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0, Give Me A Home Where the Buffalo Roam(ed)

No more soul-satisfying moment awaits my wife and me in any season than a hike along the hillside at our farm overlooking the Ohio River several hundred feet below. Nature's razor has carved breathtaking views through the maples, the beeches and wild cherry trees growing along these slopes. And under foot lies abundant evidence of the ancient road we tread. There, embedded in the rock slabs along the way, rest the fossils of our Ordovician past. These brachiopods and other marine invertebrates serve as reminders that this height was actually the floor of a vast ocean which covered most of the northern hemisphere about 450 million years ago.

If we were to continue walking a scant half-dozen miles south to a point two miles inland from the river as it courses downstream, we would come upon another powerful monument to this bygone time. There, even to this day if one looks closely, milky blue spring water bubbles to the surface, offering a whiff of rotten eggs. Some 800 to 1,000 feet below lies its source: age-old sediments from the same Ordovician period from which percolating ground water removes salt, creating a geological rarity for these parts.

The pathways from our farm to these salty springs even today hint of the buffalo traces that crisscrossed this area of Northern Kentucky. Along these routes and for untold stretches of time came mammals of immense size and shape. They lumbered across the hillsides and the river's dry bed as they made their way through the dense forests, instinctively drawn as by a magnet to the salt licks. These highways through the pristine wilderness were at times so wide that their right-of-way still shows up in earth satellite photography as barely visible lines of a spider's web centering on this place.

We know that the saline springs attracted prehistoric life here because of the telltale evidence left behind. When millennia later the first European settlers edged their way into the frontier in the early 1700's, they were startled to discover at this place a landscape littered with sun-bleached bones and ivory tusks the size of which the New World had never before seen. That is why it came to be known as Big Bone Lick.

From the volcanic sands of New Mexico east through the Great Plains and scattered along the river beds of the Midwest and coastal South, America's earth has

since yielded the bones of many **pre-historic** mammals. Their variety, their age and their sheer numbers have over time eclipsed this salty bog in Kentucky. But none played the pivotal role that Big Bone Lick did in shaping crucial cultural and scientific dimensions of the infant United States at its founding. And therein lies this story.

To be sure, Big Bone Lick is no Jurassic Park. There are no dinosaur remains to be found here. Those prehistoric creatures belong to an era that unfolded millions of years beforehand. The mammals that came to this place were products of the Ice Age. As glaciers as tall as two miles high advanced over vast reaches of the continent, glacial material from the Canadian north was pushed by the continental ice shelf as far down as the Ohio Valley during the Pleistocene Epoch, which is estimated to have begun 1.8 million years ago. Perhaps tens of millions of years before that, huge elephant-like creatures had evolved in Eurasia and started crossing over the Bering Straits, gradually populating much of the **unglaciaded** North American land surface. It is believed they found their way to Big Bone Lick itself 20,000 years ago. Shortly thereafter the ice cap began to retreat. And then, 10,000 years ago, with a relative suddenness that continues to provoke debate, the species vanished. Big Bone Lick became a graveyard of these creatures.

Before it did, however, the mammals had met man there. Evidence has been unearthed suggesting **Paleo** Indians were the first human visitors to Big Bone Lick perhaps 12,000 years in the past. And even after the mammoths and mastodons were no longer, herds of bison, elk, deer and scores of other animals were still attracted to the **sulfur** springs. The Native Americans who greeted the settlers told how their forbears had come there from time immemorial not only to hunt but also to heal. The salty waters around the lick proved good medicine for people and animals alike, providing their bodies with minerals vital to metabolism.

Modern man's discovery of Big Bone Lick took place in 1739 when **Capt. Charles Lemoyne de Longueuil**, commander of French and Indian forces in Canada, launched an expedition from Fort Niagara to provide military support to New Orleans at the southern tip of his nation's North American river empire. A great imperial rivalry was unfolding at the time between France and England for control of the Ohio Valley. So along the way **Longueuil's** troops undertook the first formal reconnaissance charting the meandering course of the river. Reaching the vicinity of the salt licks in late summer and helped by Indian guides, he and his provincial troops were awe-struck by the broad path they found leading from the river through the dense forest, stripped of all growth by migrating caravans of large animals. Following this well worn trail, they came to a broad green

valley filled with grazing deer, bison and elk. They saw these herds not only pasturing on grasses and sedge but also licking patches of black boggy ground around foul-smelling springs. Examining the area, Longueuil then came upon what seemed a carpet of gigantic bones and tusks.

Without realizing it, he had stumbled upon a discovery that would eventually have huge significance - political and cultural, as well as scientific -not just in the New World but more immediately in Europe as well.

The age of science was in its infancy at the same *time* that the rivalry between France and England was in full flower. Elephant bones had been found in England earlier, giving the British bragging rights over the hated French on the intellectual battleground of natural history. Now the French possessed a trump card.

