Paleontology Poster Child

Our latest show and tell specimen is not some gnarly knobbled bone from some strange dinosaurs, but an unsung hero of Eastern Utah field work: a large, impressive petrified log from a very impressive fossil tree!

Found in the Cretaceous Dakota Formation, the wood adds to our understanding of forests of that time and is a beauty of a tree. The wood preserves amazing detail to the cell level and will be sent off for thin sectioning, but some details can even be seen with a hand specimen. The wood has “diffuse porous” vessel structure, like modern tropical hardwoods, and huge “rays” of lateral cells giving it a very striking appearance.

Polished and unpolished faces of The Log showing beautiful detail, murky blackness

Preliminary identifications using the cutting-edge Inside Wood database have shown few Cretaceous age woods that bear similar characteristics. It will take more study, but it is possible we may have an undescribed new wood type on our hands and perhaps even the earliest member of an entire family of hardwood trees.

See page 4 for the stirring account of the log’s excavation!

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Rock On!

Upstairs, neatly tucked away in the southwest corner of the gallery is a fabulous exhibit titled, “Rock On”. Aptly named, the exhibit comes to life when the button is pushed for the lights to go out and the fluorescent lights to come on. A spectrum spectacle that is sure to delight. This John Bird brain child is a wonderful addition to the exhibits already at the museum.

Editor/Layout

Christine K. Trease

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Student Researchers: an invasive species?
Over the past year we have been fortunate to have large herds of enthusiastic students descend on the museum in hot pursuit of wide range of interesting projects. Mike Burns, Ph.D. student on a dino-investigating road trip from Canada, reports that his group was “…astounded by the sheer quantity of The College of Eastern Utah’s ankylosaur material. The College of Eastern Utah has many important ankylosaur specimens, including beautifully-preserved skulls, a newly-named species of giant ankylosaur, and material from several species which cannot be found anywhere else in the world.” And they’ve been around!

The Cleveland-Lloyd Quarry also benefited from a summer of student interns, who made great progress there but also, in their spare time, joined us at the museum as well, putting in a great deal of time and effort in field and lab. Interns helped with educational and lab projects, such as organizing and interpreting our collection of Yellowcat Quarry maps for an upcoming Utahraptor project. But what they really took home, of course, was the fieldwork. In the words of intern Catie Armstrong, who saw the romance in adversity: …The desert sun was generating scorching heat and with the lack of vegetation, our only shelter was a white tarp above our heads. Constantly drinking salty water, I had to ensure that I stayed hydrated. This hotbox was my dwelling for the day, and I was in heaven… This was an event of which I would remember forever.

Among the most critical services we can provide visiting researchers: Rally Big Pens.

The Cleveland-Lloyd Quarry also benefited from a summer of student interns, who made great progress there but also, in their spare time, nonetheless a real prize. In Eastern Utah there are numerous kinds of pseudofossils, collectors’ red herrings that look like they might or should be biologic remains but are actually inorganic – common ones are branching manganese crystals called ‘dendrites’ growing like frost blooms on a window, or lumpy nodules or concretions which can look like anything from a petrified brain to Richard Nixon.

But perhaps my all-time favorite was collected by our avid longtime volunteer and current UFOP president Barb Benson. She brought in a strangely shaped reptilian-looking thing from the Mancos Shale in the San Rafael Swell near Ferron. It was instantly recognizable, partly because I had just collected the very same thing a few weeks earlier (although it had been decades since I’d seen another). You can imagine crinkly skin impression, a strange sea creature, or any number of culprits for this shape, but the real explanation is still a bit of a mystery. Called a ‘cone-in-cone structure,’ it is thought to form under pressure of burial by complicated crystallization and solution processes, and takes a particular mix of sand, clay and calcite cements – but after that it is open to speculation, since no one has ever seen them form in modern environments. And although they are very poorly studied here in Utah, spectacular examples can be collected out of the same sediments that yield marine fossils, so you get a two-for-one. So remember when you are out and about that if it looks strange, it probably is!

In the regular course of service answering folks’ information requests, where the objects in question can include the occasional lumpy concretion or just-a-pretty-rock, every once in a while there is a stunner which, although not what the collector may have expected, is a real prize.
It’s been a busy summer for the paleo crew here, working mostly at our Suarez Sisters site south east of the town of Green River. This is proving to be a prolific site, yielding to date over 1500 bones consisting principally of the little therizinosaur, Falcarius utahensis, a very large and yet to be named Nodosaur and possibly a third critter yet to be identified. There is an impressive cluster of the therizinosaur bones that John affectionately calls the Spaghetti Bowl. Imagine a pile of dino bones arranged like the Pick-up-Sticks you might have played with when you were a youngster, or may still play with. While it can be exciting to have such an abundance of bone to excavate, it is after all what we do, it can also be a challenge to know where to start or how to proceed. More than once I would hear John’s laughter at finding another bone take on a slight edge that would suggest his feelings might lean more to, “oh no, not another bone!” As often as not if I leaned over to see what he had going, I would witness a tightly woven mesh of 15-20 bones, John hovering over the pile murmuring, patiently working his way through it one by one. We should all be so lucky.

