

America's First Immigrants

You were probably taught that the hemisphere's first people came from Siberia across a long-gone land bridge. Now a sea route looks increasingly likely, from Asia or even Europe ~ *BY EVAN HADINGHAM*

ABOUT FOUR MILES from the tiny cattle town of Florence, Texas, a narrow dirt road winds across parched limestone, through juniper, prickly pear and stunted oaks, and drops down to a creek. A lush parkland of shade trees offers welcome relief from the 100-degree heat of summer. Running beside the creek for almost half a mile is a swath of chipped, gray stone flakes and soil blackened by cooking fires—thousands of years of cooking fires. This blackened earth, covering 40 acres and almost six feet thick in places, marks a settlement dating back as far as the last ice age 13,000 years ago, when mammoths, giant sloths and saber-toothed cats roamed the North American wilderness.

Since archaeologists began working here systematically seven years ago, they have amassed an astonishing collection of early prehistoric artifacts—nearly half a million so far. Among these are large, stone spearheads skillfully flaked on both sides to give an elegant, leaf-shaped appearance. These projectiles, found by archaeologists throughout North America and as far south as Costa Rica, are known as Clovis points, and their makers, who lived roughly 12,500 to 13,500 years ago, are known as Clovis people, after the town in New Mexico near where the first such point was identified some seven decades ago.

A visit to the Gault site—named after the family who owned the land when the site was first investigated in 1929—along the cottonwood- and walnut-shaded creek in central Texas raises two monumental questions. The first, of course, is, Who were these people? The emerging answer is that they were not simple-minded big-game hunters as they have often been depicted. Rather, they led a less nomadic and more sophisticated life than previously believed.

The second question—Where did they come from?—lies at the center of one of archaeology's most contentious debates. The standard view holds that Clovis people were the first to enter the Americas, migrating from Siberia 13,500 years ago by a now-submerged land bridge across the Bering Strait. This view has been challenged recently by a wide range of discoveries, including an astonishingly well-preserved site in South America predating the supposed migration by at least 1,000 years.

Researchers delving into the origins question have sought to make sense of archaeological finds far and wide, from Canada, California and Chile; from Siberia; and even, most controversially, from France and Spain. The possibility that the first people in the Americas came from Europe is the boldest proposal among a host of new ideas. According to University of Texas at Austin archaeologist Michael Collins, the chief excavator of the Gault site, “you couldn't have a more exciting time to be involved in the whole issue of the peopling of the Americas. You can't write a paper on it and get it published before it's out of date. Surprising new finds keep rocking the boat and launching fresh waves of debate.”

FOR PREHISTORIC PEOPLE, one of the chief attractions of the Gault site was a knobby outcrop of a creamy white rock called chert, which conceals a fine, gray, glasslike interior. If struck expertly with a stone or antler tool, the rock fractures in predictable ways, yielding a Clovis point. In the end, each spearhead has distinctive grooves, or “flutes,” at the base of each face and was fastened to a wooden shaft with sinew and resin.

Ancient pollen and soil clues tell archaeologists that the climate in Clovis-era Texas was cooler, drier and more tolerable than today's summertime cauldron. Vast herds of mammoths, bison, horses and antelope ranged on the grasslands

southeast of Gault, and deer and turkeys inhabited the plateau to the west. Along the creek, based on bones found at the site, Clovis hunters also preyed on frogs, birds, turtles and other small animals.

This abundance of food, coupled with the exceptional quality of the chert, drew people to Gault in large numbers. Unlike the majority of Clovis sites, which are mostly the remains of temporary camps, Gault appears to have been inhabited over long periods and thus contradicts the standard view that Clovis people were always highly mobile, nomadic hunters. Michael Collins says that of the vast quantity of artifacts found at the site, many are tool fragments, left behind by people who'd stuck around long enough to not only break their tools but also to salvage and rework them. The researchers also unearthed a seven by seven foot square of gravel—perhaps the floor of a house—and a possible well, both signs of more than a fleeting presence.

Another clue was concealed on a 13,000-year-old Clovis blade about the size of a dinner knife. Under a magnifying lens, the blade's edge is glossy, rounded and smooth. Marilyn Shoberg, a stone tool analyst on the Gault team who has experimented with replicas, says the blade's polish probably came from cutting grass. This grass could have been used for basketry, bedding, or thatching to make roofs for huts.

Among the most unusual and tantalizing finds at the Gault site are a hundred or so fragments of limestone covered with lightly scratched patterns. Some resemble nets or basketry, while a few could be simple outlines of plants or animals. Although only a dozen can be securely dated to Clovis times, these enigmatic rocks are among the very few surviving artworks from ice age America.

