

The Origins of American Medicine

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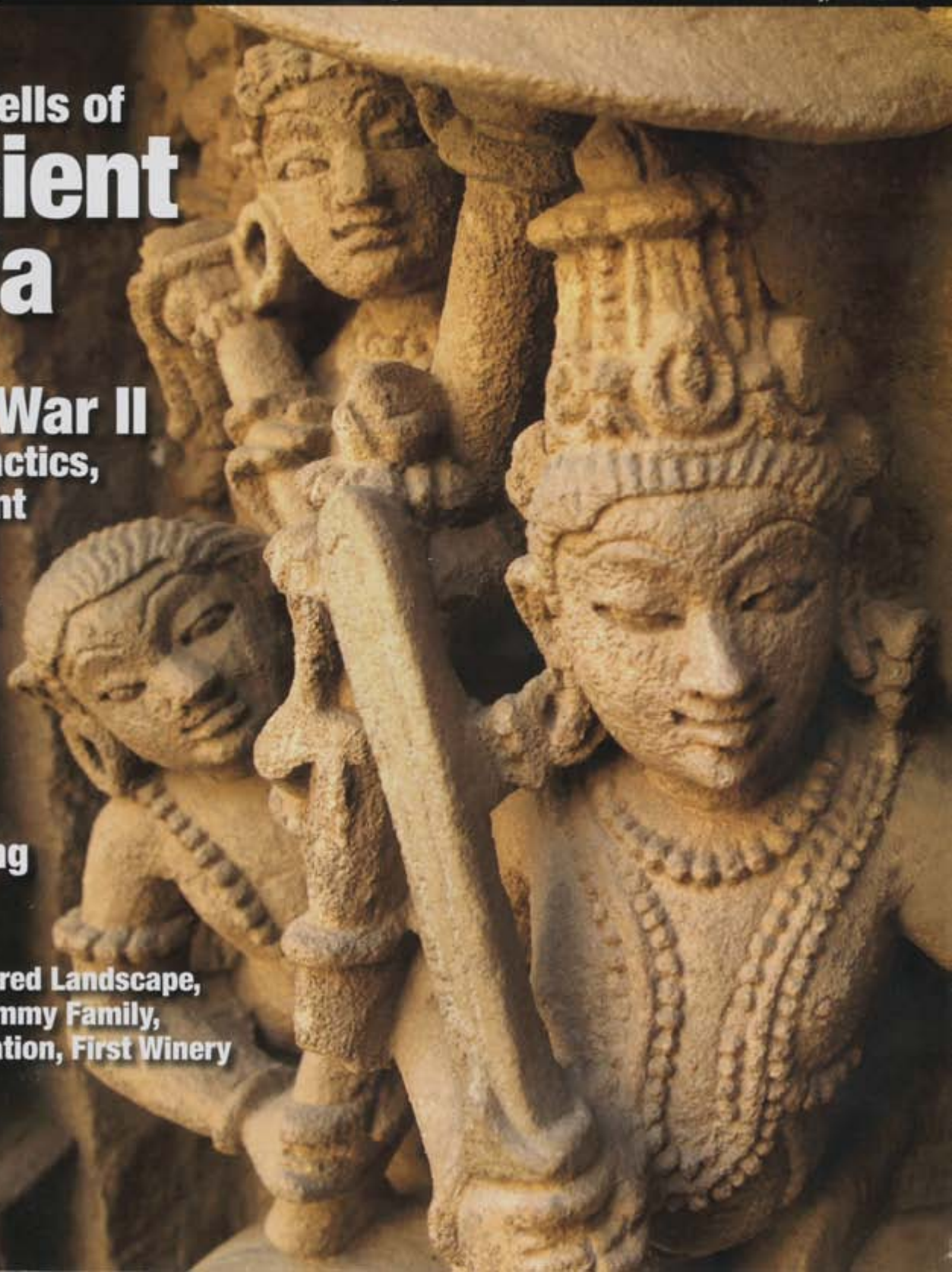
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Windover Pond

