

# Mass Murderer

*May have heard of Ephron*  
 Were the Zodiac murders part of a grand design? For an amateur sleuth, the question became a terrifying obsession.

From 1966 through 1969 a series of bizarre murders terrorized Californians from Riverside to Napa. It seemed the killer struck at random, but in his cryptic letters to the press, which continued until 1974, there was the hint of a method in his madness. Today, twelve years since his last known attack, police have all but given up hope of ever catching the Zodiac—or of understanding his crimes.

Not George Oakes. A writer and gentleman scholar, Oakes lives in the hills north of San Francisco. Prompted by news stories in which the Zodiac was erroneously associated with the Trailside murders in Marin County, Oakes took up the case late last year. But he brought to his inquiry an unusual array of talents: postgraduate training in literature and library science, map-reading skills gained in the army, a familiarity with secret writing, passed on to him by his father, a former army cryptographer, and a passion for the riddles of Lewis Carroll.

After Zodiac's reign of terror, Oakes's father was employed in the attorney general's office in Sacramento, where he read over the entire Zodiac file. There were

portions of the killer's strange messages that had never been released to the public. For instance, the Zodiac had hinted that if a radian angle were placed on Mount Diablo—a well-known Bay Area landmark—something interesting might be found. Investigators—most of whom construed the murderer's misspellings and garbled syntax as a sure sign of cretinism—had ignored the clue. Oakes pounced on it. It was to be the keystone of the most amazing Zodiac theory yet.

Four months ago Oakes sent us the "portrait" that follows. As far as possible, statements of fact have been verified, as they routinely are in stories published by California Magazine. But this is no routine story.

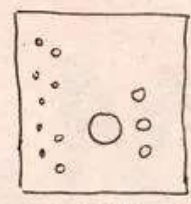
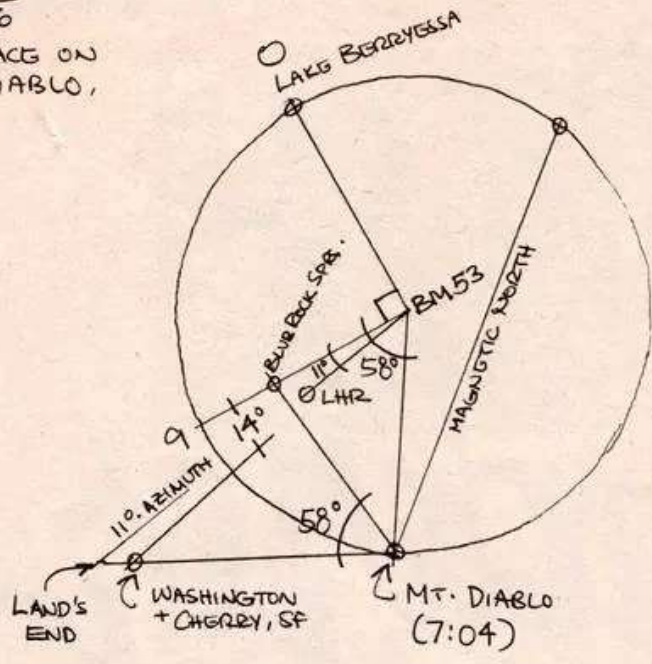
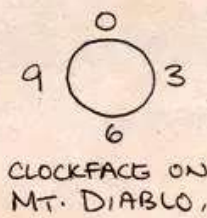
ON THE FOURTH OF JULY 1862, the Reverend Charles Dodgson took Alice Pleasance Liddell and her sisters, Lorina and Edith, on a boating picnic, rowing upstream from Oxford, where Dodgson taught mathematics. The party stopped for tea on the riverside, where

the man who was to become known the world over as Lewis Carroll extemporized the first version of *Alice's Adventures in Wonderland*. The story was spellbinding, full of happenings that defied explanation. In its published version it included a number of mathematical puzzles, nonsense verses, and words with strange spellings, but for the moment, it was just a fairy tale made up on the spot for the amusement of the three little girls, and especially for Alice, who was the heroine. Carroll later recalled, "I distinctly remember how, in a desperate attempt to strike out some new line in fairy lore, I had sent my heroine straight down a rabbit hole, to begin with, without the least idea what was to happen afterward."

On the evening of October 30, 1966, more than a century later and half a world away, Cheri Jo Bates parked her Volkswagen in front of the library at the city college in Riverside, California. When she returned with some books on English composition, her car refused to start. It was found the next morning with its ignition system completely dismantled. Bates was found in an alley half

BY GEORGE OAKES





GROUPING OF EYES ON HALLOWEEN CARD

From the author's notebook: When Oakes placed a radian angle on Mount Diablo, the murders seemed to form a pattern—a "death clock" writ large, with Lake Berryessa at the ominous zero hour. He found a Morse code message in the pelicanlike symbol on the Zodiac's Halloween card, and the holes in the card looked like "casting out nines," a mathematical allusion to vanishing. Police are baffled by the interpretation.

Footprints  
Paint or wood  
Sign

a block away. Her throat had been cut. A man's Timex watch was lying near her body. Witnesses who heard her screams had not called the police.

A month later the local press and police received carbon copies of a typed letter from the murderer. It was full of strange phraseology and a number of untruths. But it alluded to details known only to the police, proving that it was from Bates's killer. "She was young and beautiful," it began. "But now she is battered and dead. She is not the first and she will not be the last. . . . When we were away from the library walking, I said it was about time. She asked me, about time for what? I said it was about time to die. . . . I am not sick. I am insane," it read in part. It was headed "BY," followed by a long black line drawn with a felt-tip pen. There was no signature.

