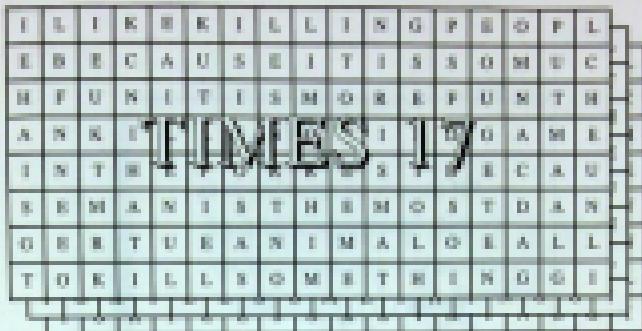


401	402	423	428	439	458	467	474	479	488	487	498	505	514	542	562	581		
429	438	456	466	471	474	479	488	487	498	487	498	505	514	542	562	581		
437	457	476	474	463	464	465	474	479	488	498	505	514	536	556	576	595		
437	475	474	463	464	465	474	479	488	498	505	514	536	576	595	576	595		
438	480	502	500	483	482	485	499	509	501	503	504	509	517	556	576	595		
479	503	441	479	479	499	509	501	503	504	509	514	514	514	514	514	514		
491	519	446	476	476	495	506	506	506	506	506	506	506	506	474	453	473		
500	429	429	477	476	476	526								462	462	462	471	479
479	487	476	476	487	504	504	503	503	503	503	503	503	503	479	479	479	479	479
479	479	494	513	513	513	513	513	513	513	513	513	513	513	513	513	513	513	513
479	493	513	513	513	513	513	513	513	513	513	513	513	513	513	513	513	513	513
493	501	536	532	532	579	589	589	589	589	589	589	589	589	589	589	589	589	589
510	529	531	536	536	536	536	537	536	536	536	536	536	536	536	536	536	536	536

The Amazing Story of the Zodiac Murders In California and Massachusetts 1966-1981

By Gareth Penn

DURING THE YEARS 1966-1981, CALIFORNIA WAS TORMENTED BY A SPERIAL MURDERER CALLING HIMSELF "The Zodiac," among other things. Besides taking the lives of six people, he bombarded the press with letters giving the interpretation of his messages. In those same letters, the Zodiac claimed that he was revealing his identity in some kind of code. Not only has the Zodiac never been apprehended, but the "code" was never cracked by the authorities. This book offers a comprehensive and internally consistent analysis of the Zodiac's letters and offers proof of his identity as derived from that analysis, corroborated by documentary evidence also presented in this book. There is now evidence that the Zodiac has struck again in New England. That story may yet prove to be even more macabre than the California murders. But perhaps the most astonishing aspect of this very strange story is that a man of great intellectual and educational attainments, who had at within his power to do anything he wanted, chose to masquerade as a morose killer. Why did he do it, and what did he gain from it? The answers are to be found here.



THE AMAZING STORY OF THE ZODIAC MURDERS
IN CALIFORNIA AND MASSACHUSETTS
1966 - 1981

By Gareth Penn

THE FOXLOVE PRESS

"If there's no meaning to it,
that saves us a world of
trouble, you know, as we
needn't try to find any."

... The King of Hearts

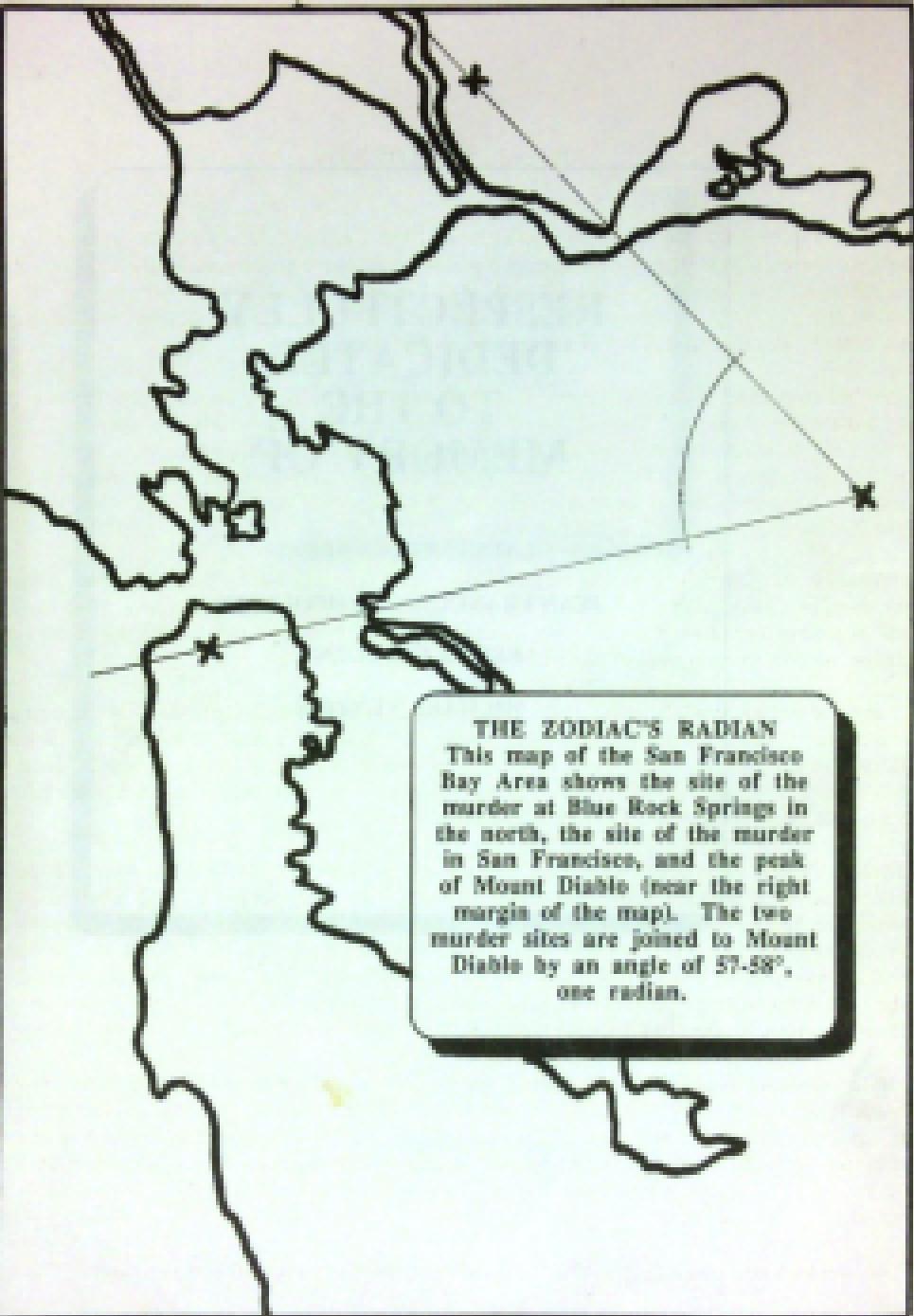
**RESPECTFULLY
DEDICATED
TO THE
MEMORY OF**

LAURENTIUS TALLA

JEAN FRANÇOIS CHAMPOUILION

BEDŘICH HROZNY

MICHAEL VENTRIS



THE ZODIAC'S RADIAN

This map of the San Francisco Bay Area shows the site of the murder at Blue Rock Springs in the north, the site of the murder in San Francisco, and the peak of Mount Diablo (near the right margin of the map). The two murder sites are joined to Mount Diablo by an angle of $57\text{--}58^\circ$, one radian.

THE CALCULUS OF EVIL

During the period October 1966 through October 1969, California was the scene of a series of baffling murders committed by an unknown person who signed himself variously as "r-h," "Z," "the Zodiac," "a friend," "A Citizen," and "Red Phantom." He killed six people and nearly succeeded in killing two others. These crimes appeared to be without motive. Neither rape nor robbery was involved in any of them.

The Zodiac offense none of the handbooks ordinarily used by police investigators to discover the authorship of crimes. They followed up on hundreds of denunciations, to no avail. Firearms records led nowhere. They pored over the admission and discharge records of every mental institution in Northern California. They even checked the circulation records of public libraries, looking for heavy readers of astrological books, thinking that since he called himself "the Zodiac," he might be a student of astrology.

Ordinarily, the police expect mass murderers to follow the same modus operandi. Son of Sam, for instance, always shot long-haired girls with a .44. By October 1969, the police had figured out that whatever other differences in methodology the Zodiac might exhibit, he always attacked couples in rural parts of the North Bay Area.

In late December 1968, he had murdered two teenagers in a lovers' lane near Vallejo, using a .22-caliber firearm. Seven months later, he attacked a couple in another lovers' lane at Blue Rock Springs golf course, also near Vallejo, this time with a 9mm automatic pistol. Then he drove about five miles into the heart of the city of Vallejo to report the crime to the police from a pay telephone about four blocks from the police station.

Toward the end of September 1969, he approached a couple picnicking at the water's edge of Lake Berryessa, a much-frequented recreation area. He was wearing a black cloth hood on which he had embroidered a crossed-circle sign (which appeared in lieu of a signature on every letter from the killer during this period). Holding his victims at gunpoint, he told them that he was born in Colorado and had escaped from prison at Deer Lodge, Montana. He took their car keys, telling them that he needed their car to make good his escape. Then he tied them up with a length of clothesline that he had apparently brought along for this purpose.

Having done so, he attacked them with a butcher knife. Leaving them for dead, he then used a black felt-tip marker, also apparently brought along for the purpose, to write an inscription on the driver's-side door of their car. Then he drove some forty miles into the city of Napa to report the crime to the sheriff's department from a pay telephone about four blocks from the Hall of Justice. Just as he had done in Vallejo, he left the phone off the hook, as if to facilitate tracing.

Two weeks later, a Yellow Cab driver picked up a fare in downtown San Francisco. The fare

asked to be taken to the corner of Washington and Maple, in fashionable Presidio Heights. Somewhere toward the end of the trip, the fare asked the cabby to let him out a block farther up Washington, where it intersects with Cherry. When the cabby pulled over to the curb and set the handbrake, the fare pulled out a .38-caliber revolver instead of his wallet and killed the cabby with one shot to the head. When the cabby's corpse was undressed at the hospital, it was found that one of his shirt tails had been hacked off with a knife.

Three days later, the *San Francisco Chronicle* received a letter from the Zodiac claiming credit for the cabby's murder. To make sure that no one else got the credit for this anomalous-sounding crime, the Zodiac enclosed a snippet from the cabby's shirt tail. It had been soaked in the blood that had bespattered the inside of the cab. It was the same fabric, the same blood type.

So much for the modus operandi. There was obviously no lowest common denominator to the Zodiac's homicidal activity. Two of the four crimes had been committed in lovers' lanes. In three cases, the victims were couples. Also in three cases, the slayings were in the North Bay. It didn't help any to calm the nerves of a jittery Bay Area when it was revealed, in November 1970, that the same individual had been responsible for the murder of a coed at Riverside City College in Southern California in October 1966. This time, he had disabled the victim's car by disconnecting her battery while she was away, then offered her a ride home. While ostensibly walking her to his car, he dragged her into an alley where he cut her throat. The only physical evidence at the scene of the Riverside murder, besides the victim's body, was a man's Times watch stopped at 12:22.

What connected the Zodiac to the murder in Riverside was handwriting evidence. The Zodiac bombarded the press in the Bay Area over a period of almost two years in 1969-1971 with letters and cards. Following the murder in Riverside, he had written to the police, the local press, and even the victim's father. One of these letters was handwritten, and expert analysis showed that it was from the same hand as the letters from the Zodiac in Northern California. Strangely, although the Zodiac went to great lengths to make sure that no one else got the credit for the four crimes committed in the Bay Area, he said nothing overt about Riverside until after his authorship of that murder had been publicly proven.

The letters made even less sense than the murders. They were characterized by strange misspellings, lapses of syntax, and Delphic-sounding utterances, which rapidly led the authorities to the conclusion that the author was deranged, not to mention of low educational attainment. In these letters, the Zodiac claimed to be identifying himself in some kind of code. "Tell them [the police] to cheer up," he wrote in one letter. "When they crack the code they will have me."

In fact, the very first communication from the Zodiac during his Bay Area phase was a cryptogram which he claimed would reveal his identity when solved. Although the cipher was broken, the contents did not appear to justify the claim. The solution was just a rambling encroachment on the pleasures of homicide, ending in a strange jumble of letters.

Beginning with the letter in which he claimed credit for the cabby murder and going on through

the next year, the Zodiac announced that he was planning to attack a school bus. Since there was no discernible pattern in what he did, it was widely assumed that he was quite capable of carrying out this threat, and for some time afterward, school buses in Vallejo were convoyed by police cars. In Napa County, sheriff's deputies literally rode shotgun on school buses. Two letters, one mailed in November 1969 and the other in April 1970, contained diagrams of the infernal devices which the Zodiac said he intended to use in his school bus attack. But he never made good on his threat.

There were three more ciphers, as well. The second one, mailed in November 1969, was written in 340-characters. It stumped everyone who set his hand to it. In April 1970, there came yet another, of 13 characters, which the author claimed would reveal his name. Then, in June 1970, he sent the *Chronicle* a letter in which he included a cipher of 32 characters. He suggested that "something interesting" would be found if the authorities were to place a radian on Mount Diablo, a prominent Bay Area landmark. In a letter mailed a month later, he gave a hint about the contents of the 32-Character Cipher: "PS: The Mount Diablo Code concerns radians & # inches along the radians." (In the letter of the previous month, he had said that the solution of the cipher would give the location of a "buried bomb" and that it would be necessary to go "Four inches along the radian" to find it.)

This time, the police suppressed the letter entirely. The local newspapers carried a brief paraphrase of its contents, but neither the radian hint nor the 32-Character Cipher appeared in print.

In December 1980, I learned of the contents of the Mount Diablo Letter by word of mouth from my father, Hugh Penn, who had read it while working at the Attorney General's Office in Sacramento. He mentioned it to me and suggested that it seemed rather incongruous for someone who had been passed off as a moron by the police even to know what a radian is, let alone use the word in a sentence. I had to agree.

A radian is a unit of angular measurement frequently used by engineers, mathematicians, and some people in the physical sciences. In mathematics, it has certain advantages over the better-known degree. There are various ways of defining it. In more familiar terms, it is $37.2957795131, \dots$, or 57 degrees, 17 minutes, 44 seconds. It is defined as an angle subtending an arc whose length is equal to the radius of the circle of which the arc is a part. Perhaps the most succinct definition is that it is a circle divided by 2π.

I was curious to discover what the Zodiac had meant by this rather bizarre suggestion. I bought a sheet of clear acetate and a marking pen. Using a protractor and a straightedge, I drew an angle of between 57 and 58 degrees on the acetate and then laid the acetate over a map of the Bay Area. I placed the apex of the angle on Mount Diablo, then rotated the angle around until one leg passed through the scene of the murder at Blue Rock Springs. Then I felt as if a ton of bricks had fallen on me.

