

Transcript for "Dead Men's Tales"

Tease

What Happened at Jamestown?

Time Travelers

A Texan Tall Tale

The Real Pyramid Builders

City of Gold

TEASE

ALAN ALDA In the first two years of the Jamestown colony over half of the settlers died, perhaps from starvation or disease. This young man was one of the casualties, although it's thought that he died of a massive gunshot wound. On this edition of Scientific American Frontiers, scientists for the first time are piecing together what happened as the colony struggled to survive.

ALAN ALDA (NARRATION) We'll also examine the mysterious mummies from China's western desert, that don't seem to be Chinese. We'll work out the truth behind the legend that Wild Bill Longley escaped the hangman's noose. We'll enter the tombs of the workers who built the pyramids. And we'll excavate the palace that reveals the lost grandeur of southern Africa.

ALAN ALDA I'm Alan Alda. Join me now as we tell you some Dead Men's Tales.
SHOW INTRO

ALAN ALDA Haven't we all sometimes dreamed of how great it would be to transport ourselves back into the past, and see what life was really like back then? About as close as we can get to that are living history exhibits -- like this reconstruction of the Jamestown fort as it appeared around 1610. It was struggling to survive then, and become the first permanent English settlement in America. But how do we know what to put in the reconstructions? Of course where they exist documents and records can tell us a lot, but sometimes they're misleading or incomplete. Often the most telling information is literally dug up. That's what scientists have been doing on Jamestown Island in the five years since the site of the original fort was discovered, about a mile from here. The results have been spectacularly revealing, particularly what they've found through forensic analysis of the human remains, so that we now have an intimate and in some ways unexpected picture of those early, terrible days at Jamestown. Then we'll be off around the world in search of other dead men's tales. In western China, the dead men are wonderfully preserved, mummified bodies of people who traveled between China and Europe two thousand years ago. The discovery

of those mummies is shedding surprising new light on the first contacts between Chinese and European cultures. In southern Africa, we'll witness the unprecedented discovery of a rich royal grave. It's inside a palace complex at the center of a powerful and ancient trading network. In Egypt, we'll be there as archeologists discover for the first time the tombs of the people who built the pyramids - literally built the pyramids. Not the pharaohs who gave the orders, but the laborers and foremen and engineers who actually did the work. And we'll make our way to the American Wild West, to see how forensic archeology has shown that the legend of Wild Bill Longley is just a tall tale. But first, think back four hundred years. Europeans have begun settling in North America, and the continent is about to change forever...

WHAT HAPPENED AT JAMESTOWN?

ALAN ALDA (NARRATION) I'm traveling with an archeologist and a climate expert, and we're about to cross the James River in Virginia. We're heading for one of the last untouched baldcypress swamps in America, with trees that can be 1,000 years old. The swamp may contain the key to understanding the terrible death rate suffered in the English colony set up on Jamestown Island in 1607. From our ferry we could see the island, which for the colonists was apparently very badly situated.

DENNIS BLANTON One of the English writes, "We took most of our drink from the river, which was very brackish and makes us sick."

ALAN ALDA (NARRATION) There could be a simple explanation for the bad river water.

DAVID STAHLE In drought years with very poor flow the brackish and salty waters intrude well upstream of Jamestown.

ALAN ALDA When the Indians visited them that one time and said, "You better start praying to your gods for rain," did they start to put two and two together then? Did they say, "Why, why should we pray for rain? Is something wrong?"

DENNIS BLANTON I think they were flattered by that comment more than anything. Because, in fact, what this Indian chief said -- and he lived just upstream from here -- was, "In the same way that your guns and your ships are better than our bows and arrows and our dugouts, your god may be more powerful than ours. So please pray to him for rain, because our god is not sending any."

ALAN ALDA (NARRATION) Jamestown Island is just 1600 acres, jutting out into the river. It's about 40 miles from the southern end of the Chesapeake Bay. The

ancient cypress swamp is here, and we'll get back to that later in the story. But first we'll head to the Island. In 1994 there was a major breakthrough when the colony's original fort was unearthed.

BILL KELSO My interest in this particular piece of land here was that church site. And what you see there is a reconstructed church, but in front of it is a church tower from the seventeenth century.

ALAN ALDA Did you think that the fort would be near the church?

BILL KELSO Yeah. The first description was that the church is in the fort, then it's at the center of the fort. These are from historical documents. VOICE "A low level of ground about half an acre is cast almost into the form of a triangle, and so palisadoed. The south side next the river contains one hundred and forty yards, the west and east sides one hundred only. In the midst is a marketplace, a storehouse, and a corps du guard, as likewise a pretty chapel."

ALAN ALDA (NARRATION) It had always been thought that the fort had eroded into the river, but Bill Kelso reasoned that if the existing church - right behind him here - is on the site of the original chapel, then the fort should still exist.

BILL KELSO Okay, this way a little more. Am I excited? You better believe it.

ALAN ALDA (NARRATION) A private group, the Association for the Preservation of Virginia Antiquities, acquired the site in the nineteenth century to preserve the church. They agreed to let Kelso dig.

BILL KELSO Here's a musket ball, and a piece of pottery.