Some months later, a strange poem was found scratched into the top of a desk at the city college library:

Sick of living unwilling to die  
Cut clean if red! clean  
Blood spurtng dripping spilling  
All over her new dress  
Oh well it was red anyway  
Life draining into an uncertain  
death  
She wont die this time  
Someonell find her  
Just wait till next time

It was signed "rh." Exactly six months

after the murder, another letter, this one handwritten, came from the murderer. There were three copies, two of them signed "Z." Years went by before expert analysis showed that the poem and the second letter were from the same hand.

Two years passed. Teenagers David Faraday and Betty Lou Jensen parked just off rural Lake Herman Road near Vallejo in the northern part of the San Francisco Bay Area. It was late in the evening of December 20, 1968. It was their first date. It was almost the longest night of the year. For Faraday and Jensen, the night stretched into eternity. Faraday was found by the car with one bullet in his head. Jensen was sprawled 30 feet from the car with five bullets through her back. The killer had used a .22-caliber weapon, probably an automatic pistol.

The Lake Herman Road killings had nearly been forgotten by the next summer. On the evening of July 4, 1969, Darlene Ferrin, who waited tables to support her infant daughter, parked at the Blue Rock Springs golf course near Vallejo, not far from Lake Herman Road, with a boyfriend, Michael Mageau. Just after midnight, someone walked up to the car on the passenger side. The door was suddenly snatched open, and a hail of bullets poured into the interior of the car. The assailant then drove into downtown Vallejo and called the police department to report the shooting from a phone booth on Springs Road, only a few blocks away.

Ferrin died. Mageau survived. The killer had used a 9mm automatic.

Three weeks later, three Bay Area newspapers received a cryptogram from someone who claimed to be the Lake Herman Road and Blue Rock Springs murderer. It was too difficult for the military cryptanalysts who worked on it. The solution came from a high school teacher in Salinas. When deciphered, it read as an encomium on the joys of homicide: "I like killing people because it is so much fun." At the end was a scramble of letters that received various interpretations. It read: "EBEORIETEMETHHPITI."

Even in the English part, the choice of words was sometimes strange, and the syntax seemed to break down here and there. It contained queer words such as "hongertue." The police reasoned that the murderer was mentally deranged and had lost control of his cipher system. The press reported various theories, and some papers just changed "hongertue" into "dangerous"—which was the apparent meaning—and let it go at that. The "cipher killer," as he was now called, was passed off as a crazy who frequented lovers' lanes. Drive-in movies in the North Bay suddenly posted record profits.

Early that fall Cecilia Shepard, a former student at Pacific Union College in Napa County, to the north of Vallejo, and Bryan Hartnell, who was still going to Pacific Union, were picnicking near the



# Other artists had sought to remove their work from the ordinary human perspective. Zodiac trumped them all."

water's edge at Lake Berryessa. It was September 27, near evening. Out of nowhere, a man approached. His head was covered by a black hood with eye slits. The hood was emblazoned with a crossed-circle design. He drew a pistol on the couple, tied them up, and pocketed his gun. He then pulled out a long knife and stabbed both of them savagely. He stabbed Shepard over and over in the back. When she rolled over, writhing in agony, he stabbed her once in each breast, once in the stomach, and once in the genitalia.

His fury expended, the killer put away his knife and produced a black felt-tip marker. He wrote on Hartnell's car door the dates of the Lake Herman Road and Blue Rock Springs attacks, then concluded the list with the just perpetrated slashing. He noted the time as 6:30 P.M. Then he drew a crossed circle on the door. He drove far off the beaten track, into the center of the city of Napa, and from a phone booth at a car wash on Main Street, he called the police department, which was only four blocks away, to report the attack.

Both victims were still alive when found. Shepard especially was suffering horrible pain. Death finally brought her relief. Hartnell pulled through. Ironically, Shepard had quit Pacific Union College to continue her studies at the University of California in Riverside.

On October 11, two weeks later, cabbie Paul Stine picked up a fare in downtown San Francisco. The man slid into the front seat and asked to be taken to the corner of Washington and Maple streets in fashionable Presidio Heights. Somewhere near the end of the trip the fare apparently changed his mind. Stine dropped him a block farther on, at the corner of Washington and Cherry.

Stine pulled over at the corner, in front of a fire hydrant. Instead of producing his wallet, the passenger pulled out a 9mm automatic. Witnesses who heard the gunfire watched through their windows as the killer busied himself with something inside the cab. As it turned out, while the police were being called, he had cut off a part of his victim's shirttail, then dabbed it in the blood that had spattered the inside of the cab. As he strolled away he was stopped by two officers sent to the scene by a confused dispatcher who had alerted them to keep an eye out for a lack suspect. The killer was white. He told the officers that he hadn't seen anybody matching the description, and they

That was the beginning of a long war of wits. Three days after the Stine

murder a letter arrived at the editorial offices of the *San Francisco Chronicle*. It was from the North Bay's "cipher killer." He authenticated his letter with the swatch of bloody shirttail. The letter began: "This is the Zodiac speaking." He taunted the police for having let him slip through their fingers. They angrily denied his version of the story.

The Bay Area was thrown into a panic. There was no rhyme or reason to the Zodiac's attacks, nothing to hang a hypothesis on. He changed sites, victims, weapons the way other people change their socks. There was no apparent motive—other than killing. The worst part was wondering when and where and whom he would hit next. He wrote that he was thinking of attacking a school bus. For some time, patrol cars convoyed children to school in Vallejo. In Napa County, sheriff's deputies literally rode shotgun on school buses. Bay Area police agencies worked as they had never worked before. But they never developed any substantial clues to the Zodiac's identity or his motives.

As far as is known the Zodiac never attacked anyone again. But he kept the Bay Area on edge off and on for almost five years with a string of letters and postcards, mostly to the *Chronicle*. He usually identified himself as "the Zodiac." Sometimes he was "a Citizen" or "Red Phantom." But the handwriting was always the same, and there was usually the now famous crossed circle.

