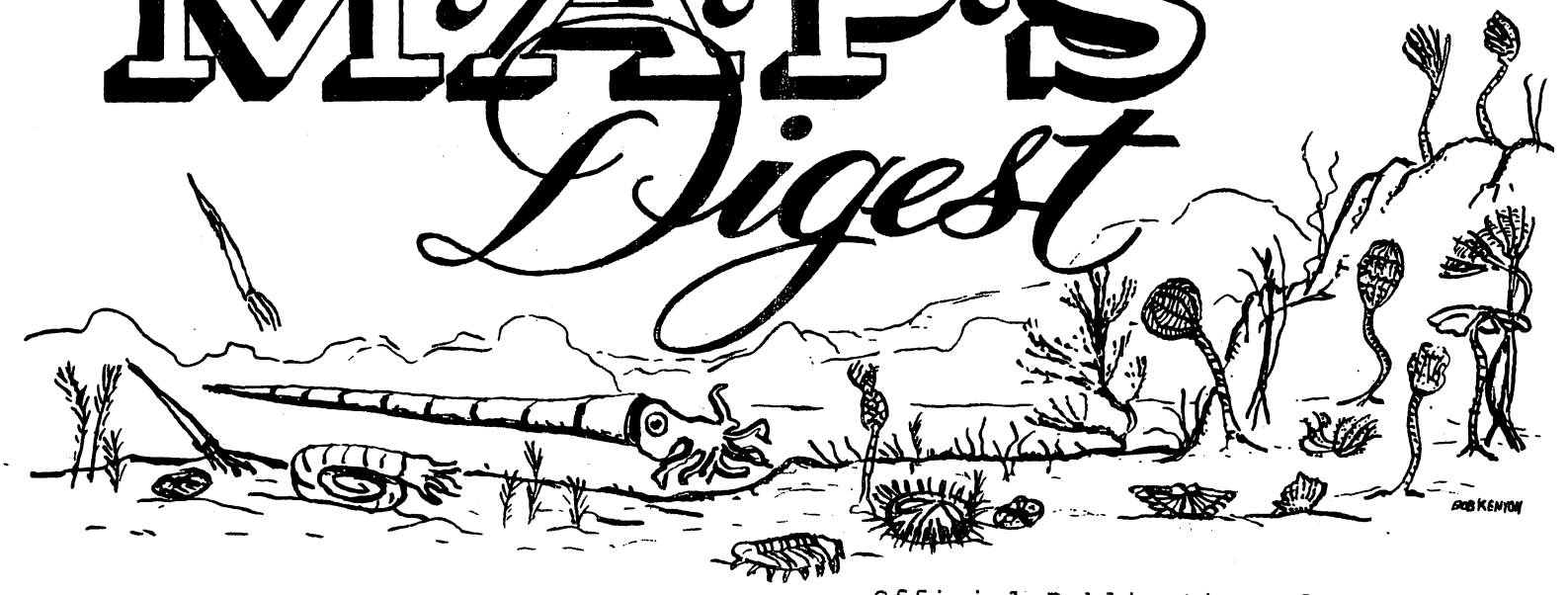
M·A·P·S Digest



Volume 4 Number 10 November, 1981 Official Publication of Mid-America Paleontology Society

MAZAMA ERUPTION: What Did It Do To People?
Hill Williams, Seattle Times, May 24, 1981

The volcanic ash must have fallen for weeks, perhaps longer, when Mt. Mazama blew itself apart about 6,600 years ago.

It began sifting down hundreds of miles away from the Southern Oregon volcano in the autumn, and seems to have continued on and off until spring.

Evidence left in lakes and bogs, where the ash record is preserved, shows that another major eruption followed the next spring. And possibly, the record indicates, another major ashfall occurred in the third year, perhaps in the autumn.

The effects of the giant eruption on the earth are obvious: Mazama, once the size of Mt. Rainier, is now a flat-topped mound with crater Lake nestled in its huge crater. Ash from the eruptions has been found in Washington, Oregon, California, Nevada, Idaho, Montana, Br. Columbia and Alberta.

The ash layer was 2 inches thick in a bog near the Idaho-Montana border, hundreds of miles from the volcano. Near the mountain, ash deposits were hundreds of feet deep.