# The Origins of American Medicine

A paramedic-turned-archaeologist sees evidence in a mortuary pond for an ancient culture's medical ingenuity

by RACHEL K. WENTZ

**W**INDOVER POND is a secluded body of water near the eastern coast of central Florida, minutes from Kennedy Space Center, in the city of Titusville. In winter, barren limbs draped in Spanish moss graze the pale-green mat of algae that covers its surface. The muddy shores gradually give way to shallow waters. Shadows roll over the pond's surface. The air is cold, and the surrounding woods provide a buffer between the pond and the Windover Farms housing development and muffle the sound of neighborhood traffic, reducing it to a soft hum. It is the burial place of, as far as we know, 168 individuals.

The pond quietly held its ancient contents for thousands of years, until 1982, when a backhoe operator working on the construction of the

Windover Farms subdivision discovered the burial site. For the last 10 years, this pond has been at the center of my work.

**F**ROM 1984 TO 1987, physical anthropologists led excavations of Windover Pond—now a protected archaeological site—and recovered the 168 bodies. Similar mortuary ponds have been discovered in Florida, all of them dating to the area's Archaic period (approximately 3,000 to 9,000 years ago). Radiocarbon dating of bone, wood, and a bottle gourd show that Windover Pond was in use before 5000 B.C. The burials found there comprise the largest skeletal population of this age in North America.

The people from Windover were an Archaic period society of hunter-gatherers who archaeologists believe

traveled in bands of about 50 individuals. They differed from Paleoindian cultures that had existed until about 9000 B.C., when the Continental Ice Sheet retreated and big game, such as woolly mammoths, began to disappear. Without those animals to prey on, Archaic peoples relied on smaller animals and plants for their food. Scientists can learn about an ancient people's diet by studying the ratios of stable isotopes of carbon and nitrogen in their bones and teeth. In fact, isotopic analysis of the skeletons found at Windover Pond revealed these ancient Americans relied on river-dwelling fauna such as duck, turtle, and catfish, and local plants such as prickly pear, persimmon, elderberry, and wild grapes. Analysis of plant remains at the pond indicates the group only visited there seasonally, during the late summer to early fall



In the 1980s, archaeologists excavated Windover Pond and found the remains of 168 individuals.

months, though core samples taken throughout the pond show it held water year-round. Its continued use may have been due to its proximity to favorable hunting territory.

While we know what these people likely ate, archaeological surveys of the area around the pond failed to turn up any clues as to where the group lived. Archaic period settlements can be difficult to locate because there is no evidence of, say, pottery or architecture during this time—pottery first appears in the southeastern U.S. around 2500 B.C., whereas architecture, in the form of mounds sometimes used for burials, turns up around 1,000 years later. Of course, rather than burial mounds, this group relied on a pond, a spot that radiocarbon dating shows they returned to for possibly as long as 1,000 years.

**I** MET THE PEOPLE from Windover—or, more accurately, their remains—a decade ago after I'd spent 13 years as a paramedic and firefighter in Orlando. I had gone back to school to study archaeology, and my background in medicine led me to specialize in the health and pathology of past populations. It was amazing to see the same injuries and illnesses that we experience today in remains such as those found in Windover Pond. What stunned me more, however, was the evidence these burials offered about how these early Americans may have coped with and overcome the diseases and injuries that plagued them—

findings that would push back the first recorded evidence of medicine by two millennia, to before 5000 B.C.

Windover Pond's neutral pH and anaerobic conditions combined to

offer a suitable environment for the preservation of organic remains. Ninety-one of the recovered adult skulls even contained brain matter. Although they varied in size and state of preservation, some of the brains had maintained their original shape. The brains' overall condition indicates the individuals were buried within 48 hours of death.

