

The Excavation of Lindenmeier



A Folsom Site Uncovered
1934-1940



The Excavation of Lindenmeier: A Folsom Site Uncovered 1934-1940

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Additional Photos

Front cover: Soapstone Prairie Natural Area, photo by Terry Burton

Inside front cover: Lindenmeier arroyo, photo by Terry Burton

Page 4: Lindenmeier overlook, photo by the City of Fort Collins Natural Areas Program

Page 26, 29, 31, 32: photos by Terry Burton

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Introduction



Today, when you visit the Lindenmeier Archaeological Site, an Ice Age American Indian site, you'll see a scene little changed from what archaeologists saw in the late 1930s. The landscape is still quiet and mostly empty of people, and on a summer morning as you approach the site the wind will probably be blowing. A short walk uphill from the parking area affords sweeping vistas to the south, east, and west across the rolling shortgrass prairie to the land rising into the foothills of the Rocky Mountains. A quarter of a mile on you'll reach the top of a low ridge where below, in the valley ahead of you, lies the Lindenmeier Archaeological Site. You are gazing down on the place that became known as one of the most important archaeological finds in the Western hemisphere.

Don't be disappointed if there seems to be little to see. Rather, listen to the silence, the bird song, the sound of the wind. Soak up the openness, the huge vault of the sky. Maybe, just maybe, you'll hear the whispers of all the people who have come to this same place and realize that you are now part of a continuous story of human presence reaching back more than 12,000 years through time. This is the spirit—and the message—of Lindenmeier.

Timeline on
page 39.

The Lindenmeier Archaeological Site is very special. It's referred to as a sacred place by many American Indians and known by archaeologists as one of the most important Pleistocene habitation sites in the Western Hemisphere. The preservation and conservation of this landscape was made possible by the people of Larimer County and the City of Fort Collins through citizen-initiated sales taxes.

Soapstone Prairie Natural Area, where the Lindenmeier Site is located, is an integral piece of the Laramie Foothills Mountains to

Plains Project. This partnered conservation effort is creating an expanse of protected lands that link the mountains to the plains, thereby conserving a large working landscape and wildlife corridor. Funding for Laramie Foothills Mountains to Plains properties came from Fort Collins and Larimer County dedicated open space sales taxes, Great Outdoors Colorado, The Nature Conservancy, Legacy Land Trust, and private landowners. This foresight and commitment to good stewardship of the land provides all of us, and future generations, the opportunity to better understand and appreciate our collective cultural and natural heritages.

The road leading to this amazing archaeological find and its subsequent exploration was an adventure in itself. So, come along and learn about the journey whose story continues today. And if you'd like to visit the Lindenmeier Archaeological Site, you can find more information on page 33 of this booklet.



Visitors at the Lindenmeier overlook, Soapstone Prairie Natural Area.
Photo: City of Fort Collins Natural Areas Program

The Discovery



On a hot July day in 1924, amateur archaeologists Claude C. Coffin, his son A. Lynn Coffin, and friend C.K. Collins were exploring an area around a deep arroyo cut into the red and white cliffs on the northern edge of William Lindenmeier's ranch. The arroyo wound down from a valley behind the cliffs and opened onto high prairie land that extended south and east for miles. Carpeted in buffalograss, prickly pear cactus, and sage, the dry ground crunched underfoot as the men walked slowly, keeping a sharp eye out for arrowheads and other Indian relics.

It was quiet, except for the sound of the wind. Few people spent time on these lands, mostly the cowboys who worked on Lindenmeier's ranch or for the Warren Livestock Company, and a scattering of homesteading families that still lived on the high prairie. The quiet was broken when one of the men called out—he'd found something unusual eroding out of the ground.

Glossary on
pages 36-38.

Over the next year the Coffins, joined by Claude's brother Roy G. Coffin, would collect a total of 34 strange, beautiful leaf-shaped projectile points from the area. They knew these relics were something different than any they had seen before—something special. What they didn't know—what nobody knew—was that these artifacts were evidence of a complex and thriving culture that dated to the late Ice Age, at least 11,000 years ago.

The Coffin's World: Archaeology in the 1920s

In the 1920s, the world was fascinated by the antiquity of humanity. Discoveries of fossil remains and stone tools in Europe, Asia, and Africa had established a history of humans that reached far

into the past. “Peking Man,” “Neanderthal Man,” and “Cro-Magnon Man” were part of the popular imagination and archaeologists, geologists, and paleontologists continued to discover sites, pushing the age of humankind further and further into the past. However, all these discoveries were happening in the “Old World.” North American scholars were eager to uncover similar sites in the “New World” and prove that a comparable history existed on their side of the Atlantic. The question was simple: Was there an ancient history of humans in the Americas?

Leading scientists at the Smithsonian Institution, the highest scientific authority of the time, said “No.”

The debate over human history in North America was not a new one—since the first European settlers arrived it had been a topic of curiosity. Ancient ruins, along with human remains and stone



Judge Claude C. Coffin and Major Roy Coffin. Photo: Fort Collins Museum & Discovery Science Center

tools found alongside the bones of strange animals, had been uncovered as fields were plowed and cities were built, but none of these discoveries were considered conclusive proof of an ancient human presence in North America. Many scientists accepted and rigorously defended the theory that people had been in the Americas for only a few thousand years.

At the time the Coffins found the strange artifacts on Lindenmeier’s ranch, the Smithsonian’s National Museum of Natural History reigned

over the debate. Dr. Aleš Hrdlička, the Museum’s Curator of Physical Anthropology, positioned himself as the determiner of human antiquity in North America. Hrdlička firmly believed that people had only been on the continent for 3,000–4,000 years and challenged attempts to establish an older date.

According to Hrdlička, a site and its artifacts could not be considered as proof of human occupation earlier than a few thousand years ago unless it met his strict criteria: there must be a clear association

between human remains or tools and the bones of known prehistoric animals, and the layers of soil (strata) used to date the age of the site had to be clear and undisturbed.

These criteria were almost impossible to satisfy. Archaeological sites were being discovered throughout the country, but none of them completely fulfilled the criteria that Hrdlička had set forth. Hrdlička was adamant that scientists meet his standards and he often criticized anyone who dared to contradict his authority. According to Dr. Frank H. H. Roberts, an archaeologist with the Smithsonian's Bureau of American Ethnology and later the principle investigator of the Lindenmeier Archaeological Site, "The question of early man in America became virtually taboo."

However, Roberts and others in the scientific community were willing to take on the "taboo" subject and believed that people had lived among, and hunted, the giant Ice Age mammoth, bison, and other animals.



Folsom point fragments found by the Coffin brothers in 1924.
Photo: Smithsonian Institution

Discovery at Folsom, New Mexico

In 1908, a torrential rainstorm washed through Folsom, New Mexico, eroding large animal bones from the wall of Wild Horse Arroyo. George McJunkin, a former slave turned cowboy with an interest in natural history, spotted the bones and recognized that they were much larger than those of modern cattle and bison. It wasn't until 1926, after McJunkin's death, that the bones were taken to the Colorado Museum of Natural History (CMNH, now the Denver Museum of Nature & Science) and shown to Director Jesse D. Figgins and Harold Cook, the honorary Curator of Paleontology.