ALAN ALDA (NARRATION) Kelso's first shovelfuls contained Colonial artifacts, and over the next 3 years the shadowy outlines of post-holes and walls were revealed. The fort, abandoned and forgotten by about 1625, had been found.

BILL KELSO We found holes that were dug in the ground where there were supports, but they were very small supports, and we think it was this crude at first.

ALAN ALDA What would this have been?

BILL KELSO Probably a barracks. Because here you have a military outpost.

ALAN ALDA (NARRATION) Kelso's team tried reconstructing the fort's palisade. The colonists built their fort over just a few weeks - without the modern conveniences - when they were attacked by Indians soon after arriving.

ALAN ALDA You don't have any other supports? You just have this stuff going straight in 18 inches?

BILL KELSO That's it. When you put each one of these posts side by side they support each other. And then we also found that we had dirt left over which would have been a shot platform. This would have acted to support one of those huge....

ALAN ALDA Oh, I see, so you have a little backing here with the dirt.

BILL KELSO You could be standing here. And, also this obviously is a problem, if you're worried about arrows...

ALAN ALDA Yes, so what about that? You could get arrows shot through there.

BILL KELSO We figured that they probably put saplings in there, just pounded them in at this point. But up here they'd leave it open because...

ALAN ALDA They can shoot out.

BILL KELSO ...shoot out.

ALAN ALDA (NARRATION) As I was looking around the site, I thought there was something about Bill Kelso's story that didn't quite fit.

ALAN ALDA This fence, it doesn't seem to encompass the church. It seems to go at an angle that won't include the church.

BILL KELSO Aha. Right. We were wrong. The church wasn't in, this church, at least, was not in the center of the fort. But it's...you know, so what?

ALAN ALDA (NARRATION) It was pure luck that the present church had been close enough to lead Kelso to the fort. Even with just an eighth of the fort area excavated so far, they've been able to build a picture of Jamestown's early days.

BLY STRAUBE We have evidence of what was known as the starving time. That was the winter of 1609, 1610, and most of the men literally starved to death.

ALAN ALDA (NARRATION) These deliberate cut marks in horse bones are just the beginning of an appalling story.

BLY STRAUBE They had six mares and two horses before that starving time.

ALAN ALDA They must have been pretty hungry to eat their horses, I mean you're eating an important part of your life.

BLY STRAUBE Exactly. Their transportation.

ALAN ALDA It's like eating your Oldsmobile or something.

ALAN ALDA (NARRATION) Even though they ate everything in sight, only 50 people out of 500 survived the winter. It's why the Jamestown colonists have often been dismissed as lazy and incompetent. They were clearly desperate:

VOICE "Nothing was spared to maintain life and to do those things which seem incredible as to dig up corpse out of graves and eat them, and some have licked up the blood which hath fallen from their weak fellows."

ALAN ALDA (NARRATION) But far from being lazy or incompetent, it now seems the colonists were well prepared and industrious.

BLY STRAUBE It's really unfair to portray the gentlemen who came here as a bunch of lazy, good-for-nothing guys who didn't want to get their hands dirty or blistered, because we have found a lot of evidence of things that they were busy doing, such as making window glass to send back to London.

ALAN ALDA Really?

BLY STRAUBE They thought they'd make a profit.

ALAN ALDA (NARRATION) The colony was a straightforward commercial venture. The main objective was gold -- this is a metal-refining still. They made their own pipes, and raising tobacco was another objective. Their plan for subsistence was simple and realistic - trade for corn, using jewelry made from sheet copper that they brought with them. They knew the local Powhatan Indians prized copper highly. Initially this strategy worked, but something went wrong. Indians stopped trading. Some attacked the fort. There were constant skirmishes. The fort site is filled with the leftovers of fighting. A couple of items showed up just in the short time we were there.

DAN GAMBLE This is a piece of chipped stone that's been flaked. But it's very distinctive in that these are really straight cuts. If this was natural, this would be more rounded. Probably American Indians did it. Probably to get a piece of stone for a projectile point. This is probably...well, this is. This is a piece of flint that the, or English flint, that the colonists would chip off bits and pieces to use for their weapons. This is not natural to the area, but this is a good find. This is a good find.

ALAN ALDA (NARRATION) The excavations also uncovered a mysterious casualty, whose remains are being analyzed at the Smithsonian's Museum of Natural History by Doug Owsley and Ashley McCowan, forensic anthropologists. From radio-carbon dating it's believed this could be one of the first colonists. They called it JR102C.

ALAN ALDA You have no idea what his name was?

DOUG OWSLEY No, I wish we did. You think he would jump out in terms of the historic record, but the record for this time period is such a black hole.

ALAN ALDA (NARRATION) Here's what they can tell from JR's bones. The pelvis says he's male. The skull dimensions and the straight tooth edges say he's European. The growth line in the leg bone says he's young, and the healthy teeth say he had good nutrition when growing up, so he was probably a gentleman. Then there's one more thing.

DOUG OWSLEY His right leg, his shinbone, is completely fragmented. And in place was this round ball. This is a lead ball right here.

ALAN ALDA So he got shot, huh?

DOUG OWSLEY He got shot. And it was essentially like a combat shotgun type of load, because when you look at the x-rays of it, not only was there this large round ball, but there were a number of small, buckshot-type pellets, and also lead fragments. It practically blew his lower leg off.