The other leg of the angle went straight through Presidio Heights in San Francisco where the Zodiac had murdered the cabby. It was the most shocking experience of my entire life. Instantly, I knew why he had murdered the cab driver, and in that same instant, I knew exactly

what kind of person he was. He had chosen a cab driver as his last victim in the Bay Area because he needed a victim at a particular location at a particular time, and a cab driver is the most transportable kind of victim possible. All you have to do is to get into his cab and ask him to take you somewhere. He had not seemed to have a modus operandi because it was invisible, except from the perspective of outer space -- and with the secret knowledge of the radian. As far as he himself was concerned, he was obviously far from being a demented moron. If anything, he was a genius. He was coldly calculating and incredibly evil. I knew then that everything he had done or written, as mad as it might appear, had to have a discernible sense.

The Zodiac had claimed that he was identifying himself in some kind of code. The police had gotten nowhere with this in nearly a dozen years of trying. But then, they had also never discovered the invisible geometry on the map of the Bay Area. They were obviously suffering from poverty of the imagination. The suggestion about the radian was both truthful and significant. I assumed that everything else the Zodiac said was likewise truthful and significant, including the claim that he was identifying himself. Since he had used a rather esoteric form, the radian, to express himself, I felt that he was probably using a mathematical idiom as his "code." What means could be used to translate linguistic expressions into number?

Two came to mind. The first way is to assign a number to each letter of the alphabet in order, i.e. A = 1, B = 2 . . . Z = 26. This system was used by the ancient Greeks, and it was also used by Kabbalah. The other method that occurred to me was to write in Morse Code and then transcribe the Morse text into binary arithmetic, using 1 for dash, 0 for dot. In this manner, a name or a word can be transformed into a number.

A close examination of the Zodiac literature revealed that Z. was using both of these methods. Let me give you just one example. On the mail cover of his letter to Melvin Belli, the Zodiac wished the recipient a "merry Xmas." In the cover letters accompanying the cryptogram, he threatened a "kill rampage" lasting from "Fry to Sun" if the cryptogram were not published on Friday, 1 August 1969.

I chose to compare the two forms PRY and MERY because both are misspellings, both are from the same hand, and both end in the group -RY. If there is some kind of consistent linguistic principle at work here, then there ought to be some kind of equivalence between the prefixes P- and ME-. How's ME in Morse Code: 11 0. 11 is M, 0 is E. 110 is binary six. And F is the sixth letter of the alphabet. In both cases, we have a form of the number six followed by -RY.

What about -RY? R is 010, Y is 1011. 0100111 has a leading zero, which does not count. The rest of it is binary 43. By alphabetic quantities, R is 18, Y is 25. Their sum is 43. RY is a convergence of systems, a formulation which yields the same result when read two different ways. I came eventually to recognize "ME 43" as a typical Zodiac sentence consisting of a subject (ME) and a predicate (43). The typical sentence has no form of the verb "to be" (like the modern Slavic languages), and as is also typical, it is disguised as English and marked as significant by the device of misspelling or other kind of error.

The statements concealed in the Zodiac literature in this manner, besides being grammatically consistent, are also consistent with the identification of a particular person. And far from being the babbling of an idiot, the Zodiac's utterances, viewed this way, began to fit together in a very coherent fashion. He really did make a great deal of sense.

What follows in this book is an account of my search for that sense. It is also an account of my search for the sense of a world in which such evil can exist. I feel confident that I can report having found the sense of the Zodiac, but not the sense of the world. In fact, I am convinced, after more than six years' involvement in the Zodiac problem, that far from protecting us from people like the Zodiac, the institutions of police and press have permitted at least this particular criminal not just to get away with his crimes, but to flourish as well.

Much of the material presented in this book is esoteric in nature, or will seem so to many readers. Those with a background in European literature or mathematics will find much that is familiar. Before I get into the heart of the matter, I would like first to review some history which provides a background against which the Zodiac seems, I think, to make more sense than the short view against which he was assessed during his heyday. That review, the next chapter, is titled "The Language of God."

With that historical review behind us, I would then like to go over the highlights of the Zodiac's literary technique. I feel that it is more helpful to get an overview of this subject first, before tackling the Zodiac literature, than to deal with it piecemeal. This chapter is titled "Reading the Zodiac." Having done this prefatory reading, you will, I believe, be well armed for the narrative that follows.

Authors seldom issue warranties on their books. This one is an exception. I can guarantee that you will find this book to tell one of the strangest stories that you have ever read. I also guarantee unconditionally that it is all true. Quite a bit of detail has been omitted, due to the constraints of space. I have left out most of the false trails I have gone down and the errors that I have made. I have done so not so much for the sake of vanity as to spare you what I consider to be tedious repetition of what turned out to be inconsequential detail. I have presented solutions to problems without reconstructing every step that I took getting to those solutions.

Some solutions were intuitive. In several cases, my problem was not the solution, but communicating the solution to others, who could not see things as clearly as I thought I saw them. In fact, it has happened more than once that I have solved a problem, then spent the next five years reconstructing how I got to it so that it would make sense to others. In other cases, I simply went through teams of scratch paper, turning over every stone in sight until I found a solution that made sense. It sounds silly now, but I even spent an afternoon going through an Ape-English dictionary compiled from old Tarzan comic strips looking for Zodiac forms. Not finding any material in the public library on binary arithmetic, about which I knew nothing, I had to reinvent it from scratch, using nothing but logic as my guide. There are many cases in which I simply don't remember how I got from one place to another. All that remains in my mind is the result.

I freely admit to having expended much work without anything to show for it, and to having been wrong innumerable times. I am leaving most of that out not to spare myself any embarrassment, but simply to make this book as entertaining and informative as I can. Not long after I became involved in this project, I decided that since nothing of this sort had ever happened to anyone before, I was in a position to write the rule-book. And the first rule I wrote was that I should not be worried about what others might think of me. I was confident that the results would justify my exposing myself to the risk of scorn and ridicule. I hope that you will find, on having read this book, that that confidence was warranted.

Happy reading.

THE LANGUAGE OF GOD

En arche ferox. In the beginning was The Word, wrote John the Evangelist. But even John would have been the first to admit that whatever The Word was, it wasn't Greek. About five hundred years before the fourth evangel was written, the historian Herodotus theorized, on the basis of a fabulous experiment attributed to the Egyptian king Psammethicus, that the original language spoken by the human race was Phrygian. One of the oldest ideas in currency is that all forms of human speech descended by one means or another from some primordial proto-language.

There are modern theories relating language to the structure of the central nervous system, and there is a large body of philological research demonstrating how particular ancient languages have given rise to a family of modern languages (which are often not mutually intelligible), for instance Latin, whose progeny include Italian, Spanish, Portuguese, French, Provençal, Catalan, Romansch, and Romanian. There are various theories as to what causes linguistic change, just as there are competing theories about biological evolution; and just as with the question of evolution, linguistic theory has divided itself historically into two camps: one argues for gradual change, a position taken by most modern linguistic scholars, and the other, most strongly represented in the writings of the ancients, sees linguistic change as the product of cataclysmic events.

The best known of the ancient theories is very briefly put in the eleventh chapter of Genesis. The post-Deluge human population settled in the plain of Shinar and set about to build a city there. Part of their plan was to build a tower that would reach Heaven. God, seeing this, realized that given a common language, there was no practical limit to what humans could accomplish. To keep them within manageable restraints, he confounded their language so that they could not understand one another. Because of this, they stopped building both city and tower, and the place was called Babel, a name which derives from the Hebrew verb *babal*, "to mix up." The author of this passage apparently did not stop to ask himself why the place name should have a Hebrew etymology, since Hebrew was just one of the end-products of the Confusion of Languages.

In the first century of our era, the Jewish historian Flavius Josephus elaborated on the Old Testament version of the Confusion of Languages. Genesis 10 makes a Nimrod founder of Babel (as well as other cities), and Josephus writes in his Antiquities that Nimrod was the architect of the Tower as well. There is no Biblical authority for this story. But as with a number of other non-canonical stories of fabulous origin (e.g. the Hanowing of Hell), it became a fixture in Christian learning.

By the fifth century, Nimrod had literally taken on a whole new dimension. In the historical writings of St. Augustine and his disciple Orosius, Nimrod had become a giant. This appears to be due to the influence of pagan classical literature (of which Augustine had been a professor). The Giants had attempted to scale Heaven by stacking the mountains Osse and Pelion on top of one another, and they were huge in stature. Therefore the Biblical heaven-sealer Nimrod had to be gigantic, too. This is just one of many instances of the tendency in the early Christian era to reconcile pagan classical literature and Scripture.

In Hebrew Scripture, Nimrod is practically just a footnote. Through the process of accretion outlined above, he gradually grew into a fairly elaborate character. By the end of the thirteenth century, he was well enough developed to appear as a figure in a major work of secular literature, the *Divine Comedy* of Dante Alighieri.

Nimrod appears there in the *Inferno*, Canto XXXI, as one of the Giants buried up to their waists in the soil at the edge of the Ninth Circle. Three other Giants here are named by the poet: Ephialtes and Briareus, who tried to enter Olympus by climbing up on Osse and Pelion, and Anteus, the son of Libya, who was defeated in single combat by Hercules. He is the only Giant named who is not a heaven-sealer, and so he alone is unfettered. Of the four, only Nimrod speaks. When addressed by Dante's companion, Virgil, he responds, "Rapido escaz zabi abbi."

This utterance has two layers of significance. The first is that it fits the rhyme-scheme of Dante's *Inferno* (abba rhymes with zabi and palei). The second is that it means nothing in any known language. Nimrod's punishment, like the rest in Dante's conception of Hell, is analogical; it has to fit the crime. In this case, the sinner is condemned to an eternity of speaking and understanding a language which no one else knows. The Giant Nimrod, in other words, has a private language all to himself.

Jewish mystics had long been bothered by the problem of language. Until the construction of the Tower, not only had mankind had a single language; this language was also the language of God. Even allowing for their special status with the Deity, Jews had to be concerned about the purity of their Scripture. Hebrew was not the original language, and like the Gentile languages, it was an imperfect means of conveying The Word. Human speech, having been separated from the divine by the cataclysm of Babel, was like a dirty window through which the sunlight finally tried to shine. It was an astigmatic lens through which the faithful could see only a distorted version of God's utterances. Some means had to be found of reversing the evolution of language, in order to restore Scripture to its original, undistorted form.

Beginning around the end of the twelfth century, Jewish mystics in the Provence worked out a doctrine of mystical exegesis of Torah. It has come to be known as Kabbalah. Using a variety of methods, Kabbalists attempted to rewrite the Hebrew scripture in the language of God. They worked on their exegetic project for centuries. Eventually, like Christian Scholasticism, Kabbalah got sidetracked on microscopic issues. There is an enormous volume of Kabbalistic literature, a lot of it running to subjects like the seventeen names of God's right elbow,

Gentiles who were more impressed by the objectives of Kabbalah than its work product even-

ually became involved. Their purpose was not to reconstruct Scripture, but to acquire the God-like abilities of transforming pebbles into emeralds, to become invisible, to fly through the air, to live forever, or to subsist on nothing but sunshine. Many of the early Rosicrucian writings appeal to this sort of striving. The basic theory was that if God can work miracles simply by uttering a few words, knowing the exact linguistic form of those words would enable even a mortal to perform similar feats.

One Kabbalistic technique, making a sum of a word by adding together the alphabetic quantities of its constituent letters, and then substituting it for another word having the same sum, was called *gematria*, a Rabbinical corruption of the Greek *geometria* ("geometry"). *Gematria* led in turn to numerology, which is based on the notion that the power relationships in the phenomenal universe are encoded in the form of number. Whereas language can be shown to follow arbitrary rules, number is ironclad and international. The physical universe demonstrably follows mathematical rules and can be described mathematically; the sciences have even shown that certain phenomena are susceptible to mathematical prediction, for instance solar eclipses. The language of the heavens, in a manner of speaking, is mathematical. It can also be Kabbalistic.

It was the practice of early modern astronomers to publish their discoveries in the form of anagrams. They were pushing not only knowledge, but also the Church, to the limits. What they found in outer space with their telescopes was seemingly so contrary to what had been accepted and sanctioned by religion that they took the precaution of protecting themselves from scorn at best and prosecution at worst by disguising their findings in a form from which only they could retrieve them. Galileo announced his discovery of the phases of Venus as an anagram, as he did with his discovery of the rings of Saturn.

Galileo was a better astronomer than he was an anagrammatist. His discovery of the phases of Venus was couched in poetic Latin phraseology:

Cynthis figuræ annulatæ Mater Astorum.

"The Mother of Lovers [i.e. Venus] evulates the figures [makes the same shapes] as Cynthis [classical tag for the moon]." The anagram which he made out of this was not quite so elegant:

Mox annulata a me jam fracta legatur — oy.

"These stripes [halos] are being picked by me in vain — oy." He had wound up with two letters left over and just tucked them on at the end; "oy" means in Latin just what it means in English: nothing.

In 1832, Samuel Finley Breese Morse, the leading American painter of his day, was returning to the United States from a tour of European art museums. While in passage across the Atlantic, he fell into a discussion with fellow-passengers concerning the uses of electricity. He contributed the observation that electricity ought to be useful in the transmission of what he called "intelligence" — what we would call today "information" or even more prosaically,

"data."

Perhaps the most formidable problem confronting Morse in his search for an electrical method of transmitting information was how to translate language into a form that was suitable to the medium. His telegraph key was a kind of servomechanism that would click whenever the circuit was closed on the other end of the line — and that is all it would do. In order to translate clicks into letters of the alphabet, some kind of paraphrase was required.

Morse reasoned that the most a human auditor could make out of the clicks of his telegraph key was the difference between long and short intervals separating clicks. It would have been conceivable to make intervals proportional to the numbers 1 through 26 and then set each of them equal to a letter of the alphabet; but it would have required computers on both ends to distinguish between, let's say, M and N with accuracy. It would also make writing at a distance ("telegraph" is from Greek roots meaning "distant writing") very cumbersome and slow.

Instead, Morse devised an entirely new alphabet, one composed of groups of characters which were either long or short. It was, in other words, a binary system of writing, in which two types of characters could be arranged in various groups to represent the letters of the alphabet. Short-long, for instance, was the letter A. Long-short was N. When it became necessary to settle on a means of representing the Morse alphabet in print, dots were chosen to represent the short interval, dashes the long interval. The choice was purely arbitrary. Any other set of symbols would have done as well, provided that there were only two of them.

One of Morse's contemporaries was an English mathematician named George Boole. Boole made a number of important contributions to mathematics in his lifetime, but what he is chiefly remembered for is his reduction of logic to a manipulation of algebraic transactions and his conception of the universe of possibilities as consisting of unities and non-unities, in which the only constant values are one and zero, unity and nothing. It is for this reason that modern mathematicians think primarily of Boole when they think of binary numbers, numbers written with only two symbols, 1 and 0. As with Morse Code, the field of symbols is restricted to two-only. Combinations of these two symbols can be used to write any number, just as different combinations of dash and dot can be used to write any Morse letter.

Morse and Boole had a peculiar biographical relationship, seen from the standpoint of mathematics. Morse's lifespan was 81 years, Boole's 49. Those two numbers are, respectively, the squares of nine and seven. The irony goes even farther. Those two numbers, expressed in Boolean (base-two) numbers, have a very special relationship. Nine to the base two is written 1001; seven is 111. Written together as a single number, 1001111, they form the binary number 79. $9 \cdot 7 = 79$. Of course, it is a coincidence, but coincidence is often devastatingly ironic.