"What this site tells us is that Clovis folks were not specialized mammoth hunters constantly wandering over the landscape," says Collins. "They exploited a variety of animals, they had tools for gathering plants and working wood, stone and hide, and they stayed through the useful life of those tools. All these things are contrary to what you'd expect if they were highly nomadic, dedicated big-game hunters." Yet this unexpected complexity sheds only a feeble glimmer on the more contentious issue of where the Clovis people came from and how they got here.

IN THE OLD SCENARIO, still popular in classrooms and picture books, fur-clad hunters in the waning moments of the last ice age, when so much seawater was locked up in the polar ice caps that the sea level was as much as 300 feet lower than today, ventured across a land bridge from Siberia to Alaska. Then, pursuing big game, the hunters trekked south through present-day Canada. They passed down a narrow, 1,000-mile-long treeless corridor bounded by the towering walls of retreating ice sheets until they reached the Great Plains, which teemed with prey. The human population exploded, and the hunters soon drove into extinction some 35 genera of big animals (see sidebar, p. 94). All of these were supposedly dispatched by the Clovis point, a Stone Age

weapon of mass destruction.

For more than half a century, this plausible, "big-game" theory carried with it an appealing, heroic image. As James Adovasio of Mercyhurst College puts it in his book *The First Americans*, it was as if the ice sheets had parted "like the Red Sea for some Clovis Moses to lead his intrepid band of spear-toting, mammoth-slaying wayfarers to the south." But recent discoveries are indicating that almost everything about the theory could be wrong. For one thing, the latest studies show that the ice-free corridor didn't exist until around 12,000 years ago—too late to have served as the route for the very first people to come to America.

Perhaps the strongest ammunition against the old scenario comes from Monte Verde, an archaeological site on a remote terrace, which is today some 40 miles from the Pacific in southern Chile. Here, about 14,500 years ago, a hunting-and-gathering band lived year-round beside a creek in a long, oval hide tent, partitioned with logs. Archaeologist Tom Dillehay of Vanderbilt University began probing Monte Verde in 1977, unearthing the surface of the ancient encampment, complete with wood, plants and even remains of food, all preserved under a layer of waterlogged peat. Dillehay recovered three human footprints, two chunks of uneaten mastodon meat and possibly even traces of herbal medicine (indicated by nonfood plants still used by healers in the Andes). The dating of these extraordinary finds, at least 1,000 years before the earliest Clovis sites in North America, aroused skepticism for two decades until, in 1997, a group of leading archaeologists inspected the site and vindicated Dillehay's meticulous work.

No such triumph has emerged for any of the dozen or so sites in North America claimed to predate Clovis. But among the most intriguing is a rock overhang in Pennsylvania called Meadowcroft, where a 30-year campaign of excavation suggests that hunters may have reached the Northeast 3,000 or 4,000 years before the Clovis era.

Meanwhile, genetics studies are pointing even more strongly to an early entry into the continent. By analyzing the mitochondrial DNA of living Native Americans, Douglas Wallace, a geneticist at the University of California at Irvine, and his colleagues have identified five distinct lineages that stretch back like family trees. Mitochondria are the cells' energy factories. Their DNA changes very little from one generation to the next, altered only by tiny variations that creep in at a steady and predictable rate. By counting the number of these variations in related lineages, Wallace's team can estimate their ages. When the team applied this technique to the DNA of Native Americans, they reached the stunning conclusion that there were at least four separate waves of prehistoric migration into the Americas, the earliest well over 20,000 years ago.

IF THE FIRST AMERICANS did arrive well before the oldest known Clovis settlements, how did they get here? The most radical theory for the peopling of the New World argues that Stone Age mariners journeyed from Europe around the southern fringes of the great ice sheets in the North At-

lantic. Many archaeologists greet this idea with head-shaking scorn, but the proposition is getting harder to dismiss outright.

Dennis Stanford, a Clovis expert at the Smithsonian Institution's Department of Anthropology who delights in prodding his colleagues with unconventional thinking, was a longtime supporter of the land bridge scenario. Then, with the end of the cold war came the chance to visit archaeological sites and museums in Siberia—museums that should have been filled with tools that were predecessors of the Clovis point. “The result was a big disappointment,” says Stanford. “What we found was nothing like we expected, and I was surprised that the technologies were so different.” Instead of a single leaf-shaped Clovis spearhead, ice age Siberian hunters made projectiles that were bristling with rows of tiny razor-like blades embedded in wooden shafts. To Stanford, that meant no Siberian hunters armed with Clovis technology had walked to the Americas.