ALAN ALDA (NARRATION) The Indians didn't have guns in the early days at Jamestown. So what happened? The project set up ballistics tests using a reproduction of the type of musket the colonists used.

ALAN ALDA The big ball landed there, right?

FRED SCHOLPP Yeah, there is your main shot. It was aimed at right about here.

ALAN ALDA (NARRATION) They're using a shot-load matched to the X-ray of the young man's leg bone. There's one large ball with about 25 fragments. Here's a shot from 20 yards.

FRED SCHOLPP So we've got really a massive spread here.

ALAN ALDA If this is typical of the kind of spread you get, at that distance, then JR had to have been shot much closer.

BILL KELSO At closer range, absolutely.

ALAN ALDA (NARRATION) Next, a point blank shot.

MAN Fire!

ALAN ALDA That looked an awful lot like you were too close to come up with a pattern that JR had.

FRED SCHOLPP Let's see what we got here. We got unpleasantry.

ALAN ALDA Wasn't his spread out more?

FRED SCHOLPP Yeah.

ALAN ALDA (NARRATION) Next shot, at a range of 5 yards. And that's just about right. So JR couldn't have shot himself by accident, but maybe someone else shot him by accident. Fred Scholpp, the firearms expert, thinks he knows how it could have happened. It was standard fighting procedure for soldiers to fire from the front rank, and then retire to reload. Someone in the rear rank could have made a mistake, while reloading.

FRED SCHOLPP Present your piece, give fire, retire.

MAN Don't point that thing at me.

ALAN ALDA This is sort of from the front.

ALAN ALDA (NARRATION) But JR was shot from the side. The angles just don't work out with Fred's theory.

FRED SCHOLPP ...that plane. I don't know.

ALAN ALDA Well, now what? Where are you with the theory now? What do you think?

BILL KELSO That's his theory.

ALAN ALDA That's not your theory?

BILL KELSO My theory is that it was on purpose and that, you know...one less mouth to feed.

ALAN ALDA Right.

BILL KELSO In times of stress, people are starving to death, you resort to some pretty animalistic behavior.

ALAN ALDA (NARRATION) We made it to the swamp, 20 miles from Jamestown.

ALAN ALDA OK, I'm gonna watch. If you disappear, I'm not taking your path.

ALAN ALDA (NARRATION) These magnificent baldcypress trees contain the simplest explanation for all the colony's problems. It just takes a little work for David Stahle to find it.

ALAN ALDA You know, I'm sure glad that you're here today, otherwise they'd have me doing this.

DAVID STAHLE We're not gonna get much, fellas, not outta this one.

ALAN ALDA (NARRATION) We're looking for an old tree, but one that still has a solid center. David Stahle is part of a network of scientists who study cores drilled from ancient trees, in order to reconstruct the history of climate. The Jamestown colonists said their water was bad. The Indians said there was no corn to trade. Maybe the colonists were incompetent, or the Indians were playing politics. But no, says David Stahle, there really was a drought. The annual growth rings in these cypresses record what the climate was doing in this region for the last thousand years.

DAVID STAHLE It's in two pieces, but...there you go, you can see you get about ten, twelve inches there of ancient cypress.

ALAN ALDA But it looks like you get about twenty to here.

DAVID STAHLE I would say, that outer inch has probably got more like a hundred.

ALAN ALDA Really?

DAVID STAHLE Yeah. I would be surprised if it didn't.

ALAN ALDA Yeah, I may need a new prescription, too.

ALAN ALDA (NARRATION) Actually you need a microscope. Each pair of dark and light bands represents one year of growth. In 1607, as the colonists arrived,

the region began its driest 7-year period in 700 years. And 20 years earlier, the worst drought in 800 years simply wiped out an English colony set up at Roanoke Island in North Carolina.

ALAN ALDA You mean to say that they came over twice, and hit the worst droughts in hundreds of years, two times in a row?

DAVID STAHLE Monumental bad luck. I mean, phenomenal bad luck. Yeah, both, the two first English adventures in the new world, were both beset by drought.

ALAN ALDA (NARRATION) But the second adventure - Jamestown - succeeded. By 1612 the drought was over, and the colony began to thrive. America's first representative assembly met at Jamestown in 1619. Around that time the first slaves were brought in to work in the tobacco plantations. The Jamestown settlers had laid the foundations for the best, and the worst, of a new nation.

TIME TRAVELERS

ALAN ALDA (NARRATION) We're in the far west of China. This arid land has been yielding up some extraordinary finds. They are the mummies of Xinjiang. Xinjiang Province is the overland bridge between China and Europe. In the early part of this century, Europeans exploring Xinjiang began uncovering mummies, in shallow desert graves. More recently, Chinese archaeologists have made discoveries. The mummies were brought to Urumqi, the provincial capital. Xinjiang is largely Moslem, its people drawn from many parts of central Asia. An archaeology institute has some of the mummies. And the rest are at the local museum. Ours were the first TV cameras allowed to film the mummies. This is the oldest, dating from about four thousand years ago. Once a year the mummies are cleaned and examined for insect damage. Blocks of insecticide are replaced. The hat with the eagle feather is felt, and the woven robe is wool. They're all vulnerable to insects. As are the cowhide boots. The child is from the same period as the first mummy. It was carefully wrapped in a large woven, woolen cloth, held together with wooden pegs. This child, from about three thousand years ago, is wrapped in a fine wool blanket, tied with a braided cord. The reasons for the stones and wool nose plugs are unknown. It lies on a bed of felt, with a cow horn drinking cup. This man is one of the museum's finest examples. He has a sunburst decoration, again of unknown significance. The state of preservation is extraordinary, a result of the dry, salty desert soil, and also it seems, some kind of glue-like coating that the bodies were treated with. One striking fact about the mummies stands out. They don't seem to be Chinese. Their full beards and prominent noses are clear Caucasian features. So where did they come from? Close analysis of the skull types suggests that they came from what's now Kazakhstan in the northwest, and from Pakistan in the

