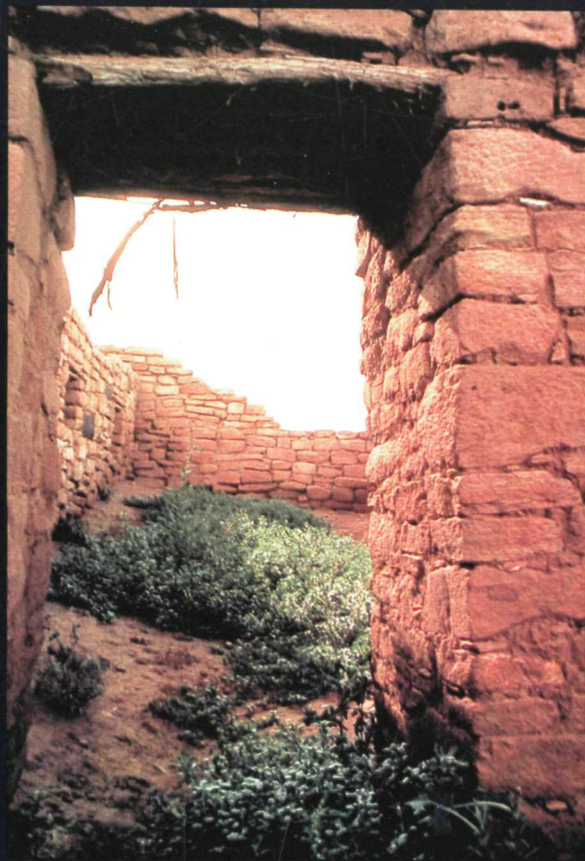


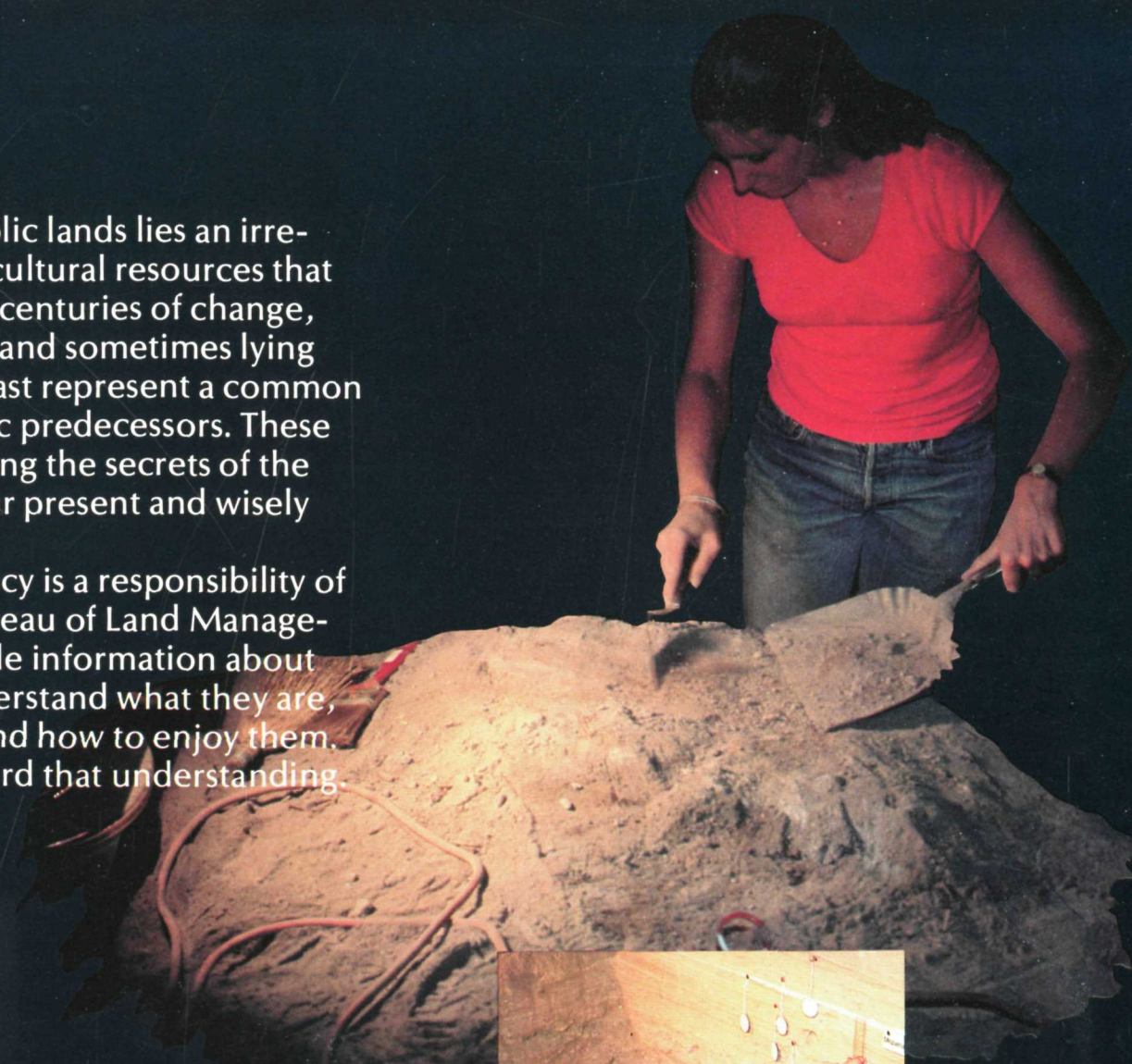
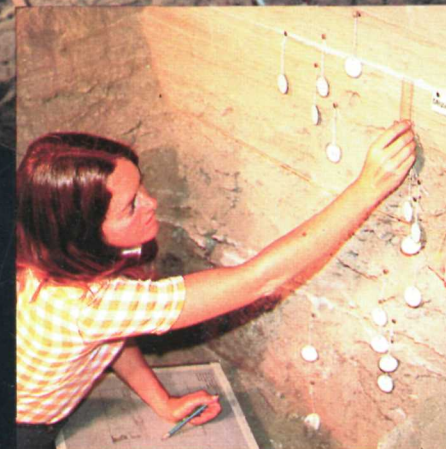
your fragile legacy





In the vast expanse of the Nation's public lands lies an irreplaceable, fragile legacy—the fossil and cultural resources that belong to all of us. Sometimes buried by centuries of change, sometimes hidden under a wisp of sand, and sometimes lying open and exposed, these pieces of the past represent a common heritage from our prehistoric and historic predecessors. These resources are invaluable clues to unlocking the secrets of the past, but they also help us understand our present and wisely plan for our future.

Management of this fragile public legacy is a responsibility of the U.S. Department of the Interior's Bureau of Land Management (BLM). It is also BLM's job to provide information about these resources, enabling people to understand what they are, what they mean, how to protect them, and how to enjoy them. This publication is designed to help toward that understanding.



cultural resources

Cultural resources may be anything that shows evidence of having been made, used, or altered by humans. They can be either prehistoric (accomplished before written records) or historic (accomplished after written records), representing a part of the continuity of events from the earliest evidence of human existence to the present day. In the BLM, the study of cultural resources is jointly carried out by archaeologists, who examine and interpret the physical evidence of previous cultures, and historians, who examine and interpret the recorded accounts of the past. Cultural resources range from ancient Indian ruins to historic ghost towns, and from small scatters of arrowheads or stone tools to abandoned cross-country wagon trails.



Photo courtesy of Smithsonian Institution

fossil resources

Fossil resources are any remains, impressions, or traces of animals or plants from a former geologic age, as in a skeleton or footprint. They may be almost as old as the earth itself, some dating back more than three billion years. Public lands have produced fossils of dinosaurs, mammoths, predatory cats, and countless other creatures that once roamed the continent. From these remains, paleontologists, who study fossils, have been able to reconstruct, in surprising detail, a world inhabited by plants and animals no human has ever seen.

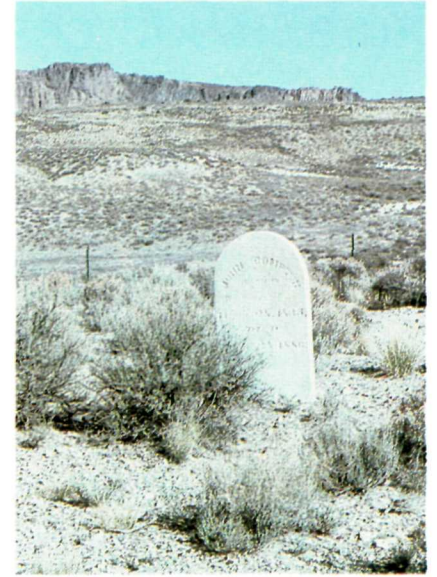


links to the past, present and future

It is sometimes hard for people to understand how a musty ruin left by a race of people that lived many generations ago, or a footprint of an extinct animal etched by time into stone can have any significance to today's world. Yet all of us, regardless of how little we recognize it, are products of the past. In some measure, our environment has been altered by every creature that has inhabited the North American continent and every creature has been altered by its environment. Discovering how and why this interaction takes

place is critical to understanding our present situation as well as providing important insights for future planning.

Cultural and fossil resources are not only important to the scientific community, but to the public at large interested in the Nation's cultural and paleontological heritage. Certain cultural resources also hold special religious and social significance for Native Americans, including Eskimos, Indians, and Aleuts.



cultural resources

yours to protect. . .

The public lands could be compared to a huge, outdoor museum that chronicles human events on this continent. Spread across millions of acres are invaluable pieces of the past, important and fascinating in themselves, but also important in the context of their location in or on the ground. Where they're found and what is found near them supply information critical to interpreting the human activities that occurred there.

Cultural resources on the public lands are disappearing at an alarming rate. Although some losses are unavoidable due to erosion, decay, and other natural processes, large numbers of sites and artifacts are being destroyed or illegally removed by people—either willful scavengers who take them for personal profit, or casual collectors who don't understand they should be left undisturbed.

