

## Skow, John. "This Florida spa holds a surprising lode of prehistory." *Smithsonian* Dec. 1986

This Florida spa holds a surprising lode of prehistory. At 155 feet, a scuba diver breathing ordinary compressed air fights to hold the barest sense of simple thought. Subtleties are not possible. Nitrogen narcosis slows the brain, and may addle the equilibrium until the world seems to be spinning, or up seems to be down. Routine matters of breathing and handling diving gear may seem hideously difficult or too unimportant to bother with. Decisions are precarious, and any change in plan not practiced in pre-dive drills can become an emergency. The effort of trying to concentrate while effectively half drunk is exhausting. The physical drain of adjusting to the pressure of six atmospheres leaves the diver limp for hours afterward.

Never mind all this. Wilburn A. Cockrell, a fiery and determined scientist called "Sonny" by his friends and adversaries, has underwater archaeology to do. He is kneeling on a fiber mat, probing with a trowel in spongy muck at the bottom of a trench he is digging into the side of a steep hill, 155 feet under the surface of Warm Mineral Springs. The Springs is a water-filled, hourglass-shaped sinkhole 20 miles south of Venice, near Florida's west coast. It is about 80 yards in diameter, and 230 feet deep at the point where warm, heavily mineralized water enters from regions far below. Some years ago it was developed as a spa, and now older people, most of them central Europeans accustomed to health spas in the old countries, come by the hundreds to gossip and paddle around the edge of the Springs.

The spa advertises as Ponce de Leon's Fountain of Youth, and the 87-degree water is supposed to be good for arthritic bones. It is certainly bad for metal. Dimes and quarters corrode in the stuff. Stainless steel deteriorates so fast that diving equipment must be broken down and cleaned after every dive. Bones are another matter. In 1973, when the world and Cockrell were younger and all things seemed possible, he brought up a nearly complete skeleton of an adult Paleo-Indian male from the 43-foot level of the Springs. Peat surrounding the skeleton was dated at 11,000 years old. No earlier intentional burial site has been found in North America.

Bones of Ice Age land mammals, a saber-tooth cat and a giant ground sloth, still lie below. The saber cat and a human mandible were found in a clay layer 12,000 years old and the find was the best evidence that the two species coexisted in the Western Hemisphere. Cockrell is driven by an almost prophetic belief that discoveries equally important still lie ahead.

A curiosity of the Springs is that the water contains no dissolved oxygen, except in a layer 15 or 20 feet thick at the surface, where some garfish and a few minnows manage to live. Thus, organic matter below the surface cannot decay or be disturbed by scavengers, since decay bacteria and scavengers require oxygen. Anything organic that gets into Warm Mineral Springs--a leaf, a dead animal, a New York Mets baseball cap--will stay as it is for an exceedingly long time, which is to say until some human searcher finds it.

The huge cone of debris at the bottom of the sinkhole (p. 76) consists of everything that has ever fallen into Warm Mineral Springs, beginning with fragments of the limestone that roofed the area and then collapsed perhaps 20,000 years ago. Burrowing into it Cockrell cuts out a soft lump the size of a hen's egg. *Eureka!* He is working in the dark by the light of two diver's flashlights surrounded by a thickening drift of silt that he has disturbed. But he knows what he has found: one more alligator coprolite, roughly 2,500 years old. Recovery of the alligator dung is the Warm Mineral Springs Archaeological Project's entire accomplishment for the day. Cockrell's half hour of bottom time, including two minutes for a crash descent, has elapsed. Some days you dig up an 11,000-year-old skeleton, and some days you don't.

But Cockrell is not disappointed. Archaeologists think of coprolites as time capsules that tell not only what animal produced them, but what the animal ate, including sediments containing pollen that may provide valuable data about prehistoric plant life.

Cockrell excavates slowly and methodically, recording what he finds. The first few inches of his trench produced the sort of treasure that ten-year-olds might keep in cardboard boxes: a 1930s Coca-Cola bottle, a 78-rpm phonograph record, a couple of garfish skeletons and, somewhat deeper, deer-skull fragments and a catfish skull bone. Recently Cockrell found a hickory nut, indicating a cooler climate; the nearest hickories now grow 400 miles to the north.

As he rises to about 100 feet, he can see dim light from the surface. At 30 feet he rests for two minutes, holding the lowest rung of a decompression stage he and assistants, archaeologists Skip Wood and Steve Koski, built from white PVC pipe. Slow decompression is a necessity if he is to avoid the extremely painful and sometimes fatal calamity known as the "bends."

He rests at 20 feet for 11 minutes and then, at the ten-foot level, pauses for 25 minutes. Here he breathes pure oxygen intermittently from a tank tied to the decompression staging. Using oxygen at a lower depth can cause toxic reactions, but breathing the gas at ten feet forestalls an occurrence of the bends. The light here is greenish-yellow, intense: bright sun, rocking and shifting overhead in stained-glass segments, diffracted by small waves as the elderly swimmers above slowly tread water.