southwest. In that period, Chinese skull types from the east are only found at the edge of Xinjiang. Xinjiang's spectacular mountain ranges once fed streams and rivers, which rushed down into the desert. The ancient settlers clustered around those desert oases. It's drier here now, but the local Kazak people still follow the herding lifestyle, along the riverbanks closer to the mountains. The wonderfully preserved objects found with the mummies, show they lived in the same way. These are three thousand-year-old lamb ribs, complete with barbecue spit. The Kazaks live in houses called yerts, covered entirely with felt they've made from matted wool fibers -- just like the child's felt bed in the museum. Inside, the yerts are decorated with woven strips, finished with braided cords. The ancient people had great textile skills as well. The Kazak men ride horses, as they did in ancient Xinjiang. This saddle was also found with the mummies. If it weren't for this man, the mummies would probably have remained an obscure curiosity. Victor Mair, a China scholar from the University of Pennsylvania, visited the museum soon after we'd filmed. For several years he's brought various western specialists to examine the mummies. This time he wanted two textile experts to be given access.

VICTOR MAIR Now we're going up to see the mummy room...

ALAN ALDA (NARRATION) But Victor Mair is a terrible thorn in the side of official China. He's working on a theory that the mummies represent people who originated far to the west in Europe, bringing with them new technologies that the Chinese did not have. Of course, we were interested in recording the visitors' first reactions. But even though we'd filmed the mummies earlier and paid the required fee, the museum authorities wouldn't allow it. We were asked to leave. The experts were fascinated by what they saw, particularly this piece, which they identified as probably a practice weaving sampler.

ELIZABETH BARBER In a way that...that almost touched me the most.

VICTOR MAIR Yeah, because it really brings --

IRENE GOOD Because I have one too that looks just about as bad.

VICTOR MAIR Ones that you've tried to make?

ELIZABETH BARBER Yeah, the first piece you weave looks really crummy.

ALAN ALDA (NARRATION) Most interesting was the fact that it's too big to have been made on the type of loom that the Chinese had at the time.

IRENE GOOD I'm very interested in that sampler because I'm starting to wonder if some of my ideas about the loom...

ELIZABETH BARBER The loom that was used.

IRENE GOOD ...may be confirmed by that particular piece.

VICTOR MAIR The width of it for example.

IRENE GOOD The width and also there were some other garments that had a very wide swath to them.

ELIZABETH BARBER Yes, it's not being done on the narrow body tension loom.

ALAN ALDA (NARRATION) Today Xinjiang's desert highways are busy with trucks. Seven hundred years ago it was Marco Polo's camels. This is the ancient Silk Road, between Europe and Asia. If the mummies were the trailblazers along this great world trade route, four thousand years ago, it could mean that China acquired important new ideas from the west. And that's what irritates the government. It's possible that the wheel entered China this way. They've been unearthed in the desert, although the dates aren't yet clear. And it does now seem that bronze came to China from the west. Victor Mair is not a popular guy.

VICTOR MAIR When I first started this project I was getting in hot water for saying that, hey, why do we have bronze out here earlier, and it ends up in China later? And I got in trouble for that.

ALAN ALDA (NARRATION) It's these Uyghur people who make the Chinese government so touchy. They're the dominant group in Xinjiang province, and they have a growing separatist movement. So the suggestion that this region was more European than Chinese -- even four thousand years ago -- is not welcome to the authorities in Beijing. In fact soon after this visit, the official newspaper published a long attack on Victor Mair's ideas. But we can be grateful to him for bringing Xinjiang's wonderful mummies to the attention of the world.

A TEXAN TALL TALE

ALAN ALDA (NARRATION) They're burying Wild Bill Longley today. PREACHER Our Lord said repent and believe the gospel. Your relative, your cousin, your kinsman in the flesh -- it's said before he died he repented. Today is the day of salvation...

ALAN ALDA (NARRATION) Wild Bill goes to his grave a repented sinner - for the second time. And this time, it really is him. PREACHER ... for the day when you look into that eastern sky, right over there...

ALAN ALDA (NARRATION) Last time he was buried, 120 years ago, many people believed he wasn't in the coffin. It was just a bunch of rocks. Wild Bill had gotten away with it once again, it was said. William Preston Longley was an outlaw and a killer. In 1878, at the age of 27, he was hanged for murder. But the rumor was that the rope was attached to a secret harness to hold him up, and that he was spirited away still alive.

ALAN ALDA Now, this wouldn't be Wild Bill Longley in here, would it?

