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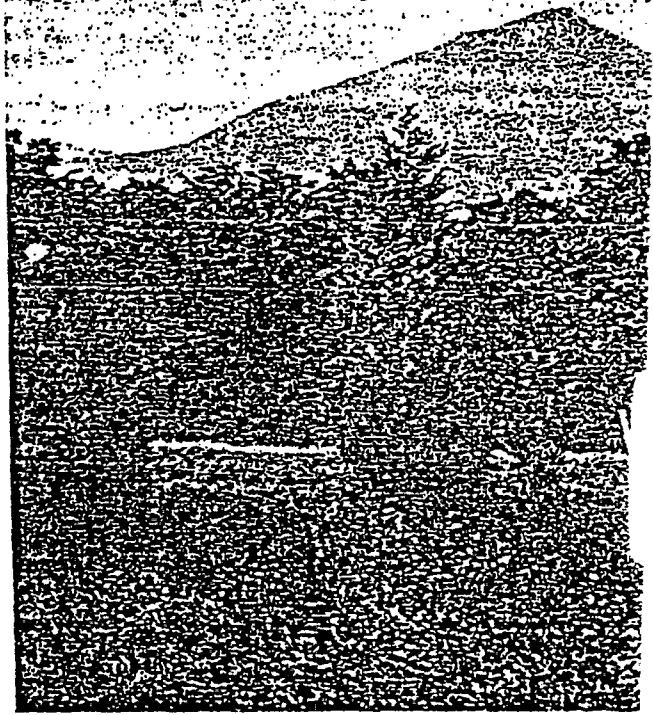
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Cipher Number One supposedly tells exact location but so far no "solutions" have led to treasure.

By Ruth Daniloff

# A cipher's the key to the treasure in them thar hills

*Cryptanalysts and fortune hunters lead a merry chase through the Virginia countryside in search of Thomas Beale's buried loot*

Colonel J. J. Holland plunged his post hole into mound where his metal detector registered ten and brought up a scoop of dusty earth containing several lumps of coal. At 70, he had been warned by his doctor against digging because of a serious heart ailment, but his obsession with the treasure he believes lies six feet under the dirt beside the railroad track somewhere in Virginia overrides all common sense. Since 1964, when he first learned of Thomas Jefferson Beale, the 2,921 pounds of gold, the 5,100 pounds of silver and some \$200,000 worth of jewels, he has clocked up more than 150,000 miles driving to the foothills of the Blue Ridge Mountains near Roanoke, Virginia, to dig. At home in Lillian, Alabama, he works most nights from 10 to 2 on the ciphers relating to the treasure. This time he is convinced he has broken the first of the three codes. "What we need now is a backhoe," he says with obvious frustration. "Then we can dig down and find the gold and solve this Beale thing once and for all."

For more than 150 years people like Colonel Holland have been trying to find the Beale millio



Cryptographer Carl Hammer, right, joins treasure hunters as they go over map.

The Peaks of Otter in the Blue Ridge Mountains may be a clue to where Beale buried gold, silver and jewels 160 years ago; treasures unearthed so far include an old car and a chunk of pig iron.

"once and for all." It is one of the largest and most costly treasure hunts in U.S. history, baffling the finest mathematical minds in the country and defeating their computers. Like the search for the Lost Dutchman mine in Arizona, or the stories of the \$3 million in Confederate treasury gold buried along the James River just before the Union soldiers entered Richmond in 1865, or wealthy plantation owners' fortunes hidden from the Union soldiers and never recovered, the Beale treasure tantalizes its seekers with fantasies of untold riches while inducing frustration, despair and bankruptcy. Numerous articles in magazines and trade journals and several books have explored the Beale mystery.

Thomas Jefferson Beale, the man responsible for trying 20th-century brains and technology, was a devious Virginia gentleman believed to have been born around 1792. That was the year George Washington was elected President for the second time; Thomas Jefferson and Alexander Hamilton were feuding over policies which would culminate in a two-party political system; and General Anthony Wayne was com-

missioned commander of the American army to fight Indians who were making pioneer existence in the Northwest Territory impossible.

