

Riddle of the Bones

New discoveries in an ancient graveyard could help unravel the enigma of the Lapita people—the first humans to reach the South Pacific

SHE LIES CURLED UP AS IF ONLY asleep, knees drawn to her chest, arms wrapped around them, tucked snugly in a nook between the coral boulders. But this woman is long dead, and her bones are as white as the coral branches that have crept among them like tree roots. Around her, lying in other cavities in the sharp rock and covered by volcanic ash, are the resting places of more human bones, all arranged in different positions of repose. Bats wheel above on the wind, which rushes through the coconut palms and sets the blue tarpaulin covering the graves flapping—a humble covering for one of the most important archaeological finds the South Pacific has yet seen.

What has riveted archaeologists since the 2003 discovery of this ancient cemetery at Teouma, on the main island of Efate, is that it's not only the oldest burial ground ever found in the region but dates back around 3,000 years—to when people first arrived in this part of the world. Never before has such a large collection of skeletal remains from

these early wanderers, known as the Lapita people, been found. Excavations by an international team working with the Vanuatu National Museum began last year, followed by a second, more extensive dig, which finished last week. The finds of just two seasons' work, covering only a small part of the site, have left Pacific prehistory hunters unable to contain their glee. "It's the site we've all been looking for, the site we were hoping might exist," says Lisa Matisoo-Smith, a specialist in the study of ancient DNA at the University of Auckland.

Last year's excavation yielded 13 skeletons, all of them headless. This find, the first of many mysteries, was followed by the discovery of three skulls resting on the chest of the skeleton of an elderly man. None of the skulls was his, and one contained a jawbone from another skull, which hasn't been found. In the past few weeks, another 10 individuals have been found, interred in a range of unusual positions—some lying on their side, others with their legs apart or face down, a fate sometimes associated in ancient burials with those guilty of awful crimes. One female was found laid carefully



on her back, with all her vertebrae in place but her ribs and one foot missing; another had its feet resting on a coral shelf. These skeletons too were headless; some had had their clavicles removed as well. Teeth sprinkled around the top of the spines suggest that the skulls were dug up at least a year after the dead were buried, by which time the teeth would have come loose. While clavicles and forearm bones are known to have been favored as tools, the fate of the skulls, and the burial positions, are curious enough to ensure that "people will be arguing about this for the next 100 years," says Matthew Spriggs, professor of archaeology at the Australian National University.

More clues, and more questions, have come in recent weeks, with the discovery of a pot containing a skull—another enigma



in a region with no record of similar mortuary rituals. It all adds up not only to the most exciting site Spriggs has worked on in 30 years of Pacific fieldwork, "but one of the weirdest, too. Every day we're scratching our heads, wondering what this is. Every day is like a new chapter in a book."

Many of Vanuatu's 83 islands are hard to reach and harder to get around, so it was a piece of astonishing luck that Teouma is only a short drive from Vanuatu's capital, Port Vila. It was another stroke of luck that the cemetery was discovered at all. After a bulldozer collecting soil for a prawn farm in 2003 turned up some pottery, the driver thought one of the shards pretty and took it home, where he showed his new curio to a friend. Thankfully for anyone interested in learning when and how the South Pacific

was first settled, that friend happened not only to be a field worker for Vanuatu's Cultural Centre, but a recent graduate of an archaeological training course. As soon as he saw the pottery, he knew what it was.

Named for the site in New Caledonia where it was first found and dated in 1952, Lapita pottery, with its distinctive dentate, or tooth-shaped, designs across a red surface, is the signature of the people—believed to be ancestors of today's Polynesians—who began moving east of the Solomon Islands about 3,200 years ago. Their pottery, found in fragments at numerous occupation sites scattered from New Guinea's Bismarck Archipelago in the west, to Samoa in the east, is like a trail of breadcrumbs across the Pacific, left by these colonizing explorers as they moved with their retinue of plants and animals through the

RICH HARVEST A team of 25, including experts from France, Australia, New Zealand and New Caledonia, has reported a string of new finds at the Teouma site

islands. Though evidence of its country's founding culture has been discovered in Vanuatu before, the story is far from complete, and when he heard of the driver's find, Ralph Regenvanu, the head of Vanuatu's Cultural Centre and National Museum, asked Spriggs and another ANU archaeologist, Stuart Bedford, to assess the site.