Some communications were made up of snippets of newspapers and magazines, but even when he wrote his own words in felt-tip script, the Zodiac was weird-sounding. "There is more glory in killing a cop than a cid," he wrote, "because a cop can shoot back." Cid? "I shot a man sitting in a parked car with a 38," he wrote. The police turned the state of California upside down looking for a shooting victim who fit the description. Eventually they gave up, deciding that the Zodiac's lack of consistency and what appeared to be claims of victims expressed as box scores—"ME 37, SFPD 0," for example—were proof of advanced dementia. He had stopped killing, the reasoning went, because he was non compos mentis.

Just before Halloween 1970, *Chronicle* reporter Paul Avery, who had written a number of Zodiac stories, received a greeting card from the murderer. It was a "secret pal" note on which the Zodiac had pasted a dime store paper skeleton. He had adorned the inside of the card with thirteen stylized knotholes, to which he had added eyelashes. He also wrote, in various places, "Peek-a-boo—you are

doomed!," "BOO," and "4-TEEN." The card was signed with a symbol that was variously interpreted as a meteorological symbol and a Jewish astrological sign, and there was the familiar Z plus crossed circle, which was, depending on who was speaking, the cross hairs of a rifle's telescopic sight, a symbol from an Asiatic religion (never specified), or a "mystical symbol of the universe."

The police and the papers interpreted the card as a threat against Avery's life. The Zodiac was now claiming fourteen victims, they said, or was threatening to make Avery his fourteenth. Only five Zodiac victims could be accounted for (everybody forgot the two survivors, one of whom had been stabbed five times with a knife, the other shot at point-blank range with a large-bore pistol—only the dead are victims). The Zodiac was obviously raving. Ironically, it was Avery who published, only two weeks later, the link between the Bates murder in Riverside and the Bay Area killings. Now there were six—or eight, depending on one's definition of the word—"victims."

Nobody paid any attention to the connection between the thirteen holes in the postcard, the thirteen eyeholes in the Halloween card, and a thirteen-character cipher he had sent to the *Chronicle*, which he said contained his name. Perhaps he thought that the thirteen-hole postcard would trigger a mental association with a Beatles song: "And though the holes were rather small/They had to count them all."

One of the more interesting—and least publicized—of the Zodiac communiqués was an oil company road map showing Contra Costa County in the East Bay. Near the center of the map was Mount Diablo—Devil Mountain—the highest peak between the coast and the Sierra Nevada. Every one of the Zodiac's Bay Area murder sites can be seen from the peak of Devil Mountain. The Zodiac had superimposed a clock face on its peak. The clock read: "0-3-6-9." Twelve o'clock had been replaced by the ominous "zero hour." In the letter accompanying the map, he intimated that something interesting would be found by placing a radian angle on Mount Diablo. As he had already been categorized as crazy, nobody followed his instructions. The police suppressed the map anyway.

The Zodiac was last heard from in 1974. A letter postmarked late in January of that year quoted, as had previous letters, from the Gilbert and Sullivan operetta *The Mikado*, and it concluded with a group of figures drawn with a felt-tip pen. A facsimile of the letter was pub-

*Blue herring*

?



lished on the *Chronicle's* front page, but the pen-stroke figures were obliterated at the request of the police.

**S**EEN FROM THE PERSPECTIVE OF outer space, the Zodiac murders make a certain kind of sense. They show, in fact, a degree of precision and a consistency of design that, combined with the savagery and viciousness of the crimes, is downright blood chilling. The Zodiac, after all, is a circular band in the sky from which the stars look down on the earth. An approximation of this exalted view can be had just by looking at a road map such as the one that the Zodiac had sent to the *Chronicle*.

A half dozen years after the Zodiac had faded from the public consciousness, I decided to take him at his word. I purchased a U.S. Geological Survey (USGS) map of the Bay Area, a quantity of acetate sheets, and a large protractor. A radian is a circle divided by  $2\pi$ , forming an angle of between 57 and 58 degrees. I drew an angle of this size on an acetate overlay and superimposed its apex on Mount Diablo. A curious thing happened. As I continued the mathematical experimentation, it became, as Alice would have put it, curiouser and curiouser.

I rotated the radian angle until one leg passed through the site of the Blue Rock Springs murder. A chill ran up my spine as I noticed that the other leg ran straight through the murder scene in Presidio Heights. I tried it another way. This time I set one leg on Mount Diablo and rotated the overlay until the other leg hit Blue Rock Springs. The apex swung through a lot of open country but passed directly over a bench mark on Travis Air Force Base, BM 53.

I looked at the map again. Sighting northwest to Lake Berryessa, I noticed that the line between BM 53 and Blue Rock Springs formed what looked like a right angle with the west shore of the lake. With my protractor I constructed a 90-degree angle on the overlay. The line ran straight through the Berryessa site. I measured the distance from Berryessa to BM 53 and from there to Mount Diablo. BM 53 was equidistant from both points, roughly 26 miles each way. The Zodiac had scribed a circle.

Mount Diablo appeared to be the anchor of his scheme. Why? Perhaps because he was very knowledgeable about maps. The bench mark on Mount Diablo is the crossing point for the east-west and north-south baselines used by the USGS as a starting point for numbering townships. A bench mark is a small brass plate stamped with a crossed circle or triangle. The landscape is littered with BMs; they are used by surveyors as touchstones of accuracy.

The Stine murder in San Francisco still didn't seem to fit, unless it had served to

construct a second radian just to prove that the first was not accidental. There had to be some other tie-in. From the back of my mind I retrieved the word "4-TEEN" from the Halloween card. It obviously didn't mean fourteen victims. The angle formed by the Blue Rock Springs azimuth and Presidio Heights looked acute. My heart was pounding as I drew a fourteen-degree angle on my overlay, Blue Rock Springs to BM 53 to Presidio Heights. It intersected with the line from Mount Diablo in the block of Washington Street between Maple and Cherry streets. Probability's cornucopia of coincidence was exhausted.