The earliest surviving map documenting Longueuil's feat was drawn by Jacques Nicolas Bellin in 1744 with the clear notation, "*Endroit ou on a trouve des os d'Elephant.*" (*"the place where they found elephant bones."*)

Longueuil's discovery would not stand in isolation for long, however. The English crown's Virginia colony was starting to lay claim to the lands of Kentucky and settlers were pressing westward, steadily challenging French supremacy in the region. The same year Bellin's map appeared, an English trader named Robert Smith came upon the Big Bone Lick site and documented his finding of a long rib bone, a huge skull and tusks too heavy for him to carry away.

Seven years later the Ohio Land Company sent a surveyor, Col. Christopher Gist, from Virginia into the Ohio Valley in search of lands suitable for settlements. As he proceeded on horseback toward the Falls of the Ohio, he increasingly encountered hostile Indians friendly to the French. Before turning back, however, he managed to obtain from English frontiersmen a mastodon tooth from the Kentucky salt lick weighing more than four pounds. Recognizing its scientific importance, he returned it to the Ohio Land Company and from there it found its way into the hands of that man of genius and insatiable curiosity, Benjamin Franklin. Franklin had founded the American Philosophical Society in 1743 to tie together thinkers from the colonies of America in order to study things scientific. A huge tooth measuring 15 inches around was just their ticket.

Meanwhile, at mid-century the French and Indian War was boiling to a climax on the frontier. Even though the hostilities foreclosed any hunt for bones at the salt lick, one person who did visit there during that time would forever take her place in the pages of Kentucky folk history. Mary Draper Ingles was the wife of a prominent settler living in

the **backcountry** of Virginia near present day **Blacksburg**. While her men folk were harvesting crops in July of 1755, she and two young sons were snatched by **Shawnee** Indians during raids ordered by the governor general of New France. Four weeks of arduous river travel took Mary and her two offspring with their captors to a Shawnee settlement on the Ohio at the mouth of the **Scioto**. By that time, she had won favor with the tribal chief and some French traders. Her sons were not so lucky and were sent away from her, her two year old dying only a few days after being separated from his mother. The following month she was forced to accompany her captives to Big Bone Lick, where they were to boil a salt supply for the tribe. She and a Dutch woman, also a captive, were the first white women known to have entered what is now the state of Kentucky. Once the Indians were preoccupied in their salt making, she secured a tomahawk and escaped into the wilderness, accompanied by her older, increasingly **beaddled** Dutch companion. Mary Ingles was a woman of incredible courage and resourcefulness. There followed a perilous 500 mile journey on foot covering 40 days. Overcoming fatigue, hunger and exposure, she finally made it back home. Once there, she was able to furnish a first-person account that confirmed the big bones at the salt lick. It was not until 13 years later that her other son, only four when captured, was reunited with his family. Over the years, as her tale became widely circulated, her heroic story provided American letters with one of its early captivity narratives.

As the frontier troubles spawned by the French and Indian War began to ebb, another colorful figure entered the picture. George **Croghan** had fled from his home in Ireland and had become a noted Indian trader in Pennsylvania. Although hardly literate and ever deceptive in his dealings, the devious **Croghan** had a knack for winning Indian trust and friendship. General Thomas Gage, commander of the British colonial forces, decided in 1765 to put him in charge of a **flatboat** expedition into the Ohio Valley in an attempt to quell Indian animosity. As they traveled downriver, **Croghan's** group stopped to inspect that extraordinary salt lick. He spent only a few hours there but managed to carry away tusks, bones and monstrous teeth. Unfortunately, his cache never made it back to civilization. **Kickapoo** and **Macouten** warriors attacked Croghan's little flotilla downstream near the mouth of the **Wabash** River and the prized specimens fell overboard into the river.

Croghan was not one to give up. He subsequently persuaded key Indian chieftains to agree to England's occupation of French forts in the Illinois country. Thanks in part to some lobbying of authorities on his behalf by Ben Franklin, he was able to mount a second expedition two years later, this time with 13 **flatboats**. Once again he stopped at

the Kentucky salt lick and there, he recalled later, "we found the Remains of those huge Animals called Elephants, and by holy Job named (the) Behemoth, in such quantities that several Waggons might be soon laden with excellent Ivory."

This time his party shipped hundreds of pounds of bones and artifacts downriver, where they eventually reached New Orleans and were then forwarded to New York. Ever the promoter, Croghan sent part of his prize on to London, where his influential friend Franklin was now posted, and part to Lord [Shelburne](#), the British minister of the colonies. He also busied himself organizing other boxes of bones into a show for the public.

In his reply thanking Croghan, Franklin said he found the material "extremely curious." Why, he asked, had no living elephants ever been seen in colonial America and why had so *many* died in one place and how could these tusks be related to those that had been found in Siberia?