The scavengers, sometimes called "pothunters," are by far the most serious offenders because their knowledge enables them to locate and plunder choice sites. Profit motivates them to remove rapidly as many artifacts as possible, sometimes using bulldozers and other mechanized earth-moving equipment which can destroy a centuries-old site in a matter of hours. Human burial sites, many of them sacred to Native American Indians, are particularly sought after as quickly exploited sources of loot.

Such thefts and vandalism are occurring despite Federal laws such as the 1976 Federal Land Policy and Management Act and the 1979 Archaeological Resources Protection Act which authorize stiff penalties for illegal

removals. The large expanses of public lands make it difficult for the BLM to adequately protect archaeological and historic sites, especially when professional pothunters are encouraged by the high prices some private citizens are willing to pay to possess original artifacts. Public cooperation is needed to report these thefts and to limit the pothunters' profit motivation by refusing to buy stolen goods.

Public education is also the key for casual collectors. Some people pick up artifacts without realizing their importance or understanding their scientific and cultural values. Publications like this, other information materials, and person-to-person communications all help to spread the word about these important resources and about the need to leave them in their rightful place on the public lands.



yours to enjoy. . .

Although archaeological and historical resources need to be protected, they can also be enjoyed. For the more adventuresome, a trip to the public lands to view and experience your cultural legacy can be exciting and interesting. However, many public land sites are in remote areas and trips should be carefully planned. Local BLM offices can offer information and advice on interesting sites and safety precautions. Viewing these sites in their natural locales, even though you can't take home any souvenirs, can be a very memorable experience.

If you're a less hardy traveler, museums can also provide you with a sense of the past through interpretation of public land artifacts collected by scientists. Sometimes, public land developments and uses such as roads, powerlines, dams, mines, and other legitimate purposes make it necessary for cultural sites to be excavated by professional archaeologists.



fossil resources

yours to protect. . .

When such excavations take place, scientifically valuable artifacts are carefully removed and catalogued for study. These artifacts are placed in museums so the public as well as the scientists can have access to them. These public museums, which range from small local operations to larger, more renowned institutions, provide interesting interpretations to help you expand your understanding and interest in the subject.

Cultural resources can also be enjoyed by the armchair traveler. Numerous excellent books and technical articles about archaeological and historical resources on the public lands have been written and are generally available through public libraries, bookstores, and from government agencies. So even though you may not be able or inclined to travel onto the public lands or to venture through museums, you can still enjoy and learn about your public land heritage.



Fossil resources are also protected under Federal law but, because of their very nature, they are handled somewhat differently. Since fossils are really plant or animal remains or impressions embedded in or with the properties of stone, their importance or value depends on how rare or common they might be. Dinosaur bones embedded in a mountain-side could be extremely rare and scientifically important, while small pieces of petrified wood could be very common and hold little scientific value.

Because of these tangible differences, Federal law allows some fossils, like petrified wood, to be freely collected in small amounts. Others, such as dinosaur bones, are protected by some of the same laws governing cultural resources.

To find out more about Federal laws regarding fossils, you should drop in at your nearest BLM office. Personnel there can tell you about fossils in the area and advise you about the kinds that can be collected and the kinds that should be left in place for scientific study.



yours to enjoy. . .

Exploring the public lands to collect common fossils or view rarer specimens can be an enjoyable form of recreation. Many types of fossils, such as clam and snail shells and petrified wood, can be collected in small amounts for personal use in most areas of the public lands.

When you check with the local BLM office, personnel there can give you information about the known fossil resources in the area, as well as critical advice about off-road vehicle use, camping guidelines, and fire and safety regulations. If you're out on the public lands and discover a fossil you think may be scientifically important, report it and its location to the BLM.

For those not given to climbing through the hills, or those who want to learn more about the creatures they've collected or seen, widely available publications on the subject can help bring a long-dead world back to life.

Fossils from the public lands are also found in numerous museums throughout the United States. In addition, if you ever get the chance to visit museums in Liverpool, England; Geneva, Switzerland; Milan, Italy; Tokyo, Japan; or Edinburgh, Scotland, you may wish to stop in and say hello to a previous public land resident—museums in each of these cities contain Allosaurus fossils from the Cleveland-Lloyd Dinosaur Quarry on public lands in Utah.

management for today and tomorrow

If the public lands are considered an immense natural museum for cultural and fossil resources, BLM can be considered the Nation's largest curator, with a job much more complex than that of most curators.

Managing cultural and fossil resources, while still providing for other uses, is a challenging job. Choices must be made, based on scientific and resource evidence and public comments and ideas, about how to integrate the values of cultural and fossil resources with other multiple-use demands including mineral and timber development, livestock grazing, recreation, and community expansion.

Professional inventories are done in areas where a proposed use could impact valuable cultural or fossil resources. Where possible, adjustments in the design or location of the proposed project are made to avoid disturbance of important sites. Sometimes, where disturbance of a valuable site is unavoidable, BLM undertakes excavations of the cultural or fossil site so materials can be saved and studied. Frequently, archaeologists or paleontologists from universities or other scientific organizations assist in these excavations.



Cooperation from State and local governments and organizations, such as State historic preservation officers, museums, and historical societies, is also critical to this ongoing effort. Technical reports of excavations or inventories help contribute to the overall knowledge of the subjects.

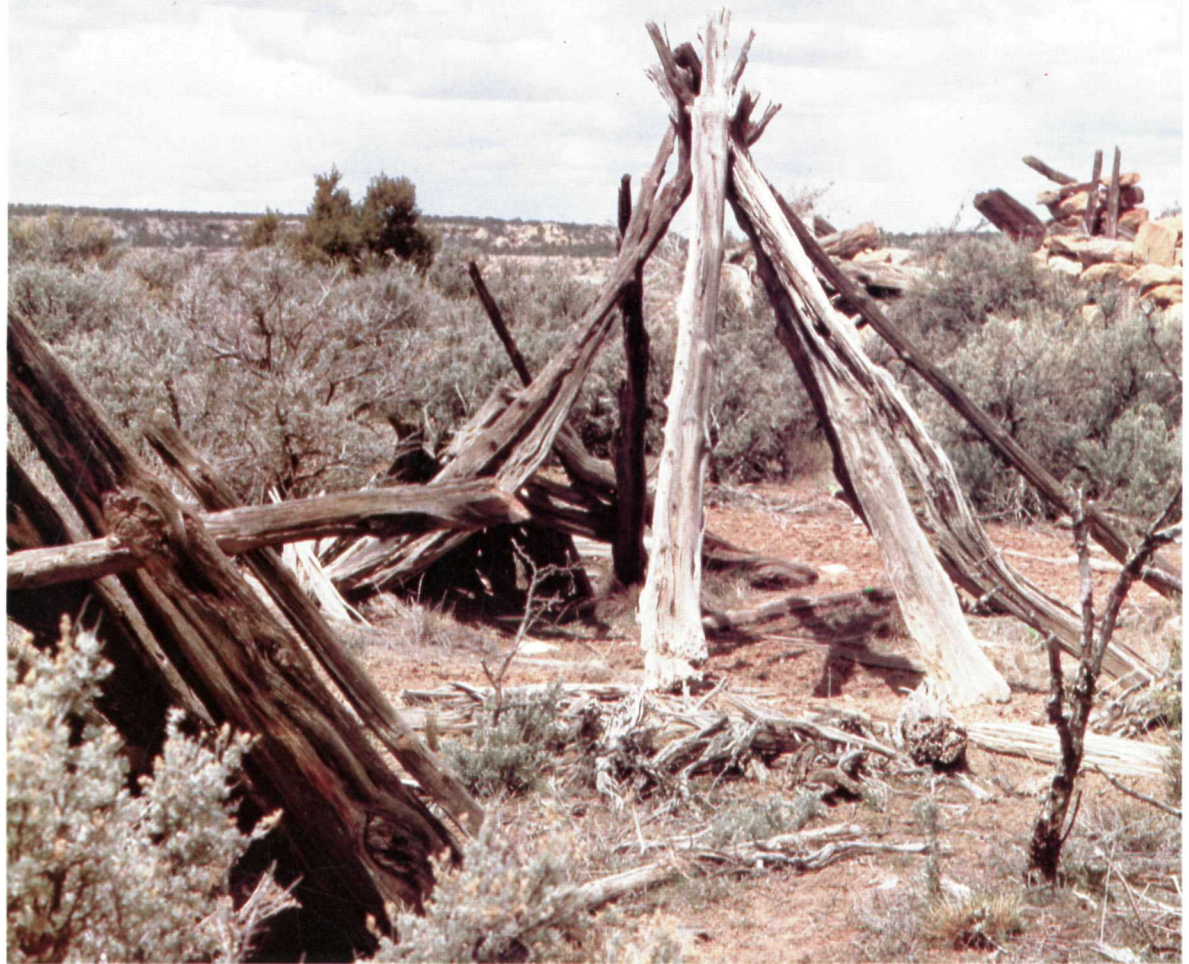
Although a tremendous amount has been learned about cultural and fossil resources on the public lands, the unknown far outweighs the known. Broad estimates of the



number of sites on public lands with valuable cultural or fossil resources range into the millions. With responsibility for more than 300 million acres of public lands, BLM has, by far, the largest natural resource base under Federal control. Discovering, evaluating, and protecting the cultural and fossil secrets lying on and under that vast acreage present a tremendous challenge for today and hold tremendous promise for tomorrow.

a short trip to the past

To help you understand the wide array of your cultural and fossil resources on the public lands, we have arranged a short whistle-stop tour of some representative examples of your fragile legacy. Sit back and relax as you begin a rambling tour of natural and human events spanning the ages.



2,000 years ago Grand Gulch, Utah

mystery of a vanished people

In a spectacular red rock canyon known as Grand Gulch in southeastern Utah lie the ruins of a once flourishing population center now shrouded in mystery.

