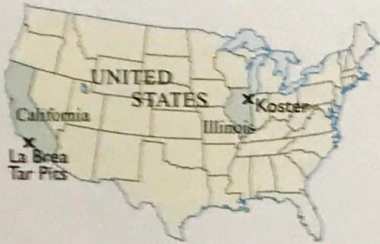


CHAPTER 18

EARTH'S PHOTO ALBUMS
THE END OF THE LAST ICE AGE

PLANT AND ANIMAL REMAINS AND ARTIFACTS IN THE UNITED STATES



Plant and animal fossils, Los Angeles, California, 40,000–10,000 years ago

Beverly Hills probably makes you think of swimming pools and movie stars—not an Ice Age. But if you are looking for a picture of the last Ice Age, there is no better place to go. Near those hills, a few miles from downtown Los Angeles, are the La Brea tar pits. This bubbling crude contains riches more valuable than black gold to researchers trying to re-create what southern California looked like when humans first moved in. From the pits they've pulled giant bones of mammoths and tiny microfossils. There are fossils of mammals and birds and plants and mollusks and insects—hundreds of organisms from the last Ice Age.

The tar pits aren't actually pits. They are puddles—very sticky puddles. Any animal chased into the tar became trapped like a fly stuck to flypaper. Of course, so did the thing doing the chasing. The trapped animals eventually died of shock, dehydration, or starvation. Scavengers attracted by the scent of death, thinking they were onto an easy meal, followed and also became stuck.

The oil coated the victims' bones. This waterproof seal protected them from damage. It preserved the bones along with the pollen that blew in, and the plants that grew nearby, and the insects that landed on the sticky surface when they came to eat the scavenger that came to eat the predator that came to eat the prey. The whole lot is an oily diorama of the prehistoric past.

A workman stands next to mammoth leg bones in Pit 9 at La Brea during excavations in 1914. His own leg looks puny in comparison.



A mastodon is trapped in the La Brea tar pits in this reconstruction. Wolves would have come to feast on the mastodon and then become trapped, too.

Imagine living 10,000 years ago. Your grandfather followed the herds of shaggy woolly mammoth from Siberia into Alaska. You remember the stories he told of the struggle to survive on the frigid **tundra**. (If your own grandfather tells the old story, "I walked six miles to school in the dead of winter—uphill—both ways," you can relate.) Even though you hunted many things large and small, you identified with one particular beast—for the Clovis people, it was the mammoth. Your grandfather was a mammoth hunter. Your father was a mammoth hunter. And now you are a mammoth hunter. There's only one problem. There are no more mammoth.

You've been eating mammoth for as long as you can remember. What will you eat with those root vegetables now? Bison burgers? That spear you've been using to hunt mammoth is going to need some adjustments if you plan on hunting bison now. Those butchering tools will have to be redesigned, too. Oh, and the houses you made back in

STUCK IN TIME

The La Brea tar pits hold snapshots of extinct organisms from birth to death. A single fossil can't show the researcher all the stages of life. The right collection can. La Brea is like a proud parent's photo album. When we flip through it, we see animals in all stages of their lives, just the way the first Americans saw them.

A tundra is one of the vast, nearly level, treeless regions that make up the greater part of the north of Russia, with arctic climate and vegetation. The term also applies to similar regions in Siberia and Alaska.

IT'S THE PITS

Whereas visitors to the La Brea tar pits watch from platforms above, researchers climb down into an excavation pit that is smaller than a sunken version of your classroom. The oil stinks and it clings to everything—clothes, hair, and skin. Excavators suck up gobs of liquid tar with turkey basters, trying to clear out the oil-slicked, black water to find the bones below. They wish it was the Ice Age now. Temperatures would be a few degrees cooler—more like it is in San Francisco than the 90-degree Los Angeles summer heat. You won't hear any complaints though. Nowhere is there a better picture of what prehistoric humans saw when they first stepped out of the ice-free corridor than the one preserved in the pits.

Siberia with mammoth tusks? Forget it. No more woolly mammoth, no more tusks. You're going to have to come up with new building materials.

When a large part of your lifestyle revolves around one of the animals you hunt, and then that animal is taken away, big changes have to be made. The changes can spread through all parts of your life, large and small, from the tusks that provided the roof over your head, to the bone you splintered for a sewing needle. Fortunately, humans are good at adapting to change.

Thousands of years ago there were no forecasts of global warming. No one warned people that their world was about to heat up. They didn't know that the glaciers were about to melt and that when they did, the coasts would flood. If sea levels rose today like they did 10,000 years ago, the skyscrapers in U.S. coastal cities would need water wings. Boston, New York, Miami, and Los Angeles would all be under water.

You would think that people around the world might enjoy their new climate. After all, an ice age is no day at the beach. But not everything likes balmy temperatures. There are grasses that thrive in cold climates. When it gets warm, they die. The grasslands are replaced by trees. Guess who ate those disappearing grasses? Woolly mammoth. Unlike humans, woolly mammoth aren't known for their adaptability. When the mammoth could no longer find the grasses they were used to eating, their numbers dwindled until there were no more.