Big Bone Lick was now attracting widespread international attention and the educated gentry both in the New World and Europe, their intellectual appetite [fired](#) by the [newfound](#) interest in natural science, began grappling with the same questions Franklin had posed.

If these bones were not those of an elephant, where could they possibly have come from and where could such huge animals now be found? With those massive molars, so unlike the teeth of the plant-eating elephant, wasn't this animal a violent carnivore? Did man indeed have dominion over nature or, as one American asked, could this "tyrant of the forest" perhaps be "the [devourer](#) of man"? And for believers, how could God create something and then let it die off; wasn't His an unbroken "chain of being"? Didn't Noah's flood fully describe earth's history?

In the winter of 1767, the same year [Croghan's](#) shipment of bones reached London, the queen's physician, Dr. William Hunter, argued before the Royal Society that the specimens belonged to an "unknown, extinct" species. It was Dr. Hunter who first used the term *American incognitum* — Latin for unknown - to describe the animal at the center of the mystery. Coming at a time when scientific speculation fit comfortably within the bounds of the prevailing religious belief, it was all but heretical for him to suggest the very idea that a species could become extinct. After all, Genesis and geology had to go together.

Others in the Royal Society were not quite so sure that the *Incognitum* was carnivorous, one of the commonly held assumptions of the time. Those grinders, they argued, were just that: teeth that were able to grind vegetation. Besides, with such size

suggested by the curling tusks, how could so lumbering an animal stalk and catch prey?

In France, an even more profound issue was about to be raised, one that would have broad implications in America's emerging political struggle for independence.

The leading French naturalist of his day was George Louis **Leclerc de Buffon**, a 32-year-old mathematician and natural philosopher whose glittering intellectual reputation led King Louis XV to appoint him to oversee the **Jardin du roi**, the king's cabinet of curiosities. The bones that Baron **Longueuil** had brought back to France from Kentucky resided in that collection.

Buffon was in the process of compiling his landmark encyclopedia of the natural world, his *Histoire naturelle*, that would ultimately stretch to 44 volumes. Buffon took a dynamic view of natural history and ridiculed the idea that Noah's flood could explain a universe that was so obviously changing. He pointed to such easily found evidence as fossils in earth's strata to buttress his argument. He wrote, "Human life, stretched as much as it can be, is only one point in the total duration, one single event in the history of God's actions."

Buffon then took a careful look at the role of climatic conditions in shaping natural history and it was from that springboard that he and other Europeans developed what strikes one today as a **cockamamie** theory of American degeneracy. Buffon used elaborate environmental explanations to argue the alleged inferiority of all life forms in the New World. He believed that the continent's drastic swings in temperature and other climatic factors had reduced the size of all creatures there, both animal and human. In a famous passage that was to inflame colonial America, he wrote that the creatures of North America "... shrink and diminish under a niggardly sky and an **unprolific** land, thinly peopled with wandering savages."

Based on his inspection of **Longueuil's** bones, he referred to the apparent disappearance of the *American incognitum*, raising speculation that a species could become extinct. If big creatures could disappear from, nature's stage and be replaced by obviously smaller ones, didn't that support his idea of a degenerate America?

Into this speculation **Buffon** mingled imagery of ancient Greece and Rome, by way of smug contrast, to bolster an image of the Old World's conquering spirit and the superiority of European civilization.

But Buffon was no buffoon. His sentiments influenced colonial thinking. Few European ideas about the New World so rankled American thinkers. Much of the American gentry, after all, was classically trained. The leaders of the colonies for the most part had studied their Latin and had read the Greeks and Romans. They sensed the

barrenness of their past and their lack of antiquities and monuments. They had some immediate knowledge of natural history as well. George Washington, for example, possessed a firsthand artifact, one of those teeth from the Kentucky salt lick, which he had obtained during one of his soldiering trips to the Ohio country before the Revolution.

When the delegates to the Continental Congress gathered in Philadelphia in 1774, Big Bone Lick and an earlier similar discovery in upstate New York at [Claverack](#) may not have been their most pressing concern. Talk about the *Incognitum* did, however, form a kind of informal cultural backdrop to their discussions. It was in Philadelphia, after all, the "Paris of the New World," where the strongest proponents of natural history studies lived.

One of them, Dr. John Morgan, who owned the largest collection of Big Bone Lick fossils, entertained John Adams at dinner one evening and afterward Adams recorded in his diary that he had been shown "bones of enormous size," still caked in Kentucky mud.