The ruins were the home of prehistoric peoples archaeologists call the Anasazi, a Navajo word meaning “the Ancient Ones.” The mystery is why these people, after settling in the canyon during the time of Christ and establishing a sophisticated way of life, suddenly abandoned their homes somewhere around 1300 A.D.

Twisting its way across a remote mesa forested with pinyon-juniper, Grand Gulch represents part of an extensive canyon system. The Gulch, 50 miles long with steep-walled canyons, drops almost 1,000 feet in elevation before it joins the San Juan River.

Perhaps best known for precariously perched cliff dwellings, the Gulch also contains masonry granaries, dramatic rock paintings, campsites, and ceremonial kivas or large chambers. Many of the cliff ruins, with names like Turkey Pen, Split Level, Perfect Kiva, Green House, and Green Mask are in pristine condition. Deep, dry deposits hold fragile artifacts of wood, bone, and plant fibers, as well as human burials. The combination of overhanging alcove roofs and the region’s arid climate has protected and preserved these remains.

This area was once the seat of a large, complex agricultural society. Mesa tops resounded with voices and sounds from hundreds of small villages. Today, the open landscape, combined with natural bridges, arches, pinnacles, and monoliths, complements the mystery and beauty of the archaeological ruins.

Hundreds of alcoves along the 400-foot-

high walls of Grand Gulch hold the evidence of almost 2,000 years of human history. The first Anasazi, the so-called Basketmakers, were the earliest known inhabitants. This culture is believed to have derived from earlier nomadic people whose livelihood was based on hunting and gathering. When these people chose to begin to plant and cultivate corn introduced from the south and became more sedentary, they built subsurface pit houses made of mud caked over stick walls and roofs. Their archaeological name comes from the finely woven baskets they made, but the most prevalent remains of the Basketmaker Anasazi are their slab-lined storage cists or containers.

A series of droughts apparently drove the Basketmaker people into the surrounding mountains. When people returned to Grand Gulch about 1050 A.D., the culture had been influenced by the Mesa Verde people to the east and the Kayenta people to the south, both more advanced forms of what archaeologists call the Pueblo culture.

Due to their influence, the later Anasazi culture in Grand Gulch was characterized by the making of fine pottery, the cultivation of cotton, weaving of cloth, and a high degree of architectural and stone masonry skills evident in the ruins.

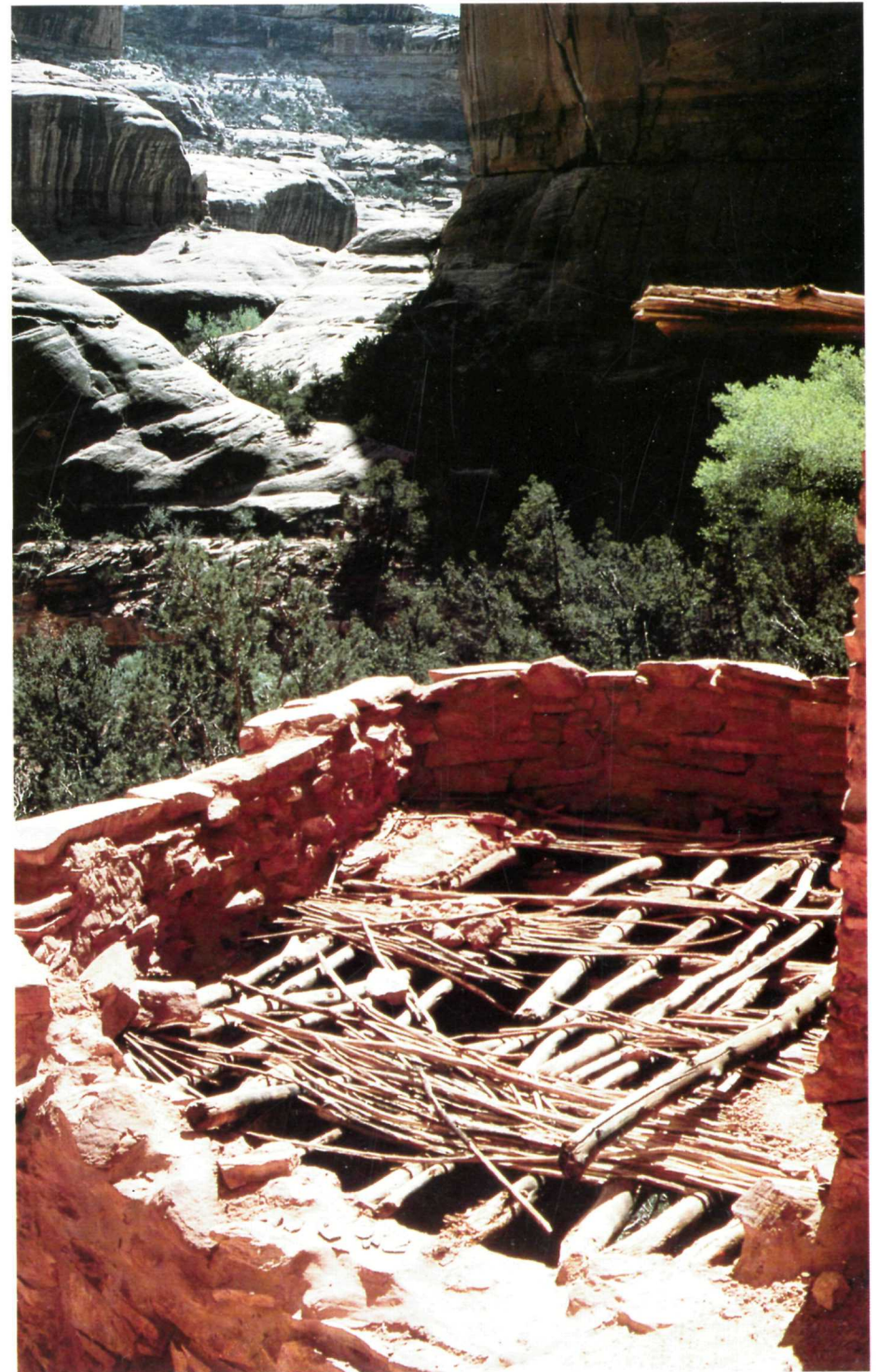
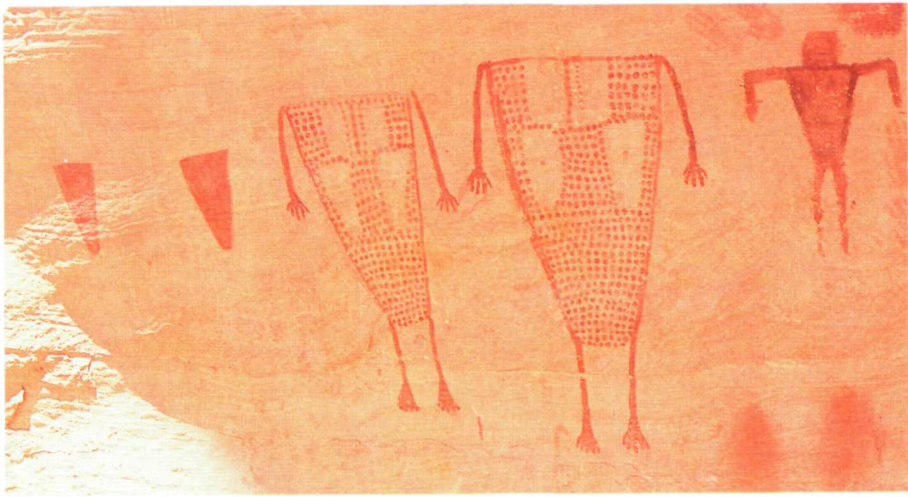
Since the 1890s when a local rancher collected artifacts for eastern museums, Grand Gulch has been recognized for its important scientific value. The late 1890s and early 1900s marked a time of extensive expeditions to collect and remove prehistoric relics from these sites in the Southwest. The passage of the Antiquities Act in 1906 was the first at-

tempt by the Federal government to stop the heavy drain of artifacts from archaeological sites on public lands, but it was more than 70 years before laws stringent enough to actually support prosecutions of violators were passed to protect priceless ruins.

In 1970, Grand Gulch was designated a primitive area by the BLM to provide protection for the ruins. Heavily visited ruins were stabilized to prevent further deterioration. A ranger program was established to monitor visitor use, provide interpretation, and deter vandalism, a problem in Grand Gulch since the 19th century. These protection efforts have reduced the incidence of vandalism, but the looting continues. The Turkey Pen ruin was vandalized recently by looters who burned original roof timbers, knocked over walls, and dug pits. Two offenders were caught by BLM personnel and later convicted on Federal charges.

Although Grand Gulch has provided us with a great deal of knowledge about southwestern prehistoric cultures, many questions remain unanswered. Why did the Anasazi suddenly abandon the area? How did they go? Did they leave all at once in a great exodus, or a village or two at a time?

Several explanations have been proposed suggesting the Anasazi left because of drought, depletion of natural resources, disease, warfare, or a combination of these factors. It is possible the answer still lies hidden in the ancient ruins and that someday, the mystery of the Anasazi will be solved. It is also possible when the Anasazi left they took the answer with them, leaving behind a deserted and haunting reminder of the mysteries of life.



150 million years ago Cleveland, Utah

graveyard for dinosaurs

About 150 million years ago, during the middle of the Age of Dinosaurs, the public lands near Cleveland, Utah, were the scene of one of the most important events in the history of North America.

Traveling through the dry, desert area today, it is difficult to imagine the swamp that characterized the land then. In the place of sparse desert vegetation were lush, green plants. And the hardy creatures living there now are hard to compare to the huge reptiles, known as dinosaurs, that dominated the landscape earlier.

Since scientific excavation of the area began in 1931, more than 10,000 bones have been discovered. These bones came from at least 100 different animals. Thirty complete skeletons have been reassembled and are on display in museums throughout the world.

