12-foot tall ground sloth skeleton added to museum's archaeological wing

Weighing in at about 3,000 pounds and standing on its hind legs at over 12-feet-tall, College of Eastern Utah’s ground sloth skeleton went on exhibit in the archaeological wing of the museum over the Christmas holidays.

Similar to the Pleistocene ground sloth found in a sandy bank in Orem two years ago, CEU’s ground sloth came from Florida and was twice the size of any found in Utah. They were heavy, slow moving creatures that were bear-like in their appearance, but much larger.

**History of the ground sloth**

They originally migrated from South America into Central and North America across a land bridge at the Isthmus of Panama about eight million years ago.

Two species of sloth once inhabited the Colorado Plateau. The best known type on the Plateau was the Shasta ground sloth, which was the size of a modern steer. The Shasta ground sloth browsed primarily on globemallow, Mormon tea, yucca, century plant, cactus, catclaw, salt brush and mesquite. Many of these plants still grow in the vicinity of the sloth caves.

**Scientific knowledge from Rampart Cave**

Ground sloths inhabited caves in the western region of Grand Canyon National Park. One locality in particular, Rampart Cave, originally contained tremendous quantities of sloth dung as well as skeletal remains and such perishable material as hair and claws. Radiocarbon dates from the sloth dung suggest the sloths visited Rampart Cave periodically for over 40,000 years until approximately 11,000 years ago.

The gain in scientific knowledge from Rampart Cave came to a halt when the dung bed was accidentally set ablaze and most of this irreplaceable storehouse of information was consumed by a smoldering fire.

**Harlan’s ground sloth**

The other species of sloth on the Plateau was a giant sloth, known as Harlan’s ground sloth. Standing on its hind legs, the sloth was 12-feet-tall and could reach tree branches as high as a second-story window. It had a thick, brownish fur coat and a large, fleshy tail. Its long hair was probably covered with algae and insects due to its slow metabolism. The sloth grasped tree branches with its immense, curved claws and stripped off leaves with its long, pliable tongue.

Harlan’s sloth was a veritable “animal tank” as it had a thick hide embedded with nickel size plates of bone (dermal ossicles) which served as a suit of armor under its hairy coat.

**Orem’s ground sloth**

The ground sloth found in Orem roamed the surrounding mountains somewhere between 11,000 to 14,000 years ago. The mountains were virtually the same as now, except they rose abruptly from the waters of Lake Bonneville, which covered most of the state. About the same time, the lake broke through a natural dam in Idaho and drained into the Snake River for a long time, dropping its level drastically and leaving broad deltas along the base of the mountains. Much of the eastern part of Sandy City is what remains of that delta as well as Orem City.

Paleontologists believe the Orem ground sloth probably died somewhere up the Provo River where he drifted down the river. The river, instead of cutting south after exiting Provo Canyon in the deep, broad valley it now flows along, shot out across the delta to a mouth on the west edge of the Orem bench. There, the sloth was deposited on the broad edge of the delta and buried in gravel, probably during the spring flood season.

It was found by a jogger named Ron Robinson who found a single bone on the surface and showed it to his brother, a geologist, who contacted state paleontologist Dave Gillette who identified its species.

**Final resting place of Huntington mammoth is the CEU Museum**

The discovery of a huge mammoth skeleton up Huntington Canyon in August 1988 will be the focal point of energy for the museum’s personnel in 1993. The staff is preparing to piece together a cast of the ancient elephant found by a construction crew working on the dam.

The bones have been at the College of Eastern Utah’s paleontology lab where they have been on display the past year. Museum volunteer, Clark Warren, has monitored the bones daily with video equipment and environmental controls to watch for any cracks or decomposition of the bones.

When the mammoth was found, it had been preserved in a “mud refrigerator” for over 10,000 years. Along with it were found pine cones, needles, vegetation, a projectile point and dung. Because of its find, a deeper understanding of the mammoth and its environment in Central Utah after the last ice age was gained by the academic community.

The elevation at which the mammoth was found was also puzzling the scientific community. A mammoth’s skeleton has been located at the 7,200-feet level in New Mexico but none higher. Huntington Canyon’s mammoth was found around 9,000-feet above sea level. Moreover, mammoths generally foraged in lower (Continued on page 2)
Huntington mammoth

(Continued from front page)

1993 and it will be integrated with the
mammals representing the last of the Ice
Age in Utah, including the ground sloth,
mountain goat and musk-ox.