But the most fascinating question, and until recently the most difficult to answer, has been: What did it do to humans living in the Pacific Northwest?

People were here, no doubt, at the time. The oldest documented traces of human activity go back about 12,000 years in several Pacific Northwest locations. And fairly near Mazama, in caves in Fort Rock Valley east of Crater Lake, cultural material has been found below the ash layer and again above it.

The inhabitants of that cave could have died, and others could have arrived and occupied it later. But what did the repeated ashfalls do to the scant population of hunters and gatherers living farther from the volcano?

It has been speculated in past years that the effect would have been catastrophic over a wide area: Ash clogging streams would have killed

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MARK YOUR CALENDARS

7 Nov MAPS Meeting -- Augustana College
1:00 p.m. Board Meeting
2:00 p.m. Program--Identification and sharing. Bring the treasures from ancient seas which you found this summer.

5 Dec MAPS Meeting -- Augustana College

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"A LOVE OF FOSSILS BRINGS US TOGETHER"

OCTOBER FIELD TRIP A SUCCESS

About 30 people gathered on a gorgeous fall Saturday to hunt for those treasures from ancient Pennsylvanian seas. Lewis Kehr was our genial host. Off we went to the floor of a huge quarry.

Lewis had samples of what we might find--cephalopods, trilobites, beautiful brachiopods, and shark teeth.

It was a most successful day. Pennsylvania brachiopods were there all right, not only in abundance but crystallized in amber, smoke and clear. Scott Yenerich (a junior MAPS member--Ernie Hammons would refer to him as a young buck) and Paul Rechten found shark teeth. Not only were they most unusual in shape but both had enamel.

Although local rock shows magnetized some of our regulars there were new faces to become acquainted with--and that's really what it's all about. Those awesome fossils!!! but then how about all you beautiful people!!!

After the quarries, Lewis took us to a local pub for supper. Good day! Many thanks, Lew for some "minute vacations" this winter when quarries are off limits.

There won't be many more fossil trips for those of us who live in the frigid zones, but some of you can hunt the year round. Keep collecting 'cause we have a hot date, remember? April 2, 3, and 4--Macomb, IL.

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MAPS NAME TAGS

Have you remembered to get your MAPS name tag? Our club logo, Cyathocrinites in white on a blue background. Send $2.50 to:

Fred S. Farrar
Rte. #2 - Box 295
Poplar Bluff, MO 63901
Phone: 314-686-2130

Send for yours today. Give yourself a Christmas present. They are most attractive! It helps to have one at shows on field trips, when traveling. One says hello to a stranger and immediately has a friend.

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Nature shows us only surfaces but she is a million fathoms deep.

--Ralph Waldo Emerson

SEDIMENTARY NOTES

Look forward to a feature article in the January-February issue of Rocks and Minerals on MAPS National Fossil Expo IV. Many thanks are in order to: Dick Johannesen, Gil Norris, Ernie and Onsby Hammons, Dennis Kingery, Bari Sines, Doug DeRosear, Jim & Sylvia Konecny, Mr. R. T. Gingras, Michelle Bernauer, Bob Howell, Wally Harris, H. L. Strimple. Many of you will see yourselves in print in pictures of last year's Expo. It's exciting! Sincere thanks for your generous cooperation in getting pictures for this article. Like everything else about this organization, without your cooperation it simply could not exist. More later after we see the printed word.

Johnsons, CA report no personal damage from the fire in the Napa area, pictures show smoke visible from their property. Roz continues with her exhibits. Tom Maloneys, CA were in Alaska this summer. Beautiful country and vertebrate fossils. (How about an article, Hilda?) Hammons, TN in Texas hunting fossils. Stopped to see Carlos Bazan. Bari Sines, WY made some awesome additions to her collection recently. Ask Dennis Kingery about her generous trilobite gift. Jim and Sylvia Konecny, AZ have had a Pennsylvanian crinoid found locally named for them. Jim supplied Dr. Chiment, NY with oogonia see Digest, April, 81, Introduction to Charophytes, no follow-up report of that yet. Larry Osterberg, IL are recently returned from a collecting trip in Germany. (How about an article, Larry?) Philip and Anna Marcus, MD continue to collect Paleocene shark teeth, put displays in local libraries and exchange overseas. Phil is writing an up-date to an already published law text. Judy Owyang is battling city hall trying to keep Sawtelle Blvd., home of Fossils, Etc., a unique ethnic environ. David Jones had phenominal luck hunting vertebrates this summer. An articulated "cat skeleton" out of WY is now at home in the museum at the University of Nebraska.