As the struggle for independence heated up and the British grip on the frontier relaxed, land-hungry squatters started flooding into the Ohio Valley, prompting concern among authorities that chaos would result if the vast areas were not properly surveyed. That led the first survey crew to the Big Bone Lick site in 1773-74 and one of its members, Thomas [Hanson](#), later recounted the strange landscape they beheld there. He described the 10 acres constituting the lick, reeking of [sulfuric](#) fumes and bare of trees and shrubs of any kind, calling it "an island in the wilderness." Around this bleak landscape lay scattered large numbers of huge bones, bleached by the sun, and great tusks beyond the size of one man's handling. Thus was made a vivid official record of the greatest natural depository of the bones of Pleistocene mammals that man's eye had ever seen up to that point.

About this time, Thomas Jefferson started playing a more and more prominent role in the story of Big Bone Lick. In 1774, during his time as governor of Virginia, he awarded several thousand acres around the site to Col. William Christian for his military service and as a means of securing his state's claims to these territories.

Jefferson was truly one of the most accomplished of the early colonial naturalists and it is not mere hype to proclaim him the father of American paleontology. He understood that knowledge of natural history was a stepping stone to social and cultural acceptability. So in the darkest period of the American Revolution, with the fate of the young nation hanging in the balance, he began writing a work that would take its place in American letters, his famous *Notes on the State of Virginia*, the only

book he ever wrote. It is both a love song to his state and a scientific treatise, finished in 1781 as he was becoming minister to France. In writing it, Jefferson sought in part to counter Buffon, whom he much admired, and the other proponents of the theory of degeneracy. He called Europe a **sinkhole** of avarice, ignorance and poverty, thus turning the argument into one of European, not American, degeneracy. Then, devoting a long section to the fossil elephant, he offered the clincher that Europe had produced no animal to match America's behemoth in size. He was too much the diplomat also to mention that he himself stood a stately 6'3" while **Buffon** failed to measure a mere 5'.

Jefferson's was a magisterial refutation of the idea of American inferiority. The emphasis he placed on the *Incognitum* helped to make its skeletal remains a kind of symbol of national identity.

In the meantime, he went to considerable lengths to further refute Buffon. He asked for specimens of moose, caribou or elk from America to be shipped to Paris to prove they were larger than anything in Europe. When he wasn't satisfied with the first try, he asked for another and this time he put a moose carcass on display in the entry hall of his hotel, even though its hair kept falling out. Buffon saw the smelly evidence but still concluded it was not sufficient to carry the day. In the end, however, he eventually backed away from his embrace of degeneracy, in part because by that time he had examined the enormity of the fossil remains. Nonetheless, his work established a pathway to understanding the pre-human era of earth's history and would have a profound influence on the later evolutionary ideas of Charles Darwin.

Then, as if to get in the last word, the Federalist Papers drafted during the Constitutional Convention back in America contained a rebuke of the degeneracy theory. In *Federalist No. 11*, Alexander Hamilton belittled "these arrogant pretensions of the European," saying "it belongs to us to vindicate the honor of the human race."

A new nation was being formed out of an antiquity that was now coming into focus as a source of pride after all. Much, of course, remained to be answered about those sun-bleached specimens from Big Bone Lick and how indeed they fit into a scientific **scheme** to explain natural history. So much was still up in the air and so little was known for certain.

Jefferson became fully engaged in pushing the envelope. In 1785, back from his service in France, he visited painter Charles **Willson Peale's** museum in Philadelphia, the first of its kind in America, and for the first time actually managed to examine specimens from Big Bone Lick. Nobody knew it then but Mr. Jefferson was actually looking at parts of an

Ice Age mastodon. The experience fired his desire to know more, so much so that his political opponents began ridiculing the energies he was pouring into his "mammoth theory."

While serving as President Washington's secretary of state, he was in a position to ask General William Henry **Harrison**, the governor of the Northwest Territory, to go to Big Bone and try to collect bones for him and the American Philosophical Society. Harrison and his crew dug into the boggy grounds and came up with a huge haul of fossils that filled 13 wooden casks. They were loaded onto a **flatboat** and started **upriver** only to have the vessel capsize in the Ohio below Pittsburgh, marking another watery grave for a precious treasure from the Kentucky site.

Meanwhile, Jefferson was moving up in the political as well as the scientific world. The election of 1796 made him the nation's second vice-president. As if to celebrate the occasion, on the eve of his inauguration he read a paper before the American Philosophical Society about still another spectacular fossil find. This one was unearthed from a cave in **Greenbrier** County, now part of West Virginia, as farmers dug for saltpeter and came upon three giant claws and a thighbone. Immediately there was speculation whether the *Incognitum* could have been an elephant with claws. In presenting his findings and labeling the creature a *Megalyonyx* ("giant claw"), he indulged in no guessing but did surmise that this animal was much larger than a lion. What he was seeing but did not recognize was a giant ground sloth, which eventually would carry the scientific label of *Megalyonyx jeffersoni*.