Beale came from a distinguished family. In 1668 King Charles II of England recommended one of his ancestors for appointment as commander of Point Comfort, at the entrance of Norfolk Harbor. Though one contemporary described Beale as "a gentleman well educated, evidently of good family, and with popular manners," recent research reveals him to have been a no-good, gun-slinging genius who was constantly bailed out of scrapes by his more respectable brothers. Still, women loved him—he was a broad-shouldered six-footer with swarthy complexion and jet black hair worn slightly longer than was fashionable. He was said to be a "model of manly beauty, favored by ladies and envied by men."

Indeed, the Beale treasure hunt may have started with trouble over the opposite sex. There are several stories—some documented, some not. One story holds that in the spring of 1817 Beale got into a pistol fight with a Fincastle, Virginia, neighbor over a woman.

*Photographs by Anne B. K. Krumbhaar*

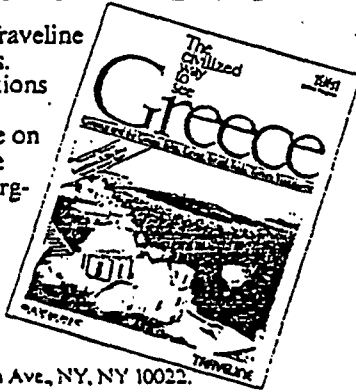
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Colonel J. J. Holland digs in secret spot convinced he has broken one code at la



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Believing he had killed the man, Beale out for the frontier to escape prosecution. Beale's version of the story was that and 30 individuals of good character were seeking adventure and left on a two-year expedition for buffalo and grizzlies.

Whichever is true, a year later when Beale and his hunting cronies were preparing supper in a small ravine some 2 miles north of Santa Fe, they discovered strange stuff in the rocks. "Upon showing it to others," Beale wrote, "it was pronounced to be gold, and much excitement was the natural consequence."

In two letters, Thomas Beale described the gold, its journey back to Virginia in two wagons and its subsequent burial. He deposited the letters in an iron strongbox and in March 1822, he left the box with his friend, Robert Morriss, for safekeeping and disappeared. Morriss, who has fallen on hard times as the result of "heavy purchases of tobacco, at ruinous figures," was the innkeeper at the Washington Hotel in Lynchburg, Virginia.

Two months later Morriss received a mysterious letter from Beale posted on May 9 from St. Louis, then a small hunting and trading post on the western frontier. Beale's letter stated the be



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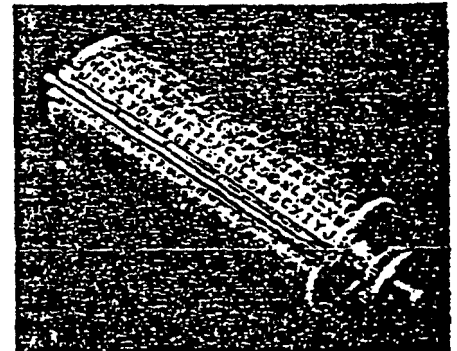
Sixteen years ago a prestigious group of intellectuals joined forces to outwit Thomas Jefferson Beale. The Beale Cypher Association (BCA) includes big-name computer experts like Dr. Carl Hammer, director of computer sciences at Sperry Univac; Per A. Holst, senior research manager at the Foxboro Company, an industrial process control company in Massachusetts; and top cryptanalysts from the CIA and the National Security Agency, such as Carl Nelson jr., now retired, who was the technological wizard behind the super-secret Berlin tunnel dug to intercept Communist communications.

The 100 members share information, but with more than 20 million dollars (at today's prices) at stake, some are reluctant to exchange vital data. After a recent newspaper article, some 10,000 letters flooded the office of BCA Executive Director Per Holst, most of them requesting information rather than volunteering it. Suspicion, Holst fears, undermines the massive effort to solve Thomas Beale's puzzler. Still, he argues, it is only a matter of time before the ciphers will be broken and the treasure, if it exists, found.

Breaking the Beale ciphers, however, is proving easier said than done.

Underlying cryptanalysis are two linguistic peculiarities. First, in all languages, some letters are used more often than others. In English, for example, the most frequently used letter is E followed by T. Second, the proportion in which the letters occur remains constant. Take 1,000 letters from a cookbook, a military manual or a love letter and the frequency of certain letters is the same. With an enciphered message, the cryptanalyst utilizes known frequency combinations to

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Thomas Jefferson invented cipher wheel in 1790s when encoding was popular.