CEU is continually receiving requests
for mammoth casts. "We have confirmed
orders for a half dozen mammoth casts
from Japan, the Philippines and Australia.
We are finalizing the sale of at least a half
dozen more," Burge said. "Requests are
coming from all over the world, and we
haven't even advertised it. This could be
the most displayed mammoth in the world.

"The casts are being made in coopera-
tion with the U.S. Forest Service. Proceeds
will be used to fund further research into
Ice Age mammals that once roamed Hunt-
ington Canyon and the Skyline Drive area.

"We will use the money to search for
mammoths, mastodons and cave bears,"
Burge continued.

The entire process is being supervised
by a five-man committee that includes
Larry Agenbroad, a professor at Northern
Arizona University in Flagstaff. He is the
most published mammoth expert in the
world and director of the Center for
Quaternary Studies (Ice Age studies).

DNA sampling may be the best link in
studying prehistoric life in Eastern Utah

W

hen Brigham Young University

professor of microbiology and

CEU alumnus, Scott Woodward,

visited the museum in December to collect a
bone specimen from the Huntington mam-
moth for a DNA (deoxyribonucleic acid)
sample, a discussion with CEU museum

director Don Burge followed with the possi-

bility of finding DNA in coal and dinosaur

fossils.

Woodward wanted the DNA sample from

the mammoth because he wants to isolate

and identify its hereditary traits. The study of

DNA is important because of its ability to

precisely replicate itself for the basis of hered-

ity and organic evolution. The Huntington

mammoth is important because it is the best

preserved Columbian Mammoth found and

he plans to compare it with DNA from In-

dian and African elephants.

Woodward, an expert in the field of DNA

analysis, plans to take the mammoth bone

his BYU lab and drill in it to obtain a DNA

sample. He will compare the mammoth’s

DNA with other elephant’s DNA to study

their evolution and how the changing envi-

ronment has affected their ancestors.

He has ventured to Egypt several times to

study and take DNA samples from Egyptian

mummies. His next trip is scheduled for the


LaVell King, Ph.D., teaches classes at

CEU on heredity and evolution and is ex-

cited about the possibilities of DNA sam-

pling in the mammoth and other prehistoric

life forms.

He explained, "DNA is the gene by which

traits are transmitted from adults to off-

spring. They are the 'character determiners.'

The importance of DNA is evident when we

realized that it indirectly controls the pro-
duction of proteins, the essential components

of many basic structures and organs. Even

the activities of organisms are regulated by

specific catalytic proteins called enzymes.

Without DNA and its products, there would

be no life as we know it. Its ability to pre-

cisely replicate itself is the basis for hered-

ity, and organic evolution ultimately depends

upon this molecule.

"The part of the DNA molecule that is

(Continued from page 4)
Dino preparation lab houses rare bones that have brought national attention to the CEU museum

With all the hoopla about state-of-the-art computers and facilities included in the CEU Computer/ Business Building which opened in fall 1991, little was mentioned about the dinosaur preparation lab tucked away in its north wing's basement. However, with Good Morning America, National Geographic, Time, Discovery and Earth Magazines, Weekly Reader, Steven Spielberg, and other international media calling CEU's museum director Don Burge, the museum's phone lines are always busy with what new dinosaur is being dug and prepared in the lab.

Coming from the warm climate of Southern California over three decades ago, Burge's body became climatized to the over 100 degree, dry hot summers he spends digging dinosaur bones in Southeastern Utah's desert. This past summer Burge and his crew of volunteers from throughout the United States dug over 1,000 bones including the Deinonychus, star of the upcoming Spielberg movie Jurassic Park to be released this summer.

The uniqueness of CEU's Deinonychus is in its size. Prior to the one Burge found, the largest one ever found was 8 to 13-feet in length with a 5-inch "terrible" claw. Burge is digging a 22-foot long Deinonychus with an 8-inch claw. Spielberg's movie features a 22-foot long Deinonychus, just like the one Burge is removing from the side of a mountain near Moab. Spielberg's production company will be in Utah in April to visit the site where the Deinonychus once roamed.

Almost 300,000 visitors toured CEU's museum the past 14 years

Almost 9,000 more people visited College of Eastern Utah's Prehistoric Museum in 1992 than 1991. In 1992, 46,383 people toured the local museum while in 1991, 37,300 toured it. This brings the 14-year total of visitors to almost 300,000 people visiting.

