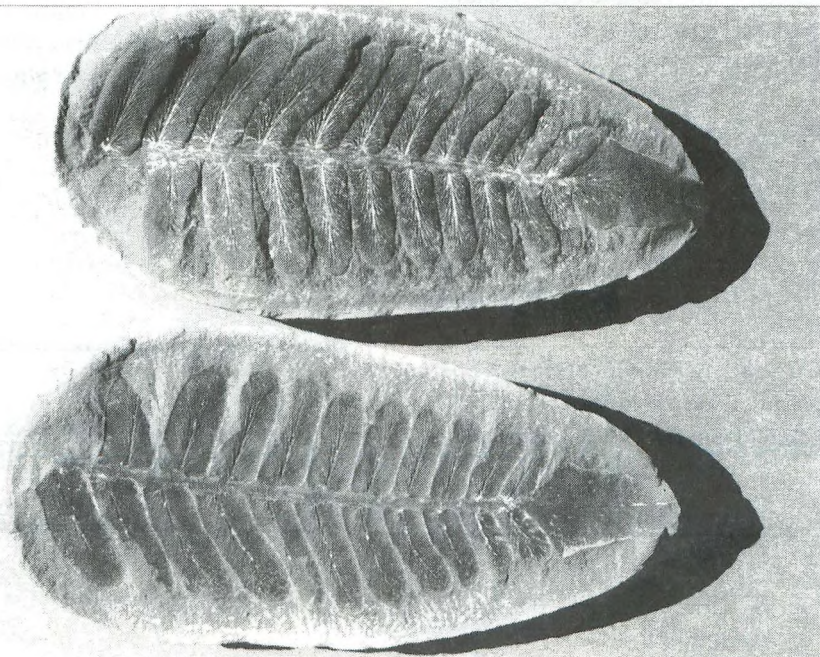
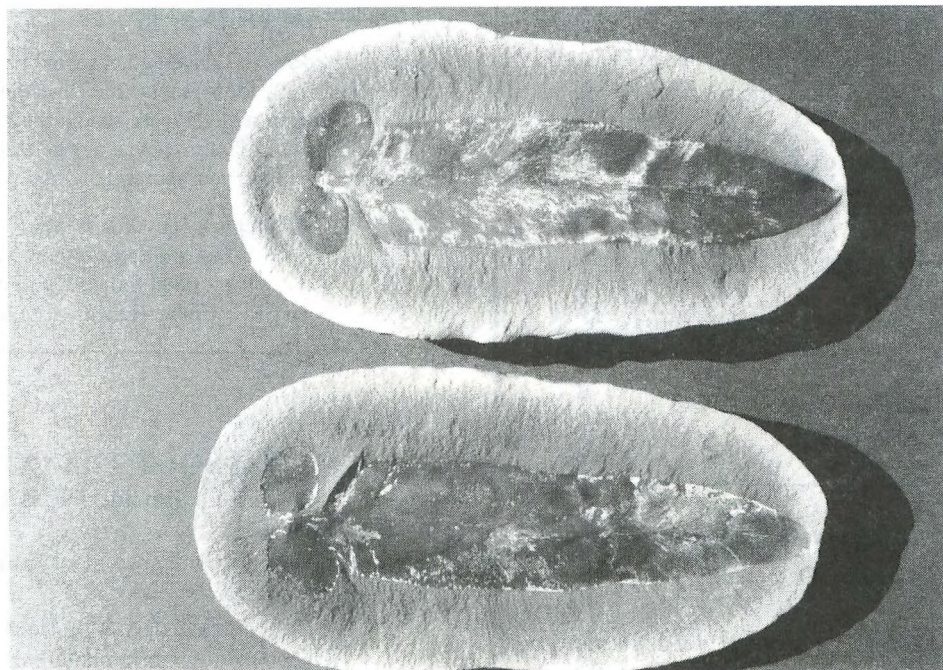


M.A.P.S. *Digest*

Official Publication of
Mid-America Paleontology Society

Volume 21, Number 7-8
October-November 1998



MARK YOUR CALENDARS

Nov 10 MAPS MEETING

Cornell College Norton Geol. Building, Mount Vernon, IA.

1:00 Board & General Meeting Combined

2:00 Program by Cornell Professor Ben Greenstein

Nov 7-8 FLORIDA FOSSIL HUNTERS 7TH ANNUAL FLORIDA FOSSIL, MINERAL AND GEM FAIR.

National Guard Armory, 2809 S. Ferncreek Ave., Orlando

Sat: 9 a.m. - 6 p.m.

Sun: 9 a.m. - 5 p.m.

Contact: Terry R. Angell, 226 Palmyra Dr., Orlando, FL 32807
407-277-8978; <FOSSILFAIR@aol.com>

Nov 18-20 SECOND CONFERENCE ON PARTNERSHIP OPPORTUNITIES FOR FEDERALLY-ASSOCIATED COLLECTIONS

Contact: Sally Shelton, Director, Collections Care

San Diego Natural History Museum

P.O. Box 1390

San Diego, CA 92112

619-232-3821, x226; fx 619-232-0248

<sshelton@sdnhm.org>

Nov 20-21 PALEOFEST98

**Florida Museum of Natural History & Florida Paleo. Soc.
University of Florida Campus, Gainesville**

Fri: Lecture by Jack Horner, Tour of the Museum's Education & Exhibit Hall; Welcome Party; Fossil & Club Displays

Sat: Fossil & Club Displays; Field Trips & Workshops; Tour of *Elephants!* Exhibit; Banquet/Awards; Auction

Contact: Vicki Henderson, Paleofest98 Coordinator

Florida Museum of Natural History

Powell Hall P.O. Box 112710

University of Florida

Gainesville, FL 32611-2710

352-846-2000, ext. 204

Email <henderson@flmnh.ufl.edu>

Dec 4-6 ROUND ROCK, TX, 8TH ANNUAL "FOSSIL FEST"

Sponsored by the Central Texas Paleo Society

Old Settlers Park Exhibit Hall, Hwy 79, 3.3 miles east of IH35

For more information, call (512) 864-0334

98/10 & 98/11 DUES ARE DUE

Are your dues due? You can tell by checking your mailing label. It reflects dues received by the 1st of Nov. The top line gives the expiration date in the form of year followed by month—98/11 means 1998/Nov. 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 and stamping 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 \$20 per U.S./Canadian household per year. Overseas members may choose the \$20 fee to receive the Digest by surface mail or a \$30 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

ABOUT THE COVER

sent by Jim and Sylvia Konecny

The cover photos are plant specimens from the Mazon Creek area of Northern Illinois.