Figgins and Cook declared the bones to be those of a previously unknown and extinct species of bison. Excited at the opportunity to obtain a complete skeleton to display in the museum, and curious about what else the site might reveal, Figgins and Cook traveled to Folsom the following month. Initially, the men suspected the site

A “kill” is a reference to a “kill site”—a term used by archaeologists to describe a place where animals, often in large numbers, were killed and butchered.

would only yield bison bones, not artifacts. However, years later, Cook recalled his first visit to the site: “... the charcoal and other evidence I noted there suggested it might be a ‘kill,’ we might find evidence here of primitive man...”

CMNH agreed to sponsor an excavation of the site and field work began in May 1926. Two months later, fragments of the first projectile point were found. However, before the point could be studied in place, it was removed from the ground. The discovery was both a triumph and a defeat—a point had been found, but the finding was met with skepticism and little encouragement from some scientists, especially Hrdlička. Figgins kept searching, planning, as he once stated, to challenge “the whole miserable caboodle of them” and prove the skeptics wrong. At the end of the next field season, he did.

In August 1927, a point lying among the ribs of a bison was found. This *was* a kill site! Figgins immediately halted the excavations and sent telegrams across the country, inviting leading scientists to come and judge the evidence first-hand. Three experts, including Dr. Roberts, examined the find and all agreed that the projectile points were indeed authentic.

Roberts later wrote, “There is no doubt but that the points went into the formation at the same time the bones did.” The unique projectile points were named “Folsom points” and scientists began re-writing the human history of the Americas.



Folsom point found with bison ribs by Jesse Figgins in Folsom, NM. Photo: Denver Museum of Nature & Science

The artifacts found at Folsom, New Mexico only told a small piece of the story: “Folsom Man” had hunted bison. What was the rest of the story? If men hunted, how did

Hrdlička never formally endorsed the discovery, and it is said that he argued until his death in 1943 that the evidence at Folsom was not sufficient to establish a Pleistocene age for the deposits. However, in spite of his often being seen as a detriment to the advancement of archaeology during this time, Hrdlička’s strict standards in excavation techniques and record-keeping actually helped maintain a high level of field methodology and analysis, and enhanced artifact interpretation and conservation for future generations.

women contribute to society? Who were the people of this time and what were their lives like? The excavations at the Lindenmeier ranch, almost ten years later, would begin to answer those questions.

Lindenmeier Changed Everything

The projectile points found at Folsom were just like the ones found by the Coffins at the Lindenmeier ranch two years earlier, although the scientific community would not realize the significance of the northern Colorado discovery for another eight years. But when the Smithsonian Institution investigated Lindenmeier under the leadership of Dr. Roberts from 1934–1940, the picture of human history in the Western Hemisphere was to be changed forever.

Prior to the excavations at Lindenmeier, what little was known about Ice Age humans came from kill sites like the one in Folsom,

A Note on Terminology

What is the correct name for the people who lived in the Americas during the late Ice Age? The term “Paleo-Indian” was initially coined by Dr. Roberts in 1940 to describe the early peoples of North America living during the Pleistocene Epoch and hunting now-extinct species of animals (the prefix “paleo” comes from the Greek word for “old”). The scientific community also uses the term “Paleoamerican.” Many American Indians refer to the people who lived at Lindenmeier as their “Ancestors” or the “Ancient Ones.” “Ice Age American Indians” is another way to describe the people who lived at Lindenmeier. But just as the theories about how and when people arrived in the Americas are in a state of flux, so too is the matter of how to identify these early inhabitants.

New Mexico. The evidence from these sites only revealed a narrow view of how people had lived. From his work at Lindenmeier, Roberts found that:

- People resided in one place for longer periods of time, rather than just staying in short-term camps.
- People traveled long distances, as demonstrated by the variety and types of resource materials used for tools and decorative items, some of which came from hundreds of miles away.
- People had the time and inclination to create intricate functional and decorative items.
- Non-hunting tools comprised a significant amount of the numerous artifacts found.
- People cooperated and interacted socially on a grander scale than previously realized, as demonstrated in the hunting of large animals.

Perhaps the most meaningful insight to come from the excavations was that the people living there were not just surviving, but thriving. Life of prehistoric humans was not necessarily “solitary, poor, nasty, brutish, and short,” as described by 17th century English political philosopher Thomas Hobbes. Roberts’ findings helped put to rest this common stereotype of prehistoric humans.

The Lindenmeier Archaeological Site remains one of the largest and most important late Pleistocene habitation sites in the Western Hemisphere. The research conducted there revolutionized our thinking about life in the late Ice Age, bringing depth and detail to our understanding of the lives of Ice Age American Indians.

Life in the Late Ice Age

When people lived at Lindenmeier during the late Ice Age, glaciers filled the mountain valleys to the west and the climate was cooler and wetter than it is today.

This was the end of the Pleistocene Epoch, which began approximately 2.5 million years ago and ended 10,000 years ago. This time was marked by cycles of Ice Ages; at times, up to 40% of the world’s land masses were covered with sheets of glacial ice. It was also the last time North America was home to large land mammals, like mammoths, camels, giant sloths, and giant bison.

Bison or Buffalo?

Modern bison are mistakenly called buffalo, but are not closely related to the Asian or African buffalo. True buffalo never lived North America. The giant Ice Age bison, *Bison antiquus*, was the ancestor of the modern bison and stood approximately eight feet tall and measured almost six feet from horn tip to horn tip—15-25% larger than today's bison. *Bison antiquus* became extinct at the end of the Pleistocene between 12,000 to 10,000 years ago. A significant resource for the people who lived at the Lindenmeier site, it provided meat, hides, and a wide variety of useful materials—utensils made from horns, fuel from bison “chips,” medicines and cooking vessels from stomach parts, thread and glue from muscles, and much more.



Bison antiquus (left), modern bison (center), Ice Age American Indian.
Illustration by Joseph Ortega.

During the Pleistocene, the Lindenmeier site was a valley bottom dotted with meadows, marshes, and bogs that provided food, water, and wallowing places for animals. The people living there found abundant food and water as well, along with wood for fuel and shelters to protect them from the elements. Besides *Bison antiquus*, other late Pleistocene animals were found, including pronghorns, wolves, coyotes, swift foxes, Arctic hares, jackrabbits, and turtles. These animals were all at home in this environment and provided game for hunting and other resources; many of these species still inhabit the Lindenmeier area today.

Because of the wetter climate, vegetation flourished and it's likely that a wide variety of berries, nuts, roots, grasses, and other plant items were available for gathering and eating. This was an attractive place for these early inhabitants, with the surrounding hills providing good raw materials for stone tools and abundant vantage points from which to observe the movements of animals or humans.