July is always the museum's busiest month with over 6,671 visitors recorded while January is the slowest month with 1,187 visitors. All states were represented in the visitation calculations as well as many foreign countries. Every day at least one foreign visitor is registered in the guest book.

"With all of the national media attention, we're finally getting noticed," acknowledge museum director, Don Burge. "Plus we're constantly growing and expanding in both the archaology and paleontology wings. Burge and his crew are currently digging at four quarries in Southeastern Utah and brought back over 10,000 bones this past summer. Students from schools accounted for the largest number of guided tours offered by the museum with 3,031 students recorded. Every elementary school in Carbon and Emery Counties brought students to the museum for a tour while others came from Loa, Red Rock, Altamont, Glendale International, Nephi, Lake Ridge and Wasatch Academy.

Scouting groups were the second largest group given tours with 292 scouts visiting in 1992 while adult groups accounted for 276 visitors. The museum had six bus tours stop with over 212 visitors given special tours.

Other groups represented in guided tours included 151 special camps, 120 church sponsored tourists, 72 handicapped students and 64 college students. All tours are free and conducted by the museum.

With the mammoth and ground sloth exhibits slated for 1992, museum director expects even more visitors this year.

"If one is into record keeping then compute this: CEU had 7,564 visitors in 1978 and 46,383 in 1992. Even a layman in mathematics will understand that CEU museum is one of the many wonders of the world in Southeastern Utah," Burge quipped.
active in the transmission of hereditary traits is called a gene. In nearly all organisms, genes are linked together to form larger units called chromosomes, the central axis of which consists of very long DNA molecules comprising hundreds of genes.

"All plants, animals and even bacteria contain DNA. It's the heredity material in cells of living things and is the commonality to all life. Because DNA testing is so accurate, it is being used in the field of criminology to solve homicides and crimes. One human hair has enough DNA to tell an expert who it belongs to and thus may help solve a crime.

"It's the computer chip in all of us that makes us who we are and still relates us to our families," he added. "What makes DNA important is that it does not compare the physical similarities but closely relates an organism's genes to what taxonomy it belong to."

King and Burge hope to fund a special DNA lab at the college with the money earned from casting and selling the mammoth skeletons.

By studying the DNA from dinosaur bones, we can link their hereditary traits. In the past, paleontologists have grouped dinosaur families together by comparing where they were found, what age they lived in and physical similarities. "With DNA, we can be 99 percent accurate on what dinosaurs were genetically related," Burge said.

### Conservation funds given to museum

In August 1992, College of Eastern Utah's Museum was awarded $3,915 from the Institute of Museum Services, a federal agency that offers conservation project support to the nation's museums.

The funds will match museum monies set aside for the completion of a general conservation survey of the museum's facilities, exhibits and collections. The product will be a long-range conservation plan which will enable the museum to apply for conservation grant funds to stabilize and preserve fragile museum collections, said Pam Miller, museum archeologist.

Judy Greenfield, a professional conservator from the Rocky Mountain Conservation Center in Denver will visit the museum in January to make recommendations for the plan and evaluate the museum. IMS received 431 applications for the 1992 Conservation Support Competition and was able to make 208 awards with $2.94 million in program funds available.

### Archaeology

(Continued from page 2)
state historic society.

The Nine Mile Canyon survey is under the direction of Dr. Ray and Dr. Deann Matheny of Brigham Young University. The local chapter assisting in the project consists of volunteers who donate time each weekend. Jeanette Evans presides as its president.

The chapter is hosting the Utah State Archaeology Society Convention June 11-13. Some of the speakers include museum director, Don Burge, and the Mathenys. Margene Hackney and Joan Taylor are coordinating the event.

Prehistory week will be celebrated at the museum May 1-8. Coordinating the week are Jim and Cleo Burgess. The week begins with Family Day at the Museum which has featured native American craftsmen, many children's craft activities and tours of the museum. The evenings will feature noted speakers in the field of paleontology and archaeology.

The VIP tour of Nine Mile Canyon will include many of the state's dignitaries and culminate with a dutch oven lunch.

In conjunction with Prehistory Week, "Friends of Paleontology will have their state convention in Price May 8.

For more information on any of the activities sponsored by the group, contact Evans or come to their monthly meetings held at 7 p.m. on the third Thursday of every month in the museum classroom.