The preservation of so many fossils in one small area is extremely unusual. The large concentration at Cleveland indicated something unique had happened there millions of years ago. As the bones were collected and examined, other strange discoveries were made. Most of the bones were from large predators like the Allosaurus, a fierce two-legged dinosaur. Few bones were from the other, more common plant-eating species. This is contrary to the normal situation where plant eaters or herbivores, far outnumber the flesh eaters or carnivores. Even today, this balance exists with large numbers of herbivores like deer and antelope compared to fewer carnivores such as mountain lion.

The first clues to the mystery came from evidence of a very swampy environment. That

knowledge, plus the fossils recovered, gave scientists enough information to reconstruct a likely scenario.

It probably began when a plant-eating creature, like the dinosaur Brontosaurus, wandered out into the sticky mud of the swamp and became stuck in the soft ooze. Trapped in the mire, it began struggling to free itself. This frantic activity attracted other creatures, primarily carnivores, like the Allosaurus, interested in taking advantage of the opportunity. Lured by the promise of easy prey, it, too, became trapped, attracting still more predators as the swamp took its toll. As these creatures died, they sank into their muddy grave, their bones preserved throughout the eons.

Today this site is known as the Cleveland-Lloyd Dinosaur Quarry, named after the nearby community of Cleveland, Utah, and Malcolm Lloyd, Jr., who financed some of the first expeditions to study it. The quarry is the focal point for scientific and recreational activities related to the fossils found in the area. A visitor center, operated by the BLM, provides information about the area and the dinosaurs. It also houses a skeleton of the Allosaurus, the huge predator whose bones are so common in the quarry.

A shelter has been erected over the quarry itself to protect the exposed bones from the weather and to assist scientists in the ongoing excavation work. It also allows visitors the opportunity of seeing the bones still in the ground and watching the paleontologists at work.

The quarry was designated a National Landmark in 1966 and draws visitors and scientists from around the world. Still actively being excavated, the quarry may yet yield new surprises. In recent years, for example, two new species of dinosaurs have been discovered there. One, the *Stokesosaurus clevelandi*, is related to the great *Tyrannosaurus rex*, the king of the lizards, a huge flesh-eating monster. The other was unearthed in 1976 and its name, *Marshosaurus bicentesimus*, commemorates the bicentennial year of the United States.

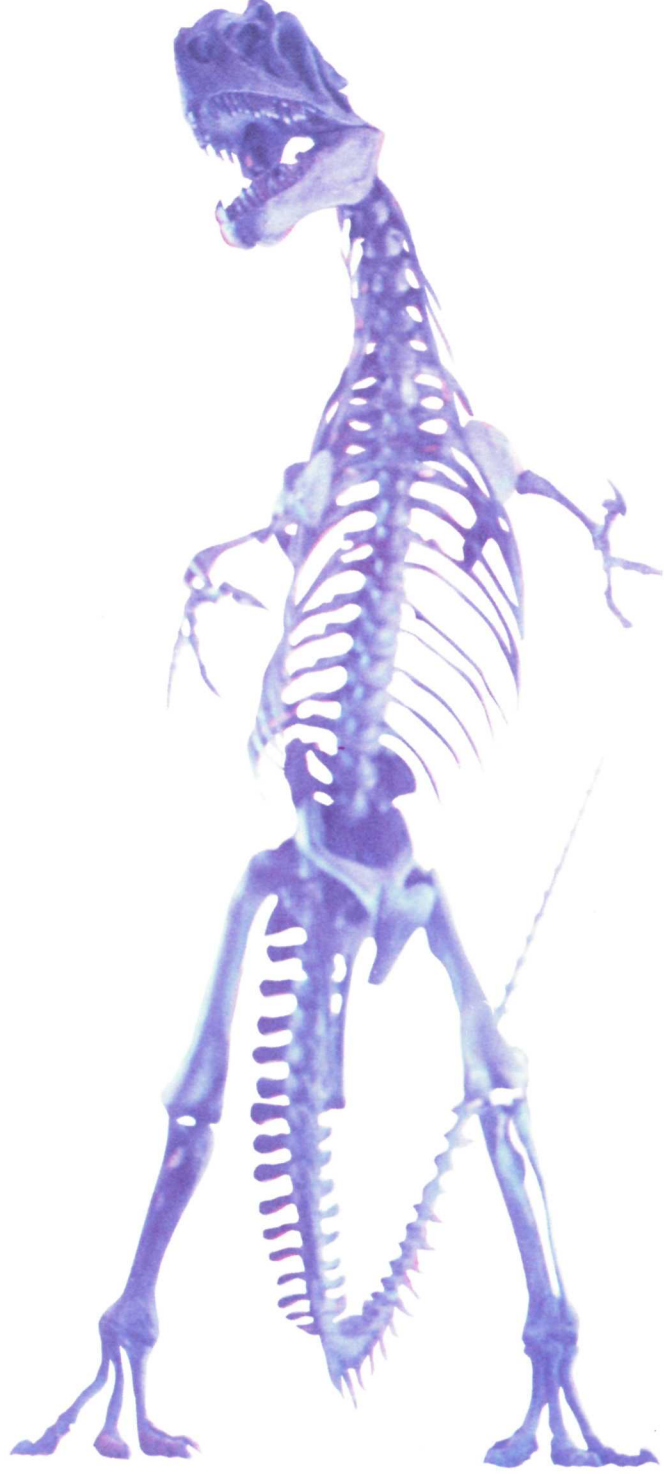
Under a BLM management plan that encourages scientific efforts as well as educational and recreation visits, the Cleveland-Lloyd Dinosaur Quarry is preserved for present and future generations, providing a unique view of a time, a world, and life forms vastly different from our own.



Photo courtesy of Smithsonian Institution

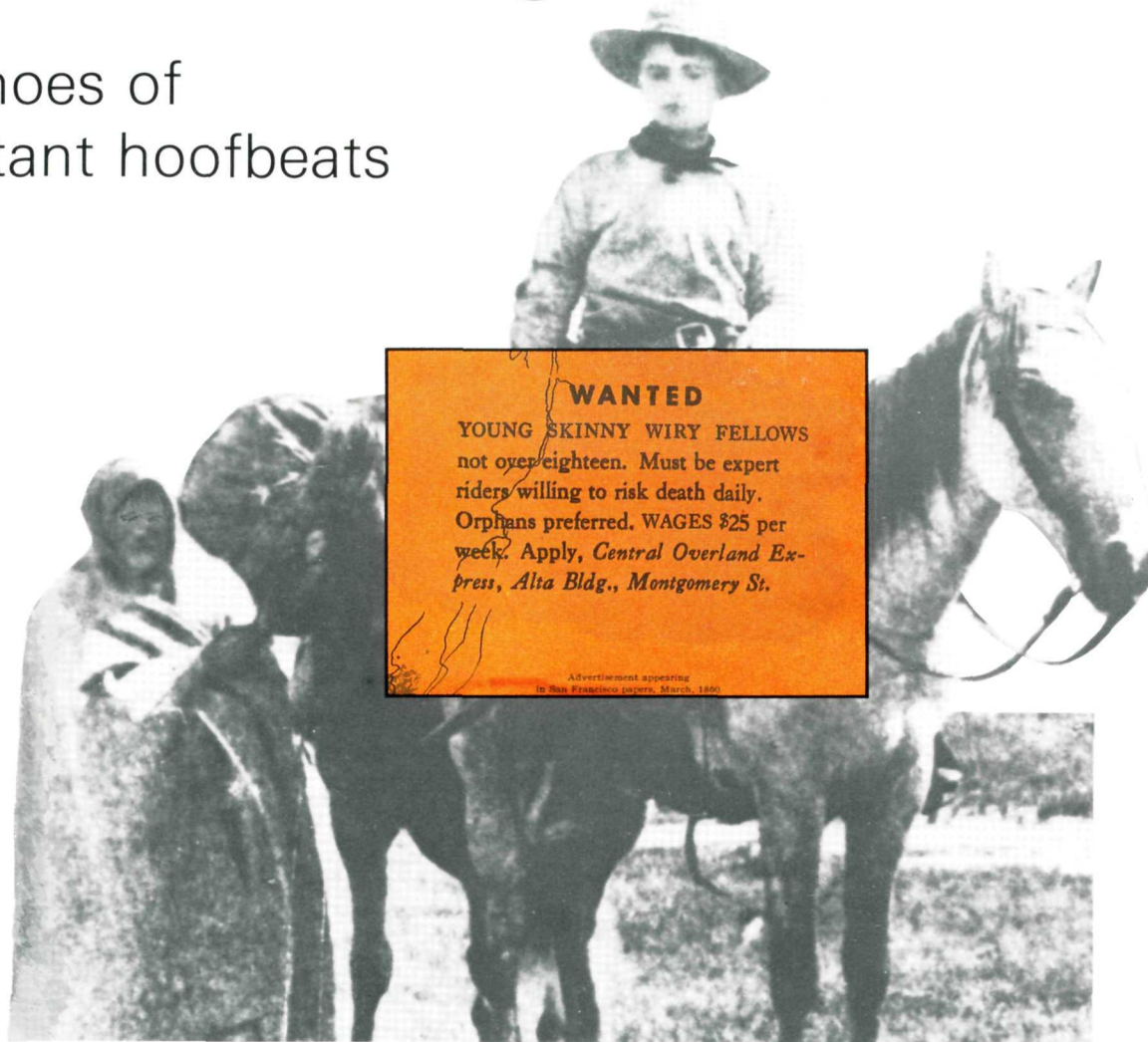


Photo courtesy of Dr. Jim Madsen, Salt Lake City, Utah



120 years ago Cold Springs, Nevada

echoes of
distant hoofbeats



Out in the middle of the Nevada desert, a cloud of dust rises in the distance. Gradually a single horse and rider emerge in contrast to the sagebrush landscape. The horse is at full gallop and the rider appears to be a young man, rather small of stature. He is crouched low, leaning forward to maximize his speed. He carries a revolver on his hip. Over his saddle is a compact leather pouch, called a

mochila. It has four compartments, all apparently filled with valuable cargo because each is individually locked.