Like Morse, Boole had started out in a completely different field. He began his studies as a classicist and turned to mathematics much later. To his life's end, his favorite author was not Newton, but Dante. The scientific picture of the universe in Boole's time was heliocentric, whereas in Dante's, it had been Heliocentric. It may yet prove to be an even greater irony than any already noted that of Dante's work, Boole preferred the *Paradiso* to the *Inferno*.

About a century after the seminal work of Morse and Boole, it came time for the invention of the computer. The problem facing inventors in this field was essentially the same that had confronted Morse a century before. An electrical circuit can reliably contain only one of two pieces of information. There is either current in the circuit, or else there is none. Unity or nothing, one or zero, on or off. In designing machines which could process information (Morse's "intelligence"), they had to settle on a language that would conform to a binary pattern, one that could be assembled out of different groupings of two sorts of information (dot or dash, one or zero, open circuit or closed circuit). The result, in the field of computers, was that all information was reduced to the form of binary numbers. In that form, it could be assimilated and processed by electronic machines.

Dante's Minrod, the scaler of the heavens, was reduced in the end to speaking a language that no one but he could understand. The modern scalers of the heavens speak such a language. At least, it can be said that they share this language only with computers, because that is what they are. In recent years, we have become accustomed to being dazzled by gorgeous pictures from the heavens, sent back by the robots which we have sent out to scour the sky for us. We have beautiful pictures sent back from the vicinity of Mars, of Jupiter, of Saturn. What most of the consumers of these pictures do not realize is that they are not pictures at all, but something more like crossword puzzles, in which binary numbers have been substituted for words.

The fuel-to-payload ratio of a spacecraft is so enormous that modern space exploration was impossible before the advent of microcircuitry. While it may eventually prove to be feasible to send manned missions into space beyond the moon, the most economical means of space exploration within our solar system has proven to be that provided by robot spacecraft, operating on the most efficient energy budget imaginable. It takes electrical power to operate any kind of spacecraft. The largest power plant that can be sent into deep space for long periods of time is limited, by weight considerations, to the size capable of driving a transmitter with the output of a 60-watt lightbulb, the same size of bulb you might find in the lamp on your living-room end table. The only practical way for such a weak transmitter to get a message back to earth from Jupiter is not by means of modulated signals, such as the ones you get in your telephone or on your television set, but by continuous-wave, or a steady signal on a particular frequency, on which information is transmitted as interruptions of the transmission.

In other words, the signals sent to the earth by the Viking and Pioneer spacecraft consist of signal and interruptions of signal, i.e. on and off, one and zero, dot and dash. The language of the Pioneer spacecraft is indistinguishable, from a formal standpoint, from the Morse alphabet, except that in the language of Pioneer, there is a larger field of combinations to select from. Pioneer has other ways of expressing information than by making it conform to the Roman alphabet.

Modern scalers of the heavens are machines equipped with television cameras that resolve images of planetary bodies into dots which are arranged in a gridwork of lines and columns. Each line has a number, each column has a number. Every dot can be identified by the computer according to line-and-column coordinates. The computer further analyzes each dot for

its optical quality and assigns a shade-number to it, which determines its color. When Pioneer looks at Jupiter, each dot in its television image is assigned a pair of coordinates and a shade number. This combination of numbers, expressed in binary digits, is transmitted to the earth like a series of Morse characters by the onboard computer, which acts as a high-speed telegrapher, and then the information contained in those numbers is reconstructed by an earthbound computer so as to form an image. The first information about the rings of Saturn was received on earth in the form of an anagram. The latest news from that part of the solar system was received in the form of binary numbers.

In November 1974, a new kind of heaven-sending was undertaken by a group of astronomers at Cornell University under the leadership of Dr. Frank Drake. Instead of sending out a spacecraft to explore the heavens, they sent a message to its inhabitants. The message was carried on the medium of radio waves beamed up to the stars from the giant radio telescope at Arecibo in Puerto Rico. Drake had to overcome not only the barriers of space and time, but also the barriers of culture and language. A message had to be composed which would be meaningful to extraterrestrial beings who had not the slightest inkling of any earthly language. It was necessary, in other words, to reverse the Confusion of Languages which had been brought on by man's first attempt at the penetration of Heaven.

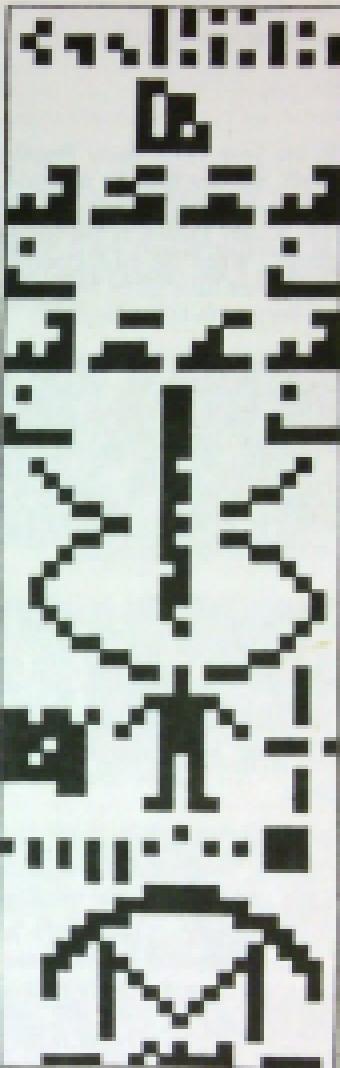
The message which was sent from Arecibo was a mathematical one. Any civilization advanced enough to receive and record radio messages from outer space would be mathematically advanced enough to make sense of it. The message is largely pictorial, showing a silhouette of the human body, a sketch of the DNA molecule, a diagram of the solar system, and a cross-sectional view of the Arecibo radio telescope. Other information includes the atomic numbers of the most abundant elements on the earth's surface and the chemical composition of the components of DNA. The whole message is a kind of typewriter-picture made up of binary bits arranged in a rectangle.

The problems involved in getting a message across to extraterrestrials are not confined to putting it in a form that they can comprehend without knowledge of English or any other human language; there also had to be some way to suggest to the recipients how to organize the contents of the message into the rectangular format. As the message was sent, it consisted of a long string of binary digits, which would be utterly incoherent unless arranged in rectangular format.

The authors got around this difficulty by expressing the message in a number of digits equal to the product of two prime numbers, 23 and 73, or 1679 in all. They reasoned that any civilization with the mathematical sophistication of the ancient Greeks would be able to recognize 1679 as the product of two primes. Multiplication, in turn, would suggest a rectangular format, since the rectangle is the geometric expression of multiplication. When the 1679 bits are arranged in a 23 x 73 rectangle, the typewriter-picture emerges. If formed any other way, the message is unreadable. It might appear, in that form, to be the product of idiosyncrasy rather than genius, or as the interstellar babbling of an inferior civilization. Such a message could easily be dismissed as worthless.

THE ARECIBO MESSAGE OF 1974

The message sent by Drake et al. from the Arecibo radio telescope is shown above in its digital form. When it is arranged in anything but the 23 x 72-bit rectangle, it is incoherent, as here. On the right, the same message is assembled in its 23 x 72 rectangular format. It is shown as if the digital text had been entered on a sheet of graph paper. The boxes containing ones are colored black; the boxes containing zeros are left white. At the top, reading from right to left, is a "Tutorial" showing the binary numbers one through ten. Following that, three prime numbers are used to describe, in terms of atomic number, the chemical components of the DNA molecule. Following that is a cross-sectional view of the DNA molecule, a silhouette of the human body, a diagram of the solar system, and a sketch of the Arecibo radio telescope.



READING THE ZODIAC

In the year 1777, Dolly Pentreath, a resident of Penzance in Cornwall, died. Neither her death, nor her life, for that matter, was very remarkable except for one thing, and that one thing earned her a rather peculiar reputation. During the last couple of decades of her life, she was widely known as the last person living who had been raised speaking the Cornish language. When she died, Cornish died with her. Of course, she also spoke English, but even so, it must have given her a very strange feeling to know that she was the sole remaining repository of an entire language.

In attempting to deal with the literary products of the Zodiac murderer, I have taken the position that what we are dealing with is not so much a secret code as it is a *private language*. Private languages are probably better known in psychiatry than they are to linguistics. Dolly Pentreath had a private language because of an accident of history. Every dead language had a last living speaker. What distinguishes Dolly Pentreath from the others is that her identity is known. In the case of the Zodiac, we have a private language which was purposely contrived by its sole proprietor for the purpose of excluding the rest of humanity from participation in his internal monologue.

I suggest further that this private language was not contrived *ad hoc* in 1969 but has probably been the central element of this individual's mental life for decades, beginning in all likelihood in adolescence. Readers who are familiar with Pig Latin and Double Dutch will see parallels between these languages and what I am suggesting here. But it goes far beyond merely adding nonsense-syllables to English words. Zodiacese, as I suggest we call this new language, has its own peculiar vocabulary, grammar, syntax, and what linguists call "idiomatic usages," that is, deviations from strict grammatical logic which are systematically and consistently applied.

When we speak of English, we can describe it as a Germanic language, related to modern German, Swedish, and Dutch, among others, with a vocabulary which is largely borrowed from Latin and the Romance languages descended from Latin, mainly French. In the same way, I would describe Zodiacese as a mathematical language whose working parts have been borrowed chiefly from Kabbalah.

Kabbalah, in turn, was largely derivative itself. The reverse-alphabet cipher which the Kabbalists called *etnash* was originally invented by the rabbinate during the Babylonian captivity. Devices such as anagram and acrostic were borrowed from classical antiquity, having been much used in ancient Greece and Rome. Kabbalah had, altogether, eight different canons, of which the Zodiac uses five. These are: reverse-alphabet cipher, redvision, acrostic, anagram, and letter as number (*gematria*).

I propose the name WIZARD for the Zodiac's reverse-alphabet cipher. To help you see why this is appropriate, let me show you how the cipher works:

A	B	C	D	E	F	G	H	I	J
Z	Y	X	W	V	U	T	S	R	Q

Each letter on the second line is the cipher-symbol corresponding to the text letter found above it on the first line. D is W; I is R; A is Z. Similarly, A is Z; R is I; and W is D. The enciphered form of the word WIZARD, then, is DRAZIW. There are a few four-letter words in English that do the same thing, for instance BEVY (YVIEB) and GRIT (TIRG), but I believe that WIZARD is the only six-letter word that behaves in this manner.

The main respect in which the WIZARD-alphabet differs from arback is that where a pair of matching letters occurs in the text, for instance GT or PK, they drop out. In almost all cases, the Zodiac uses WIZARD in combination with anagram, and where it does not matter what order the letters of an expression occur in, WIZARD-pairs represent superfluous material. The word WIZARD itself is made up of nothing but WIZARD-pairs. The only thing that distinguishes DRAZIW from WEZARD is the order in which the individual letters occur. If the Zodiac were to express the word WIZARD in this cipher, every letter would drop out, leaving nothing. It seems to me that calling this reverse alphabet WIZARD is doubly appropriate, since the word itself vanishes as if by magic.

Another favorite Kabbalistic technique is letter as number. A well-known (and generally misunderstood) example is the admonition of John the Divine concerning the "number of the beast," 666 (*Revelation*, 13:18). The scholarship is fairly well united behind the opinion that this number represents the sum of the letters of the Greek writing of the name "Nero," using the numerical values traditionally assigned to Greek letters in classical antiquity. It is not too surprising that John would resort to camouflage of this sort, since expression of less than flattering opinions about certain Roman emperors was a very dangerous undertaking.

In the Zodiac literature, numbers are given to letters according to the order in which they occur in the Roman alphabet. A = 1, B = 2, . . . Z = 26. There are two classes of exceptions. Z, occasionally uses Roman-numeral values where it suits his purpose (e.g., V = 5, C = 100), and the letter E, instead of being 5, as it ought to be, is consistently 3. I will suggest the reason for that in another place, and I will defend my suggestion with several examples taken from the Zodiac literature, where the assumption E = 3 reconciles seeming discrepancies between language and history. As to the use of both alphabetic-quantity and Roman-numeral values for certain letters (C, D, L, etc.), Webster does the same. The letter C is defined by the dictionary both as the Roman one hundred and as third in a list or series.

An acrostic is an expression formed by the first letters of a series of words. Acrostics are frequently found in acronyms, such as SALT (Strategic Arms Limitation Talks) and mnemonic devices; everyone who has taken piano lessons recognizes "Every Good Boy Does Fine" as the notes given by the lines of the treble staff, EGBDF. A very famous acrostic appeared in a

contribution to Poetry by Redfe Harephries in June 1939. Harephries' poem, titled "Draft Ode for a Phi Beta Kappa Occasion," was written so that the first letter of each line spelled, in order, NICHOLAS MURRAY BUTLER IS A HORSES ASS. Dr. Butler, a long-time president of Columbia University, Vice-Presidential candidate, and winner of the Nobel Peace Prize, had nothing to say about it publicly. Perhaps the acrostic was so unobtrusive that he never noticed it.

Anagram, the scrambling of the letters of one expression to form another expression, was used by courtiers of James I of England to flatter their sovereign by changing "James Stuart" into "a just master." Florence Nightingale's admirers found that her name could be rearranged to spell "Fit on, cheering angel." And there is a traditional story that Pontius Pilate, disposing of the case of Jesus, asked, "Quid est veritas?" ("What is the truth?"). The response was "Etu nō qui adest" ("It is the man who is present" -- i.e. Jesus).

Finally, there is redvision. This is a technique by which a particular sequence of characters is divided up into different groups so as to spell something different. Unlike the anagram, where a particular set of letters is scrambled into a new order, with redvision, the original order is preserved, but the dividing-points between groups of letters is changed. My daughter has provided a simple example taken from a children's magazine. Why can't you keep a secret on the farm? Because the corn has ears, and the beans talk. "Bean stalk" and "beans talk" are written with the same letters, in the same order; only the division between groups is changed, which alters the meaning.

In the Zodiac literature, there are a few instances of literal redvision, where the author disposes words by redividing sequences of letters. But for the most part, he redvides digitally, which is far more subtle. The mainstay of Zodiacese is the conversion of English into number by way of Morse Code, writing Morse dash as 1, dot as 0. The resulting binary numbers can sometimes be redvided to form a completely different word having no letter in common with the original.

I will show several instances in the main part of this book where the Zodiac expresses significant numbers as postmarks, using the Julian Date, that is the day of the year, counting 1 January as 1, 31 December as 365. The very first Zodiac letter, titled "The Confession," was postmarked 29 November 1966, Julian Date 333. It was typewritten; carbon copies were sent to the *Riverside Press-Enterprise* and to the Riverside police.

On 30 April 1967, Z. sent a second letter. This one was handwritten on three-ring binder paper, in three copies. This time, he added the victim's father to his mailing list. The envelopes were franked with three-cent stamps, and when he signed these letters with a "Z," he made it look like an Arabic 3.