At last Cockrell breaks the surface. His wife, Barbara, 30, a slim, pretty woman who is the project's manager and who also works as a diver, waves from the shore where she has timed the dive's progress. Sonny's routine after a deep dive is to stand chest-deep in the water for a few minutes, relaxing. The trouble is, the old people crowd around and ask questions.

"Catch any fish?"

"No," Cockrell says, "not today."

"What's down there, dinosaurs?" Cockrell hasn't seen any. In fact, among the remains visible below the surface are a giant shark tooth and the partially excavated fossil of a dugong, a relative of the manatee that dates from the era perhaps 30 million years ago when this part of Florida was sea bottom.

"So, keep looking." Sonny nods. He will keep looking. Sometimes, when he is feeling good after a dive, he will stand in the water with his mask around his neck and his beard dripping and give an impromptu seminar on Warm Mineral Springs.

Ledge is grave site of a Paleo-Indian

Cockrell is a gifted lecturer, and his story of the Warm Mineral Springs dig is worth waiting for. The key is hidden in a sentence printed a few paragraphs earlier in this account, which speaks of the ancient Indian skeleton excavated from a burial site at "the 43-foot level of the Springs."

Was the Indian's burial, then, somehow performed under water? Of course not. Was the body simply that of a man who drowned in the Springs, or was thrown in after his death? No, this was an arranged burial, done in the fetal position often used by early cultures, in a niche in the wall of the sinkhole, and the end of a spear-thrower (or atlatl) carved from shell was buried with the dead tribesman. Further, two sizable pieces of broken-off stalactites were wedged across the front of the burial place, obviously to keep marauding animals from attacking the body.

Stalactites underwater? Yes--evidence suggests that only a few thousand years ago, sea levels around the Earth were much lower than they are now, because a great part of the planet's water was locked up in the ice sheets of Pleistocene glaciation.

How much lower? How much land was exposed then that is covered now? With what effect on, for instance, the migratory movement of primitive people? With what loss of evidence to present-day scientists who are looking for the first traces of people in the Americas?

Answers depend on how far back you go, but the mile-thick glaciers of the last major advances of the Ice Age solidified enough water so that ocean levels were at least 100 feet and perhaps more than 300 feet lower than today. Groundwater levels at places like Warm Mineral Springs are tied to sea levels, and so were correspondingly lower. To a geologist this is commonplace, a minor by-product of the Pleistocene epoch, less interesting than the great, unanswered central question of why the Ice Ages occurred at all.

For most archaeologists of 15 or 20 years ago, the fact of lower ocean levels during the Ice Ages was not disputed, but neither did it enter much into their theories and speculations about early Man. For one thing, it used to be assumed that the last Ice Age ended 20,000 years ago, before there was very much activity in the New World. If this were the case, there was little reason to worry about sea-level change. Thus if no traces except the remains of a few highland hunting camps had been found of the first native American people to reach the East Coast of North America, it was assumed these people were only migratory hunters who left little evidence of their passing.

Yet current estimates have it that glaciers still dominated North America as recently as 10,000 years ago (some scientists regard our tick of history as merely a warm interglacial stage of the Pleistocene). Could early men equally well have been residents of coastal, river-mouth communities, at sites now inundated, who regularly sent out hunting parties? If no traces were found on islands in the Bering Strait of the early Asians thought to have traversed this "land bridge" to reach the Americas, could one answer be that migration generally followed shore routes, where both sea and land foods were available? And might evidence of this passage still be discoverable, on old shorelines now far underwater?

According to Cockrell, the prevailing view among archaeologists in the '60s, when he did his graduate work at Florida State University, was that 1) there was not much worth studying underwater in Florida; 2) if anything worthwhile were underwater, it had fallen there; 3) besides, storms and currents would have destroyed it; and 4) anyway, you could not conduct a methodical archaeological dig underwater, so any discussion of possibilities was pointless. Yet to Cockrell, early suggestions to the contrary were tremendously exciting. He recalls a "simple, but momentous conclusion" in a 1966 paper by K. O. Emery and R. L. Edwards of the Wood Hole Oceanographic Institution, to the effect that the Atlantic continental shelf might contain the drowned habitations of early Man. And Reynold (Rey) Ruppe, a professor under whom he did his PdD course work at Arizona State, believed not only that sea-level change had flooded prehistoric coastal settlements, but that diving archaeologists could find and investigate them.

The first diver to explore Warm Mineral Springs thoroughly, however, was neither Ruppe nor Cockrell. He was Bill Royal, a retired Air Force Colonel, now 82, who settled in Florida in the early '50s. An adventurer, a rider of sharks, a man of enormous physical vitality, Royal rightly saw it as an important site. He had learned how to use primitive scuba gear of the time. And he used it to discover old bones.