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A MAPS SERVICE -- ADVERTISING

Because of requests from members, MAPS Executive Board has decided to experiment with an ADVERTISEMENT PAGE. If the response warrants, we will continue to run ads. The January issue of the Digest will include the first advertisements.

Ads are $3.50 per column inch--minimum $3.50. (Editor's comment--a column inch is 6 lines of

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MAZAMA ERUPTION, Continued

fish. It would have killed the root and berry plants the primitive people depended on. Animals would have been poisoned by eating ashcovered plants. The result would have been widespread human starvation during winters. But all this was speculation by scientists who'd never witnessed a major eruption. That changed on May 18, 1980, when Mt. St. Helens exploded and covered much of the Northwest with ash.

Frank Leonhardy of the University of Idaho has been one of the speculators over the years, but he has tended to doubt that the effects of Mazama were catastrophic to humans except very near the mountain. At a conference (in May) on "Mount St. Helens: One Year Later" at Eastern Washington University, Leonhardy said the May 18 eruption offered a basis on which to assess the impact on people of long ago who endured the eruptions of Mazama, the biggest ever known to have hit the Northwest. Leonhardy's conclusion: Even if you assumed Mazama's ashfall was 10 times than that of Mt. St. Helens, the effects on most of those prehistoric people "would probably have been uncomfortable, but not catastrophic."

Leonhardy used these criteria: --Mt. St. Helens erupted at the most critical time of year for plants, early spring. Yet it caused little damage to the root crops that early people depended on, such as camas, and almost no damage to berries. --Except in the blast zone immediately around the mountain, animals were little affected. --Fish populations were not damaged except in the Toutle and Cowlitz River drainages close to the mountain.

"The two things we learned (from Mt. St. Helens) were how short-lived the ash was and how rapidly the plant and animal communities recovered," Leonhardy said. "It gave us the basis for extrapolating effects of earlier ashfalls."

In addition to the Mazama ash, early people in the Northwest certainly were exposed to at least three Mt. St. Helens ashfalls and possibly a fourth about 13,000 years ago. In addition, they probably experienced the Glacier Peak ashfall about 12,000 years ago. Scientists have had little idea how long those ash layers persisted on the surface. But Leonhardy said Mt. St. Helens showed that the ash first compresses and then erodes away. A year later, you have to have been here when it fell to know that the gray stuff lying around is not just dirt," he said.

Other reports at the conference told of another series of ancient ashfalls in the Midwest which could only be described as catastrophic but which, oddly, seem to have left no long-range biological effects. Michael R. Voorhies, of the University of Nebraska State Museum, described his excavation of a basketball-court-sized deposit in which thousands of animals died within a few weeks, apparently as a result of a volcanic eruption hundreds or thousands of miles away.

The ash, believed to have fallen about 10 million years ago, piled up to depths of 6 inches to a foot on level land. But at the water hole where the animals died, it drifted to about 10 ft. The site is at Poison Ivy Quarry in the northeast corner of Nebraska. The bones were of a now extinct rhinoceros, camels, primitive horses, birds and turtles. Studies of the site leave several big question marks. Voorhies said the animals all died within a few weeks of each other but he doesn't know the cause. He suspects asphyxiation from ash or poisoning by volcanic products in the water. And Voorhies doesn't know the source of the ash. Geologists tell him it almost certainly would have had to blow in from west of the Rocky Mountains. The nearest possible source is the Yellowstone area, 700 miles away. Other possibilities are even farther, in Colorado or New Mexico.

But Voorhies knows that the animals died quickly--too quickly to be explained by starvation--and that a few weeks after their death, the carcasses were covered by still another huge fall of volcanic ash. It was the covering layer, in fact, that accounted for the excellent preservation of the bones, dug up in the summers of 1978 and 1979. The rhinos, a short-legged, barrel bodied species about 9 feet long, died last among the animals. Their bones were atop the trampled bones of horses and camels.