Another exciting possibility at this quarry arose when we came to realize that scattered chunks of dermal armor from this massive Nodosaur that we kept uncovering may, in fact, be connected into one large sheet of armor plates and scutes that measures about 3 meters by 1.5 meters. If that proves to be true, that would be way cool. These pieces of armor appear to be set in a thick layer of sandstone and will represent a considerable amount of work to excavate, so we did what any intelligent person would do, we put it off until next season.

This summer also gave us a very nicely preserved and nearly complete Pubis, one of the three pelvic bones in dinos. When we got it pretty well exposed in the quarry its shape and proportions suggested it might be something other than a therizinosaur and definitely too small for the nodosaur. It had been a mentioned a couple of times in the past that our collection of therizinosaur material might include bones of some other critter. So you can imagine that when this pubis presented itself and appeared different, it generated some excitement. Once we got it back to the lab and prepped out, we took it down into collections and compared it to the other less complete pubis bones. Bits and pieces shared some clear similarities. Overall size and proportions were not dissimilar to bone we had already collected. While it began to look less exotic than it did in the quarry, it still presents some mysteries. Our hope now is to get the opinions of a couple of folks whose knowledge of Falcarius utahensis is particularly robust so we can begin to pick through what this quarry has to offer to paleontology. It’s all cool stuff.

Often this summer it was just John and myself out there bumbling about in 100 degree weather and, for a short while, unpleasantly thick smoke from both Utah and Californian fires. Very strange and eerie when everything is yellow and the massive Book Cliffs just ten miles away can’t be seen. We did on occasion have some help, interestingly, a father/son team from the west coast and, later, a mother/son team from the east coast. In between we had a group of kids from an assortment of places, Utah included, and finally a fun bunch of older duffers from the Pacific Northwest with a massive mobile home, a pocket full of interesting little pick-like tools and a host of funny stories. It’s nice to meet new folks and share the companionship and we are very appreciative of the help excavating these fine little dino bones. Summer was over as of Sept. 22. Gone south, I suspect, with the Hummers that no longer hover about the feeders in our yard. But there are still some fine fall days to be spent out in our quarries. Some of the nicest weather is before us and we hope to make the best of it before the days get too short and the air too cold. If you have given thought to trying your hand at excavation, this would be the time to do it. Just give us a call at that museum and we can lay out the dates and time for you.

In our last newsletter I mentioned a material called linear foam and how we saw a demonstration at a symposium on how this foam could be used to replicate dino tracks. We often find these track in the desert. Earlier this summer we got a chance to try out this material on some tracks that John and I had gone to look at on a previous outing. Methods we have used in the past involved plaster or silicone which required carrying water, mixing bowls, rubber gloves and allowing a set time for the material to harden.
The linear foam is weightless, packed neatly in sturdy boxes and requires only a flat, firm surface like a clip board and a few minutes to cut the foam to size, place it on the track and press it in. Once compressed, one simply carefully lifts it out, returns it to its box and heads off to the lab where a plaster cast is them made. An added benefit to this foam is that it leaves only a trace of blue foam in the original which can be removed completely with a soft bristle brush and a healthy blow. It’s nice to have new tools in our bag of tricks.

Early in September we spent a couple of days here in the Swell excavating a large section of petrified log. This log was pretty badly weathered on the exposed surface. Our hope was that more solid material existed in the heart of the tree. The tree was of some interest because it appeared to be a kind of palm, but it sat in a formation in which palms were not thought to exist. We are attracted to such mysteries. On a Tuesday John, myself and B2 (Barb Benson, current president of UFOP) headed out early, found the tree and began digging around it in preparation of encasing it in a plaster jacket. This is exactly the same process that we use when jacketing a dino bone. By the end of the day we had an impressively LARGE jacket encasing an impressively HEAVY fossil tree. This isn’t the first time we have been faced with this problem, so we went to our first line of proven defense, that is, we resorted to subterfuge or sought to pass this problem off to someone else. As it happened, the finished jacket looked remarkably like an Egyptian mummy, both in size and shape. With the addition of a pair of white tennis shoes (nobly offered by B2) propped up in the appropriate place, a number of photos were taken of the Mummy.

