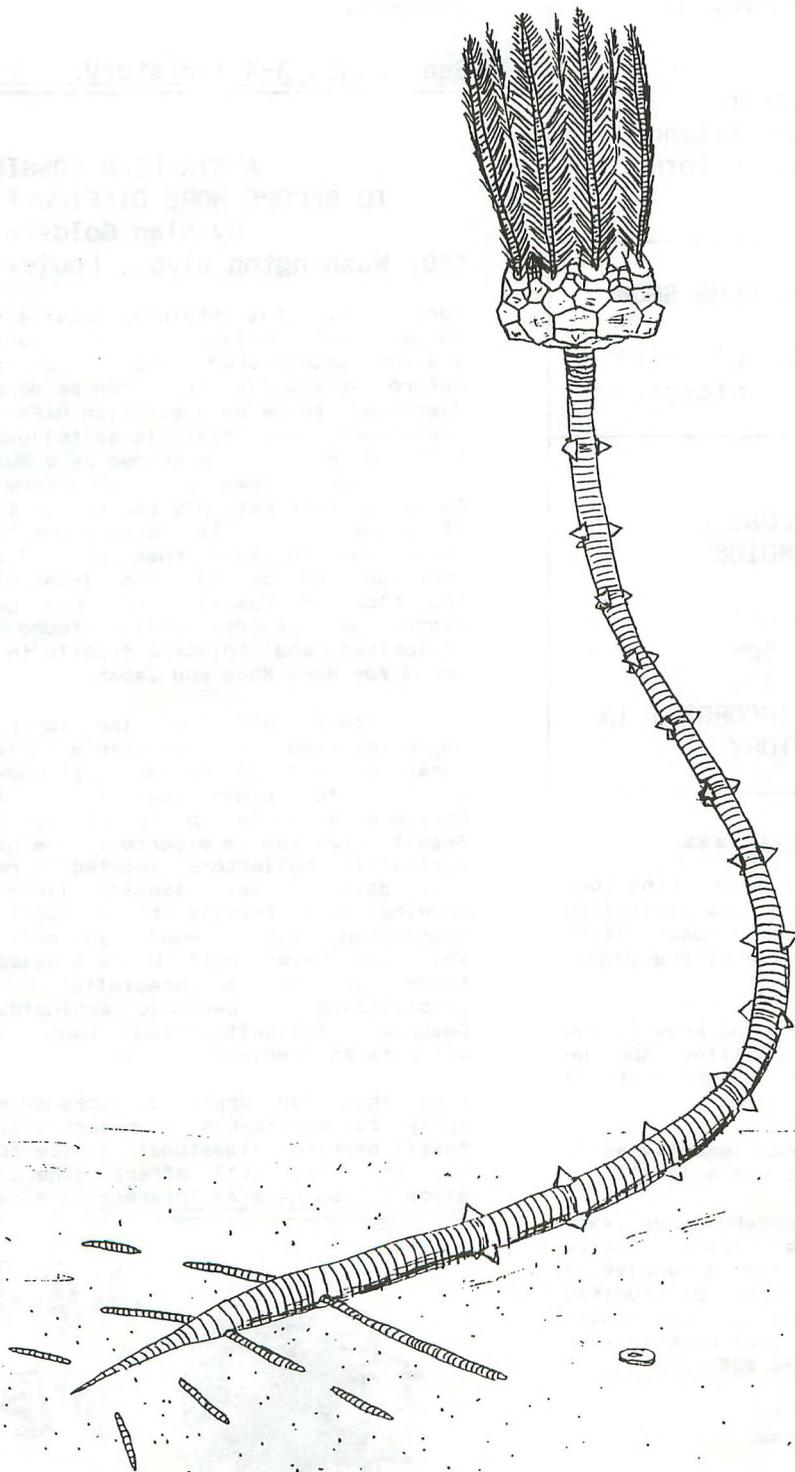


M.A.P.S. *Digest*

Official Publication of
Mid-America Paleontology Society

Volume 17 Number 9
December, 1994



Dolobrinus pyramidatus

MARK YOUR CALENDARS

7 JAN MAPS MEETING. The Cove Restaurant
Near Tipton, Iowa. On south side
of I-80 at Exit 267.

12:30 Luncheon Meeting
Board and Regular Meeting
Combined

There will be no program;
instead, there will be extended
discussion of the future format of
MAPS meetings.