The majority of burials were placed on their left sides, tucked in a flexed position (knees drawn close to their chests and arms tightly folded), with their heads oriented north. Whether this was done for ritual significance or ease of interment is unclear. The body was then wrapped in woven matting. More than one-third of the adults and many of the children were found with grave goods accompanying their remains. These included tools fashioned from bones and teeth, antler, and wood, as well as shells and shark teeth that could have been worn as jewelry—all of which were bundled with them.

The textiles surrounding the burials are the oldest known fabrics of their type in the New World and are believed to have been made primarily from cabbage palm, or sabal palm. The flexible fabrics, bags, and matting showcase several styles of weaving and braiding. Many of the textiles show wear, suggesting the items had been used during life. Those found with children, though, show little use, suggesting they were made specifically as burial shrouds. Their production likely necessitated a delay between a child's passing and

his or her burial—an inference supported by the lack of preserved brain matter among the children.

The bodies were likely carried into the soft soils at the shallow margins of the pond, beyond the thick tangles of tree roots. A small teepee-style construction of branches was then erected over the body. The wood used for these shelters was primarily ash, which does not naturally grow near the pond and appears to have been chosen specifically for this purpose. These structures may have protected the burials from animals within the pond. Individual wooden stakes, made for the most part of pine, anchored many of the dead to the floor of the pond. Weathering at the stakes' tapered ends indicates they probably protruded from the water's surface, perhaps serving as grave markers to show the location of individual burials or family units.

**T**HE REMARKABLE preservation of the Windover people's remains allowed me to make strong inferences about the health of the population. Relative to other archaeological skeletal populations in the Western hemisphere, the Windover people show higher rates of some forms of pathology, such as anemia and traumatic injury. However, they suffered lower incidences of dental and degenerative joint diseases.

Fracture frequencies and their locations on the body can serve as indicators of interpersonal violence, which is implied when several injuries in the same skeleton appear to have occurred concurrently. At Windover, the skeletons show little indication of conflict. One individual, however, died with a spear point made from an antler embedded in his hip. There is no indication of healing, so it probably coincides with time of death. His head and first cervical vertebra are missing, indicating possible decapitation.

The skulls found at Windover Pond exhibit severe wear to their teeth, including the teeth of chil-

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dren, possibly due to large amounts of grit in their diet. The condition of front teeth seen in some of the adults indicates they were using them as tools, perhaps to grasp hides as they scraped or sewed them. Tooth loss was common.

Growth interruptions in the enamel of children's teeth, as well as porous lesions on their skulls, indicate nutritional deficits that may have been due to parasites, such as hookworms, which sap the body of iron, leading to anemia and malnutrition—a chronic health problem plaguing developing countries today. The anemic children would have experienced lack of energy, stunted growth, and delayed mental development. This condition may help explain why more than half the people buried in the pond never reached adulthood.

Those malnourished children would have required treatment to enable them to survive their early years. Several adults bore marks of long-term illness or injury and would have required care. Burial 72, a middle-aged woman who at one time sustained a fractured femur, would have been unable to walk for many weeks while the bone mended. Burial 119, a man in his 60s suffering from arthritis, had extensive fusion of the vertebrae that would have rendered his spine immobile, prohibiting him from bending or flexing side-to-side.

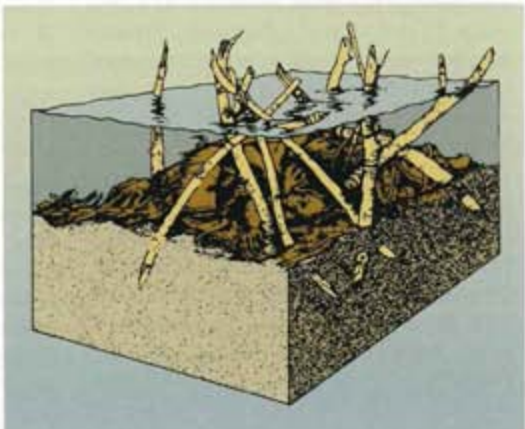
One of the bodies recovered from the pond belonged to a teenager plagued by numerous health problems. During his prenatal development, the lower segments of his spine failed to fuse, a condition known as spina bifida. This likely caused paralysis of his lower limbs, eventually leading to wasting away of his skeleton and extensive infection throughout his body.