Meanwhile, Bruce Bradley, a prehistoric stone tool specialist at Britain's University of Exeter, had noticed a strong resemblance between Clovis points and weapons from ice age Europe. But the idea that the two cultures might be directly connected was heretical. “It certainly wasn't part of the scientific process at that point,” Bradley says. “There was no possibility, forget it, don't even think about it.” Bradley eventually pursued it to the storerooms of the Musée National de Préhistoire in Les Eyzies-de-Tayac in southwest France, where he pored through boxes of local prehistoric stone tools and waste flakes. “I was absolutely flabbergasted,” he recalls. “If somebody had brought out a box of this stuff in the United States and set it down in front of me, I'd have said, ‘Man, where did you get all that great Clovis stuff?’” But the material was the work of a culture called the Solutrean that thrived in southwest France and northern Spain during the coldest spell of the ice age, from around 24,000 to 19,000 years ago.

Thousands of years before their successors created the masterworks of Lascaux and Altamira, Solutrean-age artists began painting vivid murals in the depths of caves such as Coudnac and Cosquer. They made delicate, eyed sewing needles out of bone, enabling them to stitch tightfitting skin garments to repel the cold. They devised the *atlatl*, or spear thrower, a hooked bone or wood handle that extends the reach of the hunter's arm to multiply throwing power. But their most distinctive creation was a stone spearhead shaped like a laurel leaf.

Apart from the absence of a fluted base, the Solutrean laurel leaf strongly resembles the Clovis point and was made using the same, highly skillful flaking technique. Both Clovis and Solutrean stone crafters practiced controlled overshot flaking, which involved trimming one edge by striking a flake off the opposite side, a virtuoso feat of handiwork rarely seen

in other prehistoric cultures. To Bradley, “there had to be some sort of historic connection” between the Solutrean and Clovis peoples.

Critics of the theory point to a yawning gap between the two peoples: roughly 5,000 years divide the end of Solutrean culture and the emergence of Clovis. But Stanford and Bradley say that recent claims of pre-Clovis sites in the southeastern United States may bridge the time gap. In the mid-1990s at Cactus Hill, the remains of an ancient sand dune overlooking the Nottoway River on Virginia's coastal plain, project director Joseph McAvoy dug down a few inches beneath a Clovis layer and uncovered simple stone blades and projectile points associated with a hearth, radiocarbon dated to some 17,000 to 19,000 years ago. This startlingly early date has drawn skeptical fire, but the site's age was recently confirmed by an independent dating technique. Stanford and Bradley suggest that the early people at Cactus Hill were Clovis forerunners who had not yet developed the full-blown Clovis style. They are convinced that many more sites like Cactus Hill will turn up on the East Coast. But the burning question is, Did these ice age Virginians invent the Clovis point all by themselves, or were they descendants of Solutreans who brought the point with them from Europe?

Many archaeologists ridicule the notion that people made an arduous, 3,000-mile journey during the bleakest period of the ice age, when the Atlantic would have been much colder and stormier than today. Stanford believes that traditional Inuit technology suggests otherwise; he has witnessed traditional seagoing skills among Inupiat communities in Barrow, Alaska. Inupiat hunters still build large skin-covered canoes, or *umiaks*, which enable them to catch seals, walrus and other sea mammals that abound along the frozen edges of the pack ice. When twilight arrives or storms threaten, the hunters pull their boats up on the ice and camp beneath them. Ronald Brower of the Inupiat Heritage Center in Barrow says, “There's nothing that would have prevented . . . people from crossing the Atlantic into the Americas 19,000 years ago. It would be a perfectly normal situation from my perspective.”

A different critique of the out-of-Europe theory dismisses the resemblance between Solutrean and Clovis points. Many archaeologists suggest that similarities between Clovis and Solutrean artifacts are coincidental, the result of what they call convergence. “These were people faced with similar problems,” says Solutrean expert Lawrence Straus of the University of New Mexico. “And the problems involved hunting large- and medium-sized game with a similar, limited range of raw materials—stone, bone, ivory, antler, wood and sinew. They're going to come up with similar solutions.”

More tellingly, in Straus' view, is that he can find little evidence of seafaring technology in the Solutrean sites he has dug in northern Spain. Although rising sea levels have drowned sites on the ice age coastline, Straus has investigated surviving inland cave sites no more than a couple of hours' walk from the beach. “There's no evidence of deep-sea fishing,” says Straus, “no evidence of marine mammal hunting,

Hunted to Extinction?

At the end of the last ice age, 35 genera of big animals, or megafauna, went extinct in the Americas, including mammoths, mastodons, giant ground sloths, giant beavers, horses, short-faced bears and saber-toothed cats. Archaeologists have argued for decades that the arrival of hunters wielding Clovis spear points at around the same time was no coincidence. Clovis hunters pursued big game—their signature stone points are found with the bones of mammoths and mastodons at 14 kill sites in North America. Experiments carried out with replica spears thrust into the corpses of circus elephants indicate that the Clovis point could have penetrated a mammoth's hide. And computer simulations suggest that large, slow-breeding animals could have easily been wiped out by hunting as the human population expanded.