(concluded page 9)

THE PROFESSIONAL'S CORNER -- Copyright, 1981

N. Gary Lane
Geology Department
Indiana University
Bloomington, IN 47405

PROJECTS

One of the best ways to learn more about fossils is to concentrate on a particular problem or project that interests you. If properly chosen and assiduously pursued a project may allow you to make a contribution to the advancement of knowledge about fossils. There are all kinds of things that can be done and a choice would depend on your specific interests, where you live, and the nature of the local geology and fossils. Perhaps the simplest kind of thing to do would be to amass as many specimens as possible of a single species from a specific site. You would need to keep all the fossils and not sell or trade any one of them. Such a large sample may prove to be useful in determining the amount of variability found in such a species population, determine growth characteristics of that species, or provide information on epibionts (one fossil living on another, like worm tubes on brachiopod shells), on injuries or pathologic specimens or on rare mutants that may occur.

A more complex and time-consuming plan would be to attempt to collect as many different species as possible from a single site. This would provide important information on the diversity at that time and place. In order to be sure of the diversity, accurate identification of all species would be necessary and you probably would have to take into account small, microscopic fossils as well as the larger ones.

Still another type of project would be to assemble specimens of all species in a genus, or of all genera in a family. Such collections may be useful for evolutionary studies.

Satisfactory completion of a suitably chosen project can bring a lot of satisfaction, give you more insight into fossils and help you to choose another project once you have finished the one you have in hand. You may be amazed to find how much help a professional paleontologist is willing to give in choosing a project and in providing guidance as you go along.

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IDENTIFYING FOSSILS --

N. Gary Lane
Geology Department
Indiana University
Bloomington, IN 47405

It is a common practice at fossil shows to require that specimens be identified correctly to the species level. There are very few professional paleontologists that would ever attempt to do such a thing unless all of the specimens were within a special field of competence. I could do this for fossil crinoids but I would never attempt it for brachiopods, or corals, or trilobites, for instance. Trying to keep up with the almost daily changes that take place in fossil names is a major chore of paleontologists and most of us can accomplish this only for one or two kinds or ages of fossils. To have such exhibits correctly judged would take a corps of from 10 to 20 experts from around the world. Since that is obviously impossible a reasonable alternative would be to find two or three professionals (the more, the better) who have as wide experience with as many different kinds and ages of fossils as possible.

What is the poor amateur collector to do when faced with such a requirement? Well, I suppose the answer is to simply do just as good a job as possible. It's a sure bet that the judge will not have as good an idea as you do what the correct name should be if you do your homework.

It is absolutely impossible to achieve correct identifications by using a single source, like Shimer and Shrock's Index Fossils of North America. A compilation of this sort was out-of-date the day it was published, because some of the names were surely changed between the time

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THE PROFESSIONAL'S CORNER, Cont'd. --

MOSTLY ABOUT INVERTEBRATE FOSSILS

Section 3 -- Results of Cooperation

H. L. Strimple
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The University of Iowa
Iowa City, IA 52242

Science, like society, is made up of individuals and each individual is unique. The basic drive and motivation is different for each individual. The point is that all of the strengths and weaknesses of human nature are present in the scientific community just as they are in the general population. Individual egos often override "good sense", teams are organized to compete with other teams dealing with the same subject, frustration takes place and can lead to "cheating" etc. But cooperation can have far reaching effects and some examples are given here.

There is a quarry in the Lawrence Uplift (an eastward extension of the Arbuckle Mountain uplift of Pontotoc County, Oklahoma) where a thin layer containing rare echinoderm specimens are preserved. The formation is the Bromide Formation (Blackriveran, Ordovician) and a few small spoil heaps remain. A massive study of the echinoderms of the Bromide is underway by a team of specialists led by Dr. James Sprinkle, University Texas, Austin, Texas. The massive collecting efforts which have been done in the past leading up to this point make a long story which will not be discussed. I am not a member of the team by choice, primarily because my interests in the Ordovician are much wider and extend from western Virginia across the south into Oklahoma, north into Missouri, Iowa, and Minnesota. Dr. Dennis Kolata (Illinois St. Geol. Survey) has already covered the Ordovician of Illinois and Wisconsin.