The horse is tiring and the rider is relieved to see a small rock building just ahead. As he approaches, someone blows a horn to announce his arrival. Several men are waiting in front of the building, one trying to calm a fresh horse which is excited and eager to go. The

rider reaches the station, quickly dismounts, pulls the mochila off his saddle, and throws it over the saddle of the fresh horse. Putting his foot in the stirrup, he is on his way, with barely enough time to exchange a few words with the men who helped him on his journey.

If you had been at Cold Springs Station in western Nevada in 1860 you could have witnessed that scene, part of the exciting history of the Pony Express. The valuable cargo was the mail, on its way from St. Joseph, Missouri, to Sacramento, California, in a record 10 days' time. Although the Pony Express lasted only 18 months, between 1860 and 1861, it is considered an important factor in western development, providing a vital communication link between the East and gold-rich California.

A great deal has changed along its 2,000-mile route. The trail that once felt the pounding of hooves is crisscrossed now in many areas by highways and powerlines or covered with wheatfields or housing developments. But in Nevada, outside of its population centers, there has been relatively little change in many areas since the 1860s, including major portions of the Pony Express Trail. Here, remains of stations like Cold Springs still exist and the trail followed by the ponies of the express can still be seen across the desert landscape.

As part of the Nation's Bicentennial celebration, which included projects commemorating the great westward expansion, the BLM began researching the Pony Express history in Nevada, marking the trail for public use, and locating and studying the remains of the stations.

Poster courtesy of St. Joseph Museum, St. Joseph, Missouri

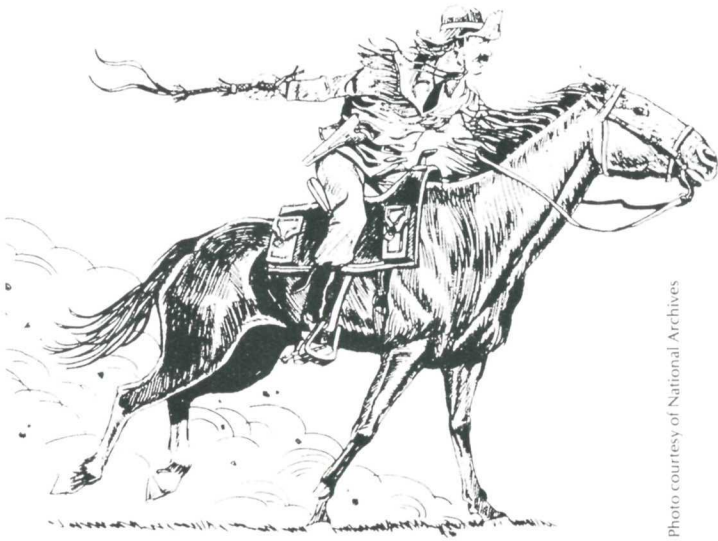


Photo courtesy of National Archives



The “Pony,” as it was called, was portrayed in the dime novels of the 19th century as a romantic, exciting adventure. Advertisements like this in a March 1860 San Francisco newspaper set the tone: “WANTED—YOUNG, SKINNY, WIRY FELLOWS not over eighteen. Must be expert riders, willing to risk death daily. Orphans preferred. Wages \$25 per week.”

By April 3, 1860, riders were hired, the best and fastest ponies bought, the stations hastily established, and the first mail was on its way, costing \$1 to \$5 an ounce, but promising delivery within 10 days, much faster than the regular stagecoach run. The riders were given a revolver, a bowie knife, a rifle, and a Bible, imprinted with the initials of their employers: W.H. Russell, Alexander Majors, and William B. Waddell, owners of the Pony Express.

The company lived up to its promise of transporting the mail across inhospitable territory in record time. And it kept a depend-

able record, except when its riders or stationmasters were caught up in the growing violence between the Indians and the newly arrived settlers and miners. Having overcome all these difficulties, the Pony Express met its demise from an unexpected source, the completion of the transcontinental telegraph, which could transmit the same message in seconds that took 10 days by Pony mail.

To enable modern-day adventurers to recapture some of that rugged individualism and enjoy some of the unique beauty of the Great Basin the Pony Express riders saw, the BLM placed markers all along the 420-mile portion of the trail in Nevada, stretching from the Utah border to Lake Tahoe on the California line. Two highway waysides, one near Cold Springs in western Nevada and the other near Egan Canyon Station in eastern Nevada, were built to enable motorists to share in the Pony Express experience.

The remains of 14 of the original 28 stations in Nevada were located, including substantial remains of the Cold Springs and Sand Springs stations in the western part of the state, both now listed on the National Register of Historic Places. With the help of archaeologists and historians from the University of Nevada, these sites were excavated to find out more about the lifestyles of the inhabitants. The rock walls of the stations, now overgrown with sagebrush, were strengthened for visitor safety and interpretive markers erected to explain the historical importance of the stations.

If you were to stand near those rock walls today, you would be able to feel the same desert wind, still blowing across the desert landscape. In such a setting, only a little imagination is needed to look into the distance, see the dust rise, and hear the faint echoes of the approaching hoofbeats of the Pony Express.

70 million years ago Bisti Badlands, New Mexico

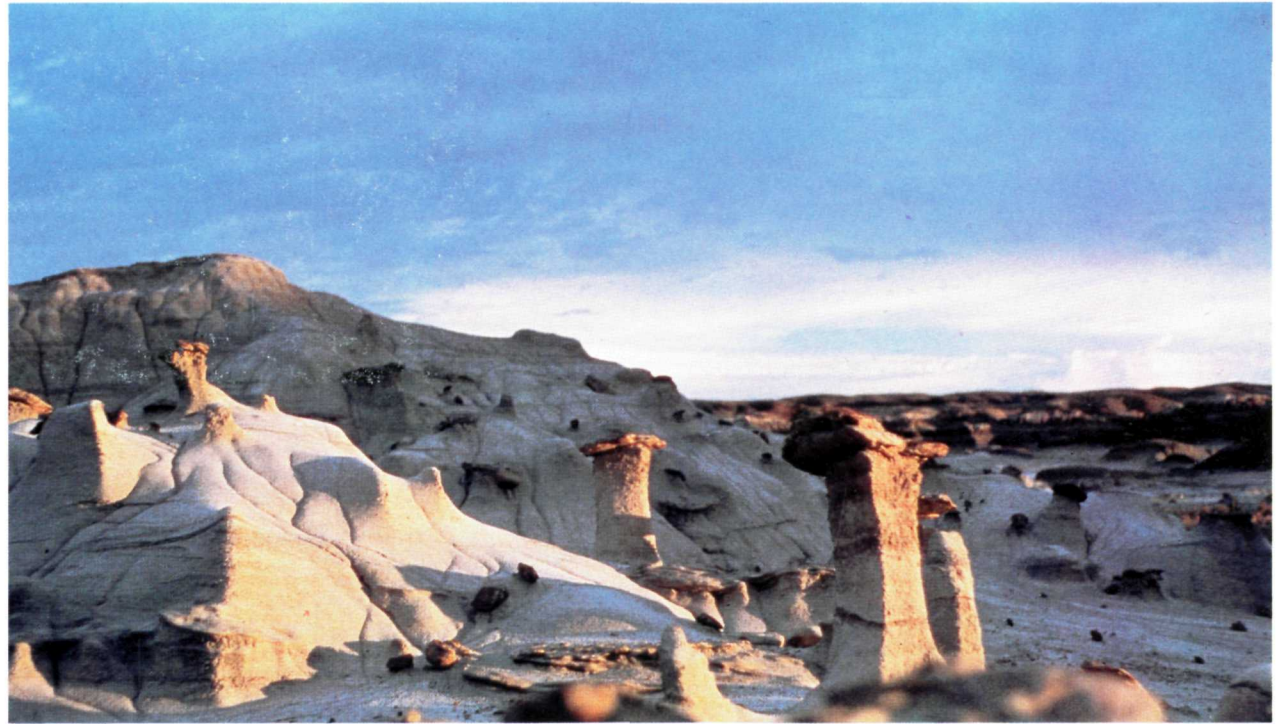
an end and a beginning



Visitors to the Bisti Badlands describe the area in terms like bizarre, grotesque, unearthly, and strangely beautiful. Except for dry bits of vegetation clinging precariously to the odd-shaped rocks and terraced hills, the land appears lifeless.

The Navajos called the place “Bisti,” a word describing its strange, eroded landforms. The white man added the word “Badlands,” reflecting its seemingly inhospitable nature.

Yet at one time the Bisti Badlands near Farmington, New Mexico, were teeming with life and the evidence is found throughout this



area in its turreted hills and mushroom-shaped rocks. Looking closely, tree stumps turned to stone can be found, along with clam shells and fragments of dinosaur bones.

Such a strange scene would be suitable for the opening of a science fiction film, but is actually part of the even stranger world we live in. Fantastic in their own right, the Bisti Badlands also hold evidence of a dramatic change in the history of the world: the end of the Age of Dinosaurs and the beginning of the Age of Mammals.

The tree stumps, clam shells, and bone fragments enable paleontologists to reconstruct the Bisti Badlands as they must have looked 70 million years ago. There were swamps, streams, and lakes filled with clams, snails, fishes, turtles, crocodiles, and even sharks. Along the banks grew sequoia and standing knee-deep in the water were bald cypress trees. Huge aquatic dinosaurs wallowed in the water. Other creatures, including great horned dinosaurs resembling the rhinoceros, grazed on plants on higher ground. Perhaps they lived

and ate in herds much like the buffalo, always on the lookout for ferocious predators.

No one knows for sure why the dinosaurs, so powerful and so dominant, disappeared. Some blame climatic conditions; others blame collisions between the earth and comets; and still others blame a small, furry creature hiding in the shadows. For whatever the reason, the dinosaurs disappeared from the earth completely, and the small, furry mammals that had been a minor part of the ecosystem for eons were free to expand, develop, and evolve.

The rocks of the Bisti Badlands record these events from the height of the dinosaurs' dominance, through their demise, to the first flowering of the Age of Mammals, which continues today.