25 MAR 1995 TAMPA BAY FOSSIL CLUB SHOW
26

This is a change. Consult MAPS
Directory for further information

7 APR 1995 MAPS NATIONAL FOSSIL
8 EXPOSITION XVII--CRINOIDS
9

Fri., Apr. 7: 8am - 6pm
Sat., Apr. 8: 8am - 5pm
Sun., Apr. 9: 8am - 3pm

**PLEASE NOTE: THE DATES ARE INCORRECT IN
THE 1994 DIRECTORY**

*** 94/12 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--94/12 means 1994/Dec. 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. (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 checks payable to MAPS and mail to:
Sharon Sonnleitner, Treas.
4800 Sunset Dr. SW
Cedar Rapids, IA 52404

*** Dues are rising effective January 1.***

ABOUT THE COVER

This month's cover portrays the crinoid *Dolatocrinus pyramidatus* Springer, illustrated by Alan Goldstein. It is one of 20 crinoid species reported from the Jeffersonville Limestone (Middle Devonian) at the Falls of the Ohio State Park in Indiana.

See pages 3-4 for story.

AUSTRALIAN FOSSILS TO BECOME MORE DIFFICULT TO OBTAIN

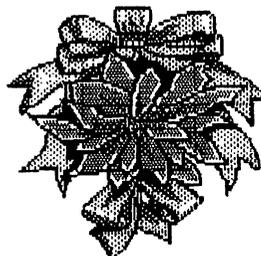
by Alan Goldstein

1607 Washington Blvd., Louisville, KY 40242

Word is out that obtaining fossils from Australia may become more difficult. Laws have been passed to prevent undescribed fossils from leaving the country before scientific work can be done. The process as described to me by Australian MAPS member Enid Holmes (Heathmont, Victoria) is as follows. A fossil to be exported must be examined by a museum curator. The curator must then fill out a form, which is sent to Canberra (the nation's capitol). It contains details of value, etc. It takes about three months to get permission to send them out of the country. Enid continues by saying that Interpol is investigating the flow of fossils from one country to another. Australian federal police found crates of large trilobites and Ediacara fossils in Western Australia bound for Hong Kong and Japan.

The intent of the law is rational, but the implementation is certainly cumbersome. Museum curators tend to be busy. (I know, because I was a curator for eight years.) It is doubtful that curators will be up to the task of examining every fossil that can be exported. The nearest curator for Australian collectors located in remote areas may be many days' drive. Imagine living in Kansas and showing your fossils to a curator in Houston--or Washington, D.C.! Would you ship them to a curator you have never met? Since a paleontologist/curator tends to be a specialist, could a curator specializing in Cenozoic echinoids determine if the Devonian trilobite you want to export is an established species?

Does this law apply to rocks or minerals? Does it apply to exportable stonework that may be made from fossil-bearing limestone? I hope to learn more about how this law will affect general geology exports, since I also have an interest in minerals.



**HAPPY
NEW
YEAR!**

MAPS NATIONAL FOSSIL EXPOSITION XVII CRINOIDS

April 7, 8, and 9 are the dates for the 1995 MAPS EXPO. (The dates are earlier than usual this year because of the date for Easter.) It is now just a month before all the registration and motel information come out in the January Digest. Because we have been running out of table space the last few years and no extra room is available this year, some changes will be made in the maximum number of tables allowed. Also, members will be given first chance at tables.

If you think creatively, you can get by with much less table space than you are accustomed to while still having the same amount of material available. In Europe table space is sold by the foot; dealers just display samples of what they have and stack supplies under the table, etc. We feel limitations are necessary to make space available to as many people as want it. Again, those with exceptional needs can apply to the Board for an exception.