Such discoveries served only to fire more popular interest in the overall mystery. Fossil remains, especially those from Big Bone Lick, became a valuable commodity due to the belief that only the discovery of a complete skeleton, more or less intact, would solve the riddle of the *Incognitum's* true identity. Money started changing hands as speculators recognized economic opportunity in being able to show off a wonder of the world to a paying audience eager to view it.

Just as the 19th century was dawning, it was not Big Bone Lick but workers digging a marl pit on John **Matsen's** farm near **Newburgh, N.Y.**, where **paydirt** was hit. There they unearthed what appeared to be an intact skeleton of an *Incognitum*, complete with massive jaws. Learning of the discovery, Jefferson sent an emissary offering to pay for the specimen, but he was turned down. Charles **Willson Peale**, the painter and museum keeper from Philadelphia, arrived with cash in hand and the idea of a commercial traveling exhibit in mind. For a total of \$300, he was able to make a deal for the bones.

As luck would have it, another set of bones was located on a neighboring farm and Peale secured the rights to them as well. His associates made an ingenious water wheel pump in order to exhume those remains, creating a carnival atmosphere that drew spectators from all around. From this material Peale used his imagination and knowledge to assemble the skeletons of two "mammoths," as he called them. They each measured 15 feet long, 11 feet high with curling tusks 11 feet long.

Peale's recreations were a sensation with the public and their first showing in New York alone netted him more than \$2,000, easily enough to pay back his original investment and then some. But those tusks were to prove a problem. Because Peale thought the animal a carnivore, he turned the tusks downward, the weapons of savage combat lurking in the artist's mind. Anatomists argued he had them upside down. Of course, they were right because the "mammoth," it turned out, was the herbivore that many now suspected and those awesome tusks were used mostly to turn over the vegetation in its search for a diet of water plants and leaves, as well as tools of combat during the mating season.

A parallel breakthrough occurred about this time in Paris where, despite the horrors of the French Revolution, a brilliant young anatomist named Georges Dagobert Cuvier was on his way to establishing paleontology as a scientific discipline. He had a particular interest in comparative morphology and was able to examine fossilized bones from a "mammoth" unearthed in Siberia alongside Button's specimens of the *Incognitum*. He concluded in a 1798 paper that while the two came from different, albeit closely related, species that were now extinct, he said "these animals thus differ from the elephant as much as, or more than, the dog from the jackal and the hyena." To suggest that a species could be extinct did, of course, run counter to prevailing religious beliefs in both Europe and America, but Cuvier's theories began to gain widespread acceptance, nonetheless, and his genius would loom ever larger in resolving the mysteries that had been swirling around the identity of the *American Incognitum* for 70 years.

One could say with growing certainty at this point that whatever the animal was, it wasn't an elephant; that based on mounting evidence and despite deeply held beliefs to the contrary, a species could become extinct, as this one apparently did; and, finally, there definitely appeared to have been a period of natural history before the time of man. The year was 1803 and the now President Jefferson could not get his mind off the possibility that despite a growing consensus among scientists to the contrary, the *Incognitum* just possibly could be found living in the vast reaches of the West. He was influenced by the oral tradition of the Native Americans, especially an ages-old Shawnee tale about the biggest of the *Incognitum* having moved West. That was at least one of the

factors that entered his thinking as he made plans to launch the great Corps of Discovery to be led by Meriwether Lewis and William Clark. He hoped these remarkable men would find evidence of a living *Incognitum* in the unexplored mountain wilderness.

At this point, a curious figure from Cincinnati took center stage. He was Dr. William Goforth, a physician with a seemingly insatiable curiosity about the salt lick and a man who had corresponded with President Jefferson on the subject of their mutual interest. He had spent a solid year digging away there and had amassed an enormous and valuable cache of bones weighing five tons.

As Captain Lewis set out from Pittsburgh with 11 crewmen on the first leg of the trip that would change the face of American history, he made a stop in Cincinnati specifically to meet Dr. Goforth and to see a sampling of his collection from the nearby salt lick. The night of September 28, 1804, he wrote a lengthy report to the White House and the next day he and Dr. Goforth mounted horses to travel the 23 miles from Cincinnati so that he could personally inspect the Big Bone site. There he gathered up a large tusk and two molars and asked that they be sent back to Washington via flatboat down the Mississippi. The seemingly inevitable happened once again, this time at Natchez, when the boat sank and the fossils with it. It was about the same time that the Lewis and Clark expedition was heading West, partly in a vain search for an animal they never found because it no longer existed.

Dr. Goforth, meanwhile, decided to seek his own profit for his labors at Big Bone Lick. He shipped his entire collection to Pittsburgh, wanting it to reach Philadelphia so it could be sold either to Mr. Peale or the American Philosophical Society. Adding to the value was the fact that the collection included a more or less complete skull of the *Incognitum*, an avidly sought clue.