Pennsylvanian (middle)

Carbondale Fm.

Francis Creek Sh. Mem.

The top specimen is *Neuropteris scheuchzeri* Hoffman. The lower specimen is *Neuropteris gigantea* Sternberg..

**Please Note: This is a double issue of the Digest.
Your next issue will be the December Issue.**

PROCEEDINGS OF THE BOARD

The October MAPS meeting was canceled because several Board members were going to be out of town and there was no pressing business.

DUE DATE FOR 2000+

Some members have already paid dues for the year 2000 or later, and the method I am using to code due dates on the labels may not be apparent to all. Therefore, please note this explanation

So that the computer will pick out and print address labels for members with expiration dates past 1999 as well as those in 98 or 99, I am using the form "99 / ___" for due dates starting in 2000. If your due date is in 2000, your label will start with 990/_. Similarly 992/___ indicates a due date in 2002, etc. With the system I have the database on now, I probably could revise the method, but I have not yet had time to experiment with it. And since I know this method works, I will probably be using it for quite a while.

PRI EXPANDS FOSSIL STORAGE FACILITY

by John Boland

On September 25th the Paleontological Research Institute (PRI) held a dedication of their new 6500 sq. ft. fossil storage facility in Ithaca, NY. Dr. Warren Allmon explained to the staff, assisting volunteers, and guests that PRI has over three million fossil specimens and 65,000 books and papers at the facility for research use. The Cornell University collection is housed there, as well as many other collections, including the recently added Rochester University collection.

The new building addition includes a large display room with many exemplary specimens, including wall charts. A glassed-in fossil preparation room allows visitors to see work in progress, and a teaching area is provided. Dr. Wendy Taylor, collections director, demonstrated a new teaching aid for visiting school children. It consists of four large drawers and an interactive audio computer. When drawer one is opened and the mouse clicks on the screen drawer one, an explanation is given on each item in the drawer. This is repeated for drawers 2-3-4.

Dr. Allmon said that PRI plans to build a new museum in about three years and that they were grateful to the 70 volunteers, members, and corporate sponsors who helped make PRI what it is today.

Mary and John Boland were acknowledged at the dedication for traveling the farthest to attend the opening. Wendy Taylor said she plans to attend the next MAPS EXPO.

SANDRA KENDREW DIES OF CANCER

To: The Editor and All Members:

It is with deepest regret that I inform you that my wife Sandra Kendrew passed away on the 21st of September 1998. She had been fighting a cancerous tumor on her liver for the past 13 months. She went through many months of therapy and went into remission in February 1998. I took her to Germany in March for our 20th wedding anniversary. We did 2 fossil shows, visited Holland, Austria, France, Switzerland, Bavaria and spent a week in the Black Forest. We were showered with 8" of snow the first night there, which made it even more spectacular. We visited several castles and toured the countryside. When we returned home, we learned that Sandra's cancer had returned. She went through several more treatments and then went through a bone marrow transplant, after which she spent nearly five weeks in an isolated room. With much sadness and regret, none of the treatments worked. Her cancer was a very rare and aggressive one. She was the 4th known case in the world with the cancer that she had. Sandy left us in peace without any pain or suffering in her last days. We all hope that anyone else that may contract this same cancer may be saved through the intensive study that was done on my wife.

Sandy was a cherished mother, wife and person. She loved family and friends and always loved the friendship with fellow fossil enthusiasts. Everyone knew my wife at the fossil shows by her kindness and smiles she gave everyone and by her loud call for me *Eric....* when I was not at my stand. I would always be at the other end of the building looking at fossils when she needed me.

Sandy has been a long time (member of) MAPS and Bone Valley Fossil Society (in which she was very active)...Last year Sandy had two fossils named after her: *Prunum sandra* from the Oligocene of Florida and *Syphocyprea sandrea* from the Pliocene of Florida.

Sandy will be missed by all and always respected by those who knew her.

Eric Kendrew
Jessica and Erica

Our most sincere sympathy to you for the untimely loss of your wife and mother. (Ed.)

"UNIQUE COLLECTOR" BILL WHITE DIES

source: *Dry Dredgers*, 9/98, Greg Hand, Ed.

It was reported in the *Dry Dredgers* that MAPS member William H. White, Jr., died August 8 at the age of 68 from cancer. From the Cincinnati area, Bill was very active in the *Dry Dredgers* and was the second recipient of the Paleontology Society's Strimple Award, presented in 1985.

"He was instrumental in establishing Stonelick Creek as one of the most famous collecting areas in the Cincinnati area

. He was also the leading force in the collecting of the edrioasteroid site at Beechmont Mall. Another location, the crinoid and starfish pocket at Hueston Woods, is now deposited at Miami University. The Florence, Kentucky, edrio bed was collected and deposited at the University of Cincinnati due to Bill's efforts. That single collection has generated more research by the University of Cincinnati than any other site..."

Our sincere sympathy to his family. (Ed.)

KEN SMITH'S COLLECTION DONATED

from *The Fossil Record*, 10/98, Mark Smith, Ed.

(Ken died while scuba diving in July--see July-Sept *Digest*)

The executive committee (of the Dallas Paleontology Society) voted to donate Ken Smith's Pleistocene collection to the Dallas Museum of Natural History. The family originally valued this collection at \$5000, but they have since decided to take \$1500. Ken's family has been very generous in the donations they have made to the museum and very gracious in allowing the Society to purchase this collection at a reduced price. If you would like to support the DPS in making this scientifically valuable collection available to the museum, please make a donation to the (Dallas Paleontological) Society.

The DPS Donation

by **Louis L. Jacobs**

from *The Fossil Record*, 10/98, Mark Smith, Ed.

I have been told that the Dallas Paleontological Society has acquired Ken Smith's collection of Pleistocene vertebrates from the Trinity River and donated it to the Dallas Museum of Natural History. I would like to applaud the DPS for its vision and foresight in doing what I believe is a valuable and important act. The first and primary reason is simply because of Ken. He deserves a proud legacy within the society and, on a larger scale, within the annals of paleontology. His collection in the DMNH is a tangible and lasting testament to his legacy.