Royal is proud of the scientific value of his finds. He brushes aside as so much jealousy the charge that he is what some archaeologists contemptuously call a pot hunter. When he welcomes visitors to his house near the Springs, he displays an unlabeled jumble of treasures. The house is built around a huge fireplace faced with mastodon teeth and stalactites from the springs, sliced into sections, with a human femur or skull stuck into the mortar here and there. "Some of those bones are at least 10,000 years old," he will say to a visitor.

Cockrell, whose relations with Royal have soured, estimates that, largely through Royal's activity, 80 percent of recent subaqueous muck on the Springs' upper ledges, 50 percent of the underlying 10,000-year-old peat zone, and 30 percent of the older clay in the lowest layer has been destroyed. The Colonel is not a scientist and, Cockrell says, he paid little attention to a stratigraphic approach to archaeology, which involves grids for measurement, note taking and analyzing the context in which objects are found.

Once, with an NBC underwater photographer at hand--an amazing coincidence, says Cockrell--the Colonel brought up an old skull out of which, he says, something was oozing the might have been brains. Given the Springs' anaerobic water, this could well have been the case, but attention to detail was intermittent in the early

years of exploration there. A "Yeah, sure," reaction from many in the archaeological community to gaudy claims about Warm Mineral Springs was not surprising. But the 10,000-year-old skull, undoubtedly genuine, was an important find.

Royal's reply is that he understood the significance of the Springs' stalactites when some scientists were still scoffing, and that he was making important discoveries underwater when they said there was nothing to be found. There was no question about it: the sinkhole's water level had once been far lower, as much as 90 feet or more below its present surface. Toward the end of the last Ice Age, its sides had been steep but climbable cliffs, whose overhangs 30 to 50 feet down were jagged with dripping stalactites.

Cockrell, then the Florida State Underwater Archaeologist, was invited to Warm Mineral Springs in 1972 by Doris Davis, the Sarasota County historian. Davis and Royal took him for an exploratory dive. In November of that year Cockrell found the buried skeleton. Space for excavation was so cramped he had to take off his tanks, such a breath of air, and squirm in for a few seconds of digging among huge boulders that had fallen onto the site 2,000 years after the body was placed there (so carbon dating of surrounding material later proved). When it was clear what had been discovered, he rigged an "airlift" operation to float the boulders away, harnessed to air-filled metal drums. So there could be no question that proper procedure had been followed, he called in other scientists to inspect the site before completing excavation, and invited Rey Ruppe, his former professor, and Vance Haynes of the University of Arizona, to help raise the bones. A photographer snapped a dark, brooding shot of Cockrell, in his diving gear, holding the wet skull. The photo, called the "Poor Yorick" picture around the project, is the most dramatic visual image of Cockrell's career, and it has been widely published. This, says the camera, is underwater archaeology.

Re-creating thoughts of a bear slayer

Cockrell was indeed caught up in a drama. More than once, he says, he dived by moonlight, and one time wedged his body in the fetal position in the niche at 43 feet where the dead man had rested for 11,000 years. Morning mist rising off the surface of the Springs stirred his imagination, and he wrote a kind of prose poem in which he tried to re-create the thoughts of the Indian whose skeleton he had exhumed. "He crouches motionlessly among the tangled roots of the storm-fallen hickory tree, joining all his nerve endings to those of the surrounding forest spirits, and waits. Spear-thrower, bear-slayer, legacy of his father, held lightly in his right hand, dart grasped gently between thumb and forefinger..."

The spear-thrower part, a bit of worked shell, was not imaginary. It had been buried with the dead man and found by Cockrell, one of the oldest such artifacts discovered in the Western Hemisphere. In use it was bound to a stick, the other end of which was held in the hand, and it functioned as a third segment of the hunter's arm to propel a large dart or small spear. It was the earliest effective way of killing at a distance. Cockrell speculates that a considerable impact on cultural evolution may have proceeded from the mastery of the spear-thrower. If it made animal protein available in quantity for the first time, family units would have grown larger and been able to feed old people. That would have resulted in an increased role for the old as teachers and history-tellers, a longer childhood learning period with an increase in knowledge.