We then packed up and raced back to the museum where John made the valiant effort of convincing Dr. Barlow, the museum’s archaeologist, that we had, in fact, found a mummy in the desert and that, being within her field of study, it was really more appropriate that she go out and collect this rare find. Now I wasn’t there when John presented his assessment of the situation to Renee, so I don’t know if he made a convincing argument or whether Renee was just naturally skeptical of anything offered by the paleo department (as well she should), but she was not having anything to do with it. So maybe next Easter when you are out in the Swell with family and friends and you see a large, white mummy laying about 100’ off the road, you’ll just throw it the back of your truck and drop it off at the museum. Don’t give it to Renee, she had her chance, go directly to the bone lab.

Thanks guys. Come on out with us and enjoy the fall weather at one of our quarries. I’ll be back at you in the next newsletter, sometime late fall or early winter. Bill

**Gift Shop**

The Gift Shop Manager/Director or Public Relations is Christine K. Trease. You can contact her by phone at (435) 613-5757 or by email at christine.trease@ceu.edu

Remember our gift shop for all your gift giving needs. We have unique items, so make a hit by giving something other than that “run of the mill gift” that can be found anywhere!

This holiday season, please remember to support the museum through gift shop purchases.
Since the last newsletter, E&E has been wrapping up a few incomplete projects such as the brachiosaur mural and undergoing major housecleaning in the education lab. The lab is still being used for storage of material such as the Kennewick Man traveling exhibit cases and the items usually stored in the large museum trailer. The trailer had to be cleaned out so that it could be used as transportation for support materials for the Little Grand Canyon Marathon (co-sponsored by the museum) in early September. Hopefully, this temporary clutter will be removed by the time you read this newsletter.

We are in the preliminary planning stages for a new exhibit featuring Fremont petroglyphs, a long overdue new exhibit for the Hall of Archaeology. This exhibit, when completed, should prove very popular with visitors due to our proximity to Range Creek, Nine Mile Canyon, and sites within the Swell.

We have a couple of more murals planned for the Hall of Paleontology and plan to begin working on them in early October. These small murals will feature skeletons of Eolambia caroljonesa and Nedcolbertia justinhoffmani, replacing the cardboard cutouts of these skeletons.

We have submitted a proposal to Conoco-Phillips to fund the initial phase of a planned new exhibit, Fossils to Fuel. This exhibit will feature the Mancos Seaway and the relationship of marine fossils to oil and gas deposits, helping to explain why we have abundant gas and oil resources in Utah as well as introducing the viewer to representative vertebrate and invertebrate marine fossils. The initial phase will produce a stand-alone exhibit that will be visually enhanced and educationally expanded with each additional phase. In-house design and fabrication will allow us to maximize our “bang for the buck”.

We have also submitted a proposal to the Tourism Tax Board (which will be considered in November) for funding to expand the Mini-Mesozoic Gardens by a factor of five to create a new immersive exhibit with a working title of A Taste of the Mesozoic. This proposed exhibit will allow the visitor to enter an exhibit area and be surrounded by Living Fossil plants and animals and casts or models of their extinct counterparts. This expansion will allow us to bring in plants that now occur naturally only in the Southern Hemisphere, but are closely related to fossil Mesozoic plants that once grew in Utah. Another feature of this expanded exhibit is an invertebrate grotto where the visitor can view living fossil invertebrates, many of which were around long before the time of the dinosaurs. The beauty of this plan is that we are utilizing existing museum space and the exhibit components can be moved to the new museum in the future, thus keeping costs to a minimum both now and in the future while keeping alive the vision of a future, full-size Mesozoic Gardens. As above, design and fabrication will be in-house to stretch our money.

In the library, we have begun an ambitious project to catch up the museum scrapbooks despite a several year backlog of articles.

Hopefully, by next newsletter, we will be scrambling frantically to get our proposed new exhibits fabricated for your viewing pleasure. Keep your fingers crossed! As always, donations and/or membership renewals help us keep your museum a great place to visit.

**Museum Memberships and Gift Shop purchases are a great way to support your museum.**

Museum Memberships are handled by Alison Sundahl. You can contact her by phone (435) 613-5189 or by email at alison.sundahl@ceu.edu

Purchase your museum membership today! The price of a museum membership will be going up to $39.00 beginning in January 2010.