I went back to the Halloween card and studied it closely. The "signature" at the bottom was particularly interesting. The pelicanlike thing at the left had always been interpreted as meteorological or astrological. Now that I looked at it in the light of the pattern emerging on my map, it looked very much like a right angle with flags and dots attached. It would correspond to the Blue Rock Springs-BM 53-Berryessa right angle if turned 90 degrees to the northwest. It looked a bit out of kilter on the card. I measured the angle its left wing formed with the bottom margin of the card. Fifty-three degrees. Fifty-three again.

Now the two dots between the pelican's wings took on a malevolent glitter, as if they were two hard, cold little eyes staring at me. The eyes. I's. The Zodiac always dotted his I's even in upper case. I rummaged around, found my old boy scout manual, and flipped the dog-eared pages to the chapter on signals. It was Morse code. Reading from left to right, the dots and dashes on the pelican spell "NW" on the outside of the angle. Inside, the two dots spell "I." Turn northwest. I am at the center.

Shaking off my paranoia, I looked at the signature again, keeping my eyes averted from the evil bird on the left-hand side. If I rotated the Z and cross hairs 90 degrees clockwise, symmetrically opposite to the pelican, it became a compass rose, pointing the way north, a map orientation symbol. And there was something else.

The symbol on the left turned counterclockwise. The one on the right, clockwise. Just like in the bathtub. Water. Riverside. Lake Herman. Blue Rock Springs. Lake Berryessa. The Washington Street fire hydrant. The phone calls from Springs Road and the Main Street car wash. Water, water, everywhere.

I still didn't understand Lake Herman Road. How did it fit in? I measured the angle between it, BM 53, and Blue Rock Springs. Eleven degrees exactly. Now the secondary meanings reported in. Main Street, Springs Road. Mainspring. It was a clock. He used a .22 at Lake Herman Road, then a 9mm at Blue Rock Springs. Twenty-two before nine. Eight thirty-eight. The hour hand sweeps a half de-

gree a minute. At 8:38 it stands eleven degrees below the nine o'clock line. He got it both ways.

Mount Diablo stood right on the periphery of the clock face. What time would it show? Fifty-eight degrees on the clock is 116 minutes, 1:56 before nine—7:04. In the 58-degree angle joining Mount Diablo, BM 53, and Blue Rock Springs, one leg points at a clock time of 7:04 (Mount Diablo), the other at the site of a murder committed on the calendar date 7/04 (Blue Rock Springs). He did it both ways again.

The Zodiac had left a Timex watch at the scene in Riverside. He used the phrase "about time" three times in rapid succession in reporting his conversation with Cheri Jo Bates. He wrote to the *Chronicle* (from the Greek *chronos*, "time"), the *Vallejo Times-Herald*, the *Los Angeles Times*. One part of the August 1969 cryptogram had gone to the *San Francisco Examiner*, known popularly as the "Ex." Time plus Ex: Timex.

I talked to a friend who paints. He hunted up a book for me on modern American art. There was a chapter in it on "earthwork" art. One pioneer in this field dug some 600 miles of trenches in the Sahara Desert with a backhoe, constructing geometric patterns meant to be perceived only from far above the earth. Others working in the earth medium have incorporated aerial reconnaissance photography into their work. The movement was in full swing in the mid-sixties, major works being executed around 1966 or 1967, two years before the Zodiac's Bay Area rampage. He was the crest of the wave, and nobody knew it—except Zodiac himself.

He had found the ultimate art form. Other artists had sought to remove their work from the ordinary human perspective, but at least the artifacts—the trenches, for instance—were still visible. Zodiac had trumped them all by using invisible lines whose interrelationships were apparent only from 200 miles up. His one-sided correspondence was another part of the conceptual artwork. It had been another late-sixties happening.

There was no passion, no irrationality, no hot blood in Zodiac. He was cold, precise, calculating. His victims were mere markers. They just happened to be standing on an invisible line whose relationship to other invisible lines could be seen only from outer space by someone whose eye was informed by the guilty secret. Their blood was shed merely to mark his canvas.

**O**NCE THE CALCULATION and design that went into the 52-mile-wide clock face became apparent, it was clear that Zodiac's rambling, misspelled, often incoherent communications were

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# 11:23 P.M.

MONTE CARLO. The casino hopes you never grace their tables again.

The restaurant was only too pleased to greet you to theirs. Now, it's coffee laced with Grand Marnier, sipped through cream. Sometimes you win. And sometimes you win.



What time today will you say "Grand Marnier"?



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## Mass Murderer

(continued from page 114)

not the product of a crazed nincompoop. The official attitude toward the Zodiac literature, as I saw it, was best summed up by the King of Hearts, speaking of the nonsense verses presented in evidence at the trial in *Alice*: "If there's no meaning in it, then that saves us a world of trouble, you know, as we needn't try to find any." Where there is design, however, there is meaning, and where there is meaning, the meaning is discoverable.

The tools the Zodiac used are neither new nor unusual. Secret forms of writing have been used throughout history to publish information and opinion that, if openly stated, would lead to the censure or punishment of the author (and in the case of the Zodiac, we are talking about the gas chamber). The prophet Jeremiah, for instance, refers to the despised Babylon as "Sheshach," using a reverse alphabet cipher. Galileo's discovery of the phases of Venus and Huygens's discovery of a moon on Saturn were originally published as anagrams. And closer to our own time, the poet Rolfe Humphries used the pages of the hoity-toity *Poetry* magazine to publish an acrostic that described the president of Columbia University as "a horse's ass."

