, locality name, additional provenance information, collector(s), state of preservation, etc.) would be appreciated.

Also, if information about the specimen(s) has been published in a scientific or popular publication or has appeared in an unpublished work (site report, thesis, dissertation, etc.) we would appreciate a photocopy or citation of the written material.

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.

To extend currently running ads, please send request and remittance to Editor by the 15th of the month. We do not bill. Ads do not run in the EXPO issue (April). Ads up to 8 lines by 54 spaces can be printed in smaller type to fit a 1" space.

FOSSIL EXCHANGE MONTHLY

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NOTES ON RECENT ARTICLES ON TRILOBITES

by J. S. Hollingsworth
Grand Junction, Colorado

Stewart writes that he tries to keep up with the technical literature on trilobites as it comes out and would like to share his cleaned-up notes with other MAPS members.

Have you ever wondered where paleontologists dredge up some of the species names used for trilobites? Lieberman, Edgecombe and Eldredge named a Devonian trilobite from Bolivia *Palpebrops donegalensis* to honor the Donegal Inn in New York City. Perhaps this is the pub at which they discussed the life history of this trilobite over a few cool ones.

In this paper, Lieberman and his associates report on a cladogram analysis of some calmonioid trilobites from the Devonian of Bolivia, Brazil and South Africa. Two new genera are defined, and the cladogram is used to investigate geographic isolation. A few fine specimens are illustrated, but most of the material is partials.

Nigel Hughes measured and studied over 2500 specimens of *Dikelocephalus* from the St. Lawrence Formation (Upper Cambrian) in Wisconsin and Minnesota. This trilobite is so variable that Ulrich and Resser (1930) named 25 new species (in addition to the original *D. minnesotensis* Owen). Hughes, in his article in the September issue of *Geology*, contends that the wide variation in 23 characters is all within one species, and he concludes that developmental flexibility of Cambrian species was often much wider than later species. This variability in *Dikelocephalus* occurred over a span of less than 2 million years, while *Phacops* species were virtually stable for 8 to 10 million years. He suggests that "the taxonomy of many Cambrian trilobite species may therefore be in need of revision."

A volume issued by the Geological Survey of Canada entitled *Advances in Ordovician Geology* and edited by C. R. Barnes and S. H. Williams contains 28 papers that variously deal with Ordovician stratigraphy

and paleontology. Several articles at least mention trilobites, but one by Robert E. Sloan, "A chronology of North American Ordovician trilobite genera" (pp. 165-177), is noteworthy. He presents a 4-page table showing the known range of all the genera of trilobites reported from the Ordovician of North America. He develops a provisional time scale with duration in millions of years for the subdivisions of the North American Cambrian and Ordovician. The greatest generic diversity was 107 genera coexisting in the late Whiterockian.

Sloan discussed the impact of various extinction events on trilobites: 72% of the genera became extinct at the end of the Lower Cambrian, 80 to 95% in the three late Cambrian extinctions (biomere boundary events). There were several gradual extinctions in the Ordovician with the terminal Ordovician event resulting in the loss of 73% of existing trilobite genera. In the Late Ordovician, trilobites had average durations of 22 million years, but in one stage of the late Cambrian the average genus lasted less than a million years (0.9 my).

The fringed trilobite *Cryptolithus* migrated to North America from Europe in the Middle Ordovician. Western (Nevada and Oklahoma) and Eastern populations developed a succession of geographically isolated forms that came together and produced hybrids after several million years of separation. These are the conclusions of a study of the Viola Group trilobites of Oklahoma by Frederick Shaw published in the November *Journal of Paleontology*. He contends that the several species of the genera *Cryptolithus* and *Cryptolithoides* are in fact subspecies or morphs of a single species of *Cryptolithus* that survived for about 10 million years.

The importance of solving the geologic problems at a fossil site is emphasized by another article in the *Journal of Paleontology*. An apparent correlation of beds over a distance of about 100 feet across a talus pile resulted in long-standing confusion over the ranges of

conodonts and trilobites at the Cambrian-Ordovician boundary in Vermont.

The trilobite fauna of the Lower Cambrian Illyd Formation, mainly carbonate rocks, in the Yukon Territory is described by W. H. Fritz in another publication by the Geological Survey of Canada. The trilobites belong to 14 genera (2 are new) of the *Bonnia-Olenellus* Zone. The top of this section appears to be the youngest Lower Cambrian in western North America. Only one of Fritz's 38 species is represented by a nearly whole specimen; the rest of his materials are isolated heads and tails.

In the September issue of *Journal of Paleontology*, James V. Tremblay and Stephen Westrop describe several collections of Middle Ordovician (Whiterockian) from the Mackenzie Mountains in northwestern Canada. Their material is all silicified parts etched from limestone. These collections came from nearshore, intertidal or shallow subtidal, and *Bathyrurus* predominates. They establish a nearshore biofacies zonation on succeeding species of *Bathyrurus* to correlate with the deeper facies zonation established for Nevada and Utah. A new genus of bathyurid, *Ludvigsenella*, and three new species of *Bathyrurus* are described.