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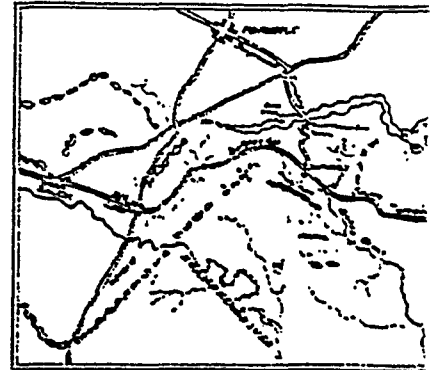


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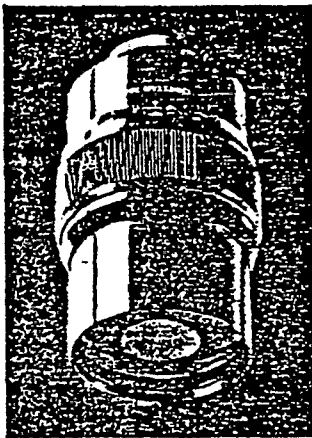
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Treasure map shows Virginia area disclosed years ago in second cipher.



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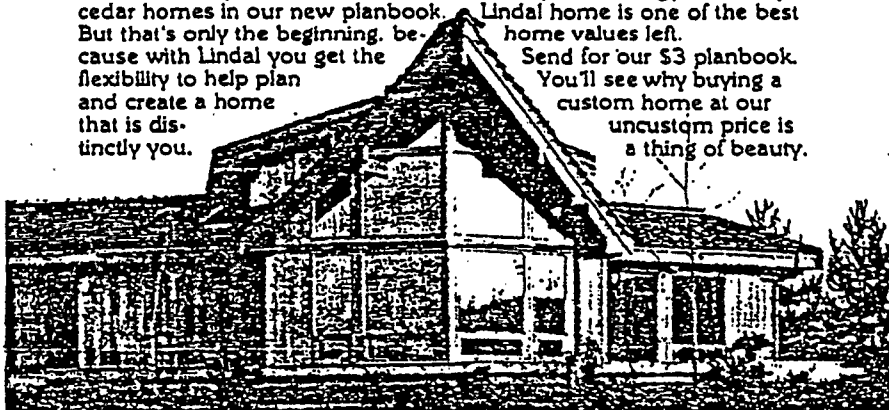
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tease out the original message. If, example, there is a high proportion of letter H, he makes the assumption that it is an E substitute.

The Beale ciphers are what cryptanalysts call multiple substitution ciphers. Since every letter in the coded message is represented by several different numbers, it is one of the most difficult ciphers to break. In the case of Cipher Number Two, cracked by James Ward, Thomas Beale first composed his message, then took the Declaration of Independence and numbered off the words, starting with 1 (which ended with 1,322 (honor). He substituted each letter of his original message with a number of a word in the Declaration beginning with that letter. Since there are only 26 letters in the alphabet, there were plenty of extra equivalents which Beale chose to use at random. For example, in the opening lines of Cipher Number Two, the letter E is enciphered by the numbers 49, 7, 79 and 37.

For an educated gentleman like Beale to be an expert cryptographer was not unusual. In those days waylaying of people's mail was common practice. To ensure privacy, people created their own personal ciphers based on common books of the day. Thirty years before Beale supposedly devised his devilish code, Thomas Jefferson had invented a cipher wheel (p. 132) that was so brilliantly conceived that a similar one was used by American military early in World War I. By dividing a cylinder into wheels, each marked with the 26 letters of the alphabet, he could scramble messages in thousands of different ways. According to Professor Ralph E. Weber, author of the recently published book *U.S. Diplomats*