These fossils were discovered near the turn of the century and have since been studied by scientists from throughout the country. Today, these research efforts, coordinated by the BLM and the New Mexico Bureau of Mines, are continuing, drawing scientists from the American Museum of Natural History, the Carnegie Museum, and colleges and universities from California to Minnesota.

The area is also visited by tourists who marvel at the toad-stool shaped rocks formed by erosion and fossil trees implanted in rock walls. For still others, the Bisti Badlands are a place to feel truly alone, surrounded by some of Nature's stranger creations in a place once the scene of an end and a beginning that changed the world.



12,000 years ago Iteriak Creek, Alaska

hidden treasures of the tundra



It is early summer, and on a hilltop in northern Alaska a small group of prehistoric Eskimos waits and watches. From this vantage point near Iteriak Creek, the Eskimos can see the broad expanse of the entire valley up to the spectacular mountains that much later will be called the Brooks Range.

They are watching for caribou herds. This is one of the migratory routes for caribou, and the Eskimos, a nomadic people, hope to get enough game to feed themselves on their travels and through the long, cold arctic winter. As they wait, they dig out flint from the nearby rock outcroppings to make spear points.

Ten thousand years later, another small group of people is working in the short arctic summer on this same piece of ground. Although the herds still migrate through here, these people are not hunting for caribou.

They are BLM archaeologists, excavating this site in the National Petroleum Reserve, the modern scene of a major oil exploration program on public lands in northern Alaska.

Today this site is being excavated because it contains valuable deposits of building materials needed for construction nearby of an airfield to support oil and gas exploration operations. The area is called Lisburne Borrow, a name referring to its geologic structure and use as a material site.

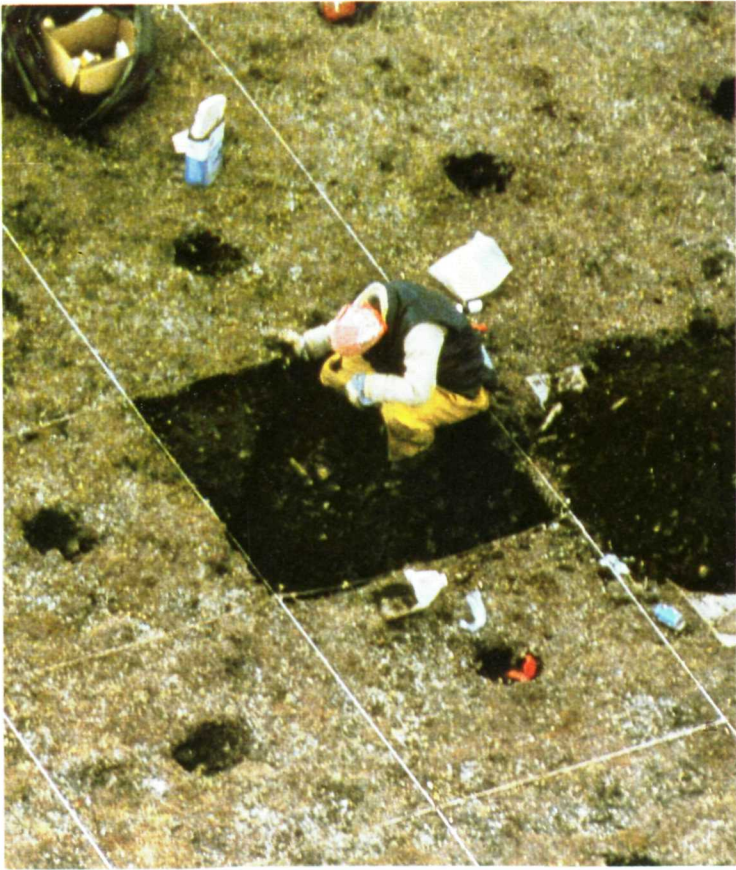
All evidence of the ancient visitors had been gradually hidden by natural processes. But a closer look revealed a concentration of tools and other materials very close to the surface. Partitioning the area into a giant checkerboard, archaeologists carefully dug through the tundra and found evidence this hilltop was a major occupation site used by nomadic aboriginal peoples from 10,000 years ago to as

late as 1750 A.D. It yielded more than 35,000 artifacts, including microblades, razor-sharp projectiles made from stone slivers that make effective weapons when placed on the end of a bone or other type of handle.

Precise dating of these artifacts by radio-carbon analysis wasn't possible, because all the necessary organic material, such as bones or antlers, had decomposed and leached away. But, by studying the tools and comparing them to other dated sites, archaeologists were able to determine the approximate time periods of the various peoples who have used this site. BLM archaeologists are continuing to study the artifacts which will eventually be displayed at the University of Alaska Museum in Fairbanks.

Studying these artifacts helps us to understand how earlier Eskimos and Indians survived in this harsh environment. As exploration of Alaska's vast resources continues, this information is becoming important to modern-day explorers as well. Further beneficiaries of this knowledge are the present-day Eskimos who live on the North Slope. Archaeological excavations such as these provide them with fascinating insight into their proud heritage.

Although work such as the excavation at Lisburne Borrow continues in many areas of Alaska, northern archaeology is still in its infancy. Each artifact, coupled with some knowledge of its place in time and space, adds to our understanding of human adaptation in this vast, beautiful, and relatively unexplored frontier.



14 to 16 million years ago Stewart Valley, Nevada

the lake that was

Somewhere between 14 and 16 million years ago, an event took place in Stewart Valley, Nevada, that is today amazing scientists.

This valley in western Nevada looked much different then. It was the scene of a lake filled with fish surrounded by a forest. There were birds and abundant wildlife. Hordes of insects formed hazy, moving clouds across the water. In the distance was a volcano, building up tremendous pressure inside of itself. Sometime during this period, the volcano, and others like it, exploded, sending rocks, lava, and ash across the countryside. The hot ash rained down upon the lake like tan snowflakes, capturing everything in its path.

Today, Stewart Valley, near present-day Hawthorne, Nevada, is a sparsely vegetated, dry place. The lake, the forest, and the creatures of millions of years ago are gone, but the evidence of their presence is locked into the rocks like flowers pressed into a book for safekeeping.

The fact the volcano erupted, probably many times over thousands of years, is not, in itself, amazing. Volcanic eruptions like Mount St. Helens are big newsmakers today, but they were common during this stage of the earth's development. What is amazing, and makes Stewart Valley unique among the world's fossil sites, is the incredible detail preserved for millions of years.

Scientists, working with BLM personnel, are just beginning to sift through the now cold, paper-thin layers of ash. They are finding delicate leaves, fruits, and flowers pressed between the layers; the shells of clams and snails have been perfectly preserved; the fish still have their scales.

But most amazing of all, and what makes Stewart Valley distinctive, are the insects. Fossils of insects are rare, because of their small size and delicate nature. At Stewart Valley, the volcanic ash has preserved even the smallest insects in fascinating detail: insect wings still show their veins; the facets of their eyes can be counted; butterfly wings still have some of their color; and spiders and wasps are preserved whole.

Even the swarms of tiny midges that danced in the sun above the lake have been preserved, giving scientists clear evidence the event

occurred in the early morning, even though they're not yet able to pinpoint the exact year, century, or even millenium the volcano erupted.

The BLM, in conjunction with scientists, State and local agencies, and the public, is embarking on a plan to help researchers study and collect these precious remnants and at the same time make them and a vision of the world they represent accessible to the public. Tours for schools and displays at the State and local museums are also planned.

Preservation and interpretation of the Stewart Valley fossils will provide much important scientific information about the earth's smallest creatures. This knowledge also allows us to recreate, almost as clearly as a picture postcard, the lake that was millions of years ago, with its thriving inhabitants frozen, instantly and forever, in time.