Steve Westrop, in an article in *Paleobiology*, has compared the trilobite family extinctions at the Cambrian-Ordovician boundary in North America and Kazakhstan, finding that survival at times of mass extinction is more likely for groups with greater geographic range than for localized groups. He observes that this "...may be the only paleobiological generalization that has emerged from the recent surge of research on mass extinctions."

NEXT REGULAR DIGEST

The next regular issue of the Digest will be the May issue, which will be sent in late May because the April issue comes out at EXPO at the end of April.

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

Marc Behrendt
421 S. Columbus St.
Somerset, OH 43783
614-743-2818
Medical Technologist Supervisor. Will trade. Has for trade crinoid stems, brachiopods. Enjoys the hunt and search above all.

John Busbee
1869 Virginia Circle
Des Moines, IA 51320
515-288-8139
Interested in networking with others who share his interests. Main areas of interest shark/fish teeth; invertebrates, primarily echinoderms.

Harold & Delma Franklin
302 Oak St.
Glendive, MT 59330
406-365-6431
Retired. Will trade for certain things. Love fossils and like to be around people who have an interest in them.

Mark E. Johnson
109 St. Owen Dr.
Madison, WI 53705

Judy Niedenthal
336 N. Audubon Rd.
Indianapolis, IN 46219
317-356-5917
Interested in field trips.

Daniel-Harry Steward
110 Harvard Avenue East
Seattle, WA 98102
206-329-0127

Marilynn S. Stewart
965 Mid. Dr. Woodruff Pl
Indianapolis, IN 46201
317-634-6524
Manager--Apt. Community. Would like to associate and learn from others with interest in geology and fossils.

Charles Warren
83 E. South St.
Hillsdale, MI 49242

PLEASE NOTE THE FOLLOWING CHANGES OF ADDRESS OR CORRECTIONS:

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Peotone, IL 60468
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Salesman/Bookdealer. Will trade fossils and fossil books. Main interest Mazon Creek Pit 11 fossils, fish plates and amber. Also specialized in photographing fossil collections.

Jess Duran
10837 Alderbrook Ln.
Cupertino, CA 95014
408-253-3227
Sound Editor. Always trading vertebrate fossils. Major interests: shark teeth (Devonian-Recent), reptiles/dinosaurs and mammals. Has a variety of fossils from California (vertebrate/invertebrate) especially echinoids, and a good selection of shark teeth from various ages/sites.

Diana Nelson
4160 Forestwood Drive
San Jose, CA 95121
Michael & Terri Reagin
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Pensacola, FL 32503
904-435-9348
Dan and Patricia Zimmerman
286 Mulberry Meadows Court
Maineville, OH 45039

Doug O'Brien
La Casa En Las Piedras
471 Works Road
Honeoye Falls, NY 14472
Helen Sinclair
The Willows
1000 N. Eisenhower
Mason City, IA 50401

Fritz, W. H., 1991, Lower Cambrian trilobites from the Iltyd Formation, Wernecke Mountains, Yukon Territory: Geological Survey of Canada, Bull. 409, 77 p.
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Lieberman, B. S., Edgecombe, G. D., & Eldredge, N., 1991, Systematics and biogeography of the "Malvinella group," Calmoniidae (Trilobita, Devonian): Journal of Paleontology, v. 65, No. 5, p. 824-843.
Shaw, F. C., 1991, Viola Group (Ordovician, Oklahoma) cryptolithinid trilobites: biogeography and taxonomy: Journal of Paleontology, v. 65, p. 919-935.
Sloan, R. E., 1991, A chronology of North American Ordovician trilobites in Barnes, C. R. & Williams, S. H. (eds.), 1991, Advances in Ordovician Geology: Geological Survey of Canada, Paper 90-9, p. 165-178.
Taylor, J. F., Kennedy, D. J., Miller, J. F. and Repetski, J. E., 1991, Uppermost Cambrian slope deposits at Highgate Gorge, Vermont a minor miscorrelation with major consequences for conodont- and trilobite-based chronocorrelation: Journal of Paleontology, v. 65, No. 5, p. 855-863.
Tremblay, J. V. and Westrop, S. R., 1991, Middle Ordovician (Whiterockian) trilobites from the Sunblood Formation, District of Mackenzie, Canada: Journal of Paleontology, v. 65, no. 5, p. 801-823.
Westrop, S. R., 1991, Intercontinental variation in mass extinction patterns: influence of biogeographic structure: Paleobiology, v. 1, p. 363-368.

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: 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. (Payments other than those stated will be pro-rated.)

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 (except February) meetings are scheduled for 1 p.m. in the Science Building, Augustana College, Rock Island, Illinois. The February meeting is held at Monmouth College, Monmouth, 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

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