All this information will be available as usual in the January Digest, but we wanted to give you some advance time to begin planning. Table reservations may be made when the January issue is out; i.e., by mid January.

Keynote Speaker for Friday night at EXPO will be Tom Guensburg, who teaches at Rockford (Illinois).

ADDRESS CHANGES, UPDATES, DUE FEB. 15

If you have any changes that you want to appear in the Directory Update that will be printed for distribution at EXPO or with the EXPO mailing, you must get that information to the **Editor** by February 15, 1995. And please send it as soon as possible.

It was voted at the 1994 EXPO to print only an update to the Directory in 1995, and every other year thereafter, because of the expense. We will also include an alphabetical listing of those who have made changes or been added during the year for your convenience.

SEDIMENTARY NOTES

Leland Miyano, Honolulu, Hawaii, writes that the mountains behind his house *used to have many species of land snails in great numbers. Within a few decades, most are now extinct. I study the fossil species, but those are also disappearing due to our developments...*

MAPS is such a great group. I am sure other members feel the same. Very few people here care about fossils at all, and MAPS provides me with wonderful connections across the country. Thank you to all the officers for all the work that gives me such joy.

Kevin Shannon, Whiteville, NC, writes: *Here are my dues...plus a note of reassurance that the increase to \$20.00/year is well worth the price. I hope you and gang at the Digest will continue years of success.*

MAPS BADGES

Those of you who ordered badges at EXPO should have received them finally; however, if yours arrived like mine did, it has "Charter Member" on it. If you let me know, I will try to get them redone. We have had so many problems lately with the business that has done the badges that we are going to find someone else to do them. *Editor*

WANT BACK ISSUES?

If you are interested in obtaining back issues of the *Digest*, contact **Tom Walsh** (address on back page). We keep regular issues only from one EXPO to the next, but we do have several past EXPO issues available. Tom stores all the extra *Digests* and can give you information about what is available and costs.

AN UPDATE ON SUE

The dinosaur Sue and the Black Hills Institute have had their day in the Supreme Court, and the Black Hills Inst. lost possession of Sue. They are still faced with other cases against them.

HOW MANY DIFFERENT FOSSILS ARE AT THE FALLS OF THE OHIO?

by Alan Goldstein

Naturalist, Falls of the Ohio State Park
201 West Riverside Drive, Clarksville, IN 47129

The Falls of the Ohio at Louisville, Kentucky, are world-reknown for the incredible number and variety of fossils that have been found. Fossils may be seen today, when river conditions allow. Collecting is no longer permitted because, over the last 200 years, enormous tonnages of fossils have been hauled away. We must preserve what remains for the enjoyment of generations to come.

Geologists describe the fossils in various layers or *strata* at the Falls. The entire rock formation is called the Jeffersonville Limestone, named from exposures at the Falls closer to that southern Indiana town (Kindle, 1899). The individual strata (or zones) are named for their fossil content.

Actually, the lowest fossil bed exposed during very low water conditions is the Silurian Louisville Limestone, some 30 million years older than the overlying Jeffersonville Limestone. In addition, there are large amounts of Ordovician limestone ripped from the floor and banks of the Ohio River upstream. These add several hundred additional species to the faunal list, but will not be described here.

The lowest Devonian fossil layer is the coral zone. It is actually subdivided into the lower and upper coral zone. That significance is probably only appreciated by paleontologists. The lower coral zone is the uppermost Lower Devonian and the upper coral zone is lowermost Middle Devonian! These layers are submerged most of the year (unless there is a drought in the eastern US).

Above the coral zone is the *Amphipora* zone, named for a spaghetti-like stromatoporoid sponge that is abundant in that layer. This layer is best observed on the small cliffs on the river bank that contain numerous small grottoes.

The *Paraspirifer acuminatus* zone is the next layer. The lowest part is sometimes called the *Brevispirifer gregarius* subzone because of the millions of brachiopod shells that make up a layer in this unit.