DOUG OWSLEY It is. It took fifteen years to prove that, but it is him.

ALAN ALDA I can't wait to see this guy.

ALAN ALDA (NARRATION) Doug Owsley, who's also working on the Jamestown project, identified Wild Bill.

ALAN ALDA What were you able to find out when you examined these bones?

DOUG OWSLEY Well, this is a long story, in the sense I started looking for this skeleton in 1986. I was asked to help a man who believed that his grandfather was William Preston Longley.

MICHAEL REES We want to thank the scientists here at the Smithsonian for their perseverance...

ALAN ALDA (NARRATION) Although the man who first approached Doug Owsley turned out eventually not to be related to Wild Bill, the 15-year search turned into something of an obsession for Owsley and dozens of Wild Bill's relatives. I had a chance to chat with family members when they came to Washington for the press conference.

ALAN ALDA ...though I will come there just when I please...

MICHAEL REES Arrogant, wasn't he?

ALAN ALDA Yeah he was, wasn't he?

ALAN ALDA (NARRATION) Two relatives are descended from Wild Bill's grandparents and one, Helen Chapman, is descended from his sister. That'll be important later in the story.

ALAN ALDA Had you always wondered if he in fact died at that hanging?

MICHAEL REES For fifty years.

ALAN ALDA Really?

ALAN ALDA Was this a topic of a lot of family conversation?

JANICE HANNES It was. It was. I remember, as a kid, hearing the adults talk about this and debate about this. And I got the impression that they thought...they really thought he had escaped his hanging.

ALAN ALDA (NARRATION) Wild Bill was a truly bad man, widely feared but a little admired, too. He possessed a lethal combination - great skill as a gun fighter, a quick temper, and a fondness for whiskey. In jail after his final arrest, he bragged that he'd killed 32 men and 1 woman. He wasn't even sure which one they'd come to get him for.

MICHAEL REES He thought he was going to be accused of killing a preacher named Lay, and he were worried about that because that was an outright just killing. The man was unarmed. He was milking a cow...

ALAN ALDA Something about that that Bill just didn't like, right?

MICHAEL REES Well, he didn't like the man to start with. The man had spread some rumors...

ALAN ALDA But, I mean, milking a cow -- it's kind of going too far, don't you think?

MICHAEL REES I think so.

JANICE HANNES You just gotta kill a man for that.

ALAN ALDA Well some people just have a short temper, you know?

MICHAEL REES Yeah -- and he did.

HELEN CHAPMAN It might have been his cow.

ALAN ALDA Pardon me?

HELEN CHAPMAN It might have been Bill's cow.

ALAN ALDA Oh, you know, I never thought of that.

ALAN ALDA (NARRATION) Wild Bill was convicted for one of his many other murders. He was hanged, and supposedly buried somewhere here. There is a Bill Longley grave marker, put up in 1976. Doug Owsley had to find out if it was actually Wild Bill's grave, or just a marker. This photograph, taken 50 years after the burial, around 1930, is the only visual record of Wild Bill's grave - if the caption is accurate.

BROOKS ELLWOOD Let me show you, let's go over here...

ALAN ALDA (NARRATION) Owsley and Brooks Ellwood, a geologist, first tried to match the 1930 photograph to what's visible today. BROOKS ELLWOOD What you have is these two trees right here. That's those two trees right there. Then you have this tree here. That's that tree there. The configuration is just right.

ALAN ALDA (NARRATION) Things seemed to match when they stood beside the 1976 marker. Brooks Ellwood sat in place of the head stone, which had been visible in 1930.

DOUG OWSLEY Well I agree with the three trees. The three trees look really nice.

ALAN ALDA (NARRATION) Recently we asked Ellwood and Owsley to return to the cemetery to go over what happened next. They had probed all around the 1976 marker, looking for the tell tale mottling which is a sign of soil disturbed when a grave is dug. The upper soil core here is what they hoped to find, but no luck.

DOUG OWSLEY We probed in this area right here, looking in front of the marker. We probed down the back of the marker, just to make sure that there was nothing here.

ALAN ALDA (NARRATION) So what was the 1930 headstone marking? Maybe nothing, it turned out. Notes kept by the president of the Cemetery Association showed that over the course of 50 years, he'd moved the headstone several times. BROOKS ELLWOOD We figured out that he probably moved it down into the Hispanic part of the cemetery, then moved it back up here just beyond us to the road, and then when they put in the road -- at that time there wasn't any road -- he moved it here. And as a result of that, we felt that we'd lost the location of the grave.

ALAN ALDA (NARRATION) So now they were looking for one unmarked grave in a 5-acre cemetery. BROOKS ELLWOOD Okay, move it.

ALAN ALDA (NARRATION) Brooks Ellwood and his wife, Suzanne -- also a geologist -- tried magnetic measurements to detect disturbed soil in the most likely sections - like here along the old fence line. Wild Bill was supposedly buried outside the original cemetery boundary. Just in one 1500 square foot area they found 14 possible unmarked graves.

DOUG OWSLEY Before too long we had sixty unmapped, unmarked graves. So now we're faced with a problem of well, okay, is it this one? Or is it this one? We had a real needle in a haystack.