The Excavations



Between 1924 and 1934, the Coffin brothers collected nearly 160 artifacts from the Lindenmeier ranch, nearly half of which were projectile points. The Coffins were no ordinary “relic hunters”—Claude Coffin had long been interested in the prehistory of Native peoples, and his brother Roy’s expertise in geology (he taught the first geology class at Colorado State University, then known as Colorado A&M) helped them to recognize that these artifacts came from ancient soils.

In 1930, the Coffins began campaigning to have the Lindenmeier ranch investigated by professional scientists, inviting Dr. E. B. Renaud from the University of Denver to visit. During his visit, Renaud identified the projectile points as Folsom points. With this information, Roy Coffin wrote to the geologist in charge of Stratigraphy and Paleontology at the U.S. Geological Survey in Washington, D.C., and eventually his letter found its way into the hands of Frank Roberts.

Roberts, an archaeologist with a Ph.D. from Harvard University, had been working for the Smithsonian’s Bureau of American Ethnology since 1926. Roberts’ roots were in the West, having spent his childhood in Wyoming, Colorado, and New Mexico, and he was drawn professionally to the archaeology of these regions. He had conducted excavations at Chaco Canyon in New Mexico, and in 1927 he verified the finds at Folsom, New Mexico. It was during these early years that

Roberts became convinced that contemporary thinking about the relatively recent arrival of humans in the Americas was in error, and he subsequently spent much of his professional life expanding what was known about the continent's ancient inhabitants.

September 1934 was a turning point in Roberts' career—the Smithsonian sent him to Colorado to investigate the Coffins' finds.

Roberts' first day with the Coffins at Lindenmeier was a disappointment. They walked the area where the Coffins had been collecting artifacts, and to Roberts it appeared devoid of anything of archaeological interest. But the next day they explored the deep arroyo that cut through the valley behind the red and white cliffs and discovered an intact layer of artifacts and animal bones, exposed on the face of the arroyo's south bank, fourteen feet below the surface.

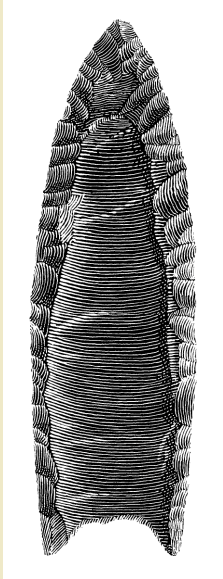
At this time, Roberts must have suspected that the artifacts in this layer were very old and that the site held the promise of meeting Hrdlička's criteria: the association of tools with extinct animal bones found in undisturbed soil layers. Roberts and the Coffins spent the next six weeks excavating a large pit at the edge of the arroyo, uncovering an area where people had butchered animals, made stone tools, burned fires, and discarded their refuse. From the assortment of tools and the abundant tool-making debris found by the men, they realized that they had uncovered the first traces of a Folsom campsite and work area. Lindenmeier the ranch now became Lindenmeier the archaeological site.

Roberts returned to Washington, D.C. in November with artifacts from the Lindenmeier site and worked through the winter months writing a manuscript that detailed the results of their finds. In the summer of 1935, he returned to Colorado to establish Lindenmeier's first official archaeological field camp.



Frank Roberts standing in the area of the 1934 excavations he conducted with the Coffins.

Photo: Claude C. Coffin Collection



Shaped for Success: the Folsom Point

The distinctive shape of the Folsom point was very intentional. The point was long, so it could be re-sharpened if it broke. The point was flaked on both sides, making it very sharp, with a concave base and a long, wide groove (called a “channel flake” or “flute”) running almost its entire length on one or both sides.

One interpretation suggests that these “fluted” points could be securely hafted to a wooden spear shaft, and reworked and moved forward as needed—like advancing the blade of a utility knife. A group of highly-mobile bison hunters might have spent weeks or months away from sources of good stone to make points, so being able to re-work a broken point would have been a real advantage. Some archaeologists also think that the fluting of these points could have been stylistic or had a symbolic meaning. *Illustration courtesy of the Smithsonian Institution*

The 1935 Field Season

Eight crew members, two geologists, one scientific illustrator, and a cook joined Frank Roberts to work for the Smithsonian at Lindenmeier for the first official field season. CMNH was also invited to participate, and sent three representatives from Denver. The Coffins were involved with both field parties, and often the three groups worked cooperatively and shared their discoveries. CMNH excavated the first season only, while Roberts and his crew returned for five more summers. Lindenmeier became the first Ice Age site to be excavated under the direction of academically-trained archaeologists and their students, and it was investigated using controlled field techniques, many of which were used for the first time.

Roberts’ primary goal for the 1935 field season was to determine the geologic age of the Folsom artifacts and animal bones found with them at the site. Scientists believed that the bones belonged to extinct animals. Since artifacts were found associated with those bones, dating the bones would also date human presence in North America.

Working with Roberts that summer was Dr. Kirk Bryan, who specialized in Ice Age geology. Bryan studied the nearby glacial deposits in the Cache La Poudre River drainage and compared them to glacial sequencing already established for North America. Over the next four years, Bryan and his graduate student, Louis Ray, established a date for the Lindenmeier occupation of between 25,000–10,000 years ago.

A Note on Dates

In this book, you'll see several different dates being used in reference to both the Lindenmeier Archaeological Site and general Ice Age inhabitation in northern Colorado. The excavations at the Lindenmeier Archaeological Site have been radiocarbon dated to 10,780 \pm 135 years before present by C.V. Haynes and George Agogino. Radiocarbon years are different than calendar years, so an age of approximately 11,000 years old is used to date the site. However, evidence of Clovis-era occupation, a complex dating prior to Folsom, in the near vicinity means that people were living in this area more than 13,000 years ago and possibly even earlier.

Roberts' crew began the season by excavating two large trenches in an area of the arroyo where Roberts and the Coffins had found bones and stone tools the previous autumn. The trenches allowed Roberts to study how artifacts were distributed within the soil layers



Smithsonian Institution field camp at the Lindenmeier Archaeological Site. Photo: Smithsonian Institution

of the site, both horizontally (in one layer) and vertically (in different layers across time).

Approximately 750 artifacts were found that first summer: Folsom points for hunting, knives and large blades for butchering meat and cutting plant fibers, and scrapers for processing hides. The CMNH crew found etched bone disks that Roberts described as showing “workmanship,” a fragmented bone disk with delicate engraving, and two beads—a large, circular hematite bead and one half of a large lignite (also known as “brown coal”) bead. While the find at Folsom, New Mexico, had uncovered a place where Ice Age American Indians had hunted, it was becoming more and more clear that Lindenmeier was a place where they had lived. A detailed and complex picture of human life in the last Ice Age was unfolding.

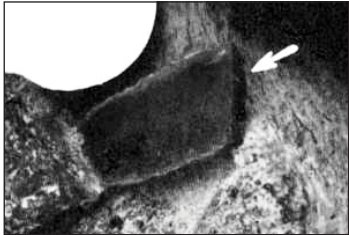
See photos
on p. 25.

Animal bones excavated that summer also held clues to how the people of Lindemeier had lived. *Bison antiquus*, fox, rabbit, wolf, and pronghorn bones were excavated from the site, some with evidence of burning, charring, and cut marks. The shells from nine species of mollusk were also found.