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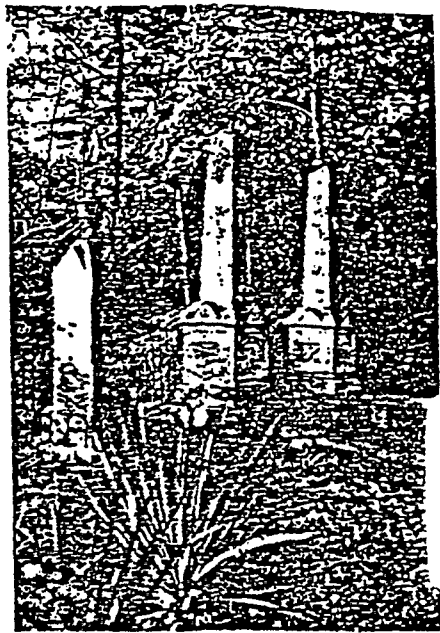
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*Codes and Ciphers*, today's historians are frustrated by the coded segments of old documents, letters and diaries which, like the Beale ciphers, cannot be cracked because the keys are lost. "Some of these messages could have real historical significance," says Weber.

Finding the key, of course, is the answer. "With a key," says Carl Hammer (p. 130), who professes to be more interested in unbroken ciphers than Beale's treasure, "a second grader could decode the Beale ciphers." According to historians, Beale could have been familiar with some 2,000 books and government documents which he might have selected as the key. Many have been analyzed, including Shakespeare's plays, the Bible, several versions of the Magna Carta, as well as U.S. historical documents such as the 1606 charter of Virginia, the Mayflower Compact of 1620 and even the 1733 Molasses Act. A researcher currently is looking through early-19th-century stock inventories of book stores operating in Lynchburg at the time.

Two schools of thought exist as to whether Thomas Beale will meet his match by computer or by hand. "We have played games with these numbers which would have taken a million men a billion years to duplicate with pen and paper," declares Carl Hammer, who is betting on the computer and a team of University of Maryland experts currently working to solve multiple substitution ciphers.

While a computer has failed to locate the treasure, Dr. Hammer and the Univac 1108 have proved the codes genuine, not just a bunch of random numbers Beale pulled out of a hat after a night on the town. "They contain intelligent messages of some sort. The method used for encoding Ciphers One and Three is similar to that used for Number Two," says



Buford family graveyard is possible site; so are 400 other cemeteries in area.

Hammer, who has spent thousands of hours over the last 20 years feeding combinations of letters and numbers into generations of Univac computers.

Carl Nelson (p. 130) is backing Mar over machine, relying on traditional cryptanalysis, reinforced by meticulous field research which he believes vital to any code breaking. Computers waste time on what he calls "garbage in and garbage out." Reprogramming is just as hard as working on the ciphers by hand, he finds, as he grinds away in the basement office of his Arlington, Virginia, home, covering hundreds of yellow legal pads with thousands of number and letter grids. In the end, he adds, "the human eye is still better than a computer at recognizing certain patterns and frequencies."

Nelson's passion is unbroken ciphers. "I just can't leave them alone," he confesses. He combats cipher addiction by limiting his work on the mystery to the winter and taking time out for another hobby—cracking the musical tonal scale system used in Jerusalem in the year 2 B.C. with the idea of using it to compose a musical score for the Dead Sea Scrolls.

One of the pitfalls of a multikey, multi-alphabet cipher similar to Beale's is that it is sometimes possible to obtain an intelligent message depending on the documents used as keys. As with some crypto-



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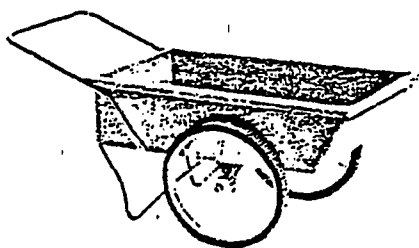
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Map in lap, Pauline Innis explains theories; she has written book on Beale.

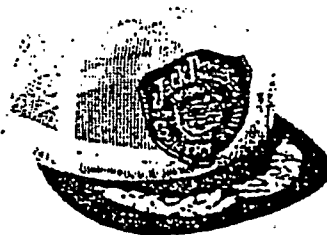
grams, there can be different solutions, but only one correct one.