It wasn't only the mammoth that died off. Most of the great beasts—the megafauna—that were found in the La Brea tar pits died, too: the sabertooths, the giant ground sloths, the camels, and bears. The idea that the changes caused by the new weather killed them all off is called the "Climate Change Hypothesis." But not everyone buys this explanation. Many scientists don't think that the end was so innocent. There is another theory lurking—murder!

The "Overkill Hypothesis" points a finger at another suspect—the hunter. Hunters swept across the continent armed with spears designed for death. Eleven thousand

years ago giant mammals shook the Americas. Ten thousand years ago they were gone. Once the mammoths were gone, the lions and sabertooths that preyed on them died, too—along with the scavengers. Did humans cause the largest mass extinction of large mammals in the history of the planet?

Some scientists believe that the mammoth died out because it was overhunted. Others can't imagine a few humans armed with pointy rocks tied to the end of sticks wiping out an entire species. The question remains: Why did so many species die out in such a short time? Was it the climate change? Or did humans kill too many of them? Or both?

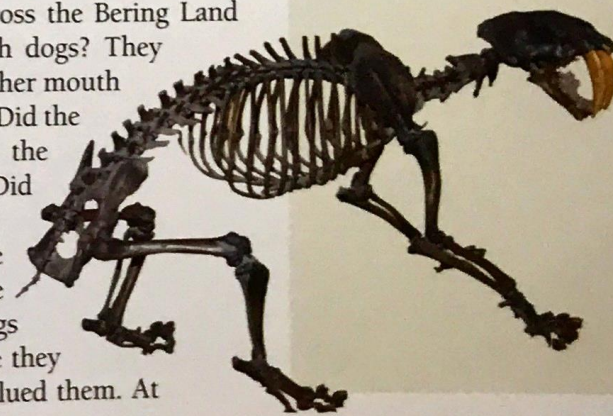
With the large mammals gone, smaller animals moved in. One of those smaller animals—the wolf—befriended humans. Or did it? No one knows who made the first move toward friendship. Was it the human? Or was it the wolf? Did children bring orphaned pups into camp and raise them, taming them from wolves to dogs, only to learn how useful they could be? Wolves, with their keen senses of smell and hearing, must have saved more than one napping human by barking and growling at some deadly beast on the prowl. Or was it the wolf who quickly realized that humans meant dinner and approached camps for leftovers? Curling up by the fire with a mammoth bone has got to be the ultimate dog fantasy.

The first dogs in the Americas appear to have migrated along with the people from Asia across the Bering Land Bridge. Why did humans travel with dogs? They didn't have the luxury of feeding another mouth unless it was very important to them. Did the dogs pull sleds? Did they protect the bands of humans from predators? Did they hunt for "the pack"?

Maybe the wolves followed the humans, scavenging scraps along the way. Although it is unclear why dogs came to the Americas originally, once they were there, it is clear that humans valued them. At

COOL CATS

One of the most common animals found in the tar pits is the sabertooth cat. The remains of thousands of them have been found. Scientists do not call them sabertooth tigers. There is no such thing as a sabertooth tiger! The sabertooth's short tail is one of the characteristics that puts it in the group with cats, not tigers.



66 Dog grave, Koster, Illinois, 8,500 years ago



Koster, Illinois, a North American archaeological site, there are graves where dogs have been carefully buried.

When we look at the pictures in the La Brea tar pits photo album, we see the landscape just how the first Americans saw it—fertile and flourishing. When we look at the pictures in the Koster photo album, we see how people lived once they had spread through the New World and had begun to settle down. When the Ice Age ended and the menu changed, some people stayed put, eating what they could find locally. With the big game gone, people began to think smaller—raccoons and rabbits—things they could count on finding. Koster is a good example of how those people lived.

Koster's layers are arranged like a stack of pancakes. Each pancake represents a particular time of human habitation. Some were big and some were small. Over thousands of years the stack grew as settlement after settlement occupied Koster. The stack is rather sloppy, not only because of size, but also because some villages were a little to the west or a little to the east of the one before it. The pancakes are all different thicknesses, too, and in some cases pretty lumpy, depending on how many people lived in one spot and for how long. There are 26 pancakes in the stack.

Each layer is called a horizon. Horizon 11 was occupied nearly 8,500 years ago. It was a tiny village, no more than three quarters of an acre, where about 25 people came every

TEMPERATURES PLUMMET

Temperatures have always gone up and come down. Right now we are between cold snaps. But the glaciers will come again. You may think these climate changes are so slow that you would barely notice. But there are paleoclimatologists—scientists who study ancient climates—who are taking a look at the chemical make-up of air bubbles that were trapped in the ice 13,000 years ago. The paleoclimatologists think the climate change entering the last Ice Age was fast. They think it could have happened in just 10 years.

year during the same season. In the center of the village many fires burned in hearths, some rimmed with limestone. Here the people roasted deer, and while it sizzled and popped, they ground nuts. At Horizon 11's thickest point, there are 18 inches of debris left behind by these Koster people—woodworking tools, sewing tools, even jewelry.