When I first read the Riverside letter it immediately struck me that the Zodiac was flogging one clue to death. The letter was headed "BY," followed by a long black line. He began: "She was young and beautiful. But now she is battered and dead. She is not the first, and she will not be the last." Young and beautiful: *y* and *b*. *A* is the first letter, *z* the last. *B* and *y* are not the first and not the last; they are the second and the next to last. He said she was "battered and dead." She had died of a severed jugular vein. Now he repeated a near rhyming phrase, "battery . . . dead." He was using a rhetorical device called emphasis to drive home a point nobody got.

When you reverse the alphabet and match up pairs of letters, *b* and *y* make the only pair that spells an English word. What if he were spelling out words in a reverse alphabet cipher like that used by Jeremiah? I tried it out, and it seemed to produce results that could be matched to known Zodiac landmarks. I call the method "wizard" because when you substitute the letters of the word "wizard" for reverse alphabet letters, it spells "draziw," the mirror image of "wizard." The only original twist on the prophet Jeremiah's cipher alphabet appears to be that when two letters whose numerical sum is 27, such as *b* and *y*, occur, they cancel each other out. Cryptanalysts call such letters "nulls." Nulls flesh out a text but add nothing to its contents.

In several places the Zodiac wrote that he was killing people to "collect slaves for paradise." In the word "slaves," the let-



"I'm both impressed and disgusted."

Three weeks later, Burton was eager to hear more about the Republicans' dismay. "Tell me about it," he said, grinning hugely. "I'm entitled to enjoy it." It was a Saturday afternoon, and Burton was rummaging through his San Francisco office, cleaning up odds and ends from the reapportionment. His walls were decorated with press clippings of past battles, a photograph of Franklin D. Roosevelt, and a sketch of singer Bessie Smith.

Burton was different this afternoon—calm, rational, passionless. He talked about committee maneuvers, bill writing, legal considerations—the technical minutiae of his trade. When he returned to reapportionment, he was so deeply immersed that he used a special language to describe the process. "My concern was more importantly to lick the mechanics," he said at one point, "which meant the variables. Burbank or not. Daly City or not. We had Shasta or not, until I found that Yuba was a civil rights county." It was an exhaustive and utterly convincing justification of everything he had done, and it will no doubt confound the jury if the Republicans challenge his plan in court—another possible retaliatory step. They claim he violated the constitutions of both the United States and California, but he didn't seem unduly concerned. His plan, after all, was one of the most precise in history, the population in each district being not more than 223 people away from the ideal figure of 525,698.

Around mid-afternoon a telephone rang on his desk. He picked it up, and a look of alarm crossed his face. "Oh, God, no!" he said. His wife of 28 years, Sala, had tripped on a cobblestone sidewalk in Washington, dislocated her elbow, and was on her way to a hospital. In the next hour Burton placed a flurry of calls to friends and doctors, demanding that she get the best treatment possible.

Finally, he spoke to Sala herself, who was resting in her hospital bed. His voice dropped to a gentle rumble. From down the corridor, one heard fragments of concern and endearment—"How's my little sweetheart? How's my bride?" It was an unexpected display of tenderness, the soft side of a tough man.

The sun was setting. Martinez brought out the vodka, great man-size slugs of it, and Burton finally relaxed. He was hot to talk, he said, and soon he was off at full cry, laying into cocktail party liberals and their "intellectual sophist bullshit."

"I trust visceral reactions, and I trust workers' reactions," he roared, skewering his listener with his wild eyes. "I like people whose balls *roar* when they see injustice. You just don't hassle people on social security. No profound intellectual rationalizations. That's it! Shut up!"

"You see, the poor and the dispossessed, they have enormous power," he continued, building up an explosive

head of steam. "The powerful are the most fearful. They see all the shadows, like in Plato's caves, and if you accept that as an operational factor, you can deal with them. You can't firefly and toe dance around. Or, as I've said once before, when you're dealing with the economically powerful"—and here, as he paused to gather himself, the room seemed to quiver in anticipation—"when you're dealing with the economically powerful, *you have to terrorize the bastards!*"

And he roared on into the evening, a man transfigured by his passion, a man altogether too large for these small and snide times. A dinosaur, perhaps. Toward the end, he said, "I'm determined to

make the universe a better place. Not the world, the *universe*. Not the Western world versus the Eastern world, not the country versus the state, but the *universe*. I'm absolutely determined to do that. Absolutely determined."

There was nothing more to say. Darkness was falling on the city that Burton considers an island of political sanity in a world becoming chilly for his kind. He had a dinner party to attend, and so he moved to a table in a corner of the office and began packing his briefcase. He left behind a few Census Bureau publications and the like.

"That," he said, "is the beginning of the reapportionment file for 1991." ■

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are a wizard pair and drop  
remainder reads:

S L A S  
H O Z H

HOH. Or is it Z, H2O?

Here is an example of what appears to be a nonsense word but which relates directly to two of the Zodiac's most powerful clues, water and the radian angle. He quoted frequently from *The Mikado*. In one letter he recited a patter song of Ko-Ko, the Lord High Executioner, in which Ko-Ko sings that he has "a little list" of potential victims, including "people who eat peppermint and puff it in your face." But the Zodiac didn't write "puff it." He wrote "phomphit." Nervous titlers swept the Bay Area when this was published at the expense of the poor demented loony who couldn't even spell "puff it" correctly. Poor Zodiac. He had the longest laugh.

PHOMPHT: P2 H2 O M I T.

Reading it as an anagram, I see a formula: H2O equals MT over 2PI. H2O is his familiar water signature. MT (read "empty") is the Zodiac's shorthand for "zero" or "circle." A circle divided by 2pi is the radian angle. What was passed off as gobbledegook was really a mathematical equation traveling incognito.