Christina (my wife) and I collect in Oklahoma once or twice a year and usually make the quarry in Pontotoc County. A couple of years back I found a couple of strange, small fragmentary specimens which I could not identify and Christina found an absolutely exquisite specimen of the incredibly rare diploporite cystoid Eumorphocystis multiporata. We were attending the IX International Carboniferous Congress in Champaign-Urbana, Illinois, and took them along. It turned out that Sprinkle had plenty of specimens of the diploporite but the "scraps" I brought along showed some features he needed for the study. In the fall of 1980 we collected there again and Christina found a good portion of an eocrinoid which I had never seen before. I went back to the pile where she had found it and found a smaller one. We sent them down to Sprinkle and he was really excited. Christina's specimen showed details of the summit or oral area (very important in identification which were obscure in other specimens. In addition Sprinkle had another partial specimen which fit perfectly onto the lower part of Christina's specimen. The combination of the two provides a nearly whole specimen which will be the holotype of the new species and in turn the type species of a new genus. As a matter of fact he had to redo his plate and manuscript. My specimen became a paratype.

A thorough investigator can often learn more about an animal from partial or incomplete specimens than he can from apparently perfect spectacular specimens. This does not mean that the complete specimen is not also needed for a comprehensive study and understanding of a species. There is a tendency for collectors and in particular commercial or semi-commercial ones to go for large spectacular specimens and ignore small specimens even though the small ones are commonly better preserved. Many species never get very large, in fact there are even microcrinoids (less than 0.5mm) which are largely ignored by professionals as well as amateurs. With the advent of the scanning electron microscope (SEM) there is some current activity in the microcrinoid field primarily by N. Gary Lane (Indiana University) and George Sevastopulo (University of Dublin, Ireland). Yurry Arendt (Moscow, Russia) has contributed heavily to the studies (without the SEM) and Prokof in Czechoslovakia has published a little. I have been involved for years to some degree. We exchange some ideas and some specimens on occasion Microcrinoids are now known to range from lower mid-Ordovician to Triassic although the documentation is rather sketchy in places. When Gary Lane was here at our home recently we spent some time discussing various aspects of microcrinoid studies and looked at many

(Continued page 6)

IDENTIFYING FOSSILS -- Copyright, 1981, N. Gary Lane

it was submitted for publication and the time it appeared. Species names tend to be considerably more stable than are many generic names. For a species name a single specimen is the "name-giver". This individual fossil is called the holotype ("main-type"). The person naming the species indicates that the new species name, whatever it is, chicagoensis, for instance, is attached to specimen no. 143543 in the Field Museum of Natural History catalogue and is the holotype. A genus, on the other hand, does not have a specimen as a type but a single species, called the type species. When a new genus is named, the author will indicate that the species Encrinurus chicagoensis Walters, 1932 is to be the type species for a new genus, which he names Crotalus. He also assigns the species Encrinurus excellens and E. patens to the new genus. This is all subject to interpretation by other workers. Someone may say that Crotalus really isn't new but is in fact the same thing as the older genus Bromis, named in 1965 and that they are thus synonyms and Bromis has priority because it was named first. Or, someone may come along and say, so-and-so was crazy to think that E. chicagoensis and E. excellens should belong to the same genus and proceed to name a new genus with excellens as type species. So it goes, on and on, but the point is that the names are constantly changing and subject to different interpretations. Take the common brachiopod name Spirifer. At one time this generic name was used for species that ranged from Silurian through the Permian. Gradually it has been restricted as new genera have been named based on species that at one time were included in Spirifer. Now Spirifer is restricted so that there are no longer any Silurian or Devonian species--they are all called other genera now--and the genus is confined to a group of large brachiopods that occur only in Lower Mississippian rocks.

In order to achieve accurate and up-to-date identifications to the species level it is essential to have access to what is called the "primary" literature. These are the papers and monographs in which various species and genera were first described. Many of these articles are old, 19th century publications, and must be used in a museum or university library. Sometimes xerox copies can be obtained. Careful comparison of the description and illustrations, if any, must then be made with the specimens at hand. Once you think you have found the correct species you need to check all other species that may be closely similar in order to either eliminate them from consideration or to change your mind as to the correct identification.