ALAN ALDA (NARRATION) There was no choice but to start digging, concentrating on the areas suggested by the magnetic surveys. Right away they began to find burials, all without any kind of marker on the surface. That's common in cemeteries of this age. It was quite a show for the town, with the added attraction of maybe solving the Wild Bill mystery. Doug Owsley was kept busy identifying the finds.

DOUG OWSLEY A black male that's about 40. Okay, so this one's not our guy. This skull's gotta be female. He's gotta be at least in his 40s. He's got suture closure, he's got a lot of periodontal disease, periodontal resorption. And he's black. Okay, well, let's fill this one in and go to the next one, I guess. We have a guy over there, huh? We still haven't found who we're looking for because this one's gonna be too old. Okay, well that one's ruled out and this one's ruled out.

ALAN ALDA (NARRATION) Thirty-five burials, and no Wild Bill.

DOUG OWSLEY Damn, wish we could get lucky.

ALAN ALDA (NARRATION) So they went back to the 1976 marker. After all, those trees seemed to line up before. They took a photograph, and cropped out everything that was modern. Then they lined that up with the 1930 photograph. Three trees, and six monuments, seemed to match. Bill's grave just had to be nearby. Back came the Bobcat, this time working within feet of the 1976 grave marker. Soon they found an unmarked grave. When they probed here 6 years ago they must have missed it by inches. BROOKS ELLWOOD Jesse James gold.

ALAN ALDA (NARRATION) Then coffin nails. Would bones be next? Or was it filled with rocks?

MAN Ho! We got something down there. We got wood.

DOUG OWSLEY Okay, that's our lid. All right, and that's got bone in it, too. See- here's rib, rib, rib. Yeah, he's a pretty tall one.

ALAN ALDA (NARRATION) Things were looking good when this Catholic medallion was found. Before his execution Wild Bill had converted. So at this point Doug Owsley knew he had a tall, young, white male who was a Catholic. Definitely not a pile of rocks. The remains were carefully excavated and brought to the Smithsonian for examination.

DOUG OWSLEY One of the last things Bill did while he was on the gallows is, they allowed him to smoke a cigar. And he liked cigars. And if you look at the teeth, you'll see the brown stains on the teeth.

ALAN ALDA Yes.

DOUG OWSLEY That's gonna be from the tobacco stains. And they're heavier, of course, in front.

ALAN ALDA He smoked more often than just on the gallows, right?

DOUG OWSLEY True, true.

ALAN ALDA This is from years of cigars.

DOUG OWSLEY He appreciated a good cigar.

ALAN ALDA (NARRATION) Another find was this artificial leaf. Wild Bill's niece had given him a rosette to wear just before his execution. The evidence was accumulating, but how much is enough?

ALAN ALDA Tobacco stains on his teeth...

DOUG OWSLEY Not enough.

ALAN ALDA Not inconsistent with his life but it wouldn't prove it. Same thing with this -- this is in the general category of what you knew was there.

DOUG OWSLEY Yup.

ALAN ALDA Same thing with the medal, but...not any one of them says this is the guy.

DOUG OWSLEY That's right.

ALAN ALDA Is there a number of these, that when you arrive at it, you say, well, that must be the guy?

DOUG OWSLEY Well, it's not like fingerprints. Fingerprints, for instance, when you're making an identification, you have to have so many landmarks that you can say are unique. So, it's not quite like that. But it's still...What we've got is very consistent, but it's not enough.

ALAN ALDA (NARRATION) What put the identification beyond doubt was a member of the family. Helen Chapman, descended from Wild Bill's sister, gave a blood sample so that her DNA could be compared to fragments found in the pulp of a tooth from the burial.

DOUG OWSLEY When you compare her DNA and this tooth, you find that it is straight down the line a match. That's Bill Longley.

ALAN ALDA Unless Bill Longley had a brother.

DOUG OWSLEY Well, all right, now, you know. But you need to go track him down.

ALAN ALDA Does anybody know...

DOUG OWSLEY I've had enough! THE

REAL PYRAMID BUILDERS

ALAN ALDA (NARRATION) This is Cairo - home to 20 million people, the largest city in Africa. Right on its outskirts, you're back in the ancient world, on the Giza Plateau. It's a complex of monuments, built for the Pharaohs more than 4000 years ago. While almost everyone's heard of King Tut, 200 years of Egyptian archaeology had revealed nothing about the people who had actually built the monuments - until recently. That began to change in the early 1990s, with a series of spectacular finds. Our cameras were there to record what happened. It's early morning, and this team of Egyptian archaeologists is heading to work. Four thousand years ago, their ancestors used this same gate every day, as they walked to work at the pyramids. In those days thousands of construction workers and their families must have lived here on the Giza Plateau. And yet, no trace of them has ever been found. Egyptian archaeologists have combed the sands of Giza, and they've made an unprecedented discovery. Within sight of the pyramids -- a graveyard of the pyramid builders. Each one of these stone piles marks the grave of an ancient worker. The miniature pyramids are the tombs of common laborers. For managers the structures got more elaborate. Archaeologist Mansour Radman found that this one belonged to a foreman.

MANSOUR RADMAN Here is a wonderful vaulted ceiling made of mud brick with a false door. And above this false door a stella which contains the name of the owner of this tomb. And you can read here that this is an offering were given by the king and also by the god Anubis for the beloved person Ptah Shepshu.