The second reason deals with the nature of scientific research and the role that such organizations as the

Dallas Paleontological Society can play in paleontological research and in building a better community. Scientific research is about creating new knowledge. Education is about the dissemination of knowledge. Given such complementary missions, the value of a museum to each is readily apparent. Removing either research or education from the equation is devastating to both. Without the creation of new knowledge there is nothing new to teach; without education, new knowledge is squandered. The Dallas Paleontological Society has been invaluable on both fronts, and as a consequence, the community is stronger, as is its museum.

Paleontological research, and therefore the creation of new knowledge about the life of the past, is driven primarily by the study of specimens. The new knowledge generated in research on specimens is placed in the public domain through publication in scientific journals. Results reported there are then presented to a broader public through the media (which is not the best way) and through educational programs, which generally make new developments available in a reliable way. All scientific research will be checked sooner or later, a process called hypothesis testing. To check conclusions based on fossils, the original fossils must be available, now and in the future, for all time. That is why museums have research collections.

Now back to the Trinity Pleistocene. Ellis Shuler first recognized the importance of fossils from the Trinity

Pleistocene and began collecting them. The first scientific study of the Shuler collection was by Richard Swann Lull of Yale and published in the American Journal of Science in 1921. He named a new species of pronghorn and a new subspecies of camel. The collection he studied is in the Shuler Museum at SMU.

Following Lull, Bob Slaughter, whom I followed at SMU and who was an advisor to the Dallas Paleontological Society, made a collection of Trinity vertebrates, which he published in a series of papers mainly referring to the Hill-Shuler local faunas and the Moore Pit local fauna. Sadly, Bob passed away last Spring, but the collections he worked so hard to build are at SMU.

The third extensive collection from the Trinity is that made by Ken Smith. Ken's collection contains probably the best sloth material known from the Trinity. Ken published on it in the Bulletin of the Dallas Paleontological Society. The placement of Ken's collection in the Dallas Museum insures that it will always be available for creating new knowledge and for learning. It also means that Ken's paper will always have value because the specimens on which it is based can be checked.

Moreover, all of the Trinity vertebrates are found in gravel pits whose sole purpose is to consume the gravel. Real collections must be made and preserved as the pits are opened, for there is no chance to find fossils once the deadlines have done their work. Shuler and

Slaughter are joined by Ken in having made the collections that will forever remain the only record from large expanses of our region that will never again provide indications of life in the Ice Ages.

Research collections are not all display specimens, although some of Ken's Trinity specimens certainly are of display quality. Research collections are largely behind the scenes in museum collections because most displays for the public cannot incorporate them in ways that have sufficient educational impact. But it is overwhelmingly the research collections that are the foundation for new knowledge. Who can generate new knowledge? Anyone who wishes. When will this new knowledge come to be? Forever, over and over, as many times as the fossils are used. What will the new knowledge tell us? Who knows now what we will learn in the future? The boundaries of new knowledge coincide with the creativity and enthusiasm of our minds. Yours, mine, everyone's. In building the collections of the Dallas Museum you are building better than you know and for longer than you realize. Ken was building when he made the collection; he was creating new knowledge when he wrote the paper published in the Bulletin; and that paper made his collection more valuable as a resource for the Dallas Museum of Natural History.

So my closing of this note is a genuine thanks to Ken and a warm feeling that his efforts will be remembered through the good works they will forever generate. ...

THE UR-PLANT

source: Discovery, 10/98

Although scientists can trace the first plants back over 476 million years, their nature is not known because the only fossil evidence of them is spores. However, molecular botanists studying plant genes have uncovered clues to the mystery.

Their studies indicate that liverworts share some traits with green algae, from which land plants most likely arose. Liverworts are the only land plants that don't have stomata (pores) in their leaves. Of the 352 plant

species studied, all except liverworts, "contained at least one of the three distinct introns—useless chunks of DNA located inside the coding sequence of a gene—in two different genes." That distinct difference suggests that liverworts branched off the species which is the ancestor of all the other land plants before the introns were acquired.

The researchers are not suggesting that liverworts were *the* first plants; instead they believe "there is a distinct lineage that represented the very first land plants, and it gave rise to two extant lineages. One consists of the liverworts; the other, everything else."

COASTAL CAROLINA COLLECTING TECHNIQUES, PART 2

by Don Clements, Rocky Point, North Carolina and Kevin Shannon, Whiteville, North Carolina

Supplement article to MAPS Digest vol. 19, No. 6 July-Sept. 1996, PP 3 and 4, by Don Clements, Rocky Point, NC

Collecting Vertebrate Fossils from Streams and Banks

Collecting vertebrate fossils from unconsolidated sediment in streams has become an increasingly popular way of obtaining shark teeth and other vertebrate fossils. Much of this collecting is done with one-quarter inch or even larger screens. Typically, the collector shovels sediment from the stream bed into a bucket or directly into the screens for processing in the waters of the stream. Sediment is quickly removed from this **coarsely** screened material, and any large fossils are immediately evident. For most collectors the large fossils obtained in this manner are satisfactory. But, smaller fossils can also be gleaned from this leftover material.

Note: The possibility of faunal mixing is also a consideration when using these collecting methods. The following methods will provide stratigraphically accurate, non-size biased faunal samples. Without collecting bias faunal, associations and relationships can be reliably determined.

After locating a suitable stream with the use of literature and suitable geological maps, it is customary to sample the bars with a coarse screen. Proceeding upstream sampling at each bar will eventually bring you to a bar with few or no fossils. At this point it is time to begin searching the bank for sections of coarser sediment within the section. Shark teeth are concentrated in the section as sediment and are usually found with sediments of similar size and weight. This sorting is the reason that the fossils are concentrated in the point bars. Generally speaking, the fossils will be found in sandy or gravelly beds within a clay bank for instance. Breaks in deposition are another source for abundant vertebrate fossils, though these may be concentrated from one or more time periods. Vertebrate fossils are also found unconcentrated in the other sediment of the bank where screening would not be productive. Once a suitable stratum has been found, the work of proper screening can proceed.