Once you have what you think is the correct species name you are then faced with the problem as to what genus this species is currently assigned. You may be lucky and find a current paper in which this species is discussed and the genus assigned. Otherwise you need to work forward in time from the species description to see what changes have been made at the generic level. If the original paper was published in the 1800's there is an excellent chance the generic name has been changed once or several times. For some groups there are bibliographies of names that are a great help. Crinoids, for instance, are in very good shape in this respect. The Treatise can help some but, of course, only type species are listed there, not all of the species assigned to a genus. And even the Treatise volumes may be out-of-date because of the changes made after a specific volume was published.

You may be able to get an expert on a fossil group to check your identifications. He may be able to tell just from the names, the locality and stratigraphic position whether you are on the right track or not. Otherwise he may have to see the specimens.

I guess about all I can say is "Lots of luck and hard work".

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Section 3 -- RESULTS OF COOPERATION -- Copyright, 1981, H. L. Strimple

specimens from various places and horizons. This is virtually a new frontier of study albeit very tedius and difficult work. A good binocular microscope is almost a prerequisite to pick the specimens from washed residues. The rewards can be great, in my opinion, and many life forms recovered in addition to crinoids.

There has been some controversy over whether the microcrinoid Tytthocrinus has two or three

(continued page 7)

SECTION 3 -- RESULTS OF COOPERATION -- Copyright, 1981, H. L. Strimple

circlets of plates in the theca. Christina picked hundreds of microcrinoids from residue we collected on the flank of Apache Hill, Lake Valley, New Mexico, from a marl in the Nunn member. Lake Valley Formation (Mississippian) and a considerable number were Tytthocrinus which is a small form even among small microcrinoids. N. Gary Lane decided to study some of the better specimens with the aid of the SEM and so resolve the problem for all times. If there are only two circlets of plates the form is probably synonomous with Octocrinus which has in fact already been suggested. There will be more about cooperation later.

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October 5, 1981 -- 2020 Henderson Avenue, Wheaton, MD 20902

Editor, MAPS Digest -- Having professional paleontologists contribute articles to the Digest is a distinct plus. What they have to say invites some questions by the writer.

Both paleontologists praise Moore, Lalicher and Fischer but say that it is out of print. One refers to a recent text in derogatory terms and speaks hopefully of some forthcoming texts. Some years ago this writer sat in on a paleontology course at George Washington University. We used Beerbower, Search For The Past (plus some mimeographed materials). I wonder what Messers Strimple and Lane think of Beerbower. I am going to try to get the Lane, Life of the Past book. We have a paperback book, Fossils, An Introduction to Prehistoric Life, which we thought was a good introductory book, by William H. Matthews III, but it's almost 20 years old and although the author--whom we happen to know, assured us a number of years ago that he was going to put out a revision, I don't think he has done so.

We continue to use the Index, having a copy, despite the Smithsonian people telling us it is out of date. Our club has a set of the Treatise but, reacting to its expense it is kept under lock and key and its accessibility is very limited, and it keeps getting out of date--it is difficult to use.

Despite Professor Strimple I think "chaotic" is not far fetched with respect to the "science" of paleontology. Over the years I get the impression that paleontologists spend more time undermining what has been accepted in the past than in exploring new finds and new fields. With respect to two such instances, on reading the paper basing the change I did not find the reasoning convincing, and as to one such instance I know some of the paleontologists at the Smithsonian felt the same way. I think that when a name has been accepted for an appreciable number of years and specimens are represented in private collections and museums here and abroad, a proposed change should not be accepted unless the reasoning is "clear and convincing". Any comment from Professor Strimple or Lane? Sincerely yours, Philip Marcus

PS Why do paleontologists allow paleontological periodicals to charge authors outrageous prices per page and plate for publication? (Editor's comment: The above letter printed as written, could start a new column LETTERS TO THE EDITOR. Messers Strimple and Lane have asked for comments and as space permits the Digest will accommodate. Please keep letters as direct and to the point as possible. Let's see what happens.)

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ADVERTISING, continued -- 45 characters, characters mean letters and/or spaces). Payment must be included with your ad. Make checks payable to MAPS. Since the January issue of the Digest goes to the printer in December, January ads must be in by the first of December. February ads by the first of January, etc.