Above it is the Bryozoan-Brachiopod subzone, dominated by fossils of those phyla. The top strata of the Jeffersonville limestone may be called the Upper *P. acuminatus* subzone, where this robust brachiopod may be found in the greatest abundance. This top layer is scarcely exposed at the Falls today.

Rock from the younger Middle Devonian North Vernon Limestone (which includes the Silver Creek and Beechwood Members) is no longer found in the Park. The shaley Silver Creek Member is not exposed at the Falls. The Beechwood Member can be found on the western edge of Goose Island, still part of the Falls of the Ohio National Wildlife Conservation Area and protected from collecting. Counts should be considered conservative. Further study will most likely reveal additional species.

The faunal lists were drafted from the sources at the end of the article. Some additions have been made through my own personal research of the fauna of these formations over the past 15 years.

Jeffersonville Limestone Fauna
(Emsian/Eifelian Age)

Phylum	Species
Arthropoda	58
Ostracoda	31
Trilobita	27
Brachiopoda	67
Bryozoa	92
Cnidarids (Corals)	160
Echinodermata	26
Blastoidea	6
Crinoidea	20
Graptozoa (Graptolites)	1
Mollusca	94
Cephalopoda	8
Gastropoda (Snails)	53
Pelecypoda (Clams)	30
Pteropoda (Sea Butterflies)	2
Porifera/Stromatoporoidea	20?
Vertebrata (Fish)	3?
Plants (Algae)	1
TOTAL:	362

North Vernon Limestone (Givetian Age)

Arthropoda	7
Ostracoda	1
Trilobita	6
Brachiopoda	45
Bryozoa	Unknown
Cnidaria	53
Echinodermata	40
Blastoidea	2
Crinoidea	38
Mollusca	73
Cephalopoda	13
Gastropoda	34
Pelecypoda	23
Pteropoda	3
Porifera/Stromatoporoidea	1?
Vertebrata	Unknown
TOTAL:	219+

? = (Needs more research)

Obviously, much work remains in terms of gathering lists together from the wide variety of sources of previously published studies. As we establish a reference collection at the Interpretive Center, we will acquire additional publications and within time, fill in the blanks. Faunal studies by paleontologists are largely a thing of the past. Like most sciences, paleontology consists of specialists--those studying a small part of the "big picture." We hope to carry this general faunal research as part of the educational mission at the Park.

One would think that everything would have been "studied out" at the Falls. This is not the case. There are discoveries yet to be made. We will try to keep you abreast in our efforts to preserve--and understand--the wondrous history of the rocks at the Falls of the Ohio.

Important References

- Butts, Charles, 1915, Geology and mineral resources of Jefferson County, Kentucky: Kentucky Geological Survey, ser. 4, v. 3, pt. 2, 270 p.
- Jillson, W.R., 1931, Paleontology of Kentucky: Kentucky Geological Survey, ser. 6, v. 36, 469 p.
- Kindle, E.M., 1899, The Devonian and lower Carboniferous faunas of southern Indiana and central Kentucky: *Bulletins of American Paleontology*, v. 3, no. 12, p. 131-239.
- _____, 1901, The Devonian fossils and stratigraphy of Indiana: *Ind. Dept. Geol. and Nat. Resources, Annual Report 25*, p. 529-758, 773-775, 33 pls.
- Stumm, E.C., 1964, Silurian and Devonian corals of the Falls of the Ohio: *Geological Society of America Memoirs*, v. 93, 184 p.

**EOZON CANADENSE
THE DAWN ANIMAL OF CANADA
by B.L. Stinchcomb, Ferguson, Missouri**

Ever since the fossil record has been seriously investigated, the wealth of animal and, to a lesser extent, plant fossils which appear suddenly in rock strata of the Cambrian Period of geologic time has been a mystery. Prior to Charles Darwin's well-documented evidence for evolution, first published in 1859 in the *Origin of Species*, geologists and paleontologists generally considered this sudden appearance of relatively complex life, the Cambrian radiation event, to be some sort of "act of creation," a part of earth's history which marks the beginning of the Cambrian to be a record in rock strata of "the beginning of life." After

all, the Precambrian boundary is still the most profound change in the fossil record.