ALAN ALDA (NARRATION) Foreman Ptah Shepshu was treated with respect in death, and surely in life, too. In fact, the whole site comes as quite a surprise. It suggests that the pyramid builders were not slaves, but instead were workers and artisans, valued for their individual skills. Everything found at the workers' cemetery reinforces this idea. Zahi Hawass, a leading archeologist and director of the Giza Plateau complex, thinks he understands the relationship that's been revealed between kings and workers.

ZAHY HAWASS This statuette, it's for an overseer of the workmen. This discovery proves that these people were not treated by the king poorly. No, they were treated and respected by the king because those are the people who built the pyramids and tombs. Those are the people who made the king eternal. Without them the king will never be a god.

ALAN ALDA (NARRATION) While the builders were here to help their pharaoh prepare for eternal life, they prepared themselves in the same way. These tombs were more than a final resting-place -- they were vessels for a journey into the afterlife. So the dead workers were sent on their way with beer jugs, for example. No one who lived and worked in the desert would embark on eternity without something to drink. This woman was sent along to grind grain for bread. Figures like this are common in royal tombs, but it means a revolutionary change in thinking about ancient Egypt to find that workers were entitled to the same consideration. Our cameras were able to witness the disassembly of one of the newly discovered workers' tombs. Two feet down, they come to the outline of a coffin. It's made of sycamore wood, a costly imported material, but nevertheless regarded as appropriate for a worker. Beneath the coffin, the outline of a skeleton is revealed. This is a hip bone. The vertebrae. Then a hand. For the Egyptian archaeologists, it's a powerful sensation to come face to face with their own history.

MOHAMMED MOHSEN It is a very strange feeling, how to meet this man or woman. You can feel that you are talking to him and he's talking to you, saying hello or something like that, after all these years of silence

ALAN ALDA (NARRATION) Dr. Azza el-Din examines the remains. They are of a young woman, about twenty years old when she died. She was respectfully prepared for death, but her life was nevertheless full of hard work. DR. AZZA EL-DIN From looking at the spine we can see if there is any compression of the

vertebrae or any lipping at the edges. We can tell that they work hard or that they carry heavy weights or something like that.

ALAN ALDA (NARRATION) This cemetery on the Giza Plateau is rewriting the story of the pyramid builders. A priceless discovery has come from the lives and deaths of ordinary people.

ZAHY HAWASS People always look for gold inside tombs, and treasures. But gold and treasure never reconstruct the Egyptian history. All what we find at the Giza Plateau reconstructs a very important part of the Egyptian history. It gives information about people that you never know.

CITY OF GOLD

ALAN ALDA (NARRATION) We're in the far north of South Africa, in the land of the Venda people. The Venda have a long tradition of singing and dancing. But this is much more than a terrific performance -- it's history. This particular song, complaining of hard times under colonial masters, was composed a hundred years ago. In post-apartheid South Africa, it's now possible to study African history, which is how I found myself on the way to visit the King of Venda with an enthusiastic archaeologist, Sydney Miller. Alan Alda Syd, is this the Palace?

SYDNEY MILLER That's right, Alan. Alan Alda Why are these white stones here at the entrance?

SYDNEY MILLER These white stones are the monoliths that show us places where the normal commoner people are not really supposed to go unless they are escorted. This is Samuel... and Alan. We are going to go up to the chief's private reception area now. Alan Alda I see.

SYDNEY MILLER And he escorts us all the way up there.

ALAN ALDA (Narration) It's deliberately been made tiring and confusing for the visitor to work his way up through the compound. Everything is designed to promote respect. There are strict standards of conduct. King's praise singer [Chanting]

ALAN ALDA (Narration) King Kennedy arrives accompanied by his brothers and a praise-singer, whose job is to recount and explain the history of the King's names. We show the respect that is traditionally practiced here. Although the King is a Member of Parliament in Cape Town, when he's here in Venda, he tries to keep the traditional customs going. Alan Alda Is that only when you are greeting a stranger, or is it when you go from breakfast to your car? King Kennedy Yeah, to my car, to anywhere, wherever I go they do that. Alan Alda I

see. Do you sometimes wish you could move a little faster or have you made it part of your life? King Kennedy Ah, you know, sometimes they... I feel a little bit shy.

ALAN ALDA (Narration) History for the Venda is passed on by tradition. But tradition is never static. It's not just the King who now works far away. And it's unlikely that the kings who went before him would have joined in the dancing. The risk is that tradition and history might be lost. But the king believes this new openness is essential. King Kennedy I think it's better to be with the people. Especially nowadays because we are living in a democratic society. You must be with your own people. Alan Alda Yeah, so there's still some of the old and some of the new. Tell me about that gun. What are we bringing that for?

SYDNEY MILLER Well, we're in the middle of the park and the elephants are starting to use the footpath. This one that we made up to the site. We need it for a bit of protection. Alan Alda Oh. Could you stop an elephant with that?

SYDNEY MILLER Well it's a 458 and it does the job if it needs to. Alan Alda Why don't you go ahead? And keep your eyes open.