The third mailing from the Zodiac, the first in the Bay Area, was the cryptogram, which he divided into three parts, mailing each part to a different newspaper. In the next five communications, he harped on his bus-attack threat. While he did not carry it out, he did succeed in keeping the word "bus" prominent for about six months.

BATES HAD

TO DIE

THERE WILL

BE MORE

2

LETTER OF 30 APRIL 1967

Executed in three copies on three-ring
binder paper, this letter was mailed to
the Riverside newspaper, the local police,
and the victim's father. Note the signature:
the letter Z has been altered to make it
resemble an Arabic numeral 3.

WRITING DIGITALLY

BASE TWO	BASE TEN	MORSE	ROMAN
1	1	01	A
10	2	1000	B
11	3	1010	C
100	4	100	D
101	5	0	E
110	6	0010	F
111	7	110	G
1000	8	0000	H
1001	9	00	I
1010	10	0111	J
1011	11	101	K
1100	12	0100	L
1101	13	11	M
1110	14	10	N
1111	15	111	O
10000	16	0100	P
10001	17	1001	Q
10010	18	010	R
10011	19	000	S
10100	20	1	T
10101	21	001	U
10110	22	0001	V
10111	23	011	W
11000	24	1001	X
11001	25	1011	Y
11010	26	1100	Z
11011	27		
11100	28		
11101	29	MORSE	ARABIC
11110	30		
11111	31	01111	۱
100000	32	00111	۲
100001	33	00011	۳
100010	34	00001	۴
100011	35	00000	۵
100100	36	10000	۶
100101	37	11000	۷
100110	38	11100	۸
100111	39	11110	۹
101000	40	11111	۰

What is of interest here is that the Morse spellings of THREE (1 0000 010 0 0) and BUS (1000 001 000) are the same sequence of digits redivided two different ways. But to judge by their literal appearance, they have nothing whatsoever in common.

Kabbalah is already semi-mathematical in nature. But the Zodiac goes even farther into the realm of mathematics. For instance, he uses algebraic summations to generate numbers. Where a letter is repeated once, the number two takes the place of one of the letters. Like other Zodiac techniques, this is well-known in everyday life. Minnesota Mining and Manufacturing (MMM) long ago changed its corporate name to "3M." The formula for the water molecule, which is written schematically as H₂O, is written algebraically as H:O. The television program, "That Was The Week That Was," used to be known simply as "TW3."

Where mathematical operations are concerned, the Zodiac generally represents them graphically, using widely-used and well-known devices. For instance, there are two types of rebus in the Zodiac literature, one implying division, the other subtraction. But before I get into that, let me explain just what a rebus is.

The rebus is another device which has been around since classical antiquity. It is used to imply a word through the physical relationship between words or objects. Here is a simple example in English:

PAID
I AM

What this says, using rebus-logic, is "I am underpaid." Perhaps the most classic example was supposedly written by Frederick the Great to Voltaire:

P	ci
"a	
vence	sans

The French preposition meaning "under" is *sous*. *Vencez sous P* sounds just like *vencez au-*
per, "come to dine." *Sous sous ci* sounds exactly like *Sans souci* -- the name of Frederick's
palace at Potsdam. Voltaire is supposed to have responded with the economical *G a* -- "Big
G, little A" in French sounding like *J'ai grand appetit* -- "I have a big appetite."

In the conventional way of writing mathematics, one number over another expresses division. Thus, six over three is two. There are a few instances in the Zodiac literature where one number, expressed as dimensions, for instance, is placed physically over another number, expressed the same way. Then the same means is used to express the quotient.

Much more frequently, however, the Zodiac uses the rebus to express subtraction. This same device is encountered in our everyday lives in the expression of clock times and Roman numerals. In this type of rebus, one number *before* another means that the leading number is to be subtracted from the following one. "9 before 7" is another way of saying, "nine o'clock mi-

was 22 minutes." The Roman numeral nine is written as IX, literally "one before ten," or ten minus one.

The third kind of operation which the Zodiac represents graphically is multiplication. Ancient mathematicians represented the multiplication of a number by itself as a square of a side equal to the number being multiplied. For that reason, we call this special kind of multiplication "squaring." Anyone who has ever measured the kitchen floor for new linoleum knows that the same operation, using two different numbers, is depicted graphically by a rectangle. For instance, a kitchen which is 15 feet in one dimension and 20 in the other (and is rectangular in plan) has a floor-area of 15 x 20, or 300 square feet.

What causes most people difficulty in dealing with my interpretation of the Zodiac literature is their unfamiliarity with binary numbers. I was interviewed in late 1981 by a newspaper reporter who then informed his readers that I had arrived at my conclusions through the use of "complicated mathematical formulas." I called him up to ask why he had chosen to use this rather misleading language, and he said that he knew it was not accurate, but he felt that his readers would not be able to understand it otherwise. What he did, in effect, was to take a very simple subject and translate it into the realm of mumbo-jumbo.

These days, the public schools allocate an entire school year to the learning of the multiplication tables. The numbers used are base-ten. If the schools used base-two numbers instead, they could get the job done in one minute instead of one year. Anything times zero is zero, and one times one is one. These are my "complicated mathematical formulas" in action. What makes binary arithmetic seem complicated is its unfamiliarity. The very fact that we have spent our whole lives doing mathematical transactions, such as balancing our checkbooks, in base-ten numbers makes base-two seem like something from another planet.

And yet, we are surrounded by base-two arithmetic. When we balance our checkbooks, we are reconciling our handwritten base-ten computations with the base-two computations carried out by the bank's computer. All electronic computation, data-processing, and switching is conducted in binary form. It seems likely that by now, more computations and transactions have been done in base-two, since the advent of the computer and computer-related equipment, than all the base-ten computations since the invention of number.

Binary numbers are written exactly the same way as the familiar base-ten numbers. The only thing that is different is the base to which each kind of number is written. In base-ten, we can write any one of ten different digits, each representing a different quantity between nothing and nine, in each "decimal" place. Each place to the left of the decimal point is ten times larger than the one to its right. To the right of the decimal point, each place is ten times smaller than the one to its left. In base-two, we can write any one of two different digits, each representing a different quantity between nothing and one in each place (which ought by rights to be called a "binary" place). To the left of the "decimal" (ought to be "binary") point, each place is twice as large as the one to its right. To the right of the (I am just going to go ahead and say it) binary point, each successive place is *half* the value of the one to its left.

If you read music, you can read binary numbers. In fact, music is inherently binary in nature.

2000 years ago, the Greek mathematician Pythagoras discovered that doubling the length of a vibrating string lowers its note by one octave; conversely, halving the length of the same string raises it by one octave. Modern guitars have a specially-marked fret which, when fingered, exactly halves the string. Musical tempo is expressed in multiples of two. The duration of notes is also determined by binary arithmetic. The longest note is a "whole" note (unity). Smaller values are half-notes, quarter-notes, eighth-notes, and so forth. If you think of places to the right of the binary point in base-two arithmetic as musical notes, then you already have a perfect comprehension of what is involved.

Let me illustrate, using 43 and the fraction of π as examples. Base-two 43 is written 101011. The fraction of π , carried out to the thirteenth place, is 0.0010010000111. The first digit of 43 (reading leftwards from the binary point) is two to the zero power (2^0), or one. The second digit is two to the first power (2^1), or two. The third digit would have been two to the second power (2^2), or four, but it is not represented here; this place is filled with a zero. The next digit is two to the third power (2^3 , or eight). The next is two to the fourth, or sixteen — but like four, it is not represented in this particular number, and so this place is filled with zero. Finally, we have two to the fifth power, the double of sixteen, or thirty-two. What 101011 represents is the addition of 32, 8, 2, and 1: 43. All other numbers are written exactly the same way. The next place left of 32 is 64, the one after that 128, and so on. There is no limit on the size of a binary number except the amount of effort the writer is willing to expend on writing it.

The first place to the right of the binary point is unity divided by two, or one-half. The next one is half of that, or one-fourth. Successive places are one-eighth, one-sixteenth, one-thirty-second, and so forth. In the fraction of π to thirteen places, we have the sum of 1/8, 1/16, 1/32, 1/64, 1/128, and 1/256. Add them together, and you have a close approximation of the fraction of π (NB: any writing of this fraction is only an approximation; π is an irrational number and its fraction goes on forever. It is impossible to write it exactly.). Just to demystify this subject completely, let me say that I have found that the best tool available for computing binary fractions is a \$16 pocket calculator purchased a few years ago at a Radio Shack outlet. It can also be done with pencil and paper, but the pocket calculator saves a lot of time.

Far from being complicated, the use of Morse Code in conjunction with binary numbers simplifies things enormously. Binary numbers tend to be rather lengthy, compared with their base-ten counterparts, and resolving them into Morse letter groups makes it much easier to deal with them. If you remember that the letter C, 1010, is ten, then when you see 10100, it is simplicity itself to recognize it as twenty; addition of the extra zero doubles the original number. Double that by adding another zero, 101000, and you have forty. Now add three (111), which is easy to do with all those zeros out there on the right-hand side, and you have 43, 101011. I have an easy time writing the fraction of the Golden Section (phi) to nineteen places by use of the mnemonic DONUT JAM, Morse 100 111 10 001 1 0111 01 11. Put a binary point in front of DONUT JAM, and you have a very accurate writing of this number. Silly as the phrase is, it is very easy to remember, much more so than all those ones and zeros. I suspect that the Zodiac found his way in the Morse-to-binary conversion process through the use of Morse Code as a mnemonic device.

The grammar of Zodiacese is mercifully simple, and so not much needs to be said about it. The basic sentence structure is subject and predicate, usually without any form of the verb "to be." (I know of only one exception to this rule.) No other verbs are used. In essence, a Zodiac sentence has the form of a mathematical equation, where the equals-sign is only implied. "XY" is a hypothetical example of such a sentence, whose semantic content can be expressed as "X equals Y" or "X is Y." In most Zodiac sentences, the subject is the author himself, and he usually refers to himself as "I" or "ME." Either of these pronominal forms can be used as a subject. The main difference between them is mathematical. ME in Morse is 110, and I is 00. When writing a sentence as a number, ME is used in initial position (prepositively), and I is used in second position (postpositively). The reason for this is that since I is two zeros, it cannot be used to begin a number without making the zeros insignificant (leading zeros do not count). Thus, when expressing a sentence in which the author is the subject and 43 is the predicate, he has the choice of writing it as "ME 43" or as "43 I" -- without changing the meaning in any way. It seems that the choice is often dictated by other considerations. "ME 43" is binary 1101010111, base-ten 350. "43 I" is 10101100, or 172. These may be a reason for selecting one writing over the other. In the present case, there were probably more ways of writing "ME 43" disguised as English than there were of writing "43 I."

In general, the Zodiac prefers short forms to long forms of names and other expressions. The following example will make the reason for this preference quite clear. The given name MICHAEL in Morse Code is 1100101000000100100, base-ten 413,732. The short form MIKE, Morse 11000000, is only 202. Sometimes the abbreviations used are quite severe. For instance, the surname O'HARE is written in Morse Code with five dashes and eight dots. A frequently-encountered shorthand for this name is "38." I will show numerous examples of this usage. At all events, there is a strong tendency in our author to favor shorthand.

I have already mentioned Z.'s consistent use of the letter E to represent the number three. That is one of those "idiomatic usages" that I said characterize Zodiacese as a true language. Another idiomatic usage is his heavy reliance on paraphrase where certain subjects are concerned. To some extent, paraphrase is dictated by the medium in which he has chosen to express himself. If you are bound and determined to say everything you have to say in number, your powers of expression are necessarily very limited. Anyone who has tried writing rhyming verse -- or constructing a crossword puzzle -- is painfully aware of the limitations that form imposes on speech. But there is one subject where the Zodiac's use of paraphrase seems to have another cause, and it appears to me to be in the realm of taboo: and that subject is the geometric form which we call the "circle."

Z. has numerous paraphrases for "circle." The most interesting one to me (because I don't have a good explanation for it) is the word "RED." RED invariably means "circle" in the Zodiac literature. Anywhere you find it, substitution of "circle" or "zero" yields a sensible result. Another frequently-encountered circle-paraphrase is "MT." This yet another of those formulations that get to the same place by two different routes. MT is the simplest phonetic spelling of the English word "empty." Our word "zero" derives ultimately from the Arabic sıf, whose concrete meaning is "empty." Zero has been, from its inception, the "empty" number. Even the way we write it conveys this concept graphically: it is nothing surrounded by a circle. And MT in Morse Code is 11 1, a digital revision of 111, Morse 0. In a later chapter, I

will have quite a bit to say about telephone communications with the Zodiac. In the peculiar adaptation of Zodiaceese as used in the telephone literature, "circle" is paraphrased by "ring." "Ring" is a synonym in English for "circle." One ring on the telephone is a circle or zero. Two rings is 00, Morse letter L.

The most important stylistic feature of Zodiaceese is the use of error. Mistakes, such as misspellings, are consistently used to flag important statements. Error marks a word as an artifact. Sometimes a word will be misspelled. Another time, it may be used inappropriately. And yet other times, a word or part of a word may be left out. What these errors and omissions do is to call our attention to them. If I use "agate" in writing about semiprecious stones, it is probably coincidental that I have chosen a word that is a digital redivision of my mother's name, "Jean." The word is appropriate to the context, and I have spelled it correctly. There is no reason to remark on it. But if I insist on misspelling "again" as "again," or if I repeatedly suggest tuning in the nonexistent radio station WZN — or, worse, do both of the above — then you might be justified in examining these two forms to see what they have in common. Both of them are redivisions of JEAN, Morse 0111 0 01 00.

Another frequently used device is casting out nines. It is particularly prominent in the area of claims relating to the number of victims. Most of us learn to cast our nines in grade school. It involves adding together the digits of a number until a one-digit result is achieved. If the one digit is nine, the number we started with is divisible evenly by nine. If it is another number, the original number gives that remainder when divided by nine. For instance, to cast nines out of 135, add $1 + 3 = 5$. The sum is nine, which means that 135 can be divided by nine without leaving a remainder. In the case of 1623, casting out nines gives $1 + 6 + 2 + 3 = 12$; $1 + 2 = 3$. When 1623 is divided by nine, it goes 180 times, with a remainder of 3. In Zodiaceese, casting out nines is used to mislead the reader. It can be used to make a truthful statement look like a lie, by disguising one number as another.

In general, it is important to bear in mind that Zodiaceese is primarily a graphic language. Most Zodiac utterances are pictorial rather than verbal. Graphic elements are often woven together into a kind of tapestry. It is a fundamental mistake to look for semantic relationships, that is, syntax, whose meaning is expressed by geometric or spatial relationships. This will be especially clear in the case of the cryptogram, which will be discussed a few chapters hence. In the case of that document, a verbal content is provided as window-dressing to beguile the reader into overlooking the graphic content. And it is the graphic content which betrays the author's virtuosity and identity.

These are the highlights of Zodiaceese. Armed with this much, you should have an easy time with the chapters that follow. I will include material besides puzzle-solving which will, I hope, prove to be amusing, as well as providing some insight into what it is that makes the world work -- and sometimes seems to keep it from working the way it is supposed to.