In the early part of the 19th century, the founder of modern vertebrate paleontology, Georges Cuvier, had suggested that the abrupt appearance of seemingly more complex life forms in the fossil record represented successive "acts of creation." Cuvier, in other words, proposed not just one "creation" but successive ones, each geologic era being punctuated by a new set of "creations." Prior to the publication of Darwin's *Origin of Species*, most paleontologists and naturalists were creationists!

With the creation theory as a working hypothesis to explain the fossil record, there was no strong impetus to search the vast amounts of rock strata which lie below and was hence older than the Cambrian rock strata. To spend extensive effort exploring for fossils in these vast amounts of Precambrian rock was looked upon as a waste of time and effort. If the first "act of creation" was represented by the beginning of the Cambrian fossil record, the lack of fossils in Precambrian strata, which casual exploration seemed to suggest, was explainable. There were no fossils in Precambrian strata because during this part of Earth's history there was no life on the Earth!

With Darwin's evolutionary theory, however, a long period of evolutionary development would have to have preceded the Cambrian Period. Many of the animals represented by Cambrian fossils, such as trilobites, were well up the evolutionary ladder. If evolution were true, there would have had to be ancestors to Cambrian animals and some of these should have been preserved as fossils. After the publishing of the *Origin of Species*, the search for Precambrian fossils started in earnest.

The first serious contender for a Precambrian fossil was a peculiar banded-on-its-interior globular structure found in metamorphosed limestones of undoubted Precambrian age, found about 80 miles northeast of Ottawa, Ontario, in Canada. The globular structures resembled a globular fossil called a stromatoporoid and found among many places in Ordovician limestones of the St. Lawrence Valley between Montreal and Ottawa. These structures were called *Eozoon canadense* (The dawn animal of Canada) and were considered by their discoverers to be some of the very first forms of life which evolved from primordial ooze or slime. Specifically, *Eozoon* was considered to be a giant shelled protozoan or foraminifer which lived in reefs on the floor of a primordial sea.

There were those who from the beginning doubted the biogenic origin of *Eozoon*. Opponents of an organic origin pointed out among other things, the highly metamorphosed rocks in which *Eozoon* was