The bodies in Windover Pond were placed in a flexed position on their left sides, bundled in textiles, and had teepee-like structures erected over them, anchoring the burials in the peat.

Spina bifida is a relatively common birth defect (affecting more than 150,000 people in the U.S. today), and several members of this group suffered from it. The teenager's skeleton has no left ankle; the leg bones taper to withered points. His foot, likely deprived of adequate blood flow due to a massive infection in his leg, may have slowly rotted away or even been amputated. The boy survived for almost 18 years, which would have been nearly impossible if he hadn't received long-term medical care.

**D**URING MY EXAMINATION of the skeletal remains, I noted that an overwhelming number—approximately 95 percent—of the broken bones had healed in proper alignment, which suggests the ancient people made splints for fractures. Immobilizing injuries would have reduced pain, minimized damage to the surrounding tissue, and allowed the bones to heal in their proper positions.

Artifacts recovered from burials further reveal the Windover population's medicinal practices. Intricately incised bird-bone tubes, approximately two inches in length, were found accompanying three women. Such tubes have been fashioned by ancient peoples in many parts of the world, with some of the oldest dating to 9000 B.C. in Iraq. They were commonly used in healing and ritual ceremonies, to inhale smoke from fires, for a healer to symbolically suck  
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an infirmity from a victim's skin, or to blow snuff or hallucinogens into the nose.

Three different women were buried with turtle-shell containers, too small to be used for food preparation. It's possible they could have been used to make medicines. Gathering, preparing, and administering treatments for the sick may have been a traditional role for women of the group, as it is on the South Pacific islands of Samoa, where female specialists known as *taulasea* receive training (via the maternal line) in how to locate, identify, and process wild medicinal plants.

Previous archaeological evidence for the medicinal use of plants



**Intricately incised bird-bone tubes found with the remains of three females may have been used in healing ceremonies.**

dates back more than 5,000 years in China. Among the 19 medicinal plants identified during the Windover excavation were black gum (typically used for gastrointestinal problems), wax myrtle (an analgesic), and arrowhead (a pain reliever and antiarthritic). Seeds from these and other plants with curative properties were found in the abdominal areas of the buried individuals.

Burial 125, for instance, is a woman in her 60s who suffered from severe arthritis of the spine and possible bone cancer. In her belly was a large concentration of elderberry seeds, along with nightshade and grape seeds. Elderberry and nightshade have

analgesic and antiarthritic properties, suggesting she consumed these plants as an attempt at end-of-life pain relief. The abdomen of Burial 93, a woman in her 50s, held 127 grape seeds, which are natural pain relievers. Examination of her skeleton revealed a possible cancerous lesion in her skull, along with a compression fracture of her spine and a healed fracture of her arm. Excavators also found 190 grape seeds close to Burial 119, the elderly man whose immobile spine kept him permanently stooped.

**T**HE AVERAGE LIFESPAN of an individual in the Windover population was probably between 30 and 40 years of age, but a few individuals were able to survive into their 50s and 60s. The skeletal remains found at

Windover Pond speak to a high prevalence of illness and injury, but also suggest a people capable of

withstanding years of pain and discomfort. Today, people equate medical care with advanced technology and speed of treatment. But,

in my work as an archaeologist, I've learned that the medical care practiced thousands of years ago by this population—in the absence of 911, ambulances, and emergency rooms—enabled them to survive in the challenging environment of Florida.

And, indeed, there is still much about these ancient Floridians left to be discovered. The well-preserved brains afford soft tissue for DNA analysis, from which future investigations might better enable us to pinpoint contemporary ancestors of the people from Windover. As long as the skeletal remains are available for study, there is limitless potential for learning about this part of America's ancient past. ■

Rachel K. Wentz is a regional director for the Florida Public Archaeology Network.

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