Just in time for the holiday season, give the gift that will give all year by purchasing museum memberships for your family and friends at the rate of $30.00 per membership. Get them before the price goes up!
This summer has been very busy for the archaeology side of the museum. I have been “in the field” since mid-May, and am still conducting excavations, surveys, and recording granaries and other archaeological sites with students and volunteer crews. We are still hoping to get several archaeology interns to help with cataloging, if they are able to obtain the work-study funds that they are eligible for from the college. Currently I am excavating at “the Burnout” in Range Creek and building a walkway across the site to prevent additional damage to the surface of the site by visitor traffic, since this site seems to be a favorite stop for recreational tours through the canyon. It is the biggest Fremont community in Range Creek! If you are interested in helping backfill sites, build the ramps on the Burnout, or donating lumber or materials, please contact me at 613-5290 for volunteer information.

Excavations at “Applique House” continued through July, and we found two separate occupation levels! The earliest house may have been inhabited as early as AD 800, but given the types of pottery associated with this level I expected a slightly later date, circa AD 950-1040, so am sending additional samples from other parts of the floor at the same level. Sometimes radiocarbon dates are off for reasons such as contamination by old or new carbon, and sometimes prehistoric people just used “old wood” for construction materials or campfires, so we always try to confirm our findings with several dates. Each radiocarbon dates costs $475 per sample (that is a discount from the usual $600+ rate). Pollen samples also cost about $400 each and our tree-ring dates cost about $25 per sample. This year budgets are tight. If you would like to help out by donating a few Range Creek dates or pollen sample assays, please contact me at 613-5290. I will publish our sponsors, along with information about the artifacts, in the newsletter.

We had seven archaeology field school students, six officially enrolled at CEU as summer transfer students from the University of Colorado, Arizona State University, the University of Arizona, a college in Indiana, the University at Melbourne, Australia, and Salt Lake Community College. All were exceptional, and I hope they will continue in their archaeology careers. I have already heard from two who are applying to graduate school.

The artifacts are still being analyzed, but include at least three different types of pottery, stone tool material from sources in the San Rafael
Swell, Vernal, and Canyonlands N. P., and food remains that suggest a prehistoric diet that included deer, small animals, maize and possibly fish. We uncovered several hearths for cooking on the floor of the structure, a pot storage location scooped out of the floor, a bone awl for sewing, metate fragments and a mano for grinding maize and other plant foods, and one area littered with tiny “microliths” that suggest a part of the house where someone sat and sharpened knives and projectiles. So far, though, the pollen profile and overall assemblage suggest a seasonal, rather than year-round occupation at this site. Turquoise found in the upper level also suggests that these Fremont had contact with people from the Hitsatsinom, or Anasazi culture region to the south.

This year we also recorded six more granaries in Range Creek (for a total of more than 160), and several granaries in Nine Mile Canyon. I held a Range Creek granary recording field session in July with graduate students from the University of California, Davis, and UCLA. Lot’s of fun-- we collected maize and tree ring samples from several granaries, and the handle of a wooden shovel from the granary near the flute site.

The Hansen Collection

We have just received a donation of ancient Fremont artifacts from the Hansen Family of East Carbon. These items were donated to the museum by Virgene and Mark Hansen in memory of Virgene’s late husband Keith (Mark’s father), so that the collection will be available for display and study, and to help us learn more about the ancient peoples of eastern Utah. Keith Hansen was the long-time deputy sheriff of Carbon County, and archaeology was his passion. The collection includes many artifacts already on display in the Hall of Archaeology, and other items previously on display for several decades. We will be inventoring, conserving, cataloging, photographing and curating this important collection for several months, and plan on a public exhibit featuring the artifacts and information about how they can inform us about the lifeways of people from the Fremont culture, and the educational and scientific importance of archaeological sites and artifacts and their provenience.
**THE DIRT ON ARCHAEOLOGY CONTINUED**

**CEU Archaeology Students**
We have four new CEU archaeology students cleaning, labeling and analyzing the Range Creek artifacts at the archaeology lab on campus, in the course called Anthropology 2525. Sarah Botkin, Ron LaBorde, Damien Scoville and Mariel Shreve are learning the basics of lithic, ceramic and ground stone artifacts, including descriptive analyses and interpretation, and will be helping us determine of what people were doing in Range Creek 1000 years ago.

**Museum Night at the Movies**
With the new fall term starting we are continuing the “Museum Night at the Movies” with the CEUPM premier of “Raiders of the Lost Ark” on Friday October 2nd. See Christine Trease’s excellent flyer & join us for a free evening of popcorn & fun at 6 p.m. in the classroom upstairs.

**CVAS meetings**
The Castle Valley Archaeological Society will meet in the museum Thursday night, October 15 with a talk by Utah Statewide Archaeological Society member and retired ARPA officer Erny Kuncl, and Thursday night, November 19 with a talk by Shawn Carlyle, a research assistant professor who completed his dissertation at the University of Utah. The public is invited!

**CEU Prehistoric Museum**
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Located at 155 East Main Street
Visit us on the web at
http://museum.ceu.edu

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