A SECRET KEPT FROM ALL THE REST

When I discovered the secret of the radian on the evening of 26 December 1968, I was profoundly affected by it. I had discovered something which was known to only one other person in the world, someone who had viciously attacked eight people, killing six of them. I don't believe in psychic phenomena, but I suspect that there are subjective experiences which give the impression of ESP. I had one that evening.

All of a sudden, there was no sound. Other people were talking in the next room, but I couldn't hear them. The children stopped making noise with their new Christmas toys. The clock stopped ticking. The blackness of the night outside the windows congealed into a sluggish liquid that seemed to ooze through the glass, slowly filling up the room; it was frigid, but the cold was not uncomfortable -- it was just there.

I was transported into someone else's head, someone whose evil I could sense the way I could sense the coldness of the black ooze that filled the room. I was looking out through his eyes, but I didn't know where I was or what I was seeing. All I knew was that I felt utterly dirty. I was disgusted and fascinated at the same time. What an incredible feeling he must have had, to have this knowledge all to himself all these years! Can you imagine what it must feel like to be the sole knower of such a secret?

It wasn't just that he was a murderer. It was that he had made an orderly, intellectual design appear to be the product of hunch, and no one had recognized it for what it was -- that was his biggest secret. He had had it all to himself until now, and I was sharing it with him. I had the easiest feeling, one which I still have six years later, of being one of only two people on this planet. A quatrain from Alice came to mind:

Don't let him know she liked them best,
For this must ever be
A secret, kept from all the rest,
Between yourself and me.

It was from the nonsense-verses entered in evidence during the trial. When Alice points out that they have no meaning, the King of Hearts responds: "If there's no meaning in it, that saves us a world of trouble, you know, as we needn't try to find any." That seemed to me to sum up the attitude of the police toward the Zodiac; they had always written him off as a semi-literate high school dropout.

Speaking of the police, I had to call them. I was not feeling psychedelic any more, but the sharing of the guilty secret still made me feel sicked. I could relieve myself of my dirty feeling only by having someone in authority take over the knowledge, which I could feel bearing down on me like a heavy burden. I got the number of San Francisco Police Department from direc-

tory assistance. I dialed the number around nine in the evening. I got a desk sergeant. I told him that I had some important new information about the Zodiac murderer. He asked me if he could take the information over the phone. I was still slightly out of my body at the moment and was able to see myself as I looked at the map, then looked at the phone, double-taking over the problem of making him see a picture on a map over the wire. I realized how ludicrous the situation was and made a mental note to laugh about it after I had hung up. I thanked him and said that I would call back another time.

All day Saturday, I was in a buzz. I was fairly exploding with the news and had nobody to explode on. Finally, Sunday morning, I called the *San Francisco Chronicle*. I talked to someone in the newsroom who put a reporter named Steve Magagnini on the line. I told him what I had found. He took a few notes and got my phone number. He said that somebody would be calling me up shortly to talk about it. About an hour later, the phone rang. When I answered, the caller identified himself as Bob Graysmith, who had been editorial cartoonist at the *Chronicle* for some years.

Graysmith, it turned out, was writing a book about the Zodiac. He asked me, rather nervously, I thought, if I was planning to write one, too. I told him that I wasn't, and he sounded relieved. He said that the radium master might make an interesting appendix to his book, which was going to appear in six months at Norton. Then he quizzed me at length about various suspects of his. I didn't know anything about any of them. (And I still don't.) A while later, Magagnini called. He said that he wanted to drive up to Napa to talk to me. Later, he called again to say that his car wasn't working. Could I come down to San Francisco instead? I told him that I would drive down later in the week.

Monday morning, I showed up at the Hall of Justice in Napa. I asked at the front desk where I might find Captain Ken Narlow. Narlow was the only original Zodiac investigator still on the job. He was now in the Civil Division of the Sheriff's Department. I walked into Civil Division and asked the receptionist if I could see Captain Narlow. I had, I said, some information about the Zodiac. She went to the door of Narlow's office and spoke to him briefly, then bade me to go on in. As I entered, I found a stocky middle-aged man with thinning iron-gray hair seated behind the desk, doing some computations. He asked me to have a seat, and I waited patiently until he was through with his arithmetic.

When he got to the bottom line, he explained to me that he was figuring out the effect on his take-home pay of the county's changeover from semi-monthly to biweekly paychecks. I told him that I had gone through just such a changeover when I had worked for Solano County, and the only difference I noticed was that some foresight was needed to make sure of having enough cash to pay bills due on the first of the month. He disagreed and turned his paperwork around on the desktop so that I could read it. He went through it in detail, comparing the semi-monthly and biweekly results; he triumphantly proved that over a year's time, he was being short-changed by three or four cents. I had other things on my mind, so I didn't argue with him. Besides, he would probably have won the argument. When it came to figuring out his paycheck, he was a veritable Einstein.

About twenty minutes after I had stepped into his office, I got to speak my piece. I placed a

Ack a map of the Bay Area on his desk and put my acetate overlay on top of it. I told him that the overlay showed a radian. He responded that he had been wondering for the last ten years what a radian was. I asked him a few polite questions and determined from his answers that in all the time that had elapsed between June 1970 and the present, some ten and a half years, he had never once thought to look up the word "radian" in a dictionary to find out what it meant, much less consult a mathematical table to find out its numerical value. I defined it for him the easy way, as a circle divided by 2π. I recited the fraction of π to fifteen places, which was as far as I knew it. He told me that he had learned in school that it is exactly 3.1.

But even if Narlow was not a mathematical whiz, he immediately saw the implications of the Zodiac's radian. Now he was the one having the psychedelic experience. He began reconstructing the events of 11 October 1969 as if he were in a trance. He was looking backward in time a dozen years and all the way across San Pablo Bay and the Golden Gate. He was obviously very excited.

The Zodiac had left his getaway car parked somewhere near Washington and Cherry, taken a bus downtown, got into Paul Stine's cab, and then returned to Presidio Heights before killing his victim. The site was not just the result of a quirk on the murderer's part. The location had been predetermined. And that, of course, was why he had attacked a cab driver in the first place. He needed a victim at a particular location, and a cab driver is the easiest kind of victim to transport to the place of sacrifice. All you had to do was get into his cab, tell him where you wanted to go, and he would take you there. But at the end of the line, when you were fumbling inside your jacket, it wasn't for your wallet.

Narlow told me that the Zodiac had originally given Paul Stine the destination of Washington and Maple. I asked him how he knew that. He said that Stine had written the destination in his trip-book and also radioed his dispatcher, who had made a note of it. For some reason -- it had been bothering Narlow since October 1969 -- the cab had been found parked a block further up Washington, at the corner of Cherry Street. He was sure that it had some significance, but he couldn't figure out what it was.

We talked about the Zodiac for about three hours, mostly speculatively. I said that I would have to go home, since it was almost lunch time. He asked me to come back. I said that I could come back the next morning. He agreed to that but asked me if I could make my time free the following Friday morning. He wanted to talk over this new information with his counterpart at SFPD, Inspector Jim Deasy. I was to meet Deasy on Friday.

That afternoon, I drove down to San Francisco and walked into the lobby of the Chronicle building. The doorman was involved in an argument with another man about the hostages in Tehran. He was saying that they ought to send in the Marines; that was what they had done in Tripoli. I had just finished reading a history of the Tripolitanian War of 1803-1805 and butted in with some information that he seemed to lack. The American hostages in that war were taken captive because the U. S. had attacked Tripoli and bungled the operation; invading Iran might well have the same result -- more hostages. The Marines in 1805 were only about twelve in number, they were an afterthought, and even though their military achievements were remarkable, what they accomplished had been wiped out by the Jefferson Administra-

sion, which negotiated the hostages' release in return for a big tribute payment to Tripoli.

In other words, I said, if history was anything to go by, then we ought to pay whatever ransom the Iranians demanded to get our people back. He said that I was talking nonsense: remember the slogan, "Millions for defense, but not one cent for tribute"? I said that that had had to do with bribing French government officials (the XYZ Affair) and not with the war in Tripoli. He told me that I was too ignorant to live and that I ought to go back to school. It struck me just then that his uniform made him look very much like a policeman. I told him that I had business with Steve Magagnini and would he please ring him up to say that I had arrived?

When Magagnini came down, he told me that he had to go check something on his beat and that I could tag along. We walked at a very fast clip from Fifth and Mission all the way to the Civic Center. He had to stick his head into a door inside City Hall and ask somebody something. On our way out of City Hall, he mentioned to me that Graysmith was in bad odor at the *Chronicle*. He had had a rather exalted position as editorial cartoonist but had recently been relegated downstairs to the art department.

I asked Magagnini if it had had anything to do with the plagiarism. A few years before, Graysmith had been caught red-handed copying a cartoon from the *Vancouver Sun*. At the time, he had pleaded that he just hadn't had the time to meet his deadline. I had never been able to figure out why the *Chronicle* had kept him on the payroll at all. Plagiarism is the worst kind of intellectual crime there is. Magagnini, who had recently come to the Bay Area from Texas, said he didn't know if there was a connection.

Then we walked back to the *Chronicle*. Once inside, we brevity past Cerberus, who was now arguing with somebody else about the hostages in Iran and how we ought to send the Marines in to rescue them. We went upstairs to a lounge outside the newsroom. Magagnini went inside the newsroom to get a tape recorder, then came back out and sat down to talk.

I got out my map and overlay again and went through the same discussion which I had had a day before with Kee Marlow. I got Magagnini's word that if the newspaper printed anything about this matter, my name would not be used. I had a wife and two children to think about. I pointed out something that I had noticed, and Graysmith said that he had noticed, too: all the places where the Zodiac had murdered people had something to do with water.

There was Riverside, the water pumping plant at Lake Herman Road, Blue Rock Springs, Lake Berryessa. The phone call in Vallejo had been made from a booth on Springs Road. The one in Napa was made from a pay phone at a car wash next to a running creek. Then Stine had parked his cab in front of a fire hydrant just before being shot to death. He asked me if I didn't think I was making too much out of the fire hydrant. I said, obviously not. Magagnini had asked Graysmith on me to see if I knew anything worth knowing, and Graysmith thought there was something to it. Did he trust Graysmith's judgment, or didn't he? We parted company on that note. I never saw him or heard from him again.

The next morning, I went back to see Marlow again. In the meantime, I had acquired a U. S.

Geological Survey map. Using this map, which was considerably more accurate than the AAA map that I had started with, I found that the Lake Berryessa murder site and the peak of Mount Diablo were equidistant from a spot on Travis Air Force Base, Benchmark BM 53. The figure Lake Berryessa-BM 53-Blue Rock Springs appeared to be an almost perfect right angle. Blue Rock Springs-BM 53-Mount Diablo appeared to form a second radius. Everything seemed to point at Travis.

The police had, in the past, given serious consideration to the idea that the Zodiac had been in the Air Force. It seemed to explain the long absences. Twenty months had gone by between the last Riverside event and the first Bay Area event. Then, between the events of 1968-1971 and the Zodiac's 1974 episode, there had been almost three years of silence. Using the same logic applied by Poe's detective, Dupin, to the mystery of Maria Roger, they reasoned that these long periods of silence were about the same length as military tours of duty. At the time, Travis had been the base of a wing of Strategic Air Command bombers. And March AFB, about five minutes' drive from downtown Riverside, was also a SAC base.

I had spent some time on the phone the previous evening talking to a former colleague, Malcolm Reynolds, who had served as an intelligence analyst at SAC headquarters in Omaha. I brought out the Air Force angle, and he pointed out to me that the crossed-circle sign which the Zodiac had used as a signature is used by SAC to mark targets on satellite reconnaissance photos of the Soviet Union. They call it, in SAC jargon, "Reference Point," or "RP" for short. I mentioned that to Narlow, and he went to his filing cabinet and dug around in it until he found a photograph showing the envelope in which the Zodiac's last letter, mailed from San Rafael in July 1974. The return address was simply, "R.P." We both noted that San Rafael is not far from Hamilton AFB, now closed. But at the time, it was a functioning Air Force base. We also noted that Marin County has another Air Force installation, Mill Valley AFB, on top of Mount Tamalpais. Mount Tam is the second highest point of land in the Bay Area, after Mount Diablo. Furthermore, there was, at the present time, another serial murderer known as the Trailside Killer, who was specializing in women victims whom he caught jogging and hiking on the slopes of Mount Tam.

The following month, the *Examiner* published a front-page story proving that Trailside and Zodiac were one and the same person. The story was brought to my attention by my brother-in-law, who said that I could stop worrying about the Zodiac. He had been identified, he said. He showed me the story in the *Examiner* to prove it. The basis for the identification was a comparison of police-artist sketches of the two murderers. I can't sum up the descriptive powers to do justice to this comparison, but it suffices to say that the two pictures looked to me like a comparison of apples and bananas. I could not imagine in my wildest dreams how anyone in his right mind could think that these two sketches were of the same person. (A few years later, one David Carpenter was convicted of the Trailside murders; now the *Examiner* said nothing about his being the Zodiac. It was as if they had never published the Trailside/Zodiac story at all.)

I had an even better reason for abandoning the Air Force Theory. But that did not come up for another week. In the meantime, I had my Friday appointments to keep. I showed up at the Hall of Justice in Napa at nine o'clock sharp. Narlow came to meet me at the reception desk

and showed me into a seminar room, where he introduced me to three other individuals: Lieutenant Richard Lonergan and Sergeant Ray Land of the Napa Sheriff's Department and Inspector Jim Deasy of SFPD. We all sat down around the big table in the center of the room. Narlow served coffee.

I came armed with a sheaf of diagrams and a lot of theories which, in retrospect, look rather silly to me. But I was still being carried away by the aftereffects of my psychedelic experience the week before. Fortunately, the other four people present weren't really interested in my opinions anyway. I realized much later that the purpose of this meeting was to give the officials present an opportunity to look over the latest candidate for prosecution as the Zodiac murderer.

Mr.

Months later, I found out that just before this meeting, Narlow had queried the National Criminal Identification Center in Washington about my fingerprints. He had checked with the National Personnel Records Center in St. Louis about my military record. Eventually, they informed him that I had been on duty at Fort Sill, Oklahoma, at the time of the Riverside murder. And my fingerprints didn't match the ones that SFPD had found on Paul Stine's cab.

I became a Zodiac suspect because I had shown up in Ken Narlow's office in possession of knowledge which I wasn't supposed to have. Not only did I know about the radon hint, which I adequately explained by reference to my father's part in it, but I also knew it to fifteen places. These were really inadequate, as grounds for suspicion of murder go. But the grounds for being cleared of suspicion were even less adequate. When the Riverside murder took place, I was in charge of preparing my unit's Morning Report, which accounts for the whereabouts and duty status of everyone in the unit. It would not have been hard for me to falsify an entry. And I had been on leave in California during the first half of October 1966. It would not have been too difficult for me to get a military hop to March AFB from Oklahoma for a three-day pass, which would not even have been reflected on the Morning Report, anyway. The fingerprints, of course, were definitive and conclusive.

Much of this meeting consisted of their showing me photographs of Zodiac documents and asking my opinion of them. One of them, the letter postmarked 29 January 1974, contains a quotation from the Gilbert and Sullivan operetta, *The Mikado*, in which the word "willow," which occurs three times, is misspelled "twillow." Narlow flashed this letter in front of my face and asked me what I thought of it. Having had only five seconds in which to come up with an answer, all I noticed was one misspelling.