Ads may be run as long as desired during a MAPS year. Each month the rate to be $3.50 per column inch. For example should one decide to run an ad from January until summer, there would be 6 Digests to finish out the year.

This is a service by MAPS, but the contract is between the buyer and seller. Send your ads and check (made payable to MAPS) to: Mrs. Gerry Norris, 2623 - 34th Ave. Ct., Rock Island, IL 61201

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HOT OFF THE PRESS -- submitted by H. L. Strimple

The September issue of the Proceedings, Iowa Academy of Science (vol. 88, pp. 103-137) contains the long awaited study "Early Silurian Camerate Crinoids of Eastern Iowa" by B. J. Witzke and H. L. Strimple. Nineteen genera, of which 8 are new, 39 species, of which 17 are new and 14 are too poorly preserved or too poorly understood to warrant specific identification, are involved in the study. Forty three exposures of the Hopkinton Formation are listed, however 7 or 8 of them were never found by Witzke in the field. Anyone who might collect the Silurian dolomites needs to keep in mind that the Hopkinton is Early Silurian (Llandoverian) whereas most exposures are younger (Ludlovian) in age. This is the largest Llandoverian echinoderm fauna ever reported anywhere in the world.

An earlier paper by Frest, Strimple and Witzke reported on the youngest known paracrinoid which was also from the Hopkinton Dolomite. It is an incomplete theca described as a new genus and species Ovulocystites hopkintonensis, (see Journal Paleontology, 1980, vol. 54, pp. 217-228). Publications on the inadunete and flexible crinoids can be anticipated at a later date.

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BOOK REVIEW: PALEONTOLOGY OF THE GREEN RIVER FORMATION
WITH A REVIEW OF THE FISH FAUNA
Lance Grande, 1980; Bulletin 63 of the Geological Survey of Wyoming
Box 3008, University Station, Laramie, Wyoming 82071 -- $10.00*

There are probably very few fossil collectors in this country who do not have specimens of the Green River fossil herring Knightia humilis (more often referred to as Diplomystus humilis) in their collection. The commercial exploitation of the Green River shales has produced tens of thousands of these common fish. Less common are the numerous other fossils that also come from these prolific fossil beds; many of these are rare, command high prices, and are typically found only in state and university museum collections. Knowledge of these other fossils has hitherto been widely scattered in the paleontological literature and thus has not been readily accessible except to the professional specialists and students.

It is thus most welcome that the Wyoming Geological Survey has recently published a comprehensive review study of all the fossils of the Green River Formation. Dr. Grande, now a staff member of the American Museum of Natural History in New York, discusses the geological history of the Green River Lake System before reviewing in turn the fish fauna, and then the many non-fish fossils which include amphibians, turtles, lizards and snakes, crocodilians, birds, mammals, invertebrates, and plants of several types. To the amateur collector, this book will not be of much assistance for finding specific collecting localities, but rather its significant value lies in the more than 200 photographs of fossils that illustrate its pages (that is a bargain at less than five cents per picture!). The book is supplemented with several apendices on excavation and preparation techniques for fossils from these Eocene shales

For those who may plan on visiting Wyoming on a future trip, the state Geological Survey still has in print the Traveler's Guide to the Geology of Wyoming and Fossils of Wyoming, both priced reasonably at $3.50* each.

submitted by Charles J. Peterson, U. of Missouri, Columbia

*These are the prices as of May, 1981.

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THE ECHINODERMS, Class Stelleroidea -- The class Stelleroidea contains those star-
subclass Asteroidea shaped free-moving echinoderms in which the body is composed of rays, or arms, projecting from a central disc. All living species are members of one of two subclasses, the Asteroidea (containing the sea stars, or starfish) and the Ophiuroidea (containing the brittle stars).

Sea stars are commonly a drab yellow, but many species are more brightly colored. Red, orange,

(continued next page)

please add the following to your membership list:

David P. Bradbury
516 S. St. Andrews Pl.
Los Angeles, CA 90020
213-381-7151 Ext. 156

Geophysicist. Collecting 6 years. Will trade. Interested in trilobites, cystoids, crinoids--Permian and Silurian fauna Wants information, association, and to acquire new specimens.