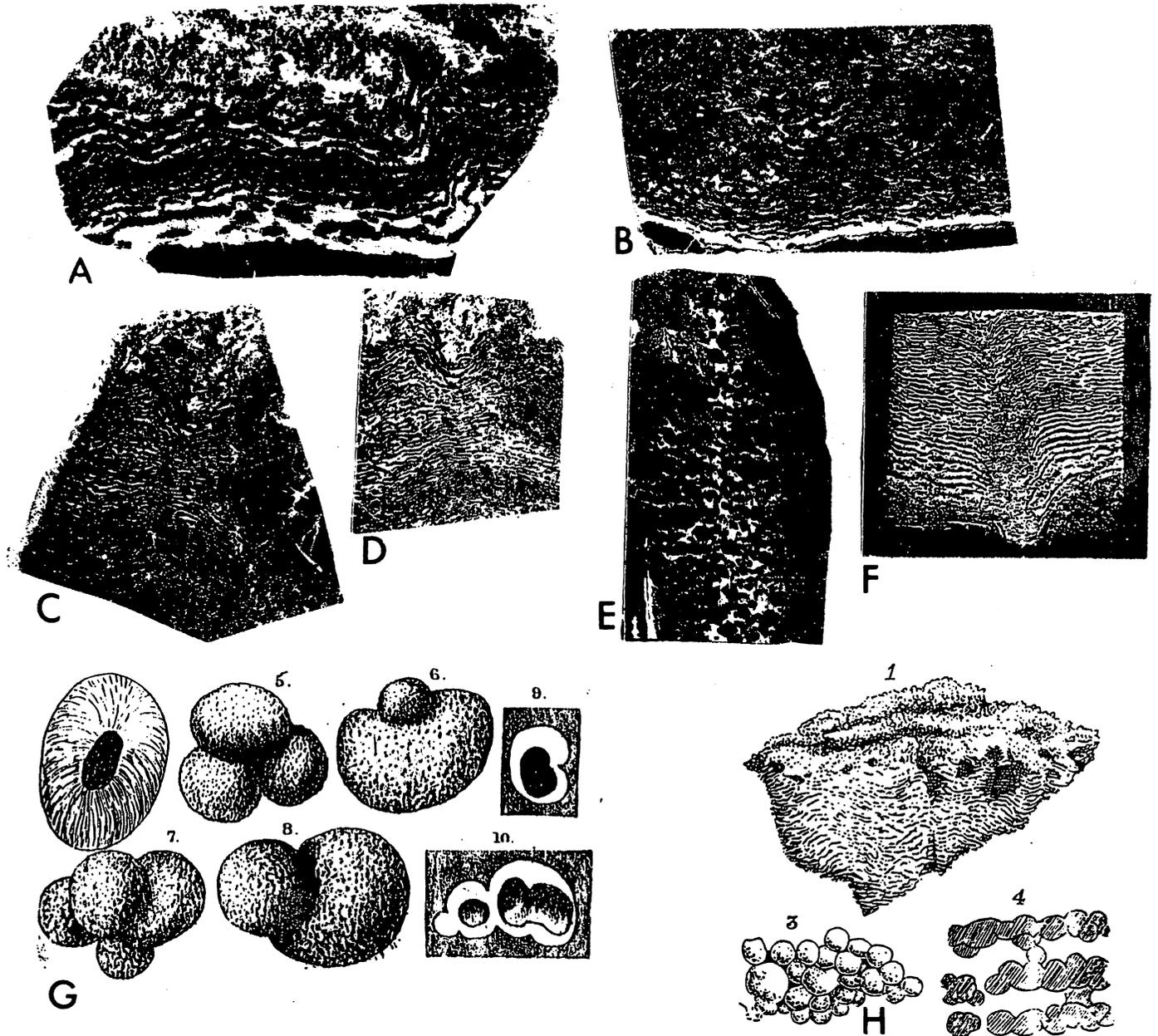
found and its mineralogical composition of serpentine, a mineral not usually associated with the preservation of fossils. Proponents of a biogenic origin of *Eozoon*, on the other hand, pointed out how the globular masses perched atop nodules of diopside much in the same way as do sponges or corals, which will grow upon hard masses such as siliceous nodules on the sea floor. A system of canals present in the structure, for diffusion of nutrient-bearing water was compared with the pore and canal systems of sponges. They suggested that the diopside nodules were originally impure siliceous nodules which upon metamorphism became diopside. Organic origin proponents also pointed out numerous 3-6 mm mushroom-shaped bodies associated with *Eozoon*, which were given the name of *Archaeospherina*. These were compared to the fruiting bodies or "buds" produced by many lower invertebrates, such as sponges and corals, in the process of asexual reproduction. *Archaeospherina* was considered to be the reproductive "buds" coming from mature globular masses of *Eozoon*.

During the 1880's and 90's, the *Eozoon* controversy reached its peak as to the pros and cons of the biogenic nature of *Eozoon*. Charles Darwin, in the 3rd edition of the *Origin of Species*, enthusiastically accepted *Eozoon* as a bona fide fossil of some of the Earth's first life, and this was followed after Darwin's death by the climax of the *Eozoon* controversy. By the beginning of the 20th century, the controversy had pretty well died down. Other puzzling fossil-like structures were being discovered in Precambrian rocks, and these, like *Eozoon* which preceded them in discovery, were the subject of heated discussion and lots of scientific "arm waving."