One of the Zodiac's most ingenious devices is a code I call "binary Morse." Morse code is a binary system having only two types of characters, dots and dashes. Zodiac used it from time to time in conjunction with binary numbers, substituting dashes for ones, dots for zeros, and vice versa. Numbers can become words, and words can be transformed into numbers, disguised beyond recognition. "4-TEEN" is a stunt performed by a virtuoso who knows that his audience is incapable of appreciating his artistry. Here's "TEEN" in binary Morse: T(1) E(0) E(0) N(10). 10010: binary 18. "4-TEEN" is a rebus, a puzzle in which the relationship between the two elements implies a verbal clue. 4 before 18 is 14. "4-TEEN" says 14 in English; as a mathematical rebus, it says the same thing another way. Once again, the Zodiac gets it both ways.

Then there's "cid." He didn't misspell "kid." "Cid" is made up entirely of Roman numerals: D (500), C (100), I (1). DCI is 601. In binary notation, 1001011001. In Morse, XEMIT. Timex. Why backward? Because forward, "Timex" in binary Morse is the number 617, Roman DCXVII. Try spelling anything that even remotely resembles English with that!

"I shot a man sitting in a parked car with a 38." Again, a violin recital for the deaf. The Zodiac shot three men sitting in parked cars, one with a .22, the other two with a 9mm automatic. The one he shot with a .22 was unwittingly sitting on the end of a gigantic invisible hour hand pointing at 8:38. Another victim was shot by a fare who had ordered him to skip the

block between Maple and Cherry—the 3800 block. In binary, 38 is 100110. In Morse that's T(1), I(00), M(11), E(0). Time. The clock face. "I said it was about time. She asked me, about time for what? I said it was about time to die."

Let's go back to the Halloween card. The thirteen eyes on the card are divided into two groups: at the extreme left there are nine tiny eyes, to their right four larger eyes. One is very large, and the three to its right are smaller. This is a graphic illustration of the mathematical principle called "casting out nines." The very large eye is a 10, the three smaller ones are 1's. The sum of 1 plus 3 is what's left when 13 is divided by 9. It works with any number. Just add together its digits until only one remains. That's what is left when the original number is divided by 9. The practical effect is that 9 equals 0, and all numbers evenly divisible by 9 likewise equal 0: 18, 27, 36, 45, . . . I is the ninth letter of the alphabet. I is (or am) a 9. The Zodiac frequently called police "meanies." With two n's "meannie" is an anagram for "me a nine."

The Berryessa attack took place on 9/27, at 6:30, according to Zodiac's own documentation. All zeros. According to one estimate, he inflicted a total of 18 wounds—another 0. On Zodiac's Mount Diablo clock, Lake Berryessa is at 12. But he didn't write 12; he wrote 0. Zero hour.

Holes in card

**I**N THE FIELD OF LITERARY STUDIES there is a classic debate among scholars over the relative importance of form and content. Those who are preoccupied with content argue that what the author says is the proper subject of study; formalists favor study of the way in which the author says it. Discussion of the Zodiac literature has always been limited to the literal meaning of the English words as they appear on the printed page. To date, no serious study has ever been devoted to the form in which those words are expressed.

The Zodiac submitted two lengthy ciphers to public inspection. The first, received August 1, 1969, was his praise of homicide ("I like killing people because it is so much fun."). It ends with the anagram "EBEORIETEMETHHPITI." So much attention was concentrated on the cryptogram as a configuration of words that nobody ever counted it to see what it expresses in numbers.

The English text is 390 letters; the anagram is 18. The ratio between these two numbers, 390:18, is the same as that between 3 and .14159265. This cryptogram is the number pi disguised as a linguistic document. The radian angle, the clue with which my whole inquiry began, is defined by pi. Here it is again, in camouflage. Once again the Zodiac was doing nothing new. In ancient Greece, poems



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were written in the graphic form of their subjects. An example of this is a poem in *Alice*, "The Mouse's Tale," which is printed in the shape of a mouse's tail. The Greeks, who had a word for everything, called this technique *technopneusia*.

The 340-character cipher, received November 11, 1969, has never been deciphered. Everybody worked on it, including members of Mensa, whose IQs are in the top two percentile of the entire population. All the confident predictions about its solution were never fulfilled. The brightest and the best flunked.

While they were concentrating on figuring out its content, nobody paid any attention to the form. The puzzle consists of three kinds of symbols: block letters, geometric forms, and dots. There are six dots. The lines containing dots subdivide the text into groups of lines numbering one and four lines each. There is no other type. The sequence of undotted lines, reading from top to bottom, is 144114. It's the binary number 38. TIME.

Why groups of four lines? This cipher, like the first one, has 17 letters to the line. 4 times 17 is 68. 68 is the binary Morse spelling of the English word "nine." It's an old friend.

The Zodiac concluded his letter to the *Los Angeles Times*, mailed from Pleasanton in March of 1971, with his crossed-circle sign, followed by the number 17 and a cross. This was translated in a *Chronicle* headline as 17 DEAD. No one thought to correlate that to the form of the two large ciphers—17 across. Likewise, while it was noted that he had manipulated the number of cipher characters used for each letter of the alphabet in such a way as to make *q* the most used character, it wasn't noticed that *q* is letter number 17. Nor was it observed that the number of letters in his missive to the *Times*—408—is exactly the same as in his cipher of August 1969.

**W**HEN I EXTENDED the line of the hour hand from Lake Herman Road until it crossed the Mount Diablo-Presidio Heights line, they intersected just off the Golden Gate. About equidistant from both lines and near the apex they form is a feature called Land's End, named after the westernmost point of land in Cornwall, England.