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please make address changes for the following:

Anne Burleigh from Houston, TX to: 9100 tejon Street, #147, Denver, CO 80221

William M. Smith, Jr. from Miami, FL to: 1117 Von Phister Street, Key West, FL 33040

Douglas B. Tilley from Port Jefferson Station, NY to: 120 S. Sable Blvd. Apt 206 C, Aurora, CO 80012

MAZAMA ERUPTION: Concluded

It must have been an almost unimaginable catastrophe. Yet, Voorhies said, nature bounced back, even after those massive falls of ash. "Fossils in layers below the ash and above it contain the same kind of animals," he said. "This shows that although it was catastrophic in the short term, the same species must have reinvaded the area after the ash. As far as we can tell, there were no long-term biological effects."

Another scientist from the University of Nebraska, James Swinehart, reported that the ash covering Voorhies' fossil site is one of a series of ashfalls that began in Nebraska about 35 million years ago. He said the biggest one occurred 30 million years ago and covered more than 11,500 sq. miles with ash averaging 9 feet thick. The solid rock required to produce this much ash, he said, is about 125 times the amount blasted out of Mt. St. Helens on May 18, 1980. Furthermore, the nearest possible source is hundreds of miles to the southwest, Swinehart said. So the ash mapped in Western Nebraska must be only a small part of the total ash produced in that eruption, wherever it was.

Voorhies said the later ashfall, the one that trapped the thousands of animals at Poison Ivy Quarry 10 million years ago, extended into Central Nebraska. He said it covered "hundreds of thousands of square kilometers" to depths varying from 4 to 8 inches. The Poison Ivy Quarry site is the only one of its kind in North America, Voorhies said. He has searched extensively in other volcanic-ash beds and turned up only "an occasional fossil bone."

Voorhies tentatively concludes that even those massive ashfalls of 10 million years ago--hundreds of times greater than that of Mt. St. Helens--did not usually result in the mass death and burial of animals.

Submitted by Charles J. Peterson, U. of Missouri, Columbia MO 65201

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THE ECHINODERMS -- blue, purple, green, and darker shades are not infrequent.

The sea stars are typically pentamerous, with most species possessing five arms that grade into the disc. However, a greater number of arms are characteristic of many asteroids. For example, there are seven to fourteen arms in the European sun star, Crossaster papposus, and as many as 40 arms or more in Heliaster of the American West coast.

Unlike those of brittle stars, the arms of asteroids are not sharply set off from the central disc--that is, the width of the arm usually increases toward the base and grades into the disc. In most species the arm length ranges from one to three times the diameter of the central disc. From this average there deviate some forms that have extremely long slender arms and others that have very short arms. In cushion stars, each arm has the shape of an isosceles triangle, and in Culcita the arms are so short that the body appears pentagonal.

INVERTEBRATE ZOOLOGY, Barnes. 1974

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.

MAPS is affiliated with the Midwest Federation of Mineralogical and Geological Societies, and with the American Federation of Mineralogical Societies. Membership in MAPS is open to anyone, anywhere who is sincerely interested in fossils and the aims of the Society.

Family membership $7.00; individual membership $7.00; junior membership $5.00 (between ages 8 and 16); dealer membership (non voting $20.00).

MAPS meetings are held on the 1st Saturday of each month (2nd Saturday if inclement weather) October through May at 2 pm in the Science Building, Augustana College, Rock Island, Illinois.

President:	Paul Caponera, 2330 Collins St., Blue Island, IL 60406
1st Vice President:	Cheryl DeRosear, Box 125, Donnellson, IA 52625
2nd Vice President:	Tom Walsh, 501 E. 19th Avenue, Coal Valley, IL 61240
Secretary:	Dennis Sievers,2323 W. 10th, Davenport, IA 52804
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CYATHOCRINITES

MID-AMERICA PALEONTOLOGY SOCIETY

Madelynne Lillybeck
MAPS DIGEST Editor
1039 - 33rd St. Ct.
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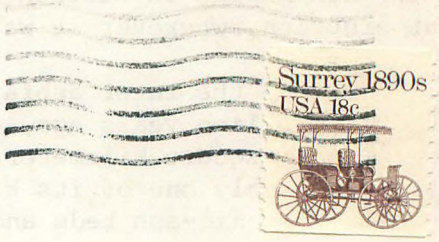
Dated Material - Meeting Notice



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