To test a solution, it is necessary to hoof it down to the Blue Ridge, to match clues to the local geography with the help of compasses and historical survey maps. Needless to say, most decipherings bear little relationship to the geography. A recent "solution" from a treasure hunter in Maine gave instructions to start at the old Buford's Tavern in Montvale, Virginia, climb the nearby Peaks of Otter and finally surface in Jefferson's bedroom at Monticello—a feat which would have involved excavating a 60-mile tunnel along the mountains. A few solutions, such as Colonel Holland's recent one terminating beside the railroad tracks (p. 128), are strikingly true to local landmarks.

When the text and the landmarks match and your metal detector signals "treasure," it is time to bring out shovels, hire backhoes or bulldozers, and buy dynamite before someone else beats you to it. A recent solution gave instructions to penetrate a deep-water pit in a disused mine on Purgatory Stream, 45 miles northeast of Roanoke. All the digging party found was a 90-pound chunk of Colonial era pig iron—a treasure in its own right. Another fortune hunter wasn't so lucky. His metal detector went berserk over a rocky area in Bedford County where his solution located the treasure. He hired guards, fenced off the area and brought in a bulldozer, only to unearth the remains of a 1930s car.

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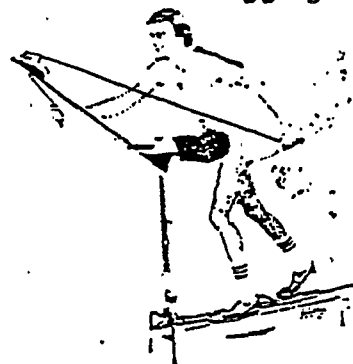
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Such solutions are mostly forced, as based more on wishful thinking than good cryptanalysis, maintains Per Holst. "Many people see interesting and revealing messages just in a sequence of syllables, in a series of short, spaced-apart words and in the occasional medium-length word that might pop out of the deciphering effort," he says. Historic context is ignored. For example, Beale's method of enciphering may have been diabolical, but the instructions for deciphering would have to be simple for an innkeeper like Morriss to follow.

"I don't think we have skimmed the surface yet," Holst says. "Instead of just taking a first letter, he could have taken every second vowel, or even every second letter after a vowel, which is mathematically very difficult without a key, but from an instructional point of view simple."

"Let's face it, we are a bunch of crackpots," jokes Carl Hammer, "but we have a lot of fun."

Farmers and landowners in Bedford and Botetourt Counties, Virginia, are not so amused by the "crackpots" who roam their property with magnetometers, Geiger counters and metal detectors. Cats fall in the holes left by bulldozers. Dynamite explosions frighten people. An worst of all, under Virginia law the treasure belongs to the finder—even if he or she trespassed to find it—unless the

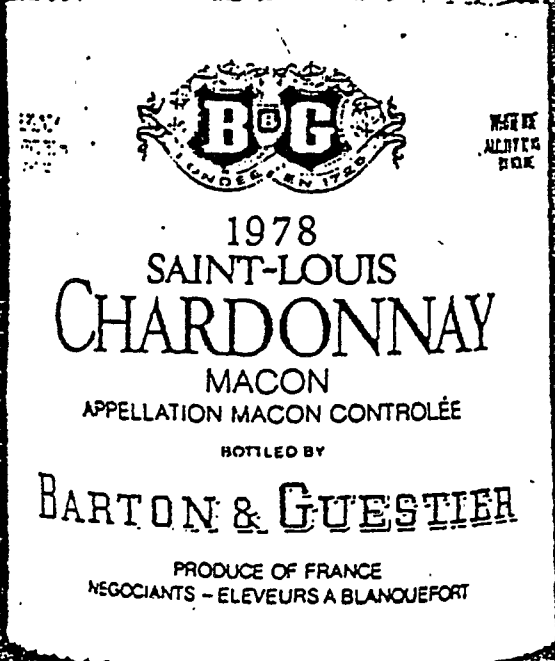


Frances Beale, a distant relative, is an avid member of Beale Cypher Association.