It is important to have a series of screen sizes for use in

the field. Dan Romeo of Howell, New Jersey, has developed a clever design for nested screens. These are sized from about 1 inch to much finer than window screen, about 1/64 inch. The largest size is intended to break up the sediment rather than provide specimens. The progressively smaller screens are beneath each other to achieve a fair degree of sorting in the field. Raw sediment can also be taken directly from the field for home screening if the stream is in close proximity to transportation. Obviously, sediment reduced in the field is much easier to carry long distances.

Some of us are perhaps interested in obtaining a complete fauna from the processed sediments by studying the less than 1/4 inch material. The following screening method was put into use by Kevin Shannon of Whiteville. He was trying to come up with a method to make the sorting process easier. When he mentioned it to his wife, she wondered if plastic canvas would work. With a little modification, these work fine.

The screens are made from basically one size. The size of the sheet is about 8.5 x 11 inches. Mesh size is seven. Each square measures approximately 2 mm. Using a sharp Exacto knife you can increase the square size to about 6 mm. If you choose, you can make 14 mm by cutting a little larger square. The next size mesh is 1.5 mm, which you can make into 3.7 mm grid. With a cost of approximately 40¢ a sheet and their availability at most department stores, it's a cheap investment. A small frame can be built to interchange the sheets/screens if desired.

Now, when you go to use these, you have 4-6 sizes, 14 mm, 6 mm, 3.7 mm, 2 mm, 1/5 mm, and 1 mm. If you know what size critter you're going for, better yet.

I use a shallow pan with about 2 or 3 inches of water in the bottom. Since I cut my patterns out of the centers, I put a small amount in the center and place the screen in the water. Shaken gently, the smaller material falls to the bottom of the pan. I rub very little or not at all if I can help it so I won't break smaller, more delicate fossils. The canvas comes in a wide spectrum of

colors, and this helps in the sorting process. Ex: if the sample has a high quartz concentration and the fossils are brown, gray, or black, use a white screen. The darker fossils will show up nicely. Experiment with the colors and see what works for you. Remember, CARE is the word. Mini/micros take time to get good results due to the nature of their size alone.

DRAWBACKS:

- Small work area, possible slow process time
- Multiple washings may cause breakage on smaller scale.

REF. SOURCE: Collecting isolated microvertebrate fossils by D.J. Ward, Zoological Journal of the Linnean Society (1984), 82: 245-259. With 2 figures.

ADVANTAGES:

- lightweight, store easily
- screens/canvas cleans up with 2-5 % bleach followed by water rinse
- depending on size of fossils, a 5 gallon pail can be processed in 2-3 hours

In providing this screening information, it is our intention to stimulate collectors to present a more complete representation of life during the time of deposition. Also, we hope it will serve as a catalyst to get groups of individuals to work as teams, so that each member can contribute with their own areas of interest and expertise.

ABOUT THE HISTORY OF PALEONTOLOGY (PART I)

by Andreas Kerner

from *Tampa Bay Fossil Chronicles*, vol. 12, no. 2. 10/98, Frank Kocsis, Ed.

In this series I will talk about the beginnings of paleontology. Some of the early beliefs are hard to understand and were often a result of old myths.

Even at the end of the Middle Ages, man still did not know what fossils really were. It was commonly believed that the "figure-stones" had been created by mystery forces in the mud ("Vis Plasmic") as Aristotle had written almost 2000 years earlier.

Nevertheless, some people were already far ahead of their time. The famous **Leonardo da Vinci** (1452-1519), a true genius, physicist, biologist, technician, architect and creator of beautiful paintings, was also one of the first to do research on fossils. During the construction of a canal, he found fossil shells, fish and crabs. To him it was clear that these were remains of real living things. He concluded that this part of the land was once covered by sea.

Most other people did not agree with this revolutionary theory. The bible stated that the world had always been the same since it was created, so Leonardo's ideas were ridiculous. All these creatures, they believed, died in a

single event, the Flood described in the Bible, and were swept onto dry land. Leonardo actually wrote an article, called "To prove those wrong that believe the shells have been carried away from the seas for many days by the big Flood." But he had to be careful. It was dangerous to state things the church did not approve, and many early scientists were burned as unbelievers. So he never published his findings; they were discovered several hundred years later in his diary. Leonardo da Vinci was so far ahead of his time he could not change public beliefs in the 1500's.

Another great researcher was **Georg Bauer**, born in Germany in 1494. He called himself *Georgius Agricola* and traveled through Germany's mountains to study minerals. He in fact became the father of modern ore mining. He found out that erosion and sedimentation always take place and constantly change the earth's surface. He, too, found shells and



other marine life forms in the mountains that he called *fossilis* (Latin for *dug out*), a word we still use today—fossil.

Almost 200 years later, a Danish doctor and scientist, **Nicolaus Steno**, made another important discovery. He was shown unusual, tongue-like stones. Nobody knew what they were, but in 1667 certain that the “tongue-stones” were actually shark teeth. Since they were a little different than the ones in the shark’s jaws, he concluded that there had been different species of sharks that did not exist anymore—they became extinct.

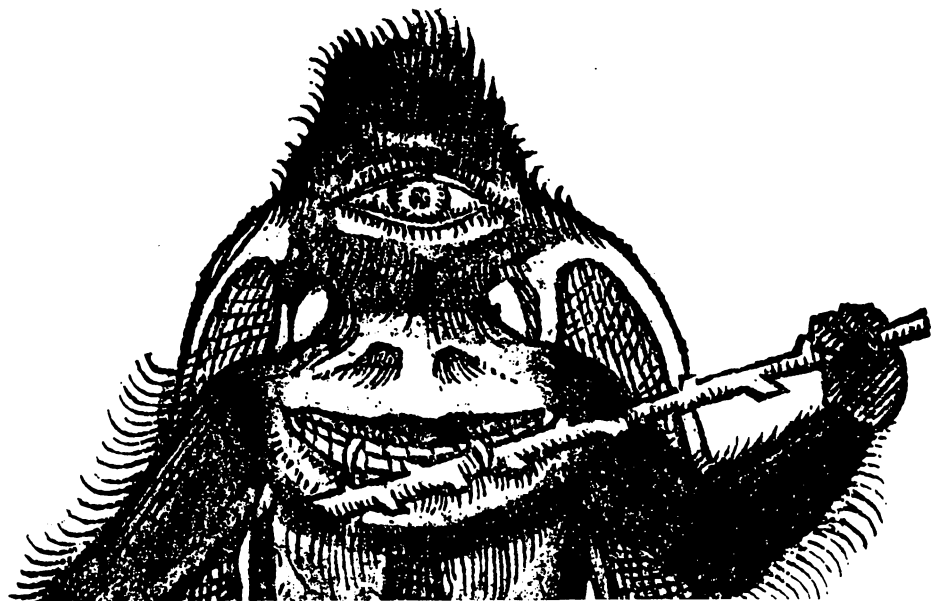
Steno then tried to find the sediments these fossil teeth came from. He was surprised to find several different layers with different shark teeth. Since they were deposited on top of each other, the deepest layers had to be the oldest. His book *Prodromus*, published in 1669, is still the basis of geology.