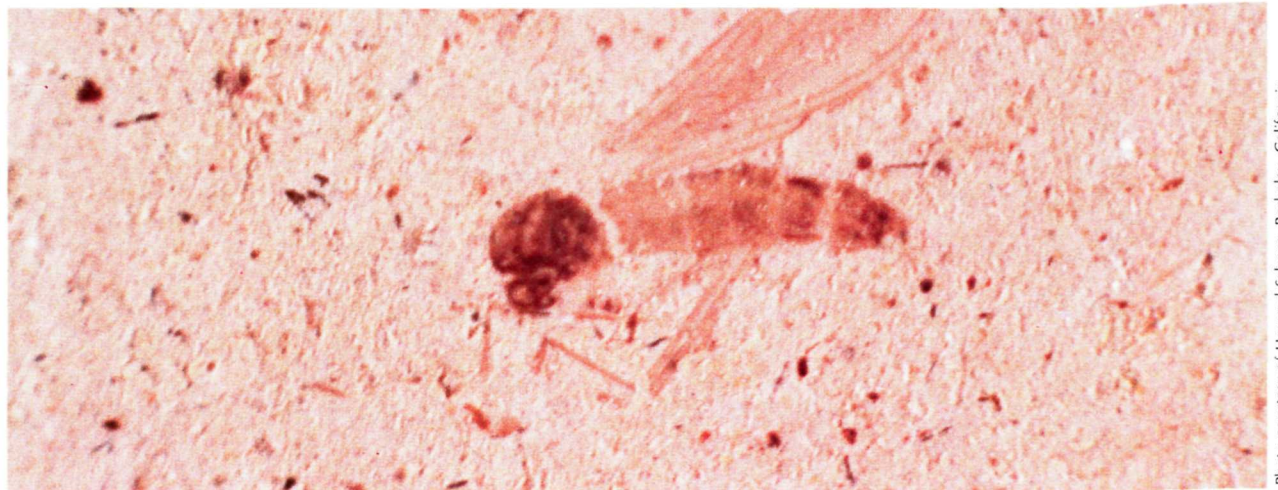
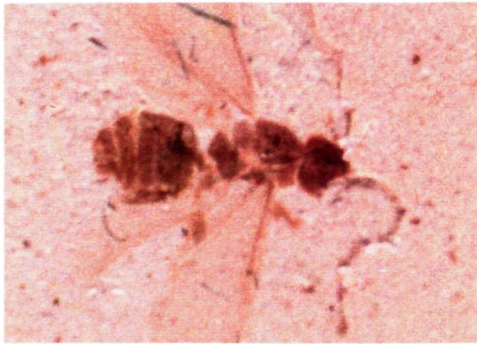
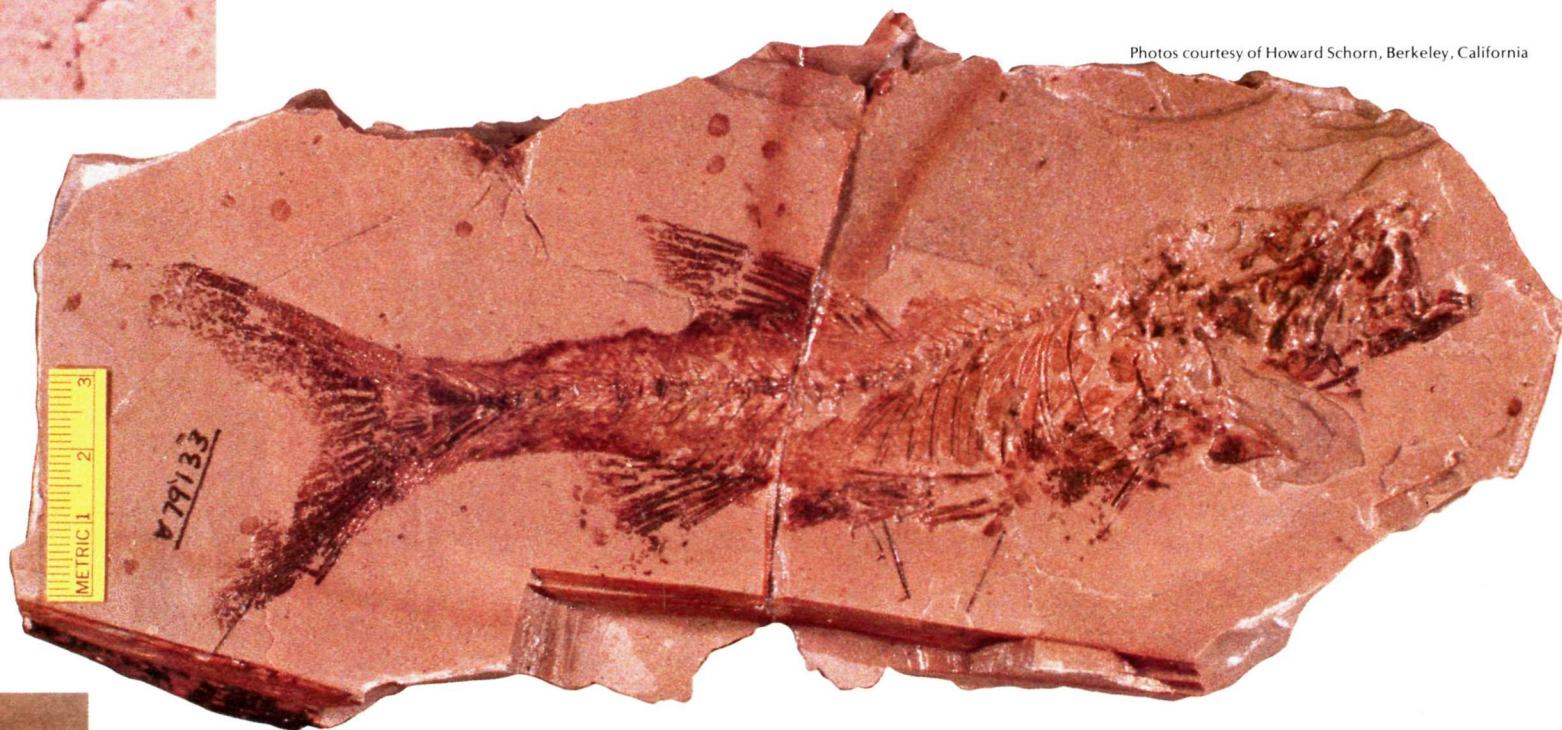


Photo courtesy of Howard Schorn, Berkeley, California

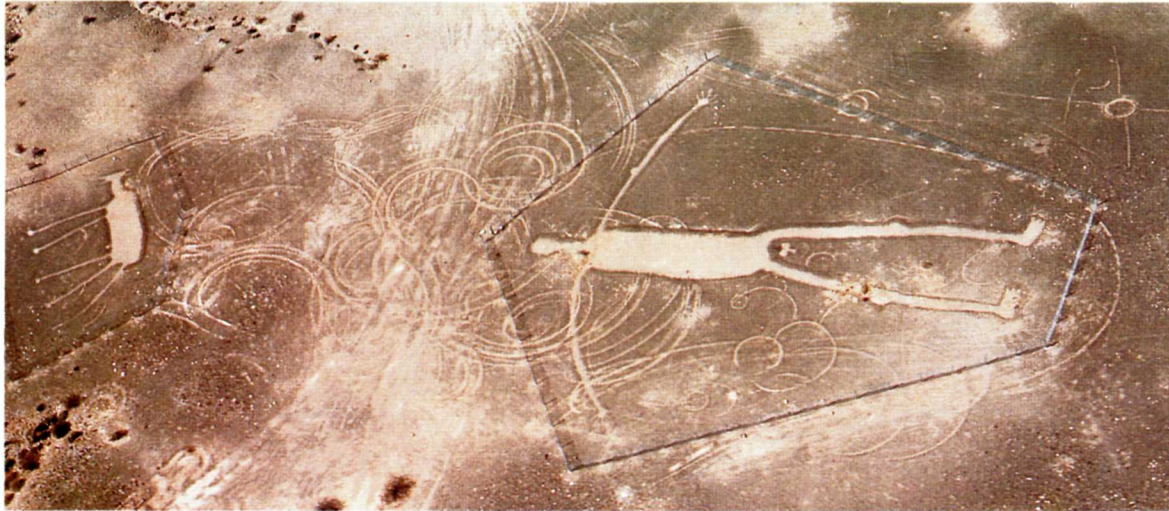


Photos courtesy of Howard Schorn, Berkeley, California



6,000 years ago Blythe, California

giants of the desert



Times were troubled for the Indians living in southern California 6,000 years ago. For reasons they did not understand, their world was literally drying up, turning into desert.

Their home, with its water, trees, plants, and game, was slowly growing hotter and drier. In response, they turned to their gods for help. Out on the changing landscape they dug shallowly into the earth, scraping aside the dark-colored desert surface to expose the lighter-colored soils underneath. In this way, they created large human and animal figures and geometric symbols, communicating the idea of creation and regeneration to their gods. Despite their efforts, the drying trend continued. The Southern California Desert was born, but the giant figures remained.

Thousands of years later, about 1500 A.D., another crisis in the desert was occurring. The mighty Colorado River, which had been emptying its lifegiving water into a huge lake

called Cahuilla, began changing its course, emptying into the Gulf of Mexico. The lake began to dry up, much to the despair of the Yuman Indians who depended on it. Like their predecessors, the Yumans created giant figures in the desert, either by the same process of removing the weather-darkened surface or tamping the earth down to create a similar effect. Again, human, animal, and geometric figures were created to communicate their troubles to their gods. Again, the change could not be stopped, but the figures remained.

These are two currently accepted theories to explain the large figures, some measuring more than 100 feet across, etched into the desert floor on public lands in southern California near Blythe. These, and almost 100 others stretched along the Colorado River in the California and Arizona deserts, are called geoglyphs or earth carvings by scientists. They

are also known as intaglios, an Italian word used to describe designs incised beneath the surface of hard metal or stone.

Although their exact purpose and meaning are still a mystery, we do know these large and delicate geoglyphs are easily damaged by vehicles breaking through the desert surface and obliterating the figures. Over the years, many, such as the Blythe intaglios, have been damaged by vandals or people who did not recognize the large figures when driving through them.

The BLM, in cooperation with local citizens, has fenced about a dozen of the more vulnerable sites in recent years. The Blythe intaglios have been listed on the National Register of Historic Places and similar protective designations are being prepared for two other sites.

Meanwhile, scientists continue to study them and compare them with geoglyphs documented in other parts of the world, such as Peru, England, and Australia to see if similarities exist and can be explained.

These efforts are important from a scientific standpoint to help expand our knowledge of human interaction with the environment. They are also important from a religious and cultural standpoint. Modern-day Mohave Indians in southern California, descendants of the prehistoric Yumans, consider these sites sacred and still use them for religious purposes, making these giants of the desert fascinating and vital links among modern and ancient peoples and our common, but ever-changing, earth.

320 million years ago Tuscaloosa, Alabama

life in an eastern coal seam

Near Tuscaloosa, Alabama, they're mining coal. Using large, earth-moving equipment, miners dig into the ground, removing the black rock that burns, providing heat and energy for America.



Every once in a while, they also find something else, like large stumps of great ferns and moss trees, their ancient roots still locked into the peat bog now turned to stone. When this happens, scientists from nearby universities are called in to examine the find. If the fossil is rare or scientifically valuable, it is studied and excavated. If it is common, it is recorded and mining continues.

Such cooperation is part of the conditions set in the mineral lease issued by BLM. The coal mining operation at Tuscaloosa and others like it are uncovering many fossils and providing new and valuable insights into the past.

The site of the mine in Tuscaloosa was once a swamp on the edge of a huge inland sea covering the central part of the United States about 320 million years ago. There were no birds, no flowers, and no bees in this world. But there were giant tree-like ferns, mosses grown to enormous size, foot-long cockroaches, giant dragonflies with three-foot wing spans, and amphibians resembling crocodiles but more directly related to present-day salamanders.