Whereupon Thomas Ashe, a thoroughgoing rascal who billed himself a writer but who had left his native Ireland to escape debt, wandered into Pittsburgh and learned of Goforth's collection, which was still warehoused there. Smelling opportunity, he took off for Cincinnati, where he ingratiated himself with the naive Dr. Goforth and returned to Pittsburgh bearing a letter of authorization to act as the doctor's agent in disposing of the bones. Instead of routing them to Philadelphia, he placed them in 10 crates and shipped them to New Orleans so that they could be put on an ocean-going vessel bound for Liverpool. Catching on too late that he had been had, Dr. Goforth lamented that he was "basely deceived and cheated." Although he never knew the outcome, he would doubtless have been comforted by the fact that a large part of Ashe's ill-gotten gains ended up housed in London in the museum of the Royal College of Surgeons. Today

they are enshrined in the Natural History Museum in London, part of a renowned collection numbering 70 million objects.

Chagrined upon learning that Meriwether Lewis' bone shipment to him had sunk and that the intrepid explorers had returned from the West without finding a live *Incognitum*, President Jefferson redoubled his efforts to gain specimens from Big Bone Lick because he concluded that the deposits there were much older than he had imagined. In correspondence he learned from Dr. Goforth that a single paw had been unearthed at the salt lick that "nearly filled a flour barrel." Jefferson assumed that the paw probably belonged to the same species of ground sloth that he had researched from Virginia. As the Goforth report arrived at the White House, William dark happened to be there, being debriefed on his famous journey West. So the President asked Captain dark to stop at Big Bone Lick on his way back to St. Louis and to employ Dr. Goforth and local laborers at Jefferson's personal expense to excavate the site further. He gave dark a detailed shopping list of specific artifacts needed by the American Philosophical Society to fill out its research into Ice Age mammals.

With Dr. Goforth and eight laborers who each earned \$1.25 a day for their hard labors, William dark undertook several weeks of extensive exploration. He was also accompanied by his brother, General George Rogers dark, the Indian fighter, who, despite bouts with alcoholism, had visited the lick several times over the years at Jefferson's behest and knew the lay of the land. At first the group was stymied by the paucity of what they found. But the deeper they dug down into the salty bog, the more their perseverance paid off in bones, teeth and tusks as well as human tools and weapons, dark could see that one of the largest creatures displayed a flatter face and different teeth than the remains of a similar animal. This led the canny military man, who apologized for his ignorance of "Comparritive Anatomy," to conclude with great perception that not just one but two different huge animals once existed at the lick. dark drafted an 11-page report documenting his findings in the same painstaking detail that had characterized his reports from the Corps of Discovery. The results so far surpassed dark's original mandate that President Jefferson and his associates at the American Philosophical Society could hardly suppress their glee.

What they didn't know - and indeed what would not be fully understood for almost two centuries - was that the dark expedition had made an even more noteworthy discovery. Three of the artifacts were the flaked-stone tips of ancient spears, known today as Clovis points. Recently anthropologists have concluded that what they found constituted the first positive evidence unearthed up to that time of the presence of Ice Age Americans.

Whether or not these Clovis people were indeed the first Americans remains the subject of much controversy, but we do know they were great hunters and their favorite prey was the mastodon and the mammoth, the largest land animals man has ever hunted. They used thrusting spears with long, tapered blades about five inches long and flaked from stone. Heaved with enough force, the points of those deadly weapons were so sharp they could penetrate a tough hairy hide and then cut deeply into the flesh and muscle, causing heavy blood flow each time the wounded animal moved.

When the prize collection of bones from Kentucky arrived in Washington in March of 1807, President Jefferson had the 300 specimens unpacked and arranged in the unfinished East Room of the White House. He invited Casper [Wistar](#), his friend from the Philosophical Society and a noted anatomist in his own right, to come from Philadelphia to help him catalogue the contents. Jefferson was serving as the Society's president, as he would for two decades, an honor he seemed to covet more than his high political offices.

The specter of a U.S. President using the executive quarters as a laboratory for inspecting bones was made all the more unlikely by the events of the day that were pressing in on him. The world was in the grip of the Napoleonic War and England's blockade to starve France into submission was spelling disaster for American commerce. When Jefferson refused to accede to the mounting demands that the young republic declare war, he quickly lost much of the popularity he had built up over the previous seven years of his leadership. His critics in the Federalist Party launched vicious personal attacks against him, ridiculing his penchant for fiddling with mammoths while the nation teetered. This vitriol included a famous bit of 1807 doggerel by then teenager [William Cullen Bryant](#) titled "*The Embargo*":

Go, wretch, resign, thy presidential chair

Disclose thy secret measures, foul or fair,

Go, reach with curious eyes for homed frogs,

'Mid the wild wastes of [Louisianan](#) bogs,

Or where the Ohio rolls his turbid stream

Dig for huge bones, thy glory and thy theme.