Soon after his discoveries, he quit his scientific research, became a priest and eventually bishop. Steno died in 1686 in Schwerin, Germany.

Unfortunately, Leonardo’s discoveries were still unknown and Steno’s were soon forgotten. Mysteries and metaphysics dominated the scientific world again. People actually believed that there were male and female stones that could reproduce! Dragons, giants and other monsters were still believed to exist.

A good example is the one-eyed Cyclops of the Greek mythology. Mammoth remains were found in abundance near the coast of Sicily. Viewed from the front, a mammoth skull has a single, large nasal opening, thought to be a single eye. So Sicily became known as the “Island of the Cyclops.” **Althanasius Kircher**, a German pastor, traveled to Sicily to examine the bones of the giants. In his book *Mundus subterraneus* (1678), he came to the conclusion that at least 4 species of giants had existed there. (Of course, they were just bones of other large mammals such as bison and giant deer.)

Mammoth tusks were usually thought to be canines of sea monsters, as illustrated in many old paintings. But since the single, spiraled tusk of the narwhale (*Monodonta monoceros*), which was usually referred to as the “unicorn,” was almost impossible to obtain, mammoth tusks were ground up and sold as medicine, called “Unicornum vercum” (“true unicorn”)



“Cyclops,” drawn 1572.
The form of a mammoth skull is clearly visible, with the “eye” being the nasal opening and the arms protruding from the alveoli of the tusks.

FINDING WHOLE TRILOBITES

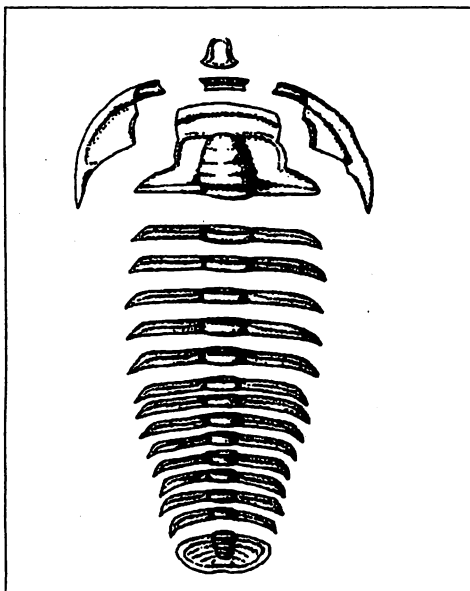
by J. S. Hollingsworth

from the Uncompahgre Plateau Paleontological Society's
Bulletin Board, 10/98

Have you ever wondered why it is so difficult to find a good whole trilobite, especially one with the free cheeks in place? Three factors conspire to destroy these little critters. First, a trilobite is composed of many individual sclerites (plates or segments). Secondly, in order to grow a trilobite must molt; that is, he must shed the rigid exoskeleton, puff up with fluid and grow another hard shell. Thirdly, environmental factors such as wave action, currents, and scavengers combine to disrupt a relatively intact exoskeleton.

Let's take a look at "Joe Trilobite" (*Elrathia kingii*). When this guy dies or molts, the exoskeleton he leaves behind breaks into 19 separate pieces.

When molting, "Joe" split the free cheeks and rostrum from the rest of the body and crawled forward, leaving the empty shell behind. Often there is some disarticulation between the cranidium and the thorax or between thoracic segments.



A dead carcass will hold together until decay is relatively advanced or until scavengers scatter the pieces. Even the molted exoskeleton has a little tissue, integument, which helps hold it together.

The Wheeler Shale, home of "Joe Trilobite" is a deep-water shelf deposit with poor oxygenation. Scavengers were apparently few and the rain of silt rapidly covered molts and carcasses on the ocean bottom. Thus these shales often contain many completely articulated

trilobites and many molts lacking free cheeks.

Limestones and other sediments deposited above normal wave base (say 6 meters) and even down to storm wave base (to 15 meters) generally have disarticulated trilobite material due to the combined impact of waves and abundant scavengers. In some cases wave action winnows out particular shapes, for example, the flat, plate-like trilobite parts may be washed away while the convex pieces such as the cranidium may remain in place. Some coquinas are made up entirely of heads of one particular trilobite species.



Down to storm wave base, and even deeper, whole trilobites may be preserved as living-kills buried under a sudden influx of silt following a storm. That was the case with this early Cambrian olenellid trilobite found in a mud flat environment. He was apparently crawling around in a 4-inch deep rill and was covered by a sudden influx of sand. All other trilobites at this site were completely disarticulated.

Thus most of the time when trilobite fossils are found, it is as isolated sclerites, and many species have been named on the basis of the cranidium (head) with or without an associated pygidium (tail). Often only the most unusual circumstances allow us to see what the entire trilobite looked like.

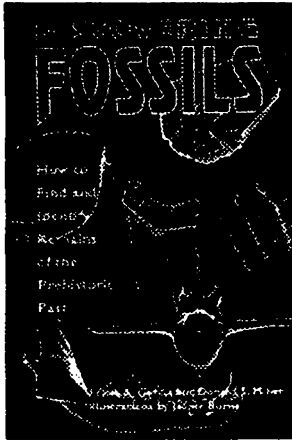
BOOK REVIEW

by Bob Sinibaldi, Ph.D.

from the Tampa Bay Fossil Chronicles, vol. 12, no. 1, 9/98

Discovering Fossils: How to Find and Identify Remains of the Prehistoric Past

by Frank A. Garcia and Donald S. Miller, Stackpole Books, 212 pages, ISBN 0-8117-2800-5
\$15.95 (paperback)



From cover to cover, *Discovering Fossils* is a great book for beginner to intermediate amateur fossil collectors. However, even advanced and experienced collectors will find this a useful reference book. Whatever your previous experiences, this book will have something for you. Collecting, preparing, cataloguing, labeling, laws and ethics are all covered in the text.