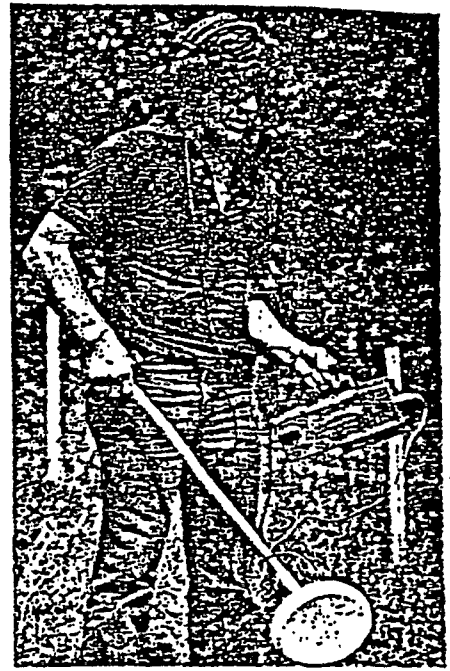
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Mike Timmerman uses metal detector, an invaluable tool of modern-day hunter.

direct descendants of the original owners are identified within a year. Since Thomas Beale left no children, his fortune is up for grabs. Now that metal detectors and the inflationary price of gold have made treasure hunting one of America's fastest growing pastimes, Bedford County locals fear an invasion. That's why they sometimes take potshots at strangers.

Some farmers, like Lee and Otis Dooley, on whose land many believe the treasure lies, draw up legal contracts with the hundreds of treasure hunters who want to explore their property. A 25-percent cut of the treasure, they insist, is theirs. Last summer with gracious Southern courtesy the two brothers agreed to show landmarks to a hunting party from the Beale Cypher Association. They pointed out the large oak tree with the blaze down the gnarled trunk, the rock ledge overhanging Goose Creek, the 20-foot cave in the woods and the large hole near the farmhouse excavated by a New York couple who spent seven summers camped in the meadow in order to dig.

Asked what he would do with his share of the treasure, Lee squinted toward the blue-hazed mountains in the distance and shrugged philosophically. "I don't rightly know," he replied. "I was born in pov-

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Farmer Lee Dooley says of treasure: "That money would just mess me up."

erty. Getting all that money would just mess me up."

The big question is, of course, does the treasure really exist? The ciphers may be genuine, but the treasure may have disappeared. It could be a hoax, or a cover-up for a Civil War bank robbery or a hijacking of federal gold. It could also be a joke perpetrated by someone like Edgar Allan Poe, an expert cryptographer who attended the University of Virginia briefly in the 1820s. A few speculate the National Security Agency already has cracked the ciphers and absconded with the treasure. We will never know, they say, because it's classified.

Within the Beale Cypher Association, nonbelievers are distinguished by their willingness to share information, says Frank Aaron, a Florida computer systems consultant who is working on a book on Beale with a do-it-yourself guide for home computer buffs. "If someone believes in the treasure, you bet they are very secretive about their work. They want to know what you are doing, though."

Only historical research will solve the Beale mystery, says Carl Nelson, who, with the patience of a veteran CIA agent, is cross-checking Beale's story. Did Beale go West as claimed? Did he find the gold, and if so, what did he do with it?

Nelson's sleuthing has taken him all

over the country, from Virginia courthouses to Kansas, Missouri, Texas, New Mexico. He has investigated old newspapers, steamboat schedules, jewelry store receipts, church registries, and tax, school and bank records. So far, with the exception of an April 1, 1820, notice in the *Missouri Intelligencer* saying a letter awaited "Thomas Beall," Nelson has found no conclusive evidence that Beale was where he said he was at the time. On the other hand, he has found no evidence that he was not.

Nelson has a theory that the Virginian was stealing from his brothers. Indeed, if Thomas were put on a 20th-century couch, his mumblings to his analyst might lead to a suspicion of unresolved sibling rivalry. After all, according to Nelson's research, he had three brothers who owned 17,000 acres along the James River as well as the largest gold mine in the Blue Ridge. Thomas, according to an 1835 Fauquier County tax record, was taxed ten cents on his sole possession, a horse. Nelson also claims Beale died in 1851, a pauper in Montross, Virginia, although others contend he disappeared out West. Whatever his end, he left behind a good yarn if nothing else. "It's an endlessly fascinating puzzle," says Nelson, who is determined, quite literally, to get to the bottom of it.



Blazed oak on Dooley brothers' land may be a clue to the treasure—if it exists.