As the undaunted Jefferson waited for Congress to convene to consider the controversial Embargo Act, he ignored the clamor and retreated to his first love. He was finally getting his fill of treasure from the Kentucky salt lick that had for so long fascinated him. He

was not about to allow a restless constituency to deter him. If Big Bone Lick can rightly be called the birthplace of American vertebrate paleontology, then the White House can share some credit as a mid-wife.

Once they had it carefully catalogued, the President and Dr. *Wistar* divided up the precious collection. Some was earmarked for the Philosophical Society to fill gaps in its own collection, including what was probably the biggest find, the skull of the extinct woodland musk ox, the *Bootherium*. Some was to be sent to the National Institute in France, to which Jefferson had been elected as the only American *honoree*. The balance he sent to *Monticello*. When today's visitors to that beloved home enter by way of the east portico into the two-story Indian Room, there they find displayed on tables amid the other relics two huge mastodon teeth from Big Bone Lick, Kentucky.

Although the two White House researchers were gaining a much firmer understanding of Ice Age mammals, what they didn't know at that moment was that in France the scientific identity of the *American Incognitum* had finally and definitively been fixed. Helped in part by *Peale's* skeleton and the fossils obtained from Big Bone Lick, *Cuvier* presented the first systematic analysis of the prehistoric beast in an 1806 paper and attached to it a formal name: "*Le grande mastodonte*." Because he had derived the crucial clue of its unique identity from the canonical protuberance on the crown of its tooth, Cuvier combined the Greek words for breast and tooth to create the word "mastodon."

Thus out of the often tangled background of Indian legend, religious belief, patriotic zeal and clumsy scientific methodology finally emerged *Incognitum's* true identity. Informed in large measure by evidence from that salty bog in the Kentucky wilderness, Mr. Jefferson at last had a fully developed symbol of national dominance speaking of an ancient past rising from wild nature. He found his nation's ancestral roots not in classical monuments of onyx and marble but in mineralized bones.

We now know that the American mastodons stood 8 to 10 feet tall at the shoulders and weighed an estimated 9,000 to 11,000 pounds, half again as heavy as today's elephants. Big Bone Lick is one of about 100 sites scattered throughout the Midwest where mastodon remains have been discovered. It's estimated that perhaps upwards of 200 perished there.

In addition to the mastodon, bones from both the Siberian and the southern or Columbian mammoth have also been extracted from the Kentucky quagmire. Although Jefferson termed the mastodon "the largest of all terrestrial beings," the mammoth was actually a bigger relative with crucially different teeth. The mammoths weighed 6 to 8

tons and had even longer **upcurving** tusks, sometimes measuring as much as 13 feet in length. They also had a wider head with a skillet-like hump at the top of it and a telltale sloping back. It's believed that there weren't as many of them at Big Bone Lick but the fact that their fossilized remains were found intermingled with those of the mastodon made the riddle of the *Incognitum* that much harder to unravel.

In the last analysis, it was the teeth that offered the conclusive evidence allowing identification of the two species. The mastodons were browsers of soft vegetation, which could be torn and chewed by those pronounced knobs on their "nipple" teeth. The mammoths, on the other hand, were grazers and their teeth were truly flat-surface grinders, made to order to nibble grasses in the manner of a cow.

In all, a relatively slender list of 17 species of vertebrates have been extracted over the years from the gravelly sediment at Big Bone Lick as far down as 25 feet. One of them, Jefferson's *megalonyx*, the giant ground sloth, stretched 20 feet in length, weighed 4 tons, and sported a long tail that offered stability as it stood to eat leaves with its peg-like teeth. Then there were the *bison antiquus*, the musk ox, the extinct giant stag moose, a forerunner of the modern horse, deer, elk, reindeer (caribou) and bear.

Although scientists still debate the fine points, it is generally thought that these Ice Age animals vanished for two principal reasons: first, the advent of early man, who as hunter-provider killed them; and secondly, by the climatic changes which brought warmer, drier summers and shorter, milder winters, causing the continental ice sheet to recede northward.

Still wreathed in mystery is the question of why so many of them met their end at this place called Big Bone Lick. Perhaps the most persistent myth surrounding the place is that the "jelly ground" - as the early settlers called the swampy bog - literally swallowed up the huge animals as they bore weight on the soft surface and were unable to extricate themselves, slowly sinking into a salty grave. In other words, the salt served as both their fatal attraction and their embalming fluid. Today scientists who have studied the site most carefully are skeptical of this fanciful version. More likely, they say, is that because the salt lick attracted huge populations of Ice Age mammals, it is not unreasonable to assume that over spans of time, natural attrition brought death to some while they happened to be in the vicinity of the lick. Another factor, even more provable, is that **Paleo** Indian hunters, relying on the presence of food prizes in such large numbers at the lick, cornered their prey and slew them on the spot.