Authors Frank Garcia and Donald Miller both have extensive experience in collecting and writing about fossils. *Discovering Fossils* brings out the best of each author. Miller's text, interwoven with great anecdotal fossil adventures from Garcia (one of the modern era's great fossil hunters) brings fossil hunting to life. This book is organized, extensive, and written in a manner that is accessible to amateur fossil enthusiasts. As a bonus, the appendices include listings of fossil exhibits, major shows, clubs, collecting sites, dinosaur digs, and suggested readings.

However, the real bonus of this book is the nearly 100 page identification section. Illustrations by Jasper Burns, provides some of the best line drawings in a non-technical book I've come across. Vertebrates, invertebrates, plants, and evidence of animal activity are all illustrated beautifully.

Discovering Fossils has something for every collector at every level. At \$15.95, the amount of information you can get from this book makes it a "steal"—a must-have book.

BOOK REVIEW

by J. S. Hollingsworth

from Uncompahgre Plateau Paleo. Soc. *Bulletin Board*, 11/98***Charles Doolittle Walcott, Paleontologist***

by Ellis L. Yochelson, 510 pp, Kents State University Press, 1998, \$49

The current flurry of interest in the so-called Cambrian Explosion is just a continuation of the scientific contributions by Dr. Walcott, who, at the beginning of this century, was undoubtedly the North American expert on life in Cambrian times. During his lifetime he published on many aspects of geology and paleontology, but it is his contributions on Cambrian stratigraphy and fossils that are still cited today. He rose to be the third director of the US Geological Survey and eventually the Secretary of the Smithsonian Institute.

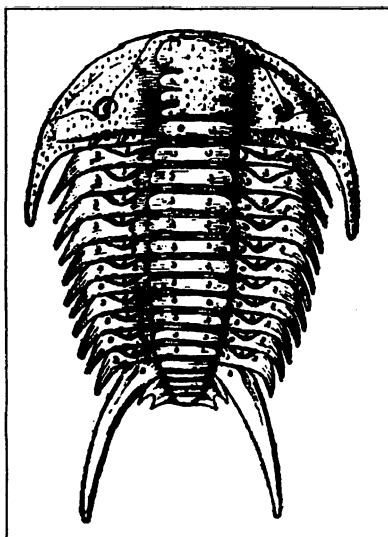
The field research in Nevada that I am associated with involves stage and series boundaries for the Lower Cambrian, and we frequently mention Charles Walcott's work in the area. When Yochelson's biography arrived, I read it eagerly, particularly noting his excursions to Nevada. My wife, who had long heard more of Walcott than she needed, soon came to call the book "Walcott the Wonderful."

Stephen Jay Gould, in his popular book about the Burgess Shale fauna, *Wonderful Life*, was vituperative in describing Walcott as an unimaginative paleontologist so conventional in his thinking that he had to force the exotic Burgess creatures into conventional phyla and classes. Walcott was undoubtedly a straight-laced and efficient bureaucrat, but he was also a hard-working, imaginative scientist when pursuing his beloved fossils.

Walcott started collecting fossils at the age of 13. Ten years later, he arranged the sale of a large collection of fossils including hundreds of complete trilobites that he and William Rust had collected. This sale of over 2800 specimens for \$3500 to Louis Agassiz at the Museum of Comparative Zoology at Harvard would be about \$70,000 in today's dollars. In 1880, as he joined the US Geological Survey, he sold a second collection of nearly 12,000 specimens to the Museum of

Comparative zoology for the princely sum of \$4000. Today such actions would make him a despised "commercial fossil collector" and exclude him from any serious scientific position.

Young Charles' first paper was published in 1875 describing a new species of the Ordovician trilobite,



Sphaerocoryphe. A major early (1877-84) scientific contribution was his study of trilobite's paired appendages: walking legs and gill-bearing appendages, which were based on carefully prepared thin sections cut from unusually preserved Ordovician trilobites.

Walcott worked as an assistant to Professor James Hall, the great paleontologist of New York in 1876 through 1879. Prof. Hall was a rather irascible man and was dependent on the legislature for appropriations. In Albany, the young Walcott honed his political skills schmoozing the legislature on Hall's behalf. Later as the Director of the Geological Survey, Walcott capitalized on these abilities. He was always attentive to the congressmen that controlled the purse-strings.

After Walcott joined the US Geological Survey in 1879, most of his field projects involved Cambrian or late Precambrian rocks. In his first full season with the Survey, he measured a five mile thickness from Tertiary down to Archean rocks on the North Rim of the Grand Canyon. In Walcott's early works on the Cambrian, he had it wrong in believing that the *Paradoxides* beds were older than the *Olenellus* beds following the current wisdom. But in 1886, the Norwegian Waldemar Brögger pointed out this error based on work in the Baltic region. Walcott then went to the field in Newfoundland and located *Olenellus* (Lower Cambrian) in shales below the *Paradoxides* beds (Middle Cambrian) and immediately reversed his position.

Walcott had no college education; his abilities in

geology and paleontology were largely self-taught, aided by willing help from many of the scientific leaders of the day. His lack of but seemingly, his family expected him to enter the clergy. He declined ministerial college in favor of his beloved fossils.

In the US Geological Survey, Walcott progressed rapidly from an Assistant Geologist through Chief Paleontologist to Director of the Survey. His political skills saved the Survey on several occasions, and under his skillful administration the Survey expanded considerably. Yochelson summarizes Walcott's accomplishments during his 30 years of service in the USGS:

1. He rescued the USGS when Congress nearly destroyed the Service.
2. He built a viable, sustainable USGS in 13 years as director with established divisions of water resources, topographic mapping and geologic mapping.
3. He saved the national forest reserves and directed the Forest Service for its initial years.
4. He led the Reclamation Service (later Bureau of Reclamation) for five years.
5. He laid the groundwork for the Bureau of Mines.