"He misspelled 'willow,'" I ventured. That was all I had.

"What do you mean, 'misspelled'?" Narlow bellowed back at me.

"He left off the W," I pointed out.

"Left off the W? Why, there it is, plain as day!" Narlow crowed. "W-I-L-L-O-W."

The Penn-Police Seminar lasted about three hours. We adjourned at noon. As we went out, Narlow was issuing instructions to Lonergan and Land about what they were supposed to do over the next couple of weeks. He was due to report in to Queen of the Valley Hospital for a double hernia operation on Monday and would be *hors de combat* for a while. His subordinates were getting their marching orders. He told Lonergan to get back in contact with the Air Force. He dispatched Deasy to the U. S. Geological Survey office in Palo Alto. I thought I might at least get a kind word. I tried to interrupt to take leave, but he shook me off brusquely. I got the picture about where I stood with Narlow. I stopped walking with the others once we got back out into the lobby of the Hall of Justice and watched their backs recede into the distance. He never even said thank you.

When I talked to Malcolm Reynolds about the Air Force angle, he had suggested something else. The construction of gigantic geometric forms on the landscape, for instance, a huge radial angle on the map of the Bay Area, is a well-defined form of behavior. It happens to be an avant-garde branch of sculpture called "earthform art." Following up on his suggestion, I went over the county library, where I scoured the art section, calling out books and passages within books having to do with earthforming.

Earthform art was the cutting edge of sculpture in the late 1960s. The period was weird, by anybody's accounting, and that the decade produced some of the most outstanding examples of earthform art should not be surprising. One prominent exponent of the genre, Michael Heizer, took a backhoe to the Sahara Desert and laid out a gigantic geometric design executed in 600 miles of trenches, which was intended to be appreciated (and photographed) by a reconnaissance satellite. I don't know if Heizer ever got his satellite photo, but that was his objective.

The whole point of earthforming is to remove the work of art from the human perspective, to make it invisible, except from the bird's-eye view. I recalled that during my three-hour meeting with the police, I had seen photographs of a number of Zodiac documents. I realize now that the reason they were thrust on me was to see if they would elicit some kind of damaging admission from me; but at the time, I was recording the documents in my memory as fast as they were flashed in front of my eyes. One of them, the postcard sent to the Chronicle in early October 1970, was franked with a stamp showing the view of the earth that had been photographed by Apollo 9. Perhaps the Zodiac's choice of stamp had been meant to underscore his outer-space perspective.

The more I thought about it, the less likely it seemed that an Air Force officer was my man. The most precise fit that could be made with any profession was with sculpture. Most Air Force officers are either gang-bo careerists without much in the way of outside interests, or else they are studying to be CPA's. Neither of those two types seemed like the kind of person who would shoot an Eagle Scout in the head or blow away a 29-year-old taxi driver with a wife and child to support just to make a geometric design on the face of the earth. This had to be somebody who was really devoted to modern art, so much so that he was willing to take the risk of paying for his artistic endeavors with a trip to the gas chamber.

I had worked for seven years as a reference librarian. If somebody came to me and asked if I could help him find an individual about whom certain things were known, I could devise a research strategy. As a rule, projects of this sort are undertaken with the objective of achieving results with a minimum of effort and time. I thought that I might know two things about the Zodiac. Given those two things, how could I identify him, using standard reference works, with a minimal investment of time? I suspected that he might be a professional sculptor. Then there was his claim of self-identification and the theme of water. What if his name alluded somehow to water? Maybe he was a Waters, or Goldwasser, or Siemola or Dellaqua. That kind of approach could take forever. The most definitive, and most economical, line of inquiry that I could imagine was that his monogram gave the chemical formula for water. Read quantitatively, water is H₂O. The schematic formula is HOH.

I really did not think for a moment that this line of inquiry would produce anything. But I also thought, after years of experience in research, that it could not take more than fifteen or twenty minutes to exhaust all of the possibilities. I was willing to sacrifice that much time to see if I could make a lucky hit. If it did not prove out, I resolved to waste no more time on alternatives. I went to the Napa City and County Library and consulted their reference section for biographical directories of artists. I was looking specifically for a sculptor with the monogram HOH. I went through the H's first, looking for someone with a name like Habakkuk Oliver Henderson. I found nothing.

Then I tried the Irish names in O'H-. I found nothing there, either, except a cross-reference under "O'Hare." "See Margoulier, Berta." Not wanting to leave any stone unturned, I leafed to the M's and found the corresponding entry. Berta Margoulier was a sculptor, all right. But she was a woman, and she was far too old to be the Zodiac; she was born 7 September 1907 in Lwowice, Poland. She was obviously very active and successful in her long life. She appeared to be an activist Jew, having served on Jewish scholarship boards and edited anthologies of American Jewish sculpture. It was interesting to me to see how many inferences I could make about her interests and character from the scanty information contained in the directory entry.

It was even more interesting to see what there was to see about her family. People who appear in biographical directories do so because they have responded to questionnaires which they have received from the editors. They are routinely asked about marriage and children. They respond in different ways. Sometimes, they name their spouses, but not their children. Some people name neither. I had, in the thousands of directory entries that I had read over the years, never seen anyone name a child but not their spouse. This entry was different. It said, "Married 1938, one son, Michael Henry O'Hare."

It wasn't perfect. He wasn't the sculptor, but the sculptor's son. And he wasn't an HOH, but an MHOH.

Even so, the hairs on my arms were standing on end.

TIME AND TIME AGAIN

There were several documents shown to me by Narlow that had registered in my mind and which bothered me. One of them was the map which had accompanied the Mount Diablo Letter. It was a piece of a Phillips 66 road map showing Contra Costa County. Z. had annotated it by drawing a circle around Mount Diablo. At the north end, he had written a zero. At the east quarter, he had written the numeral 3. At the south quarter, a 6; and at the west quarter, a 9. Because the author had suggested turning the "magnetic indicator on Mount Diablo to north" to find the buried bomb, Narlow had always assumed that this figure drawn on the map was a "magnetic indicator" -- whatever that might be. It was obviously a clock face.

On the mail cover of the letter to Melvin Belli, Z. had affixed a public-service message which the postal service printed on the margins of sheets of stamps. It read, "Mail Early in The Day," and it showed a clock face.

At the scene of his very first crime, the Zodiac had left behind a man's Times watch stopped at 12:22. I thought that I saw in the wristwatch a continuation of a theme, clock faces and time.

The Zodiac even harped on the word "time." In the Confession Letter, he reports this conversation with his victim:

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 FOR HER TO DIE.

What stuck in my mind (besides the peculiar syntactic position of the word "walking") was the threefold repetition of the phrase "about time." The expression is ambiguous. "About time" means that the time is pressing; it is time to do something. It also means that the subject is time; time is what it is about.

In a letter to the *Esquissier*, Z. talked of his homicidal activities near Vallejo as "good times." In the next breath, he asked if the police were having a "good time" with his cryptogram. His favorite correspondent was the *C'Arconte*, which takes its name from the Greek *chronos*, meaning "time." Other correspondents included the *Vallejo Times-Herald* and the *Los Angeles Times*.

In the Mount Diablo Letter, Z. claimed to have "shot a man sitting in a parked car with a .38." At the time, the police let on that there was no shooting victim in recent memory fitting that description. According to all the published accounts, the cab driver, Paul Stine, had been shot with a 9mm automatic. I learned, more than three years later, that the murder weapon in the Stine killing had in fact been a .38-caliber revolver. That brought up another interesting

thought. Z. had used three different types of firearms, in this order: a .22, a 9mm, and a .38. The expression "22 before 9," read as clock time, is 8:38. It was about that time that I made my first trip to the scene of the murder in Presidio Heights. I didn't know what looking over the site would reveal, or that it would reveal anything. But I was in the city anyway, for my one meeting with Magagnini at the Chronicle, and I thought I might as well take a look at it.

The Zodiac had instructed Paul Stine to take him to the corner of Maple and Washington, but the cab was found a block away, at Cherry and Washington. The newspapers, reporting on Stine's murder, had said nothing about the trip-book entry. Three days after the murder, Z. sent a letter to the Chronicle, claiming credit for the cabbie murder, which he said had taken place at Maple and Washington. Even if Z. had not been aware of where he was when he pulled the trigger, during the three days which had intervened between the murder and his mailing the letter, he would have read in any newspaper that he had killed Stine at Cherry and Washington. But he harped on the other intersection for some reason -- possibly because he was concerned that nobody had noticed the trip-book entry.

When I got to the scene and took one look, I saw the reason for his concern. The block between Maple and Cherry on Washington Street is the 3800 block. Every house number in that block begins with 38, and Paul Stine's life ended there with the same number.

The very first letter from Z., "THE CONFESSION," was mailed on 29 November 1966 in two copies, one to the Riverside police and the other to the *Riverside Press-Enterprise*. There were no stamps on the envelopes, and the addresses were strange. Here is how the newspaper's copy was addressed:

Daily Enterprise
Riverside Calif
Attn: Crime

The newspaper is not called the "Daily Enterprise." It has a post office box and a street address, neither of which is used here. The address also does not contain a ZIP Code -- although that is not an unusual omission in 1966, since ZIP Codes were introduced only in 1963. But the attention-line is very strange. There is no crime department at the newspaper, and there is no one on the staff named "Crime." The effect of all these distortions and omissions is to produce a test of 38 letters.

The address was the first thing that one saw of this letter. The topic sentence of the July 1966 cryptogram was the first thing one saw of that. It said, "I like killing people because it is so much fun." The sentence is written in 38 letters. The first spelling error occurs 38 letters further on in the text: "It is more fun than killing wild game in the forest." The letter to Melvin Belli was addressed to "228 Mfgy." For some reason, it had never occurred to the police to wonder about the address -- I don't mean the abbreviation "Mfgy" for "Montgomery." I mean the house number.

Melvin Belli has been practicing law since 1962 at 722 Montgomery. The Zodiac letter was off the mark by five blocks. Of course, since Z. had a habit of misspelling words, he might be dyslexic. Perhaps he just transformed "722" into "228" because of dyslexia.

722 and 228 have something in common. Both of them are exact multiples of 38. $722 \div 38 =$

19. $228 = 38 \times 6$. How likely is it that this mistake was the result of dyslexia? There are 900 three-digit numbers to choose from. The choice of 228 to replace 722 was either intentional, which means that the Zodiac chose to write 228 for some purpose, or else the choice was dictated by whatever considerations the dyslexic brain takes into account, and whatever they are, they cannot, where number is concerned, be anything but random in operation. What are the odds against the choice of another 38-multiple?

In the range of three-digit numbers, 24 in all are 38-multiples. One of them is 222. This means that Z. had a chance of hitting another one of 23/899, or about one in 39. This is roughly the same chance that you have of winning by betting on a single number at the roulette table. It was not very likely to have been the result of dyslexic coincidence, in other words.

I have already mentioned that it had occurred to me that one way of translating language into number was by way of Morse Code and binary numbers. My very first attempt was with the word TIME, since that appeared to be something of interest to my author. Using 1 for dash and 0 for dot, TIME in Morse is 1 00 11 0. Having written that down, I then calculated the value of 100110 as a binary number. It turned out to be 38.

I felt rather as if I had just discovered a new continent. It appeared that 38 was a disguised form of the word TIME, or else that TIME was a disguised form of the number 38. In either case, this coincidence of forms appeared to confirm my guess about Z.'s use of binary numbers and Morse Code.

Some time later, I remembered the return address on the Coast Marco Letter, postmarked in San Rafael on 9 July 1974. I had not inspected every mail cover, but of the ones that I had seen, the only one with a return address was this one, and it was simply "R.P." I wrote out RP in Morse Code: 010 0110. 0100110 as a binary number is 38 — the leading zero does not count. A return address is supposed to give the location of the sender. In the case of a letter postmarked in San Rafael, "38" is a very appropriate return address, because the city of San Rafael straddles the 38th Parallel. (I didn't know if Z. was aware of it, but the 38th Parallel runs through the exercise yard of the Marin County jail. That seemed doubly appropriate.)

So the Zodiac was harping on TIME (or 38). Why? Was he saying something profound about time? Did he have some kind of philosophical point to make, one which was so important that he had no compunctions about underscoreing it with blood? Whatever his moral inclinations, I saw him as having a first-rate mind. I would have liked to think that he was making some kind of argument which had a general application for all mankind. That would have taken some of the edge off my feeling of horror at what he had done.

I am now going to get ahead of myself chronologically, in order to pull this all together for you. When I return to the narrative, it will be at a time considerably before this synthesis had taken place. I apologize for any confusion that this might cause, but I see no other way to deal with this very important theme.

About ten days after my discovery of the existence of Michael Henry O'Hare, I learned, at second hand, some information contained in the Michael O'Hare entry in the Harvard yearbook for 1964. I did not actually see a copy of this entry until more than a year later. He was born 22 January 1943 in New York City and had attended Harvard in the years 1960-1964. He had majored in architecture. His extracurricular activities included the Harvard rifle team.

and editorship of a student literary periodical titled *Cambridge 38*. The magazine took its title from the postal zone of West Cambridge, where Harvard is located. Prior to the introduction of ZIP Codes, large metropolitan areas were divided up into zones, each of which had a number. The old postal zones were absorbed in 1963 into the new ZIP Codes: Cambridge 38 is now ZIP Code 02138. At all events, here were two new facts about O'Hare that seemed to fit the pattern: he had proficiency with firearms, and there was a 38 in his life.

The cryptogram of July 1969 was composed as a rectangle of 24 lines and 17 columns. It looked as if it had been written on graph paper, then traced onto another sheet; it was that neat. The 340-Character Cipher of November 1969 was also composed in a rectangular format, of 20 lines and 17 columns. Nobody had ever offered any explanation for the rectangular format or the choice of 17 as the number of columns. The number 17 occurs one other place explicitly, at the foot of Z.'s letter to the *Los Angeles Times* (postmarked 13 March 1971). It was the first and only time since Riverside that a letter had been addressed to anyone outside the Bay Area. At the foot of the letter, Z. wrote what appeared to be a box-score: "SFPD - 0 (crossed circle) - 174".

The *Chronicle*, being devoted more to sensationalism than the truth, transformed this statement into the headline: "17 DEAD." Of course, Z. had said no such thing. He just wrote "17" at the foot of his letter to the *Times*. There had been a few other hints. The cryptogram had been a multiple-substitution cipher. That is, the author used more than one cipher symbol for certain letters. He had used no fewer than seven cipher symbols for the letter E, which is the cryptographer's usual entry-point into an English-language substitution cipher. (E is the most frequently-occurring letter in English.) By contrast, M is relatively infrequent; it falls about halfway down the table of frequencies used by cryptographers. In the cryptogram, M is represented by only one symbol, and that symbol is the most frequently-used symbol. In reading the Zodiac literature, context is usually meant to be instructive, as this one is.

The symbol used for M is Q, the seventeenth letter of the alphabet.