Such speculation is good fun and can be a necessary part of good science. But the larger part was the routine of measuring and recording. During the mid-'70s Cockrell and colleague Larry Murphy developed a methodology for underwater archaeology, a branch of science that was still widely dismissed as mere shipwreck looting. They pegged out the Springs with stainless-steel wires and mountain-climber's bolts, so divers would have reliable physical reference points for mapping discoveries. Cockrell and Murphy were the first to use a system of video cameras and two-way phone communication to tape excavations as they proceeded, so that non diving scientists had a way of participating in the digs. By identifying the marks of rodent-gnawing on the articulated skeleton of a giant ground sloth, they re-proved the obvious: that the animal had died and decomposed in air, not water, on a cliffside ledge of the Springs that was later flooded by the rising water level. Analysis of the skeleton put the Paleo-Indian's height at about five feet four inches and suggested a weight of 110 pounds. The skull type resembled those found in the upper levels of the cave at Choukoutien, China, and the Vero and Melbourne skulls from Pleistocene bone beds in Florida, rather than the skulls from Archaic-stage Indians of 5,000 to 7,000 years ago found throughout the Southeast United States.

And there, for several years, matters stagnated. Diving costs money, and Cockrell's position as Florida's Underwater Archaeologist sank from lack of state funds brought on by heavy lobbying against him because of his strong stand against treasure hunting. He taunted, brooded, explained and fumed, and finally, two years ago, won a \$100,000 appropriation from the state to start up the Warm Mineral Springs project again. He and Barbara, recently married, moved back to the Springs. But the appropriated money, the actual, physical, good-as-gold check, was snarled in governmental red tape and did not arrive. And did not arrive. They wiped out their savings accounts buying supplies and diving gear. Barbara took out a loan on her car, and they spent that money. One day, as they prepared gloomily to sell their last object of value, an Oriental rug, Sonny's car was rear-ended by another motorist at a stop street. The fellow was in trouble with his insurance company already, and he offered Sonny \$100 not to report the fender bender. Done! Sold! The stately march of science could resume, and more important, the Cockrells could buy some groceries. A couple of days later, the state's money faucet began to gurgle.

The first season was spent in trying to recover momentum. The elaborate stainless-steel mapping grid in the spring had corroded to nothing. Newly deposited silt and beach sand covered partly excavated sites. An old bathhouse offered as a field headquarters by the spa's owners, who loyally supported Cockrell and the project, had to be cleaned and painted. And a feud with Bill Royal had worsened. In 1977, Warm Mineral Springs was listed on the National Register of Historic Places and Sarasota County erected a plaque on the site naming Royal among those who had explored it. The Colonel was still eager to dive. Eventually the spa's owners ruled that Royal must not use scuba gear in Warm Mineral Springs. Each morning, however, he comes and swims for a half hour.

Cockrell, in the meantime, dives regularly to his deepening trench at 155 feet in the silt cone. A Sealab-type habitat at that depth, in which he and an assistant could live comfortably for several days at a time, would make the work easier and subject the divers to far less wear and tear. But the \$300,000 second-season budget could not be stretched to cover the Sealab-type gear. More pressing needs include a decompression chamber. Cockrell, who is 45, came up "bent" on one occasion. And Mike Bessette, a healthy young sheriff's deputy who dives regularly in his police work, surfaced after helping photographer Robert Holland shoot pictures at 155 feet. He felt strong and alert, he said, and he talked happily of having just had the best dive of his life. Ten minutes later he was feeling woozy and having trouble with his peripheral vision. An hour of resting and breathing pure oxygen brought him around, but there was no doubt that his body had just received a warning. This writer made a deep dive the next day without problems, but was exhausted physically until the next morning, and four hours after surfacing could not summon the mental concentration to read one of Cockrell's clear and straightforward scientific papers. My experience is in mountain climbing, not diving, and the draining of strength and mental sharpness seemed to me about as physically and mentally exhausting as I remember after a day's hard walking in the thin-air zone of, say, 22,000 feet.

Stubbornness keeps Cockrell adding a few inches a day to the depth of his trench, which will soon have to be shored up with braces and Plexiglas sheets. He also knows, he says, of more discoveries to be made at the easy 40- to 50-foot level of Warm Mineral Springs. A big discovery just now would help with the funding. But he leaves funding problems to his legislative ally, a state senator named Bob Johnson, who takes an interest in the project and sometimes dives there. Johnson deserves considerable credit for pushing the project's budgets through the Florida State Legislature, with enough money for a decompression chamber. Organizational matters Cockrell leaves to Barbara. For steadiness underwater, he counts on assistant Skip Wood, a big, solid ex-Navy SEAL who studies for a graduate degree in archaeology when he has time, and who works 40 hours a week as a sheriff's deputy--because the project can't pay him properly.

When Cockrell probes gingerly at his silt cone, perhaps he is simply taking what seems to him a simple gamble against good odds: his health against the certainty, as he sees it, of finding bones and tools older than anyone has seen in this part of North America. He is, after all, a serious scientist and his work has led him here. But perhaps explanations are simply words, and this submerged mountain of dung and debris, despite danger and good sense, is his Everest. He pulls down his mask and, walking backward in the shallow water to avoid tripping over his flippers, heads out for one more dive.