This biography is based largely on Walcott's diaries, which were as inspiring as you might imagine for such a bureaucrat. At times the book degenerates to a day-by-day account, but overall Yochelson has generated a very readable account of this complex man. I personally would like to have had more details about Walcott's field sessions and less about his political battles in Washington. For instance, I enjoyed the story of Walcott, in Utah, walking around in the field with stove pipes on his legs as snake protection. Reportedly, he could be heard a mile away.

This book covers from his birth in 1850 to the end of his directorship of the USGS May 1, 1907 when Walcott left to become the Secretary of the Smithsonian Institute. Many of Walcott's great contributions to science, particularly the discovery of the Burgess Shale fauna, occurred in the last 20 years of his life, which are not covered. I look forward eagerly to the sequel.

FALLS FOSSIL FESTIVAL - 1998

by Alan Goldstein, Naturalist and Festival Coordinator
Falls of the Ohio State Park, P. O. Box 1327, Jeffersonville, IN 47131-1327

The fourth Falls Fossil Festival September 19 and 20 was a tremendous success! It is held each year at the Falls of the Ohio State Park - a locality where a 170 - 200 acre Middle Devonian coral-stromatoporoid patch reef is preserved across from the city of Louisville. Several thousand visitors attended the Festival, including many M.A.P.S. members.

The Festival featured many activities for folks of all ages. Budding geologists had the opportunity to dig for fossils from the Waldron shale and North Vernon residual chert. I saw one child that found a pecan-sized *Caryocrinites* cystoid! The four-foot high shale pile was less than 18-inches high after the event, although it will continue producing fossils as long as we keep it there (which will probably be a long time).

Under a large nearby tent, we had a children's activity area, with a variety of make-and-take projects. The Kyana Geological Society, Louisville Science Center and the Clarksville Riverfront Foundation all provided activities. The "scavenger hunt" participants received a fossil upon completion.

Our "resource tent" housed five organizations. The Kyana Geological Society, Kentucky Paleontological Society, Indiana Society for Paleontology and the Paleontological Society had members present to identify fossils as well as fundraising efforts. The Clarksville Riverfront Foundation provided information about the festival for visitors and sold tickets for door prizes. I had contacted about two dozen other fossil parks and museums for brochures which were available for visitors planning future vacation travels.

Over a dozen outdoor vendors lined the parking lot with a variety of fossil and mineral specimens as well as lapidary and jewelry. Vendor space provides the income to subsidize many of our purchases for the park's resource library, professional memberships and the like.

Several quarries in the county hosted geology clubs, collecting out of the Silurian Waldron Shale and the Devonian formations. We are lucky that most area quarries permit clubs to collect on Saturday.

Inside the Interpretive Center, visitors could see our new eight foot mammoth tusk on display in the lobby. It was donated by a local sand and gravel company earlier in the year and preserved with the help of Ron Richards (Indiana State Museum) using white glue. We are currently completing the construction of a permanent display case.

A new temporary exhibit gallery contained a variety of fossil and mineral displays. Among them, I set up my display Brachiopods from A to Z and Margaret Kahrs provided an amazing selection for Fossils of Indiana. We are raising money for Adolf Seilacher's Fossil Art exhibit to coincide with the Falls Fossil Festival in 1999. If you visited the Dinofest International in Philadelphia in 1998, you may have seen this exhibit.

Each year I try to bring in a selection of paleontologists to cover various topics. This year we had a great selection. Dr. James Farlow was to present a slide-based program on tracking dinosaurs. However, due to a city-wide power outage about 10 minutes before he was to begin, Jim modified his program on dinosaur feet and gave a very good presentation which involved the audience.

Dr. John Pojeta covered mollusks over time, reviewing which mollusks are around, and have been found as fossils. Luckily the power did not go out before his presentation, it would have been more difficult to draw everything!

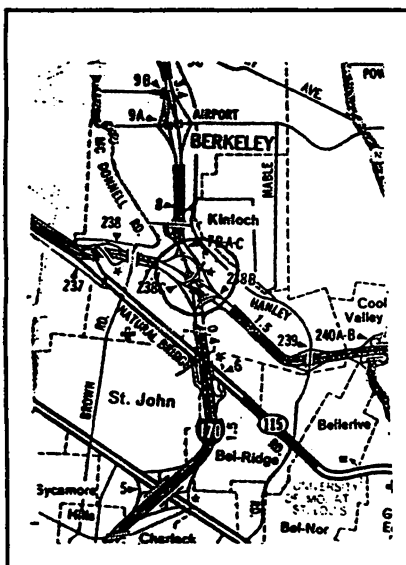
Dr. Gary Lane discussed the history of crinoids with beautiful photos of living examples. M.A.P.S. member Charles Oldham spoke about fossil collecting techniques, emphasizing safety and the importance of good information on specimens collected in the field. Dr. Steve Greb, a coal geologist with the Kentucky Geological Survey, talked about coal age fossils in Kentucky. Orton Geological Museum curator Dale Gnidovec gave a living account of the great debate between the cold and warm blooded nature of dinosaurs. I am in the process of arranging our speakers for 1999, the dates are September 18 and 19. We have a web site at <http://www.cismall.com/fallsoftheohio/festival.html>. As the 1999 program develops, information will be posted.

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF GEOLOGY AND LAND SURVEY

Missouri Geological Survey Section Form

This description of a stratigraphic section was sent by B. L. Stinchcomb, who says "It's somewhat technical; however, MAPS members might like to see such a geologic section which includes representative fossils."

Page 1 of 3 County St. Louis Elevation 570-580 (Est.)
Description: S 1/2 SE Section 9 (projected), T. 46 N., R. 6 E.
Datum _____ Latitude _____ Longitude _____



Quadrangle name
Clayton 7 1/2' Quadrangle

Described by
Wallace B. Howe
(now deceased)

Date
25 Oct 1990

Remarks: Exposures along I170 in cuts through a low ESE extension'' of SL Airport tract; SW of a tributary to Maline Creek and across it from Hanley Rd; cuts about 0.3 to 0.4 mile NNW of I170 and I70 intersection with base Worland at 570-580 feet (Est.), S1/2 SE Section 9 (projected) T. 46 N., R. 6E., in City Berkley, St. Louis Co., Mo., Clayton 7 1/2' Quadrangle, 1954 (revised 68 and 74).