But the most exciting moment of the season was the discovery of the tip of a Folsom point lodged in the backbone of a *Bison antiquus*. Found by crew member Loren Eiseley, it appeared to have been driven into the animal and then broken off at the end.



Vertebra of the extinct *Bison antiquus* with a broken Folsom point embedded, found at the Lindenmeier Archaeological Site by Loren Eiseley during the 1935 field season.
Photos: Smithsonian Institution



Twenty-eight year old Loren Eiseley was a member of the crew working at Lindenmeier that first field season. His fellow diggers teased him about being a poet—his degrees were in English and Anthropology—but he was genuinely enthralled by his work in the heat and wind of this high Colorado prairie. He'd begun another long day with breakfast that morning at 7:30 in the camp's white canvas mess tent and then walked around to the south side of the arroyo to his digging area.

Roberts had the men working in separate five-foot square areas that formed a grid over the site. Each man was responsible for excavating his piece of the grid, inch by inch, sifting all the dirt through a fine screen and meticulously mapping the location of each artifact within the square. Eiseley hopped down into his square and began to work.

Using a brush to carefully sweep the dirt away, Eiseley uncovered a tip of bone—it looked like a vertebra, a large one, probably from one of many *Bison antiquus* they'd already found at the site. Eiseley gently brushed away more dirt until he saw something that stopped his hand—there was a piece of stone embedded in the bone. Looking closely, his heart began to pound. It was a fluted Folsom point, broken off in the bison's backbone!

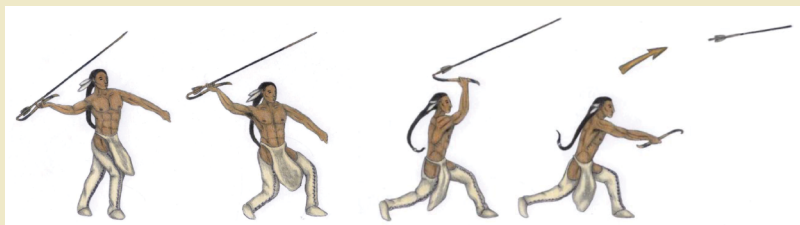
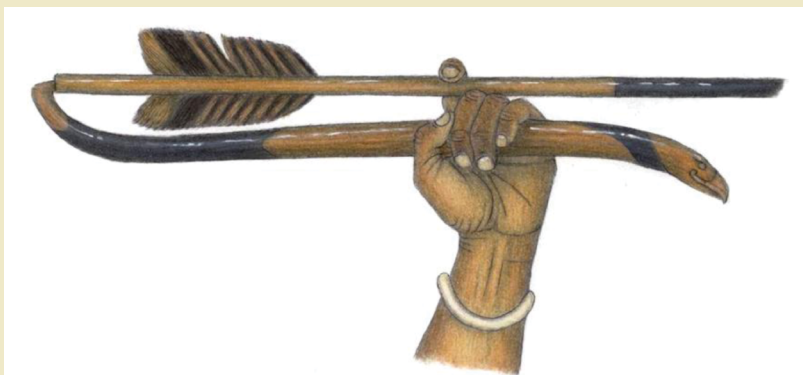


Charles R. "Chili" Scoggin of the 1939 crew excavating a bead. Photo: Smithsonian Institution

Eiseley knew that during the 1927 field season at the site in Folsom, New Mexico the crew had found fragments of two fluted projectile points in loose soil and a third among the ribs of a *Bison antiquus*. But the find wasn't 100% conclusive—there was still the chance that the points could have come from a later time and have simply been washed into the same layer as the bison ribs. But this—! A fluted projectile point broken off in the vertebra of the extinct giant bison! No one could dispute this—a man-made tool stuck firmly in an Ice Age beast.

Extending the Range: the Spear Thrower

How could Ice Age American Indians successfully hunt large animals like *Bison antiquus* with stone projectile points? Although not yet found at Lindenmeier, the atlatl, or spear thrower, was probably used to deliver the Folsom point-tipped spear powerfully and accurately to its target. The atlatl, made of wood or bone and varying in style, is about two feet long with a handgrip at one end and a hook on the other. The hook fits into the base of a four to six foot long spear, which is launched through a sweeping arm and wrist motion, similar to a tennis serve. By giving the hunter extra leverage, the atlatl can hurl a spear up to 150 yards, and is accurate at up to 40 yards.



(Top) Atlatl with spear fitted into base. (Bottom) Atlatl throwing motion. Illustrations by Joseph Ortega

The 1936-1940 Field Seasons

With the antiquity of Ice Age American Indians in North America established, Roberts continued to excavate at Lindenmeier, looking for the pieces of stone and bone that would reveal more about the lives of the people who had lived there. Over the following five years, Roberts brought a crew back to Lindenmeier each field season from

mid-June until September. Roberts' primary goals for those years were to find a camp location with evidence of shelters and to uncover burial sites. Using his extensive grid system, Roberts began to excavate large horizontal areas in order to reveal living floors within the site where the remains of dwellings and burials might be identified.

Over six years, Roberts and his crew excavated for a total of 530 days, but they never found the dwellings or human remains they had hoped to find. Edwin N. Wilmsen, the archaeologist who consolidated Robert's annual field reports into a final site report in 1974, wrote that "Neither of these objectives was realized and this became a source of frustration and disappointment to Roberts...."

Life in the Lindenmeier Field Camp

It wasn't easy to become a part of Roberts' field crew. Roberts hired a mix of young archaeology students and local men to work on the dig, twelve to fifteen "boys" each season. Many of the crew members were striving to become professional archaeologists, and the chance to work with Roberts was a huge honor. On at least two occasions, men begged for the chance to work on the dig. One, Forest Wayne Powars, even offered to work only for food and lodging. Roberts, who was remembered as a "fair" boss by everyone who worked on his crews, hired Powars, but when the first pay day came around Powars found that he'd been paid the same wage as the rest of the crew.



Ted Peterson (L) of the Smithsonian field crew and Ray Bear (R), whose family homesteaded east of the excavation, work on backfilling the dig in 1940.

Photo: Smithsonian Institution

The Great Depression was in full swing during the years Roberts excavated at Lindenmeier. Although the wages were low, this work helped many men support their families or pay for college tuition. It also provided hope for a better future in spite of the times, according

to Doris Greenacre, whose husband Jim worked on the dig in 1937. Years later, she reflected that although the Great Depression was very difficult to live through, the excavation at Lindenmeier during the same period was a time of dreams—dreams about the future of the young people who worked there, and dreams about the American Indians who had come before them.

Each field season began with the crew erecting their camp. White canvas tents bordering the arroyo where the Folsom occupation level had been found would be their home for the summer. Their shower was a barrel filled with water each morning and warmed by the sun throughout the day. Their latrine looked out over the camp, affording a view across the prairies to the foothills, including Longs Peak and even Pikes Peak on very clear days.