In early October 1970, Z. had sent a postcard to the *Chronicle* covered with snippets of paper cut out of newspapers and magazines. He had punched thirteen holes in one end of the card with a paper punch. One of the statements appearing on this card (which I call the "Holy Card"), reads, "I'm crackproof." By alphabetic quantifies, F is 6, K is 11. Their sum is 17. In context with the "crackproof" claim, it seems to have a bearing on reading the Zodiac's "code."

In an introductory chapter, I mentioned the interstellar radio message devised by Frank Drake, which was transmitted from Arecibo to outer space in late 1974. Drake had arranged this graphic message in rectangular form and composed it in 1679 bits, 1679 being the product of the prime numbers 23 and 73. The idea was that 1679 ought to be recognizable to an extraterrestrial as the product of two primes, which in turn would suggest arranging the (otherwise incoherent) 1679 bits into a rectangle of 73 lines and 23 columns. Written in that format, the message would become coherent. In any case, what the authors of this message did was to imply a rectangular format through the use of multiplication.

I did not become aware of the Arecibo radio message until early 1983. But I mention it here because it is a useful parallel. What it demonstrates is that others besides the Zodiac have used this device for the purpose of non-linguistic communication. In the Zodiac's case, there

is a rectangular format of 8 lines and 17 columns. Both rectangles imply the operation, "8 times 17." Then we have the letter to the *Los Angeles Times*, at the foot of which Z. wrote the number 17. What these three documents have in common is the phrase TIMES 17 - 24 times 17, 20 times 17, *Los Angeles Times* 17.

I wrote out the phrase TIMES 17 in Morse Code (using binary 17): 1 00 11 0 000 10001. The number expressed, 10011000000001, is the base-ten 9745. Then I went back to biography. Bertha Margoules, Michael O'Hare's mother, had been born in Lowicz, Poland, on 7 September 1907. On the seventh of September 1945, she had celebrated her 38th birthday. That date, written in the same style the Zodiac used for writing dates, number for the month, number for the date, last two digits of the calendar year, is 9-7-45. TIMES 17 is a disguised form of the date of Bertha Margoules' 38th birthday.

When the Zodiac attacked the couple at Lake Berryessa, he wore a black cloth hood, on which he had embroidered his crossed-circle signature in gold-colored thread. He told his victims that he had escaped from prison at Deer Lodge, Montana, and that he had been born in Colorado. Instead of shooting them, he used a ritual instrument, the knife. He brought along a felt-tip marker and used it to leave an inscription on the victims' car door. The only suspect in which this crime resembled any of the others was the anonymous phone call afterward; it shared that characteristic with the crime immediately preceding, the shooting at Blue Rock Springs.

It doesn't seem likely that Z. could have ingratiated himself with his first victim, Cheri Jo Bates, whom he had offered a lift home, had he been wearing outlandish costume. The surviving victim from the shooting at Blue Rock Springs said that Z. had walked wordlessly up to the car and started blazing away. He was not wearing anything out of the ordinary. Several witnesses saw Z. right after the murder of Paul Stine in Presidio Heights, and he was not wearing anything unusual. It seems to everyone who studies the problem that there was something extraordinary about Lake Berryessa. The victims both said that Z. seemed to lose control of himself and to surrender to a kind of frenzy, once he started stabbing them.

The newspapers reported a wide range of numbers for the stab wounds. The *Chronicle*, sensational as always, reported that Cecilia Ann Shepard had been stabbed twenty-four times. The low-ball figure came from the *Napa Register*, which reported that she had been stabbed ten times. The *Register* also reported that her companion, Brian Hartnell, had been stabbed seven times. I had no idea which account to believe until late 1981, when a producer at ABC News Department in New York, Dan Goldfarb (about whom more later), obtained a copy of the coroner's report on Cecilia Shepard, which he read to me over the telephone. She had been stabbed five times in the front of her body and five times in the back, for a total of ten.

I take this as complete confirmation of the *Register's* account. It was the local paper. It has long-standing and close ties with local law enforcement, the coroner's office, and the admission desk at Queen of the Valley Hospital, where Cecilia Shepard was treated — and where she died. I also assume, because the *Register* was right about her, that it is also right about Brian Hartnell. That means that on 27 September 1968, the Zodiac, who was obviously celebrating something, to judge by the ritual that attended this murder, stabbed his victims a total of seventeen times.

Michael O'Hare had been the editor of *Cambridge 38*. TIMES 17 gave the date of his mother's

32nd birthday, 9-7-45. He himself had been born on 22 January 1943. On 27 September 1969, the date of the Lake Berryessa murder, he was twenty-six years of age. In months, he was 320. But in days, his age was 9145.

He was TIMES 17.

CONTACT

Narlow was in the hospital with his double hernia. I took my new information to Lowongan instead. In a way, I was glad to have the opportunity to talk with him. During our three-hour seminar, he had made what I thought were the most intelligent observations. He had suggested to me, for instance, that if the Zodiac's misspellings might have something to do with alphabetic quantities ($A = 1$, $B = 2$, etc.), if they had any system to them at all. He had simply never spent the time necessary to follow through on this insight.

He greeted me cordially enough, but it was soon obvious that he wasn't interested in anything I had to say. He was pointedly looking at his watch from time to time. He had a class to teach at the junior college, so his time was limited. I gave him O'Hare's name and a short lecture on the subject of earthform art. He said that he would like to see a complete "workup" on the subject, and by that time, we were already headed out toward the lobby of the Hall of Justice. It was now clear to me that since I had been cleared as a suspect myself, law enforcement had no interest in anything that I might have to say.

Just to be on the safe side, I called Deasy in San Francisco and offered him the same information. He said that he was very busy. I asked him to take a minute and write down a name that I was going to give him. He agreed, and I gave him O'Hare's name. I told him that I never wanted to hear that I had not given him the information. I could just hear him looking at his watch. After this phone call, I never heard from Deasy again.

Some time after Narlow was out of the hospital, I ran into him at the post office. I asked him if I might drop in on him in the next few days. He agreed, and I did so, bringing along my three-year-old daughter Amanda, who sat on my lap during the interview. Even with Amanda there to charm him, however, I got nowhere. It was apparent that his mind was closed to anything I had to say. I tried to get across to him the idea that there were other ways of writing numbers than base-ten. He made the flat statement in response that the largest number that can be written to the base two is twelve. In my mind, I could hear his ears clanging shut.

I pointed out to him that the theme of the first commercial greeting card sent by the Zodiac had been a fountain pen. The theme of the second commercial greeting card had been a dragon. Those two themes, in order, give "Pendragon," the family name of King Arthur. He stared at me. "Gareth, are you trying to tell me that the Zodiac is King Arthur?" I didn't bother pointing out to him that Michael O'Hare had been employed during the Zodiac period by the consulting firm Arthur D. Little, Inc. I just thanked him for his time, gathered up my daughter, and left.

I had become aware by this time of the consistent theme of the number 38 running through the literature. I had at this time no idea what lay behind it, but I knew that it was important to the author. I had noticed that in about a week, Michael O'Hare was going to turn 38. If he was

the Zodiac, and if he had a human sacrifice on the agenda for 1981, it was my moral responsibility to do something to prevent it. The police were obviously of no use, so I turned to other sources of assistance.

I had joined Mensa the year before. Mensa is a social organization for people who do well on intelligence tests. The criterion for membership is scoring on standardized instruments in the two top percentiles of the general population. Many Mensans belong to Special Interest Groups, or SIGs, which cater to particular intellectual or hobbyistic interests. Through Mensa, I made contact with a SIG called the Court of Last Resort. COLR had been founded by the mystery writer Eric Stanley Gardner, the author of all the Perry Mason stories. After Gardner's death, COLR had become an adjunct of American Mensa. Its coordinator was Darrell Bross, who lived in San Francisco.

The purpose of COLR is to investigate claims of innocence by condemned criminals. If you are on Death Row and feel that you have been railroaded, it is COLR's charter to take the extra steps that the police and prosecutors may not have taken, to find if there is in fact any exonerating evidence. I don't know what kind of track record COLR has as a Mensa SIG, but I remember that it had a very good reputation back in the days when Gardner was running it.

A few days after I had talked to a Mensa official about using COLR's resources, Darrell Bross gave me a call. I discussed the problem with him and said that what I needed was background material on Michael O'Hare, about whom all I knew at this point was his name, address, birthdate, and parentage. He said that he would be able to provide me with a lot more information from people that he had in the field. I did not hear from him again for three and a half years, and when I did, it was only through intermediaries.

A former colleague of mine who was now working as Librarian at the *Oakland Tribune* discussed my situation with the paper's city editor, who assigned a reporter named Paul Grabowicz to me. I met with Grabowicz at the Vallejo public library and showed him the map information. I also suggested the possibility that Michael O'Hare was the Zodiac. After that meeting, Grabowicz obtained a copy of the 1984 Harvard yearbook and looked up the O'Hare entry. He told me that in that entry, O'Hare is described as editor of *Cambridge 88* and a member of the university rifle team.

I met with him again about two weeks later, also at the Vallejo public library. By this time, I had produced a digital transcription of the 340-Character Cipher. That text (which you will find reproduced later in this book) has remained unchanged, by the way, since January 1981. It took me three years of work to produce the readings which appear here. But I did have the opening passage, 0010010000111, which I read as Morse BRAIC (0 000 01 0000 111), the family name O'HARE in reverse, and I had found MIKADO (Morse 110010101 00111) in Line 7. This finding was of importance because Z. had quoted, in two letters, from the Gilbert and Sullivan operetta of the same name.

I didn't have a good explanation for O'HARE being spelled backwards — that came much later. But I felt that it was significant, in any case. I presented these findings to Grabowicz, who received them not just skeptically, but caustically. He told me that I had cooked up a di-

gital reading that would incriminate O'Hare, who could not possibly have committed the Zodiac murders. For one thing, he lived on the East Coast. The only way that Grubowicz could see O'Hare's having traveled to California was on his mother's money, which seemed rather far-fetched. How could anyone have afforded to commute repeatedly to California from Massachusetts over a period of several years just for the purpose of murdering people? But even worse for my theory, Grubowicz's own research, in the tenth anniversary report of the Harvard graduating class of 1964, had established that O'Hare was married. "Mass murderers," he pontificated, "don't get married." And that was that. I never saw him again.

I wish now that I had known about Leonard Lake then. But Lake wasn't news until four years after my second meeting with Grubowicz. He had murdered possibly dozens of people in his mountain hideaway in Calaveras County. He was married, too. It would certainly have come as a great comfort to those murder victims to know that they were not dead because their killer was married. And about a year and a half after Leonard Lake made the front page, I was informed by a correspondent in Pennsylvania that the Boston Strangler had been married -- and the father of children.

At the time, I had no effective counter to Grubowicz's argument. That was my first encounter with criminal detection "à la pop psychology." I was to hear, over the years, variations on this theme from a number of different people, none of them psychiatrists. Over time, I got the distinct impression that the license to utter psychiatric pronouncements comes with your U.S. citizenship. I also got the impression that in this case at least, psychologizing was actually counterproductive.

But my immediate problem was to prevent bloodshed. O'Hare was on the verge of turning 38. I resolved to take the bull by the horns. I would let him know, as subtly as possible, that somebody was aware of his secret identity. I hoped that if he knew that somebody was looking over his shoulder, if he was no longer a needle in a haystack, he might be deterred from any homicidal activities planned for this calendar year. On the other hand, if I was wrong and he was not the Zodiac, he might be annoyed about being pestered. He might even sue me. But I felt that that was a small price to pay for being able to sleep nights.

I suppose you could say that I had decided to play by the rules of folklore. There is a type of story which is richly represented in folklore about a monster who poses a riddle and threatens those who cannot solve it. Only the person who solves the riddle can destroy the monster. A well-known example is Oedipus and the Sphinx. An even better known example is the story of Rumpelstiltskin. I conceived of what I hoped to accomplish as The Rumpelstiltskin Effect.

Over the next four months, Michael O'Hare received a number of what you might call weird postcards from me, all sent anonymously from a number of locations. I expressed in these postcards what I felt were allusions to Zodiac formulations that the Zodiac and nobody else would recognize. If O'Hare was not the Zodiac, he would be baffled and quite possibly upset about it. If he was, he would know that he was no longer invisible and might -- I hoped, would -- refrain from any further crimes. I didn't know that it would work, and it may have been the wrong course to follow. But this was a new, unprecedented situation. There was no rule book to consult. I didn't think that anybody else had the experience to suggest a better

course. It was like warfare, in a way: there are no rules to follow except the ones the participants make up as they go along. In war, the rule books are always written after the smoke has cleared.

About the same time, I made the acquaintance of Dr. Laonti Thompson, a psychiatrist who is well-known in the Bay Area as an expert in criminal matters. I found Dr. Thompson to be not only a psychiatric expert, but also extremely well-versed in mathematics. He gave me a number of valuable tips, too many for me to acknowledge individually. Much of whatever success I have had in analyzing the Zodiac literature is due to his suggestions.

By curious coincidence (it is a small world), he had graduated from the same high school that Michael O'Hare had attended, Bronx Science in New York. After showing him what results I had managed to obtain so far — chiefly the geometric design on the map — I asked him how he would pigeonhole the Zodiac as a psychiatric phenomenon. I was not immune, you see, to the universal American urge to deal with everything in psychiatric terminology. He thought about it for a moment and then said that he suspected that this criminal was simply evil. It was like a breath of fresh air, to hear someone resorting to moral terminology rather than psychobabble. He also expressed the opinion that the police were so backward that they would never see what the problem was. He said that he would try to use whatever influence he had with other institutions to get some results. Over the next few months, he wrote letters to everyone he could think of. Finally, he got the attention of a national news organization. I will come back to that later.

About this time, I had been selling little pieces of writing to *New West*, a regional magazine with a rather checkered past. It had originally been a spin-off of *New York*, a creation of Clay Felker's. Then it had been bought out by Rupert Murdoch, the Killer Bee Baron. Finally, it had been taken over by *Texas Monthly*, published by William Bradford Huie. The editor with whom I dealt was Tom Bates. I have a few things to say about him to introduce him as a character.

Bates told me that he had a Ph.D. in history for the University of Wisconsin and had been teaching in Ohio at the time of the Kent State massacre. He had participated in a sit-in, for which he had been dismissed from the faculty. Following his departure from academia, he took up magazine editing. The first piece that Bates bought from me was a memoir on building geodesic dome houses. I had just done one myself, and in the process, I had found out everything they don't tell you in those glowing promotional articles in *Popular Mechanics*. He offered to purchase my material as "research notes," which would then be written into an article by magazine staff (i.e. Tom Bates). The fee would be correspondingly low. A few weeks after I sent him my "research notes," a fact-checker called me up and read me the magazine's copy over the phone. It hadn't been staff-written at all. It was my writing, word for word. After I complained about this deception, my fee was doubled. This kind of behavior proved to be typical, however.

In any case, while I was on the phone talking to Bates about something else, I mentioned that I had a longer piece on the Zodiac murders and asked him if he would be interested in reading it. He said he would, and so I mailed it off to Beverly Hills. I was astonished when he called back a few days later to offer me \$2000 for it. He characterized it as "the story of the decade"

-- I would have preferred "century," but I didn't quibble. He said that he wanted to get the article into print in the first open issue. I said that I felt it needed a lot of work. I didn't mean writing. I meant mathematical analysis. I also meant detective work. I had a number of reasons for thinking that Michael O'Hare was the Zodiac. But if it turned out that he didn't look like the Zodiac, write like the Zodiac, or have a history of travel to California during the Zodiac episode, then it was high time for me to stick my head in a bucket of cold water. I said as much to Bates.