I had once seen Land's End from a ship standing well offshore. It didn't look like much from that perspective, but now I looked at it as the Zodiac would have—on a map. Land's End is five degrees, 44 minutes west of the prime meridian, which runs through Greenwich Observatory. Land's End, San Francisco, is five degrees, 30 minutes west of the 117th meridian, which passes a few miles east of Riverside. When you cast nines out of 117, the remainder is 0. I wondered if the

Zodiac saw a rough arc of the Earth. Riverside was his Greenwich. The meridian dred seventeen west runs to the Pacific. Riverside through the deepest hole measured from sea level, in the Western Hemisphere—Death Valley. Its deepest point, Badwater, is near the line. It reads like a catalog of Zodiac themes: bad, water, zero, hole, death.

Longitude is a function of time. The earth is a gigantic clock, and every fifteen degrees of longitude is an hour on the clock. I remembered something I had once read about Oxford. Before standard time was established in the late nineteenth century, every place was on local time. Travelers had to reset their watches whenever they came to a new town. Standard time, with its fifteen-degree-wide zones, made everything a lot simpler.

But Oxford University didn't like being deprived of its own time. Each evening the bell of Tom Tower at Christ Church College is tolled to commemorate the Oxford founders. The observance is officially set for 9 P.M. But by timeworn tradition, the bell doesn't begin to peal until 9:05 because Oxford is one degree, fifteen minutes west of Greenwich.

So it was when Lewis Carroll taught mathematics at Christ Church, and so it is today. To refresh my memory, I leafed through a book about Oxford, looking for the passage about local time. As I was searching, one of the plates leaped out at me. It was an aerial photo—a Zodiac-eye view—of the city. All the colleges were visible, each one built around a quadrangle whose lawns are quartered by crosswalks. One college is singular: its quadrangle has a circular walk quartered by a cross. The sign of the Zodiac. The college is Christ Church.

**I** FOUND THE SOURCE OF THE pen-stroke figures from the January 1974 letter in about an hour after obtaining a photocopy from the police. It seemed logical to assume that the Zodiac would have quoted from something that everybody knew. Otherwise the challenge would have been meaningless.

*Alice* seemed a likely choice, given the other implicit Lewis Carroll quotations in the Zodiac's oeuvre. John Tenniel's illustrations have been familiar to hundreds of millions of children for more than a century. It also seemed likely that the illustration would show a timepiece. "Jabberwocky" has a sundial. The mantelpiece in the Looking-Glass House has a backward clock.

But there is only one watch, the kind you can carry in your pocket and leave behind at the scene of a murder. The White Rabbit is looking at it, fretting about the time, in the illustration that accompanies the chapter "Down the Rabbit Hole." The Zodiac signed his poem "rh" in Riverside. The pen-stroke figures were taken from the lower right-hand corner.



White Rabbit's waistcoat and his umbrella. The groups had separated to hinder recognition, but when reassembled, they matched up. The Zodiac wrote in his first letter: "I am not sick. I am insane." Look again: I am Not Sick. I am in SaNe. NS in wizard is MH. Mad Hatter. March Hare. The Mad Tea Party. The Mad Hatter was condemned to a perpetual tea party because he had been murdering time.

MT for zero. For Lewis Carroll, MT is the Mock Turtle. He sings the praises of turtle soup "so rich and green/Waiting in a hot tureen!" Question: When is a tureen of turtle soup not a tureen of turtle soup? Answer: When it's MT.

Turtle soup isn't green, anyway. Split-pea soup is green. Scholars haven't noticed it, but Carroll's "green-rich" may have been a pun on "Greenwich." The MT tureen is a hole, a zero. It's GMT, Greenwich Mean Time, the time of zero longitude. GMT is known to navigators the world over as "z time."

Casting out nines. Vanishing. That is what Lewis Carroll's "Hunting of the Snark" is all about. In "Snark," there are nine characters, and all multiples of nine vanish, zero out. The Baker is an interesting character. He loses 42 boxes of goods. That's because 42 boxes is 42 cubed—74,088—which is evenly divisible by nine. He has no name, so everyone simply calls him "Ho!" He also loses his watch and his umbrella. The Zodiac's thirteen-character cipher is made up of block letters and circles, except for the tenth character, which is an inverted umbrella. The watch is in the Riverside Police Department evidence room.

There is another character, called the Butcher. He is also a mathematician. He signs on to kill the Snark, but a keener passion grips him outward bound:

He came as a Butcher: but gravely declared,  
When the ship had been sailing a week,  
He could only kill Beavers. The Bell man looked scared,  
And was almost too frightened to speak.

The Beaver, another of the crew, takes out insurance.

The Zodiac stabbed Cecilia Shepard in a part of the body vulgarly called the "beaver" with a large-blade weapon. A butcher knife? He wrote that his "killing tools" were "bought out of the state." Normal English would be "out of state." "Bought out of the state" read acrostically is "BOOTS." Boots is the first crew member named in "Snark," and he is described as a "maker of Bonnets and Hoods." Is that why the Zodiac wore a hood at Lake Berryessa?

The Baker, the one they call "Ho!", is the one who encounters the Snark. There is a particular type of Snark called Boojum, and if you meet a Boojum, both you

and it will vanish. From some distance the Baker's shipmates watch him approach his quarry:

"It's a Snark!" was the sound that first came to their ears,  
And seemed almost too good to be true.  
Then followed a torrent of laughter and cheers:  
Then the ominous words "It's a Boo—"

Halloween card: "BOO." As a literary quotation, it's what you say before you vanish.

**W**HEN THE ZODIAC went looking for murder victims on July 4, 1969, he wasn't celebrating America's independence. He was commemorating an event that had taken place more than a century before on a sunny riverside in England where an eccentric mathematician from Christ Church College, Oxford, entertained three little girls with an extemporaneous story of incredible wonders in a remote land that existed only in his imagination, like the world of the Red King's Dream. Later, he bestowed this benison on his amiable invention:

And, though the shadow of a gh  
May tremble through the story,  
For "happy summer days" gone by,  
And vanish'd summer glory—  
It shall not touch with breath of bale,  
The pleasure of our fairy-tale.