At first they feared the bulldozer had done its job too well, smashing pieces of pottery across the area. But just below the churned surface, in some places just five centimeters from the bulldozer's tracks, the finds



started. When these people were buried, their graves lay near the shoreline of a beach, and the area is still littered with a ghostly confetti of coral and shell. Since then, earthquakes have pushed the shore about 800 m away, and the burial ground is now on private land used in recent times for cattle grazing, surrounded by a green tide of dense bush, vine and coconut palms. Some time later a village, now vanished, sprang up on top of the graves, perhaps as memory of them faded. Animal bones have been found with the remains, and large pieces of Lapita pottery appear to have been broken and placed

SILENT WITNESS Beneath an inverted flat-bottomed Lapita dish, incredulous diggers found a skull in a pot. A similarly positioned dish nearby had nothing under it

in the grave pits. Flat pieces of coral had been placed where their heads once were, each topped with a ring made from a cone shell.

Most previous Lapita pottery finds have been too damaged for repair—few are in as good shape as those being unearthed at Teouma, and the team hopes several objects can be fully restored. The last week of this

year's dig produced an extraordinary pottery bird, never before seen in the Pacific, one of three originally on the rim of a pot which contained human bones and was decorated with mouthless human faces. The birds were perched looking into the bowl: "God knows what that means," says Spriggs. Such objects will make priceless museum pieces. But the answers that the Teouma site may help provide are just as precious. The tussle over the origins of the Lapita and Polynesian people has boiled for more than a century, from the 1885 publication of New Zealand scholar Edward Tregear's widely debated theory that



CODE BREAKER Piecing together the rituals behind the Teouma burials, says Spriggs, above, "will be a talking point for as long as archaeologists are working in the Pacific"

from a range of younger sites, has ever been done in the region, and it was undertaken, Matisoo-Smith says, when less rigorous protocols produced less reliable results. While her results are still incomplete, Matisoo-Smith says the Teouma bones, along with information from the bones of the pigs, rats and other animals that accompanied them, offer the best chance yet to discover how closely related today's Polynesians and Melanesians are to Lapita people—and find out what the vanished people looked like by comparing their DNA with sequences found in modern populations across the region. Trouble is, DNA is preserved best in dry and cold conditions, where it can last tens of thousands of years, while the Teouma bones have been subjected to long periods of damaging humidity. "Unfortunately, in the Pacific we're really pushing the boundaries of how well the DNA is preserved," says Matisoo-Smith, who will soon send her results to a U.S. lab for replication.

Hands dusty from gently loosening fragile bones with a dental pick, Hallie Buckley works in the Efate heat barefooted and in a T-shirt. A biological anthropologist at New Zealand's University of Otago, Buckley specializes in prehistoric health, and the discovery of Teouma seems to her a small miracle: "It just keeps getting better." Hidden within these graves, she hopes,

are clues about how the first humans in the region interacted with a pristine environment. Did they suffer from malaria or other diseases? What did they eat? She's already found telltale signs of degenerative bone disease—evidence of hard physical work. Signs of malaria could reveal whether the Lapita people unknowingly brought the illness with them, while details of their diet will help tackle one of the great puzzles of the Lapita story—did some stay long enough in Melanesia to set up gardens, or were they, as proponents of the "Express Train to Polynesia" theory believe, just passing through on their way east, eating whatever they could forage along the way? "The fact that they were burying people in a cemetery suggests they were here for the long haul," says Buckley. Archaeologists may be eager to determine where these first people came from, but Buckley wants to fossick around inside their lives: "For me it's more interesting to know what they did once they got here."

A major Lapita conference begins this week in Tonga, and Matthew Spriggs expects the audience to be "stunned" by news from Teouma. He won't be surprised to find hundreds more burials there, meaning years of work ahead. In the meantime, the bones from this year's dig, carefully washed and packed, will soon follow Hallie Buckley to the University of Otago in Dunedin, in the South Island of New Zealand—the last place settled by Polynesians in their sweeping colonization of the Pacific. Now their ancestors are following them there. Even in death, the Lapita people's travels continue. ■

Maori were of Aryan descent, to Thor Heyerdahl's attempt, in his epic 1947 raft trip from Peru to Polynesia, to prove that South America was the Polynesians' homeland.

In the past few decades, argument has focused on whether the Lapita people originated among Neolithic farmers of Taiwan before moving through Melanesia and into Polynesia, or whether the Lapita culture was indigenous to the Bismarck Archipelago. In Auckland, Matisoo-Smith's lab has begun the intricate task of following that trail by trying to extract DNA from the bones. Only one other study of ancient DNA, collected