What is for certain is that ever since the first curious Europeans explored Big Bone Lick, the area has served as a happy hunting ground not only for the serious naturalist but for

scavengers, commercial opportunists and souvenir hunters as well. In 1807 William dark wrote to President Jefferson that "this lick has been pillaged so frequently that but few valuable bones are to be found entire." Over the years, other factors worked to change the lick's appearance as well. As trees on the perimeter were felled, sun rays were allowed in to dry up the boggy ground dramatically and shrink its size. Then there have been the relentless pressures of years of flooding from the nearby mighty Ohio - and this may be the biggest reason of all why such a treasure trove of bones were packed into this relatively small site.

In the early 1800s, the area around Big Bone became the center of salt making, a commodity as needed by the pioneers and early settlers as by the animals and Native Americans who preceded them. Then came a period of health spas on the hillside overlooking the salt lick, but the Civil War spelled the end of that quaint era.

In the mid-1800s, scholars began coming to Big Bone Lick because of its "great geological celebrity," as a visitor put it. One of them was Nathaniel Southgate Shaler, a local boy from Newport who had joined the celebrated naturalist Louis Aggasiz at Harvard.

Shaler arrived in 1868 determined that "these licks should be worked to their very bottom in search of their possible contents." As he was loading his wagon with what eventually became a literal ton of specimens, the largest ever taken from the area, he told of an old man, apparently of deep religious persuasion, who had been watching intently and was heard to cry out as he got up to leave the scene, "Well, that knocks Moses."

Shaler took his large collection to Cambridge, where it resides in the Museum of Comparative Zoology, joining London and Paris in boasting major aggregations of the famous Ice Age remnants from Kentucky.

Dr. Goforth bequeathed his significant collection to our own Dr. Daniel Drake and from him it passed through various hands until today it is curated by the Cincinnati Museum Center.

More recently, in a project that is praised by some and still rankles others, researchers from the University of Nebraska's noted center of Pleistocene studies came to Big Bone Lick from 1962 to 1966. Employing the latest stratigraphic methods, they carefully mapped the area. Local skeptics take it as an article of faith that these Nebraska interlopers acted in the manner of the Elgin marbles and hauled fossil treasures out of Kentucky. In point of fact, the investigators took only a modest number of bones, but more importantly they left perhaps the most valuable field records ever compiled of the site.

Only in the last year has the state of Kentucky finally built a visitor's center at what is now Big Bone Lick State Park but even that required years of pulling and tugging at a legislature that seemed oblivious to the site's unique international importance. The center describes the history of the place, even though an outdoor diorama perpetuates the "jelly ground" myth by graphically depicting the Pleistocene mammals sinking into their boggy graves.

More ambitious plans for an educational museum and research center, however, have become mired in the slimy ooze of state budgetary problems.

Collecting dust as well are the dreams of those who say another major **paleo-anthropologic** dig is still needed to write the definitive finale to the lingering riddles of Big Bone Lick.

* * * * *

On a crisp evening, I stood on our **hilltop** gazing down at the glistening river, the story of Big Bone Lick fresh in my mind. I could not help but contemplate how this self same scene had evolved over eons. I imagined how in those mists of time the mastodons and mammoths and then the herds of buffalo trudged across the river's dry bed and up our hillside, their hulking stride carving indelible marks in the land. And it struck me how small is man and how little he knows measured against the mysteries of time and place.

We proud children of the Enlightenment stand ever more confident of our power to probe what we sometimes smugly call our **pre-history**. To its relics we have affixed labels from our scientific lexicon and with a surety have hypothesized a past. Still, I had to confess that ours is a shallow plough with which to harvest knowledge of a universe so vast and wondrous. In the end, I found it hardly **antediluvian** to ask by what creative intelligence far exceeding our ken was this ever evolving place shaped? Indeed, by what creating hand am I here? And as I stood there, I was reminded of the ancient psalmist's refrain:

" When I see your heavens, the work of your fingers,
the moon and the stars that you set in place -
What are humans that you are mindful of them,
mere mortals that you care for them?"

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NOTE: The subject of this paper was also discussed in a paper titled "When Did the American Mammoth and Mastodon Become Extinct?" read before The Literary Club on October 31, 1903 by John Uri Lloyd (1849-1936). It was one of 49 papers prepared for the Club from 1901 to 1923 by Mr. Lloyd, a noted pharmacist and author of stories about Kentucky folklore.

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Laura Chace, curator of rare books, kindly produced from the Cincinnati Historical Society Library's vault an original letter written on September 21, 1807 from "Big Bone Lick, Ky.," in the strong, clear script of General William dark. It is addressed to Colonel William Findlay in Cincinnati (after whom Findlay Market is named) and details dark's discovery of "bones, teeth and tusks" for President Jefferson.