Most of these Precambrian fossils discovered after *Eozoon* have been found to be various types of stromatolites, structures produced by the physiological activities (usually photosynthesis) of primitive life forms such as blue-green algae and bacteria. *Eozoon*, however, remains somewhat of a puzzle; however, its origin as a product of intense pressure on impure limestones remains the most convincing explanation. In some ways,

however, *Eozoon* suggest a type of stromatolite and the possibility remains that it represents a type of stromatolite modified by the intense pressure and crystallization which the original limestones have undergone.

For a more detailed summary on the *Eozoon* controversy, see Hofmann, H.J., 1969. Precambrian fossils, pseudofossils and problematica in Canada. Geological Survey of Canada, Bulletin 189. Also Bathybius and *Eozoon*, Stephen J. Gould, The Flamingo's smile. W.W. Norton Co., New York.



EOZON CANADENSE AND ARCHAEOSPHERINA

A-D, *Eozoon canadense* collected recently (1993), sliced and reproduced by means of placing the slice on a Xerox machine, all x1. E, *Archaeospherina* slab reproduces by Xerox machine, x1/2. F, *Eozoon* reproduced from 19th century literature, x1/2. G, "Buds" of *Eozoon* or *Archaeospherina* from 19th century literature, x3. H, *Eozoon* and *Archaeospherina* from wood cut of original *Eozoon* paper, 1868.

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.

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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.

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HOMINID BIPEDALITY: WHERE DOES IT STAND?
 from *American Paleontologist*, Aug 1994
 pub. by Paleo Research Inst., Ithaca, NY
 Warren D. Allmon, ed.

The upright posture and bipedal locomotion of humans are two of their most distinctive traits, yet their origins remain controversial. Two questions are usually asked about the origins of these features: when and why. The when has usually been considered answered by the discovery of fossil hominid footprints more than 3 million years old in Africa, and assigned to australopithecines. The why has often been answered with reference to presumed environmental changes in Africa at around this time; forest gave way to grassy savanna, so the story goes, and humans came down from the trees to stand up and walk around.

Two very different new studies, however, cast doubt on both of these answers. Fred Spoor and colleagues recently reported (*Nature*, 369:645, 1994) the results of CAT scans of fossil hominid skulls. Their examination of the inner ear region of these skulls suggests to them that *Homo erectus* was the earliest species to demonstrate the modern human morphology that allows upright balance to be maintained. Thus if, as seems evident, australopithecines walked upright on occasion, they also spent considerable time in the trees.

Meanwhile, John Kingston and colleagues report (*Science*, 264:955, 1994) results of isotopic studies of fossil soils that formed in the Kenya rift valley over the last 15 million years, and conclude that open grasslands at no time dominated the area. "If hominids evolved in East Africa during the Late Miocene," they write, "they did so in an ecologically diverse setting."

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Marketing manager SIGMA Chemical Co. Will trade. Major interest invertebrates. Has for trade archimedes. Member of Eastern Mo. Soc. for Paleo. Wants to learn more about fossils & meet others with same interests.

Alan & Rita Shero
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Hospital Material Manager. Will trade. Major interest echinoderms, exp. blastoids and crinoids. Also corals, plants and trilobites. Have for trade various corals, blastoids and some plant material. Member of Myrtle Beach Fos. Club, SC, and Birmingham Paleo. Soc. Want to expand knowledge of fossils, meet people interested in fossils and go on field trips.

Jeff H. & Michele P Smith
& Jared
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LAGRANGE GA 30241
706-884-6533
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Mr. William T. Speer Jr
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Irene Stemple
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Teaches a fossil class at a local museum and conducts teacher workshops. Major interest Texas invertebrates. Will trade Penn. material for other times and localities.

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Geologist. Will trade. Major interest Brachiopods, sharks' teeth, invertebrates. Will trade Texas fossils mentioned. Member of Dallas Paleo Soc.

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HAPPY HOLIDAYS

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 meetings are scheduled for 1 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 April, May/June, July/August/September.

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