He was horribly wrong. The Jabberwock is alive and well and somewhere in our midst.

### Postscript

*The preceding "portrait" was just the tip of an iceberg. In supplementary working papers, author George Oakes (a pen name) identified a suspect whose name, birth date, address, and telephone number he believed he had found hidden in the Zodiac clues, along with the suspect's mother's name, birth date, and address—and coded allusions to an Oedipus complex. Receipt of such material is not a daily occurrence at California Magazine. On the chance that the manuscript could contain evidence about some particularly heinous crimes, we immediately turned the material over to the FBI and the state attorney general's office.*

*We then hired three consultants—a computer scientist, a cartographer, and a mathematician who does code-breaking work for the National Security Agency—to evaluate Oakes's theory. The cartographer discovered discrepancies of measurement on the death clock map but acknowledged that these might be accounted for by the use of nonscientific*

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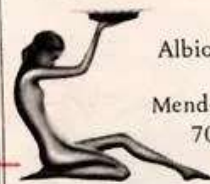
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tools (the Zodiac had used an everyday road map). The other consultants found the code-breaking results improbable from a purely statistical point of view. Large assumptions were involved in deciding how to regroup the letters of an anagram and in deciding where the breaks were between dots and dashes in Morse code, and between zeros and ones in a binary number series. There was too much flexibility in Oakes's technique, too many manipulations were involved in obtaining each result—and even then things didn't always fall into place. In the statistical models of the experts, Oakes's flamboyant free associating just didn't compute. The consultants wouldn't say that the theory was wrong—only that it was not convincing.

The FBI forwarded the material to its own cryptography experts in Washington, D.C. They weren't very impressed, either, and at last report the bureau was not about to bother the person named, who turns out to be a fairly prominent resident of another state. An investigator in the state attorney general's office described the theory as "a lot of bull." Like most detectives, he didn't figure the Zodiac to be that bright.

Earlier this year, Oakes had approached Captain Ken Narlow of the Napa County Sheriff's Department with his preliminary findings. Narlow is the only one of the original Zodiac investigators still actively pursuing the case. He is used to people coming in off the street with Zodiac leads, but he had never seen anything like this. The first thing he did—as a routine matter—was to check out his informant. Oakes, he learned, was serving his country in Fort Sill, Oklahoma, at the time of the killings. The thing that most intrigued Narlow, however, was the radian angle business. Why had the Zodiac told us to place a radian angle on Mount Diablo? The police had never been able to answer that one; in fact, they had never tried. But there was something about the death clock scheme that troubled Narlow. How could the Zodiac have planned all those murders? In the case of the Lake Berryessa attack, the two kids had gone there on a whim. At that time of year (late September) and that late in the day (six-thirty), the chance of finding someone up there is slim. "But who am I to say he's wrong?" Narlow adds. "I've been after the Zodiac for twelve years and haven't caught him yet."

Oakes responded to official opinion with a lengthy, point-by-point defense, but it had nevertheless become clear by now that we couldn't go with anybody's name, much less his address and telephone number. Still, Oakes himself and his Holmesian exertions continued to fascinate us. What had started as a freelance writing project for him had become an all-consuming and potentially dangerous passion.

Periodically he would show up at the Napa sheriff's office with new amendments to his theory, and eventually these visits brought him some unwanted publicity. In May he was identified in a San Francisco Chronicle story about amateur Zodiac sleuths. He was already having trouble sleeping, often waking up in the middle of the night to jot down new ideas. And after the story appeared the situation became even curiously. Seemingly mundane events took on new and—through the looking glass of binary Morse—ominous meanings. In a recent letter to us he revealed the mortal fears of a man locked in intellectual embrace with the Zodiac:

Four days after my name was in the Chronicle I got two phone calls at 1:30 A.M. On the 9th, 9 is I. The caller hung up as soon as I answered, both times. Two rings: 00. Morse letter I.

Maybe that's just paranoia talking.

On the twenty-second of June, I got two similar calls, at 8:20 A.M. Since I now automatically analyze numbers, I noted that 8 and 20 make 28. 6-22: 6 and 22 are also 28. 28 is 11100, MTI, empty eye. Halloween card.

Maybe that was just paranoia again.

Do you remember what happened here on June 22? There was a fire set by an arsonist that burned 25,000 acres. He planted four incendiary devices with timers set to go off at 1:30 P.M. 4:1V. 130: BER. The fire was headed straight for Lake Berryessa before it was contained. Timers: TIME, clocks.

Two days later, on the twenty-fourth, I got another call, this time at 6 P.M. sharp (6, 110, ME). This time, he didn't hang up. And this time I was mentally prepared. "—, is that you? —, what would you like to hear?" (Whoever the public personality, the Zodiac personality is obviously about four years of age emotionally.) '112? 9745? Are you 23, —? How about 532, —, is that DICE? —, what you did on Monday was a VERY BAD THING' (I have a lot of experience talking to my three-year-old daughter). That got a response: 'You're right,' rather weakly. Then click, buzz.

As best as I can make out on my Triple-A map, the 11:12 (DEATH) hour-hand position laid out on the Bay Area, with BM 53 as the center and Lake Berryessa as 12, points directly at the junction of Silverado Trail and the access road to Rector Reservoir (water). That's where the four incendiary devices were set.

If any one, or all, of my family came to grief because of some loose nut, it would be hard enough to take. Now I have to live with the potential of bringing it on them. If he gets me, at least it's fair combat. But my nightmares have to do with my little daughter especially. He promised gun, knife, fire, and rope. I just hope that having used the first three, he's saving the last for himself.

Article May 4, 1981: 4+4=8