Work began at 7:30 a.m. each morning and the crew would usually excavate until 6:00 p.m. Most days were spent in the trench or “diggings,”



1935 Smithsonian field crew. L-R (back) A. Lynn Coffin, Loren Eiseley, H.L. Mason, E.G. Cassedy, Roger Mixter (front) W.C. Beatty, Jr., Carl F. Miller, George L. McLellan (cook), C.T.R. Bohannon. Forest Wayne Powars and Frank Roberts not present. Photo: Smithsonian Institution

with each crew member excavating their own five-foot square grid. Carefully sifting dirt through a fine screen, each artifact, bone remnant, chip, and flake was removed, with thousands individually bagged and labeled according to grid section and depth. Cataloging

artifacts that way was a new practice that Roberts helped to pioneer, and the procedure is still used today. Roberts' wife, Linda, spent portions of each field season at the camp cataloging the artifacts.

Excavating at Lindenmeier was exciting for both the crew members and the public. Jim Greenacre wrote in his journal, “Hardly a day goes by without someone stopping in” to see what they were doing. Archaeologists, geologists, paleontologists, students, and townsfolk out on an afternoon excursion would all come to visit Lindenmeier. Visitors were welcome, but visiting was at their own risk. Summers at Lindenmeier were so hot that the men often worked in their “breechcloths” or underwear. Since they couldn’t be indecent in the presence of company, the men would rush to clothe themselves when visitors approached. Luckily, cars traveling the dirt road leading to Lindenmeier kicked up enough dust that the crew had a twenty minute warning to put their pants back on. That is, unless someone had hidden another man’s trousers—forcing that crew member to hide in the bushes until the company left!

Hiding clothes wasn’t the only practical joke the crew played. The close camaraderie that developed led to plenty of pranks, especially on the “Easterners,” students from Ivy League colleges who had never been west before. In one instance, the newly arrived Easterners were convinced by one of the local crew members that a windmill pumping water into a cattle tank was actually a fan to keep the cattle cool!

In the evenings, the crew members gathered together, drinking beer that they had hung “like a bunch of bananas” at the bottom of a dry well to keep cool. Passionate about their work, the men would often talk about the day’s finds, debating the purpose of an artifact and



Crew members from the 1938 field season excavating a bone bed. Photo: Smithsonian Institution

looking to Roberts to settle the discussion. They also indulged their creative sides by composing stories, songs, and limericks. Two of their more impressive compositions, *The Epic of Folsom Man* and *Daddy, Please Don't Burn Me with the Branding Iron Again*, were eventually cataloged by the U.S. Library of Congress.

Although field work was hot, strenuous labor, few of the crew wanted the season to end. Greenacre's journal entries from his year on the crew say it well: "It will not be long now until camp is over...All of us have been digging as fast as possible in hopes of finding something good. If we do, it means we will get to stay a little longer...Everyone hates to think of leaving but I suppose we will have to." Even though the seasons ended, and eventually the entire excavation, the friendships between men who worked together to excavate Lindenmeier did not. Decades after the excavation, the men spoke highly and fondly of one another. Many crew members went on to become highly respected archaeologists (including John Cotter and Loren Eiseley), continuing to explore the story of people in North America that Lindenmeier helped begin.

The excavations at Lindenmeier ended in 1940. After World War II broke out in Europe in 1939, federal funds for scientific projects were diverted to the expansion of the U.S. armed forces and aid for U.S. allies. Roberts never returned to work at Lindenmeier.

Some researchers speculate that Roberts had planned on going back to Lindenmeier one day to resolve his still-unanswered questions regarding social life of the Ice Age American Indians. But even if the exploration of Lindenmeier was cut short, Roberts and his crews accomplished an impressive array of work over six field seasons:

- 530 field days
- 23 test pits
- 19,300 square feet of occupation level excavated
- 1,557 pages of field records
- 5,478 catalog numbers assigned to artifacts
- 46,380 numbered pieces of debitage (waste flakes)
- 10,000-20,000 animal bones recovered

Lindenmeier's Legacy: Advances in Archaeology

Although Roberts never found the shelters or human remains he hoped to locate, the artifacts that he and his crew did find (approximately 5,500) were instrumental in changing the academic and popular depictions of Ice Age people in the Americas and in changing the field of archaeology itself.

When Roberts first began looking for sites that might yield artifacts that would refute the theory of the recent arrival of humans in the Americas, he carefully considered the criteria outlined by Hrdlička. Those standards demanded meticulous work. Roberts' work at Lindenmeier set the standards for excavation methods that are still used today. These excavations marked the beginning of scientifically based chronological archaeology, a departure from the old method of lumping artifacts into categories by type and describing them on the basis of form and function.

Using the grid system, Roberts defined the excavation area with five-foot square grids in which artifacts were examined by looking at each artifact in relation to all the others from that grid, then comparing them grid by grid at the same level and to those grids excavated above and below them. Roberts showed how the relationships between where artifacts were found in space (horizontally) and time (vertically) could uncover meaning as well. This allowed Roberts to estimate the length of time the inhabitants of Lindenmeier had lived there and how the relationships of dissimilar artifacts could help uncover cultural meaning.

In Wilmsen's analysis of Roberts' work, he writes that

[Roberts'] excavation was meticulous...his field work superb even by today's standards. Perhaps the greatest professional tribute that can be paid him is that his work remains relevant and useful long after it was done...Lindenmeier serves as the standard of reference for almost all PaleoIndian studies.

Lindenmeier's Legacy: A Thriving Culture

The excavations at Lindenmeier provided insight into a culture that was more complex than previously imagined. For the first time, archaeologists found a place repeatedly occupied, a “home base” rather than a campsite used only briefly and then abandoned. The site was also large, almost twenty five acres, unlike most other Folsom sites that are six acres or less.

Studies of the area's glacial deposits during Roberts' excavations and in later research allowed scientists to date human occupation to the late Ice Age, 10,000–12,000 years ago. This put to rest once and for all the theory that people had come to the Americas only a few thousand years prior to the Europeans' arrival, proving that humans had lived on this continent for a very long time. Further studies of climate, water resources, and the plants and animals living at the time show an environment that was rich with resources. But even more telling clues have come from the artifacts uncovered during the excavations at the site.

The sheer quantity of materials found during the years of excavation was astounding—over 51,000 artifacts. A wide variety of stone tools and artifacts were found in addition to hunting tools like the Folsom points, yielding evidence of a much more extensive and varied “toolkit” than had been uncovered at other Folsom-era sites. In this Ice Age toolkit, each tool was used for a particular task—bifaces for cutting, graters for etching softer surfaces including bone and wood, drills and awls for making holes in bone, wood, shell, and hides, and scrapers (which made up a large percentage of the total tool assemblage) for cleaning animal hides in order to make leather goods. Even stone manos (smooth, hand-held stones) were found that were used to grind plants and seeds. Taken together, this assemblage paints a picture of an organized group of people carrying out a variety of different jobs needed to make the group function—people with specialized skills, using specialized tools, using raw materials brought from as far away as Texas, New Mexico, and Wyoming.