But humans might not be entirely to blame. The rapidly cycling climate at the end of the ice age may have changed the distribution of plants that the big herbivores grazed on, leading to a population crash among meat-eating predators too. New research on DNA fragments recovered from ice age bison bones suggests that some species were suffering a slow decline in diversity probably caused by dwindling populations long before any Clovis hunters showed up. Indigenous horses are now thought to have died out in Alaska about 500 years before the Clovis era. For mammoths and other beasts who did meet their demise during the Clovis times, many experts believe that a combination of factors—climate change plus pressure from human hunters—drove them into oblivion.

Amid all the debate, one point is clear: the Clovis hunter wasn't as macho as people once thought. Bones at the Gault site in central Texas reveal that the hunters there were feeding on less daunting prey—frogs, birds, turtles and antelope—as well as mammoth, mastodon and bison. As the late, renowned archaeologist Richard (Scotty) MacNeish is said to have remarked, "Each Clovis generation probably killed one mammoth, then spent the rest of their lives talking about it."

and consequently no evidence, even indirect, for their possession of seaworthy boats."

And David Meltzer, an archaeologist at Southern Methodist University and a critic of the European-origins idea, is struck more by the differences between the Solutrean and Clovis cultures than their similarities—particularly the near-absence of art and personal ornaments from Clovis. Still, he says, the controversy is good for the field. "In the process of either killing or curing" the theory, "we will have learned a whole lot more about the archaeological record, and we'll all come out smarter than we went in."

BESIDES CROSSING THE LAND BRIDGE from Asia and traveling to ice age America from Europe by boat, a third possible entryway is a sea route down the west coast. Using maritime skills later perfected by the Inuit, prehistoric south Asians might have spread gradually around the northern rim of the Pacific in small skin-covered boats. They skirt the southern edge of the Bering land bridge and paddle down the coast of Alaska, dodging calving glaciers and icebergs as they pursue seals and other marine mammals. They keep going all the way to the beaches of Central and South America. They arrive at Monte Verde, inland from the Chilean coast, some 14,500 years ago. Each new generation claims fresh hunting grounds a few miles beyond the last, and in a matter of centuries these first immigrants have populated the entire west coast of the Americas. Soon the hunters start moving inland and, in the north, their descendants become the Clovis people.

Many archaeologists now accept the west coast theory as a likely solution to the origin of the earliest Americans. On Prince of Wales Island in southeastern Alaska, inside the aptly named On Your Knees Cave, University of South Dakota paleontologist Timothy Heaton and University of Colorado at Boulder archaeologist E. James Dixon recovered an accumulation of animal bones from the last ice age. When mile-high ice sheets still straddled the interior of the continent 17,000 years ago, ringed seals, foxes and seabirds made their home on the island. "Humans could easily have survived there," Heaton says.

The ultimate evidence for the western sea route would be the discovery of pre-Clovis human remains on the coast. No such luck. Dixon and Heaton have found human jaw fragments and other remains in the On Your Knees Cave, but those date to about 11,000 years ago—too recent to establish the theory. And what may be the oldest-known human remains in North America—leg bones found on Santa Rosa Island, off the California coast—are from 13,000 years ago, the heart of the Clovis era. Still, those remains hint that by then people were plying the waters along the Pacific Coast.

IF THE TRAIL of the very earliest Americans remains elusive, so, too, does the origin of the Clovis point. "Although the technology needed to produce a Clovis point was found among other cultures during the ice age," says Ken Tankersley of Northern Kentucky University, "the actual point itself is

unique to the Americas, suggesting that it was invented here in the New World.” If so, the spearhead would be the first great American invention—the Stone Age equivalent of the Swiss Army Knife, a trademark tool that would be widely imitated. The demand for the weapon and the high-quality stone it required probably encouraged Clovis people to begin long-distance trading and social exchanges. The spearhead may also have delivered a new level of hunting proficiency and this, in turn, would have fueled a population spurt, giving Clovis people their lasting presence in the archaeological record.

Sheltering from the broiling heat under the cottonwoods at Gault, Michael Collins told me of his conviction that the Clovis people who flocked to the shady creek were not pioneers but had profited from a long line of forebears. “Clovis represents the end product of centuries, if not millennia, of learning how to live in North American environments,” he said. “The Clovis culture is too widespread, is found in too many environments, and has too much evidence for diverse activities to be the leavings of people just coming into the country.” Collins reminded me that his team has investigated less than 10 percent of the enormous site. And archaeologists have barely scratched the surface of a handful of other Gault-size, Clovis-era sites—Williamsburg, in Virginia, for instance, or Shoop, in Pennsylvania. “One thing you can be sure,” he said, beaming, “there’ll be great new discoveries just around the corner.”