Description	thickn.	
<u>Note:</u> a) Apparent thickness as well as presence of upper shale and clay beds <u>below</u> the Worland limestone, <u>within</u> the area of cuts, varies owing to slumpage and compaction beneath the limestone. b) Fusulinids occur in abundance in unit <u>8</u>, but are not seen below. Unit <u>8</u> is probably equivalent to limestone identified as Worland in most of western and northern Mo. c) <u>Unit 7</u> identified as lower Worland; <u>Unit 8</u> along with 9 and 10 as upper Worland; <u>Unit 6</u> as <u>upper</u> Lake Neosho; all of the Altamont Formation. d) Lower Worland resembles <u>upper ls.</u> At Page/I70 but other information clearly indicates that they are not the same limestone. <u>Unit 2</u> is most probably the bed Knight (1933) identified as the "R" zone, from which he collected his micro-gastropod faunas.		<i>Revisions/ Based on visit 16 July 1991 are not completed in this draft</i> <i>Relating to the above, collections for conodont studies were made on that date</i> WD

Page 2 of 3

Section S ½ SE Section 9 (projected), T. 46 N., R. 6 E.

Description	thickn.	
Top		
11) Unconsolidated clay and silt, poorly exposed; may include some post-Worland shale and clay; thickness varies according to modern topo, but ranges up to 15 feet or more.		11
10) Limestone; dolomitic?; f-m xln with sandy to silty texture; bedding indistinct but unit is perforated generally with burrows and/or plant root molds (1/4-1/2 inch ±), "bleached" appearance.	1'	10
9) Limestone; similar to that above; but with thin, irregular bedding; weathers to consistently stained dull maroon to red; locally replaced by dull maroon silty claystone; distinct boundary with unit below.	1'	9
8) Limestone; clearly distinct from that below; med-to brownish-gray, weathering brown to tan; mostly medium grained texture with abundant fossil material; unit is argillaceous and possibly silty; forms massive ledge but is characterized by thin to med. Slabby to irregular bedding; wide variety of marine invertebrate fossils throughout, including productids, horn corals, crinoidal debris, and fusulinids (<i>F. megista</i>); thickness ranges from less than 5 to more than 6 feet, averaging approximately.	1'±	8
7) Limestone; med. Gray, weathering light gray; wavy to irregular bedding, with some gray, calc. Shale ptgs; abundant fossils in f-m xln matrix include <i>Phricodothyris crurithyris</i> , crinoidal debris, horn corals; resembles typical L & M Higginsville, Myrick Station, as well as the upper limestone at Page/270 and I-up at MO94 (St. Charles) which (the lower and middle part) is about the same thickness but is distinctively thinner bedded. Average	5'	7
6) Shale; deeply weathered along most of exposure, but clearly includes 3"-6' or more of dark sub-fissile shale with subspherical to elongate and irregular phosphatic nodules; lower part also deeply weathered as well as characterized by/with maroon coloration (locally-derived material?); shaly, as opposed to clay structure throughout; slumped and variably compressed and squeezed, with estimated total thickness of about	6'-7'	6

Page 3 of 3

Section S ½ SE Section 9 (projected), T. 46 N., R. 6 E.

Description	thickn.	
5) Clay/claystone; gray, extremely compact/hard; interpreted as in stratigraphic position of an underclay; average	1'	
4) Clay/claystone; seemingly distinct from that above; strongly hematitic with maroon and gray variegated color; associated with underlying shale and irregular basal limestone; average approximately	2'	
3) Shale; maroon with deeply oxidized material (see above); gradational, — and is persistent laterally as compared to irregular limestone below.	1'-2'	
2) Limestone; gray and maroon; extremely argillaceous and massive to shaly; ferruginous, weathering deep maroon along with shale above; sparsely fossiliferous to coquinoïdal, with brachiopod shells, and other material reduced to limey powder; seemingly persistent as a variably-expressed marine horizon, with thickness of less than one inch to as much as 6 inches (see note).	0"-6"	
1) Clay; variegated gray, yellow and maroon; generally compact and "tough;" interpreted as in stratigraphic position of an underclay; apparent thickness	3'-4'	
0) <u>Ditch-level material</u> apparently in place suggest that a deeply-weathered massive argillaceous limestone occurs beneath bed 1.	—	

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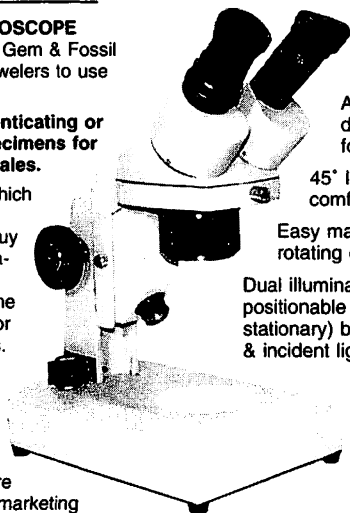
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Richard P. S. Jefferies
Dept. of Palaeontology
The Natural History Mus.
Cromwell Rd.
London, SW7 5BD, U.K.
00 44 171 938 8713
fx: 00 44 171 928 9277
r.jefferies@nhm.ac.uk

Palaeontologist. Will not trade. Major interest: For the past 30 years he has been studying the origin of chordates and echinoderms on the basis of fossil evidence; i.e., he has been redescribing the so-called "carpoid echinoderms," most of which, in his opinion, are not echinoderms but chordates with calcitic skeletons (calcichordates). The groups which particularly interest him in this connection are the solutes, cornutes, mitrates, ctenocystoids, helicoplacoids and cinctans. Member of The Palaeontological Association (U.K.) Wants to make contact with anyone who has found his animals. AIRMAIL

Bill Montante
2120 Jockey Hollow Dr.
Kennesaw GA 30152-3168
H: 770-499-0337
W: 404-586-8269
fx: 404-586-8208
William.M.Montante@marshmc.com

Senior Consultant—industrial safety. Will trade. Major interest trilobites. Has for trade Cambrian (Mid) trilobites from GA, Pennsylvanian period plants, various marine specimens. Wants to make new contacts.

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Membership in MAPS is open to anyone, anywhere who is sincerely interested in fossils and the aims of the Society.

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