In addition to stone tools, items made from bone, shells, and

minerals point to a developed level of technology, indicating a much wider range of activities than was previously known. Delicate bone needles allow archaeologists to infer that tightly-sewn hide clothing and footwear, warm and weatherproof, was being produced. And rather than enduring a shivering life exposed to the cool and damp climate, the people at Lindenmeier probably sewed hides together to make shelters. The bone awls found could have assisted in the process and durable thread could have been made from plant fibers or bison sinew.

The most compelling finds to come out of Lindenmeier are perhaps the beads made of bone, hematite, and coal (the earliest known in North America), and the finely etched bone discs.

While we don't know if these beads and discs were worn as decoration, used as gaming or trade items, or had ceremonial uses, they do tell us that the people at Lindenmeier

were concerned with more than simple survival. They not only had the technical skill to make such items, but they also had the leisure time to do so. Some of the materials used for stone tools and beads came from hundreds of miles away, indicating that people traveled and possibly traded widely with other groups.

Also significant was evidence that smaller bands of people likely came together to hunt cooperatively, as indicated by the "bone pit"



Inscribed bone disc. Photo: Denver Museum of Nature & Science



Lignite bead. Photo: Denver Museum of Nature & Science

containing the remains of several *Bison antiquus* killed at one time. Hunting a single bison is a difficult feat, especially on foot, so having a group of hunters would be advantageous when hunting more than one. The butchering of these large animals would also require more than a few pair of hands. Another sign of social collaboration was found in a rather small “work” area in which eleven of the twenty five bone needles were found. One can imagine a group of women working together, sharing stories and advice, catching up on news—not so different from the quilters’ circles or a knitting bees of the more recent past and today.

On-going Research at Lindenmeier

Although Frank Roberts and his crew did not return to Lindenmeier after the 1940 season, the story doesn’t end there. In the early 1940s the Coffin family loaned much of their collection of Folsom artifacts to the newly-established Pioneer Museum in Fort Collins



Folsom points on exhibit at the Fort Collins Museum & Discovery Science Center

(now the Fort Collins Museum & Discovery Science Center), officially donating them in the 1970s. Many of these artifacts have been researched and studied over the years by students and archaeologists, as well as reviewed by American Indians. They can be seen at the Museum today.

Beginning in 2006, Colorado State University professor Dr. Jason LaBelle has been conducting archaeological survey and monitoring work at Lindenmeier and across much of the Soapstone Prairie Natural Area and Larimer County’s adjacent Red Mountain Open Space. Dr. LaBelle’s survey work has identified hundreds of other archaeological sites in the area, ranging from pre-Folsom to historic American Indian

and Euro-American times—an unbroken line of human habitation that extends across more than twelve millennia. Researchers continue to study the materials gathered from Roberts' excavations, and to investigate the climate and geology of the late Ice Age at Lindenmeier. There is still great excitement about the opportunities to learn about the past that Lindenmeier affords us, and much for us to discover.

One thing you won't see at Lindenmeier in the near future is more excavation. There are several reasons for this. There is still much research to be done on the already-excavated artifacts and materials at the Fort Collins Museum & Discovery Science Center, the Smithsonian's National Museum of Natural History, and the Denver Museum of Nature & Science. This is a tribute to the meticulous work of Roberts and his crew, his innovative use of the grid system for recording artifact locations, and the careful handling and cataloging of the artifacts they found.

Another reason has to do with a change in consciousness in the field of archaeology itself. From the early days of exploration in 19th century Europe, Asia, and Africa, until recent decades, archaeologists focused on digging—dismantling—the sites they investigated. In the 1970s a new attitude arose, one that reframed the archaeological site as a non-renewable resource. No matter how carefully a site is excavated, once it's been dug, it's gone, the new thinking goes, so there needs to be a very good reason to dig—a very specific research question that can be answered no other way. Digging a site just to see what's there is no longer considered a good enough reason.

Researchers also have other means by which to learn about what lies beneath the ground, such as remote sensing—a way of getting information about an object or objects by recording information from the ultraviolet, visible, infrared and microwave regions of the electromagnetic spectrum, with equipment such as cameras, scanners, lasers, and linear arrays. This equipment is located on aircraft or spacecraft, and the information analyzed through visual and digital image processing. By not digging now, we preserve the site for study with these and other improved technologies, allowing archaeologists to explore what still remains below the ground without ever having to put a shovel into the prairie. By not resuming excavations, we leave these opportunities open for future scientists and technology.

American Indian Perspectives: Other Ways of Knowing

We all want to know about the people who lived so long ago at Lindenmeier. What were they like? What kind of lives did they lead? How did they see themselves and the world they lived in? Archaeologists and other scientists strive to answer these questions by analyzing the traces these ancient people left behind.

However, some of the most compelling questions—what made them laugh? Did they sing? What were their families like? What were their spiritual beliefs?—can't be answered through the Western scientific method and its reliance on tangible evidence alone.

For millennia, American Indians have been keen participant observers of the world around them, and they have their own long-held beliefs and stories about their origins and migrations. Many tribal peoples share the view that they have lived here for a very long time, perhaps forever. Not as the tribal groups we know them as today, but as “The People” or the “Sun Clan” or the “Blue Sky People,” or one of the many other groups that have called the land of the Western Hemisphere home. Many tribal peoples of today have stories that talk about lands of perpetual snow and ice, strange animals, and floods caused by melting snow and ice. For tribal peoples to have survived throughout the millennia, they had to have a lot of specialized knowledge, knowledge that has been transmitted from one generation to the next.

For American Indians, what they know about the past is drawn from their languages, the land they are joined to, and the relationships with their ancestors and the world around them, of which they are an integral part. Shared stories, prayer songs, and sacred ceremonies help them to maintain these connections, telling them who they are, where they came from, and where they are going. This relationship to the world around them, and to their pasts, provides another way to understand the ancient life at Lindenmeier.

Since 2004, American Indian representatives from the Ute, Northern and Southern Cheyenne, Northern and Southern Arapaho, and Oglala Lakota tribes have visited the Lindenmeier site and

surrounding Soapstone Prairie Natural Area and Red Mountain Open Space. In spite of being forcibly removed from northern Colorado in the 1850s–1870s and confined to reservations in southern Colorado, Utah, Wyoming, Montana, Oklahoma, and South Dakota, and suffering significant damage to language and cultural traditions during the boarding school years of the 20th century, Native people still have invaluable insights into the land and the people who have lived there. Consultations with American Indians will continue into the future to not only create a more accurate picture of life at Lindenmeier, but to also reconnect Native peoples with a place that still has significance to them, that is still sung about in their songs, and is still prayed for in their ceremonies.

Clifford Duncan, a Northern Ute elder, spiritual leader, and a former museum director, shares his perspective on how he, as a Native person, understands the old ways and the past:

“I mentioned about archaeologists not having that certain

right to step over a fine line that goes into the spiritual aspect of a site or an object,” he explains. “[They] can look at an object, and that’s it, to determine how old it is. But an American Indian, in a ceremonial circle, will take it one step further across that fine line, and say here’s how you use it and [how] it connects to that spirit.”