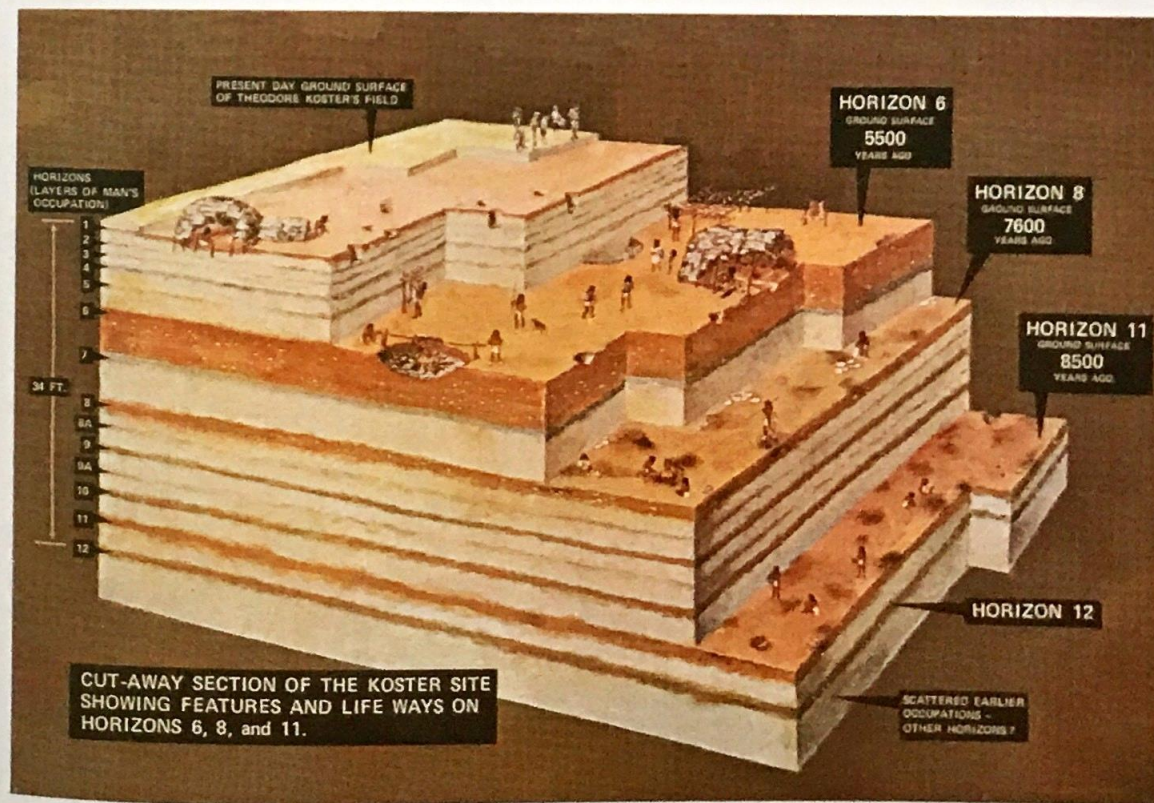
In Horizon 11 we find eastern North America's oldest cemetery. Oval pits were dug for the dead in this special burying place. The bodies were positioned on their sides with their knees tucked into their chests and were left uncovered until they began to rot. A child, one and half years old, had been dusted with red powder. Not far away, the Koster people buried their dogs.

The next pancake—er—occupation is quite different. Horizon 10 was a workplace for toolmakers. They came, they worked, and they went home to eat and sleep.



66 Bone and clay beads, Koster, Illinois, 8,500 years ago

Each layer in this stack is a different occupation at Koster. The layers span more 8,500 years. Imagine your home 8,500 years from now, at the bottom of a stack similar to this one.



Lifestyles changed again in Horizon 8. Koster settlements 7,600 years ago were built for year-round living. Horizon 8 holds four separate occupations, each lasting 100 years or more. The people who lived there dug out flat areas in the hillside on which to build homes. They toppled trees for construction. Now that the people weren't pulling up camp every season, they put more effort into building their homes.

Once the people built houses, they began to collect things to put in them. By Horizon 6 people had begun collecting things other than the tools they needed for living. In the graves of both men and women, right near their heads, archaeologists have found bone pins shaped like clothespins with engraved handles. They think the pins were for hair. Because these pins have shown up in Indiana,

66 Hairpins, Koster, Illinois, 8,000 years ago



Men and women both used these hair pins to hold their hair up and out of their faces.

Missouri, and Kentucky, people probably traded them. Imagine trading your barrettes (boys wore them, too). What do you think you could get for one?

Hunter-gatherers don't have much in the way of material things to fight over. But with permanent settlements comes an accumulation of "stuff." Your neighbor may have a nicer ax, but he's eyeing that knife you got in trade for your finest

white-tailed deer skin. The fellow down the alleyway has stored more dried meat than he can possibly use. And that woman wearing the fancy beaded necklace is sure full of herself. People were starting to experience envy. Some were gaining importance in the community according to what they had and how much. All the while, the occupation level thickens with the belongings of these people.