Eon after eon, these ancient plants and animals lived and grew and died in the swamps. As they died, their remains sank into the great dark water to be buried deeper and deeper into the earth. Over a long, long time, heat and pressure gradually performed their magic of turning peat, or partially decayed plant matter, into coal.

Millions of years later, as miners begin to remove the coal, fragments of the ancient world where it was first formed come to light once more. Tree stumps, impressions of fern fronds, stems of plants, shells of clams, bone



Drawing courtesy of Shelly Fischman



bits, and, occasionally, a footprint are discovered.

Working with miners under the guidance of the BLM, scientists are gradually compiling a picture of what life was like in an eastern coal seam 320 million years ago, helping us to understand the direct relationship of living things to life-sustaining energy sources that may hold the key to our future.

110 years ago Silver City, Idaho

the town that wouldn't die

In a remote corner of southwest Idaho, nature's rich mineral resources and man's dreams of striking it rich combined to create a classic American story of a western mining boomtown.

All the ingredients were there: a lucky discovery of rich ore, a frantic rush to stake claims, instant wealth for some, and fruitless searching for others. Behind the miners came the builders and the merchants. Stores, hotels, restaurants, and houses of ill-repute suddenly appeared. Not far behind came the churches and schools as a temporary, makeshift settlement gradually became a full-fledged town.

Scenes like these occurred throughout the West during the late 1800s and early 1900s, but for most of these boomtowns the curtain fell rapidly as the precious but scarce ore was depleted. When the gold and silver disappeared, so did the people, leaving behind a string of ghost towns, haunting testaments to man's successes and his failures.

Silver City, lying on public land in the heart of the Owyhee Mountains southwest of Boise, is a classic example of the boomtown period. Unlike most of its peers, it stubbornly refused to die, surviving the bad times to age gracefully, true to its early nickname, "Queen City of the Owyhees."

Silver City was once one of the most flamboyant, vibrant cities in the West. Only Nevada's Virginia City surpassed it in silver production and cultural energy. At its peak, it supported almost 10,000 people. In spite of its

name, Silver City owes its origin to a May 1863 gold discovery in a stream in the Owyhee Mountains. Within a few days after news of the discovery reached Boise, about 2,500 miners converged on the area, setting up several temporary settlements. Later, silver was discovered on nearby War Eagle Mountain and one of these settlements was called Silver City in honor of the new-found wealth.

Even during the early years, Silver City demonstrated its tenacious nature by overshadowing its rival settlements to dominate the region. Between 1864 and 1866 its population jumped from 250 to 3,000 residents. By the early 1870s, it had 10 general stores, four hotels, six saloons, a brewery, a Wells Fargo bank, two schools, two churches, and no less than 18 brothels.

Material prosperity was only part of the city's wealth. It was also culturally rich with a surprising cosmopolitan flavor. According to the 1870 census, more than a third of its citizens were foreign born. The two largest groups were from China and the British Isles. The majority of Silver City's native-born residents came from the Northeast, especially New York. The total population represented 34 states and 19 foreign countries.

In the midst of all this prosperity, a national economic depression set in, and by 1875, the mines had closed along with most of the city's businesses. Without jobs, most of the residents moved on to better prospects. But the town hung on, managing to survive until

mining picked up after 1884. By the early 1890s, the city was booming again. Its population reached 10,000 and the number of buildings more than doubled to almost 400 structures.

Even this boom finally began to fade. Although mining continued until the late 1920s, 1912 marked the high point of this second and last historic mining boom. From then on, a gradual, steady economic decline began. Again, it appeared Silver City's end was near, but for some reason it never was deserted completely. In the 1950s, some of its former residents started to return, a few to take up permanent residence and others just for the summer months. About 30 families now live there part or all of the time.

These people have a strong attachment to their town and many have devoted their energies to keeping the town alive. For some, it's a family affair, with roots going back to early settlers in the Owyhees or relatives born and raised in the town during the boom times.

Today, Silver City is recognized as a valuable historical resource. Many of its buildings are outstanding examples of Victorian architecture. It also contains valuable archaeological information and its colorful background offers a wealth of information about social history and cultural processes. The cultural diversity of its previous citizens makes it an ideal example of the "melting pot" effect that has played such an important role in shaping

modern American society. The city has also become a popular tourist attraction with up to 30,000 visitors annually.

Although the buildings are privately owned, the BLM is responsible for managing the adjacent public lands. Working with the townspeople, BLM personnel are developing a management plan for the area to provide for protection of its historical values and enjoyment by residents and visitors. The Owyhee County Historical Preservation Committee, composed of representatives from the building

owners, BLM, the State of Idaho, and Owyhee County, reviews all proposals for architectural or land use changes in Silver City to ensure the preservation of the city's historical integrity.

The cooperative spirit of these public and private groups helps guarantee the protection of an outstanding historical resource. Despite the odds, Silver City, the "Queen City of the Owyhees," will continue to survive, a monument to a stubborn mining boomtown that simply refused to die.

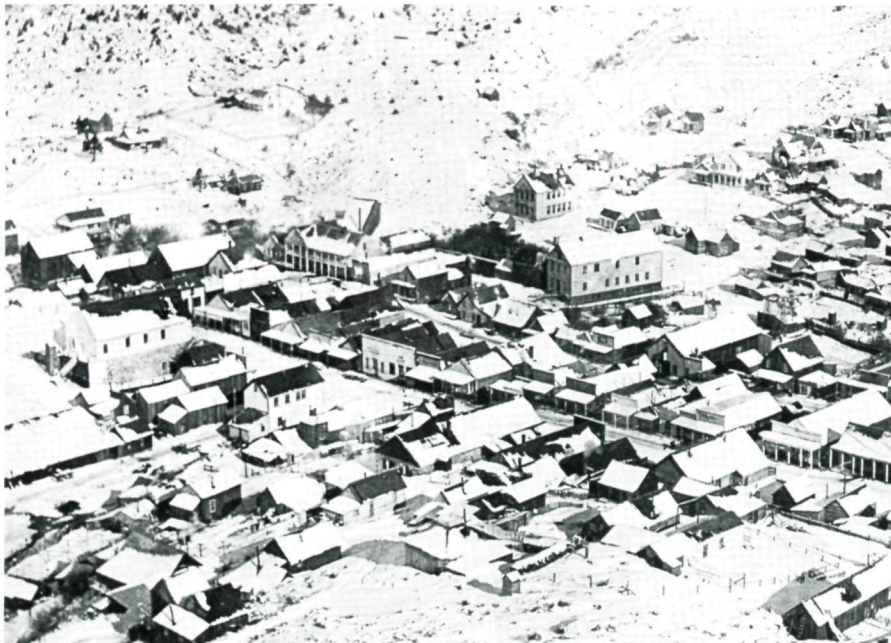


Photo courtesy of Idaho Historical Society



100,000 years ago Lovell, Wyoming

natural trap



The land around Lovell, Wyoming, didn't look too much different 100,000 years ago than it does now. It might have been a little bit greener and the climate a little bit wetter, but the general framework of North America had already been set into place eons before; only the little details were changing.

Among the details were the animals. The fauna of the North American continent was in flux and dramatic changes were occurring.

The horse, for example, after having evolved in North America from a small, forest-dwelling browser to a fleet creature of the plains, would soon become extinct. Before that happened, some of its brethren migrated to the north, across the ancient land bridge to Asia and on into Europe. The wild horses now roaming the American West are distant cousins brought back to their ancestral homeland by Europeans.

There were camels, too, but they also would

become extinct here, migrating earlier out of North America to give rise to the camels of Asia and Africa and the llamas and alpacas of South America.

The pronghorn antelope would not migrate, but would remain in North America to continue evolving into a truly unique American animal, with no close relatives anywhere else in the world. Mammoths and musk ox also roamed the Wyoming plains. The mammoth became totally extinct, disappearing from the face of the earth. The musk ox moved north out of Wyoming into the Arctic tundra where it still lives today.

There was also a cheetah-like cat on the plains. Built for speed, it probably preyed on the pronghorns and the horses. Now completely extinct in North America, the only evidence of its existence is a single skeleton found at the bottom of a deep hole on public lands in Wyoming called "Natural Trap."

Natural Trap was formed by accident. Water slowly percolating through the rocks below the Wyoming plain had carved out an immense cave. After centuries of existence, a portion of the cave collapsed, forming a gaping hole in the ground. Steep-sided and 80-feet deep, it became a hazard for and a collector of the ancient animals of the plains.

Falling over the edge while pursuing or being pursued, creature after creature plunged into the void with little understanding of how it got there, and less of how to get out. Each ultimately died, adding to the great collection of bones littering the bottom. Year after year,


more hapless creatures were added, providing a priceless cache of fossils from horses, camels, antelope, musk ox, mammoths, and even the strange cheetah-like animal.

Although the existence of Natural Trap had probably been known by Indians and settlers for a long time, its fossil secrets were not discovered until 1970, when a group of rock climbers, who were enjoying their sport on the sheer rock walls, discovered signs of fossils and alerted paleontologists to the cave's scientific potential.

Since then, work in the cave has been slowly progressing, removing a fantastic collection of bones from these earlier Wyoming residents. To protect the fossils below and for public safety reasons, the BLM has erected a structure resembling a trap door over the cave's opening.

Access is still extremely hazardous, so to provide visitors with information about the site and its fascinating fossils, the BLM and the National Park Service have put up a display at the Bighorn Recreation Area Visitor Center in nearby Lovell.

Meanwhile, down at the bottom of the cave, work continues. No one knows how many fossils will eventually be found, but it is possible this geologic "accident" called Natural Trap may hold critical clues to understanding why some of these animals became extinct, others migrated, and still others survived on the North American continent.



*The past belongs to the future,
but only the present can preserve it.
Anonymous*

Interior of Natural Trap near Lovell, Wyoming.

Photo on front cover depicts petroglyphs or Native American rock carvings in the Pryor Mountains, Montana.

Credits:

This publication reflects the cooperative efforts of private individuals, State and national groups and institutions, as well as BLM employees throughout the country. All these contributions are appreciated.



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