ALAN ALDA (Narration) Fifty miles from King Kennedy's compound, inside the Kruger Park, Sydney Miller has been working at a site, which is revealing Venda history in rich detail. Dating back to the thirteenth century, it's called Thulamela -- a royal citadel just like King Kennedy's, perched on a commanding hilltop. For three laborious years, Syd and two helpers rebuilt the collapsed walls, stone-by-stone. Arriving visitors pass under these baobab trees. Then, the same kind of stone markers that King Kennedy has point the way. Up the hill we enter the first ceremonial space, where the dancing would have been staged. Alan Alda Now what happened in here?

SYDNEY MILLER This is now where... one of the real problems that we have got on the site. This is a female enclosure where a wife would have lived. And when I tried to excavate this area, looking for a structure, I found a floor that had collapsed in the middle. And when I had excavated through that I actually found a skeleton down there, of a male, which is a very tall person. Over two meters tall.

ALAN ALDA (Narration) Syd had some unsolved problems, but some exciting finds too. Across the royal reception area was the king's private enclosure, once containing a thatched house. We weren't permitted to film in this part of King Kennedy's compound. Alan Alda Is this a pot here?

SYDNEY MILLER That's right. It's a pot that we have found in this very early phase. You can see the floor here is much harder than the floors we see at the top. So this pot is actually sitting on the floor in position. Alan Alda Ah, I see.

SYDNEY MILLER But what's also very interesting here is this little cowry shell. It's a seashell that has been used for trade money in the olden days, so we might even be sitting here with a pot that had some other valuable objects in it.

ALAN ALDA Oh, I see. This was like a little jewelry chest maybe.

ALAN ALDA (Narration) Also in the king's enclosure, iron bells of a type known in west Africa, two thousand miles away, but never before seen in southern Africa. And Syd's found glass beads from as far afield as India. So Thulamela had wide outside contacts. They were also great metal workers. These beautifully made harpoons are for hunting hippo... There were tough iron hoes for field work... A copper ingot caught at the moment of smelting... And gold, including droplets fresh from the crucible. It has always been known that this part of Africa had trade contacts with the Arabs and Portuguese, but it's thanks to Syd's archaeology that the breadth and sophistication of what went on here is being revealed.

SYDNEY MILLER Archaeology is like taking the soil and opening up the history book. Africa has always been seen as the neglected country. Everybody thinks about the Egyptians as high culture, but for the whole world to know that these people were just as important as the Egyptians, I think that is what it is about.

ALAN ALDA (Narration) But Thulamela is not just about history -- it's about the present as well. In an approach probably unique in the world, excavation is overseen by a committee, not only of scientists but also of local people from outside the park, whose ancestors created Thulamela. And they'll stay involved in the future too. I met the Venda school teacher, Israel Nemaheni, who will be interpreting the discoveries for visitors. Alan Alda What does this mean to you? Israel Nemaheni To me it means... in fact it's my history. It means I've got somewhere, I am coming from somewhere. And that is part of my history.

ALAN ALDA (Narration) The skeleton in the women's enclosure presented the committee with a challenge. To proceed would risk disturbing an ancestor's grave. So they compromised -- excavation could go ahead so long as the remains were given a respectful reburial. And what a find they made. It wasn't a man as Syd had thought, but a tall woman decorated with gold jewelry -- probably the sixteenth century queen of Thulamela. Soon after, the team found the king buried in his enclosure, also wearing lots of gold. The discoveries hit the headlines -- the first royal couple ever excavated in southern Africa. There was rejoicing among the Venda people, by one family in particular who had always thought their ancestors were buried here. Venda man We've come here with some beer; this is African beer, to pour down so that we can talk to our ancestors.

ALAN ALDA (Narration) To stay in touch with ancestors is of the deepest significance, because they provide the link to God. So from the family level to the national, Thulamela turned out to have gifts for everybody. Israel Nemaheni summed it up. Israel Nemaheni I won't say how I will feel as a Venda, but as a South African I am very happy to see that people are remembering their ancestors. But not as a Venda but as a South African, because I regard the whole Thulamela as belonging to all people of South Africa. PROMO :30

ALAN ALDA In the first two years of the Jamestown colony over half the settlers died.

ALAN ALDA (NARRATION) On the next edition of Scientific American Frontiers, scientists are piecing together what happened as the colony struggled to survive. We'll also examine China's mysterious mummies, and see if Wild Bill Longley really escaped the hangman's noose.

ALAN ALDA I'm Alan Alda. Join me next time as we tell you some Dead Men's Tales. PROMO :20

ALAN ALDA In the first two years of the Jamestown colony over half of the settlers died.

ALAN ALDA (NARRATION) Unearthing mysteries and legends of the grave, on Scientific American Frontiers.

ALAN ALDA I'm Alan Alda. Join me next time as we tell you some Dead Men's Tales. PROMO: 10

ALAN ALDA (NARRATION) Unearthing mysteries and legends of the grave, on Scientific American Frontiers.

ALAN ALDA I'm Alan Alda. Join me next time as we tell you some Dead Men's Tales. 1204 TRAILER

ALAN ALDA (NARRATION) Help! We're being invaded. Snakes in Guam. Gypsy moths in Ohio. Longhorn beetles in New York. Fungus in the Caribbean, and weed in the Mediterranean. They're all where they shouldn't be, and they're running wild.

ALAN ALDA Join me next time for Alien Invasion.