Gilbert Brady, an elder of the Northern Cheyenne tribe and an archaeological consultant, further elaborates:

“They [the archaeologists] could be standing on a sacred site and they wouldn’t even know, or they could be standing on a ceremonial site, and the only way they know a burial site is [there] is if they dig it and find the bones, that’s the only way they know this.”

Over the past century, few scientists have consulted with Native



Daylan Figgs (L, City of Fort Collins) and Clifford Duncan (R, Northern Ute) on a visit to Red Mountain Open Space and Soapstone Prairie Natural Area

peoples to gain this understanding of how contemporary American Indians view themselves as part of the past and possible descendents of these Ice Age ancestors. Answering the question of the origins and antiquity of humans in the Americas has been left up to non-Native people and scientists who have interpreted the data, often based on single lines of evidence, sometimes leading to false conclusions—such as Hrdlička's certainty that no one occupied the Western Hemisphere prior to 3,000–4,000 years ago.

But to understand the early history of American Indians, including the inhabitants of Lindenmeier, it's necessary to explore multiple lines of evidence. Scientific research and findings are continually offering new insights, and archaeologists, together with American Indians and other researchers, can collaborate to interpret the past in a way that is factual, useful, and interesting to all people.

Unbroken Chain: Past, Present, and Future at the Lindenmeier Archaeological Site

Gradually buried under layers of soil, the Lindenmeier Archaeological Site remained mostly undisturbed for millennia. After the last Ute, Arapaho, Cheyenne, Lakota, and other American Indians were removed from northern Colorado, the area around Lindenmeier was privately owned, first by the Warren Livestock Company and a few homesteaders and ranchers, and then by the Soapstone Grazing Association. It was not open to the general public.

Now Lindenmeier is entering a new phase. With the opening of the City of Fort Collins' Soapstone Prairie Natural Area in 2009, people can once again come to this remarkable site and learn about those who lived at this place. This access, even limited, significantly raises the risk of damage to the site and the many other cultural resources in the area.

We still have so much to learn from these places, and if they are damaged, looted, or vandalized, we lose that opportunity forever. As you enjoy your visit to the Lindenmeier Archaeological Site, Soapstone Prairie Natural Area, or any public lands, you may find an artifact or other cultural resource (such as stone circles, fire hearths, or built structures). Please help preserve our collective cultural legacy:

Leave an artifact or cultural resource where it is. Don't pick it up or walk through it. Instead, leave it as you found it. If you can, take a picture of it.

Record an artifact or cultural resource's location. Estimate the object's location relative to nearby landmarks. Use your camera or GPS unit to help note the artifact's location.

Tell a reliable source. If you've found an artifact or cultural resource in a City of Fort Collins natural area or Larimer County open space, contact a ranger or staff person on-site, or if no one is available on-site, contact the Fort Collins Museum & Discovery Science Center. Tell them what you have seen and where it is located. An investigation of the artifact under the auspices of a valid permit will ensue.

In spite of the fact that "relic hunting" was once a popular hobby, it is no longer either legal or ethically permissible. Remember that picking up artifacts or disturbing cultural resources is:



DISRESPECTFUL: These resources are part of the cultural legacy of people who have lived here, and leaving them alone demonstrates respect for the people who made or owned them. It also allows others to enjoy them today and in the future. Many American Indian groups with ties to this area believe that objects are still connected to the people who made them, and collecting them disrupts those connections.

ILLEGAL: According to Colorado State law, it is illegal to knowingly take an artifact, or excavate, damage, or destroy any prehistorical or historical resources on public land. A person can be fined for a misdemeanor and offenders may face a fine, time in jail, or both.

A LOSS: Once an object is removed from its surroundings, it loses its ability to educate us about the past. Additionally, objects are

often fragile and when people handle them they can break, or the oils and acids on our skin can permanently damage them.

As the latest link in a chain that extends more than 12,000 years into the past, it is now our responsibility to care for this place and keep its stories alive. We can feel a kinship with all the people who have looked out over these same prairies and hills, people who raised families, who both struggled and thrived, who had a deep relationship to the land—Ice Age American Indians, homesteaders, ranchers.

“I think it’s a good contemplative place too,” according to Dr. LaBelle. “Obviously there’s a metaphysical aspect of this too that can’t be ignored, of questioning who we are, what we can learn about thinking about the past.”

So you can picture yourself standing here and looking out. You can hear people in the background or see people moving around. But they’re spirit people. The land itself still is the same. It hasn’t changed...So this is a very sacred place. Right here. This is as far as I can go, now. Like if I want to reach back, say to my old ancestors...I’m standing with them. We are all at the same place. How close can you get to how the original world, how this world was at that time? We are there.

Clifford Duncan, Northern Ute



Soapstone Prairie Natural Area

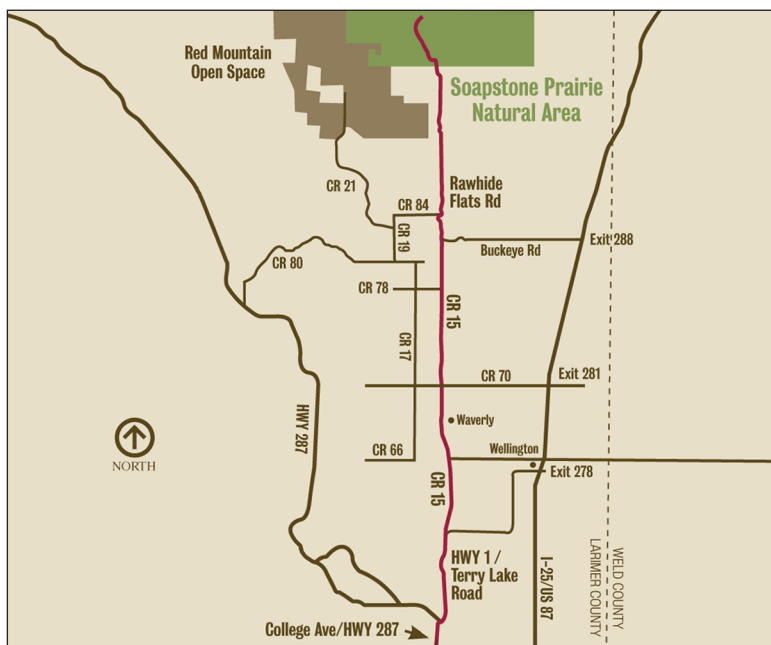
Visiting the Lindenmeier Archaeological Site

Twice as old as the Egyptian pyramids, the Lindenmeier Archaeological Site bears witness to some of the earliest inhabitation of the Western Hemisphere. The site is a National Historic Landmark (1/20/1961) and is on the National Register of Historic Places (10/15/1966 5LR13).

The Lindenmeier Archaeological Site is located in the City of Fort Collins' Soapstone Prairie Natural Area (SPNA). SPNA is open to visitors daily, from dawn until dusk, from March through November. The area is closed December through February, and some trails are closed seasonally to protect wildlife. Admission is free. Travel by foot, mountain bike, or horseback is allowed on designated trails only. No dogs are allowed (even in cars), and there is no camping. For more information and a downloadable trail map and area brochure, please see www.fcgov.com/naturalareas/finder/soapstone. For information about Red Mountain Open Space to the west of SPNA, please see www.larimer.org/naturalresources/red_mountain.cfm.

Directions

From Fort Collins, travel north on State Highway 1/Terry Lake Road to County Road 15. Travel north (left) to Rawhide Flats Road. Stay on Rawhide Flats Road to the SPNA entrance station. The drive is 25 miles one way.



Map courtesy of City of Fort Collins Natural Areas Program

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Glossary

Arroyo

A deep gully cut by an intermittent stream.

Artifact

Anything made by a human.

Awl

A bone or stone tool used primarily for sewing, punching holes, or basket weaving.

Biface

A two-sided stone tool used as a multi-purpose knife.

Bison chip

A piece of dried bison dung.

Clovis

A North American prehistoric cultural complex that pre-dates Folsom. Clovis culture dates to around 13,000 years ago.

Complex

In archaeology, a cultural unit identified by the association of several distinct tool types.

Debitage

Waste flakes or chips from the manufacture of stone tools.

Drill

A stone tool used for boring holes in materials such as bone, wood, and animal hide.

Ethnology

The study of human cultures.

Flake

A piece of a stone detached from a core or partially-finished artifact; may also be referred to as a chip or spall, or collectively as debitage.

Folsom point

A projectile point that is chipped on both sides and has a symmetrical, leaf-like shape with a concave base and wide, shallow grooves along almost the entire length of the point. Named for Folsom, NM, where it was first recognized in 1926 as a unique artifact. The edges are finely worked, and the characteristic groove, known as a flute, may have been used to haft the point to a wooden spear shaft. The fluting may also have been a stylistic element or have had some symbolic purpose.

Kill site

An area of human activity in which the primary function was the killing of animals for food.

Mano

A smooth stone used for grinding plant materials.

PaleoIndians

A term coined by Dr. Frank H. H. Roberts, from the Smithsonian Institution, to describe the early peoples of North America living during the Pleistocene period.

Pleistocene Epoch (Ice Age)

Geologic time frame meaning “most recent,” which occurred from approximately 2.5 million years ago until about 10,000 years ago.

Projectile point

A bifacially-flaked implement with a pointed end designed for penetrating an animal’s hide and a blunted base designed for attachment to a shaft. Can be a spear point, dart point, or arrowhead.

Radiocarbon dating

A method of absolute dating based on the radioactivity of an isotope of carbon (C-14) formed in the atmosphere by cosmic ray interaction and assimilated by plants at the same time as normal carbon (C-12). It passes to herbivores and carnivores and can be found in their flesh and bones. After the death of an animal or plant, no more C-14 is added, and since the C-14 decays by radioactivity at a constant rate, dating the animal or plant is possible.

Scraper

A tool used to remove tissue from the interior surface of hides, to smooth wood, and for other similar tasks.

Sinew

Animal tendons that are dried, separated into thin strips, and used in sewing leather and attaching projectile points into shafts.

Stone circle (or ring)

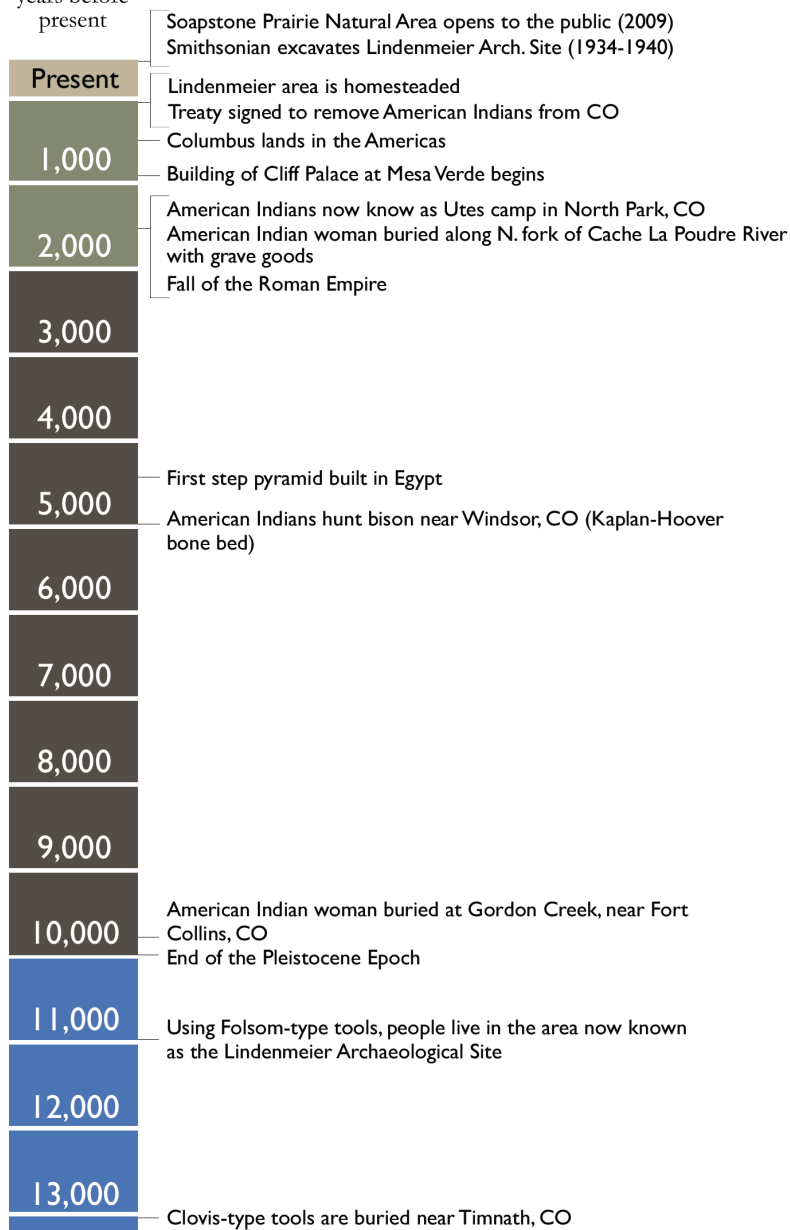
A circular arrangement of rocks marking the location where an indigenous dwelling once stood. Some stone circles are tipi rings, but not all stone circles can be positively identified as such, so the more generic term “stone circle” is preferred when describing these features.

Strata

Sediments deposited in layers. The arrangement of strata is called stratigraphy. If undisturbed, the Law of Superposition applies, meaning that the lowest stratum is the oldest and the highest stratum is the youngest.

Timeline

years before
present





Monument erected at the Lindenmeier Archaeological Site by the 1936 field crew, whose initials appear on the bottom lines of the inscription. Also included are the initials “PSR,” which refer to Roberts’ dog Punky. Putting the finishing touches on the inscription is David McAllester, while Gog, a pet Purple Martin, looks on.

The Excavation of Lindenmeier: A Folsom Site Uncovered 1934-1940

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