I also said that I felt that it would be a good investment for the magazine to spend a few hundred on a private investigator in Boston (O'Hare lives in the Boston area), who could, I felt, easily establish either that I was dead wrong or else that there was enough substance to warrant further investigation. Under the terms of my writer's agreement, the magazine owed me \$400 whether they used this Zodiac article or not. This "bill for" would have bought quite a bit of private investigator's time. Bates dismissed the suggestion out of hand. He requested instead that I make the time to fly to Southern California for a conference with him and other magazine personnel in order to work the story into final form.

Other publications were interested in doing Zodiac stories, too. It had been years since the *Chronicle* had had a story on the Zodiac, and so they dusted him off for a two-page feature story. It appeared in their issue of 4 May 1981. It contained a sidebar on amateurs. There are a number of Zodiac theories, quite a few of them advanced by private citizens. In this story, all of the amateurs mentioned were treated anonymously, save one. The reporter who wrote the piece, Bill Wallace, said that one theory which placed the Zodiac at Travis AFB, and which derived from the discovery of a gigantic geometric design on the map, had been advanced by Gareth Penn, a resident of Napa County. Not only was this a distortion of my opinion, but I had an agreement with Magagnini that the *Chronicle* would never use my name in a Zodiac story without my consent. I inferred that Wallace had obtained his information second-hand from Graysmith, who had talked to me on the phone about five months previously.

Wallace's version of my theory was not only distorted and out of date; he had not even taken the trouble to talk to me about it. He just slavishly repeated everything he thought Graysmith had told him without bothering to check his facts.

I called the *Chronicle* and talked to the city editor. First, he told me that I had not been mentioned in the story. He knew this because he had to read everything that went into the paper. (He took much the same smug tone about the facts as the doorman in the lobby downstairs.) I had the newspaper in front of me, and there was my name in black and white, but because this smug individual said my name wasn't there, it wasn't. That was that. I read him the relevant section, word for word, after which he became slightly less arrogant. He put Wallace on the phone. I asked Wallace why he hadn't called me to find out what I really thought before publishing this misrepresentation of my opinion.

He said that he hadn't called me because I had an unlisted number. I opened my copy of the Napa County directory and read him the entry listed under my name. I asked him if there was a copy of the Napa directory in the newsroom, and he said yes. I pointed out that my number

had been listed in that directory for eight years. I suggested that his behavior was unprofessional and unethical. I also said that I had had an agreement with Magagnini that my name would not be used.

He said that I must be "paranoid" to think that he and Magagnini were involved in some kind of "mysterious cabal" against me. I said that I had suggested no such thing; those words were his, not mine. I had had an agreement with the paper, which had been violated. I was being quoted as saying something that I did not agree was my opinion, and that had happened because he, Wallace, was too lazy to pick up the phone and talk to me for five minutes. I said that I felt like writing a letter to *Colombia Journalism Review*. He just hissed at me: "Write your letter," and then hung up.

Five days later, I was sitting up late, reading. At exactly half past one in the morning, the phone rang. When I picked up, I got a dial tone. The caller had hung up. I put the handset back in the cradle and went back to reading. Almost immediately, the phone rang again. When I picked up, I got a dial tone again. After that, there were no more calls. It was 9 May 1981. I didn't need to speak to the caller to know who it was.

The hour at which had called was 1:30. The word "ring" is a synonym for "circle." Two rings is 00, Morse letter I, the subject of the sentence, "I (am) 130." He had seen, or been informed of, my name and whereabouts in Wallace's story. Even though the information was garbled, all he needed to know was that I had to do with a theory concerning a geometric scheme on the map. Several of the postcards that had gone to Michael O'Hare were postmarked in Napa. He had put two and two together. As I learned later, he had been trying to discover my identity another way, but Bill Wallace had just dumped me right in his lap.

I wasn't alarmed at having been found out. If anything, I was elated. Communication had been established between the two people who, just five months previously, had been intimately linked by special knowledge but ignorant of one another's identity. I now knew whose eyes I had looked out of on the evening of 26 December 1980, and he was now aware of a new presence in his life. And he was communicating back to me, using the means that he had employed as the Zodiac. I thought that his use of the telephone and clock was frightfully clever. I was rather proud of myself, for that matter. I felt that I had achieved the equivalent of communicating with an extraterrestrial civilization.

"Extraterrestrial civilization" reminds me of Southern California. About ten days later, I was at the editorial offices of *New West* in Beverly Hills. I met William Bryles in the men's room. He was standing at the urinal next to mine. Fearing a disaster, I refrained from offering him a handshake. I met Tom Bass face to face, as well as the magazine's defamation attorney, Steve Shiffman. Shiffman told me that he had contacted somebody with a Japanese name in the Attorney General's Office. That person had told him that my theory was a "load of bull" -- how could the Zodiac have used a secret code when he couldn't even spell English words correctly? In the course of our discussion, it came out that what the magazine intended to do was to name Michael O'Hare as the Zodiac murderer. Everybody was very excited about it.

The article which I had submitted did not do so, and in fact, did not even advance the claim

that I knew the Zodiac's identity. I had sent along, however, a sheaf of essays in reading the literature, titled "A Zodiac Christomathy," in which O'Hare was named. All that the article attempted to do was to demonstrate that where the police had perceived only chaos before, there was order and design; and that being the case, the literature ought to be readable. The Zodiac's claim of self-identification should be taken seriously. Hitherto unpublished letters should be released for examination by experts in the fields of mathematics, linguistics and psychiatry. I did not include myself in any of these categories. I certainly did not intend to spend the next five years doing the whole job by myself.

The magazine wanted to create a sensation. Obviously, if I was wrong about the Zodiac's identity, they would have a huge libel suit on their hands. I was flattered by their confidence in me, and since they thought it was all right to go out to the end of such a skinny limb, I didn't mind joining them. But I was still surprised. It was also startling to talk about these things with people whose education, for all their degrees, was wanting. None of them had ever heard the words "rebus" or "anagrams" before. I knew Bates had a Ph.D. from a perfectly respectable state university, and I had seen a dictionary on his desk. It came as something of a shock when he turned around to me in the car in which we were driving to the UCLA campus and asked me, "By the way, what's a CHRESto-MATHy?"

We were on our way to UCLA to meet with a member of the mathematics department. His name was David Cantor, and he had been retained by the magazine as a cryptography expert to evaluate my findings. Cantor worked on the side as a consultant to the National Security Agency and was regarded as knowing everything there was to know about code-breaking. Steve Shiffrin had told me that the one thing that he was most interested in hearing from Cantor was the reading ERAHO, which I had found expressed digitally as the opening passage of the 340-Character Cipher. He was also interested in finding out more information about Michael O'Hare. As he put it to me, if it turned out that O'Hare was black, six-foot-five and living in Melbourne, Australia in 1969, then I was all wet. I pointed out that I had suggested using my kill fee to hire a private investigator to see just how dry I was. He said that he wished they had agreed to it.

We met with Cantor at the UCLA faculty club. Cantor began the conversation by saying that he had not had time to go over the material in detail. He said that the 340-Character Cipher must be unbreakable, since the NSA had not managed to make anything out of it. I told him that as far as I knew, nobody had sent it to the NSA. He replied that of course, they would have. I said that the historical fact was that it had been worked on by a Navy cryptographer at the Skaggs Island Naval Communications Center, but that he had had no success. He had also had no success with the cryptogram, which had been solved by a high school economics teacher in Salinas named Harder. Cantor became very emphatic about it: of course, they would have sent it to the NSA, because that was the logical place to send it. He was practically throwing a tantrum. He apparently felt that he could change history by stamping his foot.

Then the conversation turned to the subject of the cipher itself. Cantor said that if it said anything at all, it was probably just "the drellings of a madman." Again, we were getting a psychiatric opinion. To myself, I wondered how Shiffrin would have handled Cantor on the wi-

and stand. Here he was, hired to function as a mathematician, and he was offering an opinion which called for expertise in a completely different field. Later, I found out that one of Carter's objections to my reading of the 340-Character Cipher was that ERAHO was backwards. How did I explain that?

By the time I learned of that objection, several months later, I had figured out that ERAHO is the distinctive part of the best-known number in mathematics, the fraction of π -- written to the base two. And while the case for ERAHO as a sequence of Morse letters is statistically weak, the case for reading it as the fraction of π is very strong. Carter did not recognize it for what it was not because he is no good at mathematics, but because his opinion was colored by his excursions into amateur psychiatry. He was blinded to his own expertise by his affinity for psychobabble.

Late in May, I got a phone call from Steve Shiffrin. Expressing himself very obliquely, he informed me that there were certain things that I might have done which he would not have done, had he been in my position. It appeared that the Federal Bureau of Investigation had received a complaint from one Michael Henry O'Hare, a resident of Massachusetts, about certain items received in the mail over the last few months. Shiffrin said that considering the nature of the situation, a big-hearted prosecutor might refrain from throwing the book at me. But whatever I did, I should stop doing whatever I might have been doing.

What had happened was that Shiffrin personally knew the Supervisory Special Agent of the San Francisco field office of the FBI, Terence Ettridge. He had forwarded to Ettridge a copy of my draft for the *New West* article, along with a copy of the *Zodiac Christomathy*. Ettridge had also received, from the Boston field office, a sample of the strange mail that had been showing up in Michael O'Hare's mailbox. By comparing the two, he came up with the same vocabulary. He put two and two together and called Shiffrin. Then Shiffrin called me.

I called Ettridge. I told him that I understood that there was a nationwide manhunt going on and that he could call it off. He laughed at the suggestion. He said that he could have an agent drive over to Napa from the San Rafael office to talk to me. I said that I would prefer to come to San Francisco. I said that I would come quietly and not offer any resistance.

I arrived at 450 Golden Gate Avenue in San Francisco at the appointed time and took the elevator to the fifth floor, which is where the FBI holds forth. The anteroom was divided in half by a counter. From the countertop to the ceiling, there was an expanse of what must have been bulletproof glass. On the far wall behind the bulletproof glass were two framed photographs. One was of J. Edgar Hoover. The other was of William Webster. The Hoover portrait was about five times the size of Webster's. I let the receptionist know I was there and then settled down into a couch with a back issue of the *National Geographic* and let the march from *The Love for Three Oranges* play through my mental ear. That was the theme-music of a popular radio program back in the old days, *The FBI in Peace and War*. I had always thought it amusing that the music which people of my generation associated with the Federal Bureau of Investigation had been composed by Sergei Prokofiev, a card-carrying member of the Communist Party of the Soviet Union.

Strange, the kind of people to whose music the FBI chooses to march.

I had just gotten involved in an article on archaeology when a steel-clad door at one side of the anteroom opened and two men stepped out. They walked over to where I was sitting and introduced themselves. One was Ettridge, and the other was somebody else. His name didn't register. Later, Ettridge gave me a business card. The other man went through the motions of fumbling in his pocket for a card but pleaded to having left his at home. He wasn't fooling me. His business cards were the ones that had "Staff Psychiatrist" printed on them. He just didn't want me to see one.

We went through the bulletproof door and down a passageway to an interrogation room. It had no windows and was about ten times longer than it was wide. Ettridge sat behind a desk. The decor was Early Classroom: desks with writing-boards on the right-hand chair arms. The first order of business was for me to sign a waiver. Ettridge passed over to me, and I signed, a mimeographed form saying that I waived the right to have an attorney present. Then Ettridge read me the riot act.

The FBI had received a complaint from a "high state official" of the Commonwealth of Massachusetts about receipt of what might be construed as extortionate communications. He had one question for me: had I ever demanded money or any thing of value from Mr. O'Hare? He stressed the "thing" of "any thing" so that I would not confuse it with "anything." No, I hadn't. Within a few minutes, the possible criminal content of the complaint was resolved. There was no criminal offense, hence no Federal interest.

I went into why I had sent O'Hare the funny mail. I had felt myself in possession of knowledge which was relevant to the prosecution of a number of homicides. I had been frustrated through the indifference and stubbornness of the local police and had felt that the moral responsibility which I bore had to be relieved one way or another, and I had chosen the route that I had for that reason. Mr. X, the man who had misplaced his business cards, clucked sympathetically when I had the floor, but when it was his turn to speak, he asked me rather aggressively why I was so angry at Captain Narlow.

I responded that I was not angry. I had the feeling that there was a thick pane of glass between me and the people who were responsible for enforcing the law. I had been trying to shoot my message through the pane of glass, and when that didn't work, I had beaten my fist against it, trying to get their attention. And when that had no effect, I had started picking up rocks and heaving them against the glass, trying to get through. The measure of my success was that I was sitting here in a field office of the FBI, with what turned out to be three hours' worth of the time of the Supervisory Special Agent and some anonymous person who had left his business cards in his other pants.

Ettridge struck what was now a familiar theme. The FBI did not believe that Michael O'Hare could be the Zodiac, because they had psychological profiles that said so. Psychological profiles are instruments derived from observation of known criminals. They are not just descriptive, that is, they do not attempt merely to describe what a particular criminal has done. They are predictive as well: they attempt to describe the mental and educational status of the off-

known perpetrators of crimes. Past experience, as reflected in these profiles, says that murderers of a particular typology have a certain kind of background, sexual proclivities, and so forth, in common.

Michael O'Hare had a Ph.D. from Harvard. He had taught for seven years at MIT. He was now a cabinet-level official in the government of the Commonwealth of Massachusetts. He had even served as chairman of the Cambridge Civic Improvement Association. (And four months after this interview, he was teaching at the Kennedy School of Government at Harvard.) He was married. Psychological profiles say that "this" kind of person does not commit "this" kind of crime. I refrained from pointing out that he was begging the question as to what kind of crime we were talking about.

Ethridge is not a psychiatrist. In fact, he told me that he had been trained as an engineer. But he had made up his mind on the subject based on a psychological picture of someone he had never even met. Over three years later, I read an article in *Newsworld*, on the subject of serial murders. The article quoted Roger Depue, the head of the FBI's Behavioral Sciences Unit, which produces the FBI's in-house psychological profiles. Depue said that the Bureau's profiles are accurate fifteen percent of the time. An instrument that is accurate fifteen percent of the time is like a watch that gives the correct time nine minutes out of every hour. You can get fifty percent accuracy by flipping a coin. But the appeal of psychiatry is so powerful that the psychological profile determines everyone's opinion on the subject, regardless of what the objective evidence says. In the same article, Judge Webster is quoted as saying that psychological profiles are not intended to turn every FBI agent into an instant psychiatrist. But that is exactly what they did to Terence H. Ethridge.

I had wondered for some time about the Times' watch. I knew that it was stopped when it was found at the scene of the murder in Riverside. Given that the Zodiac appeared to be worn to express himself in number, and given that watch dials are covered with numbers, it would be interesting to see what number the Times expressed. At that time, it still had not dawned on me that the very word TIMEX was a number, read digitally (Morse 1 00 11 0 1001) as binary 617. It is the Area Code of Boston, Massachusetts. But aside from that, the time shown by the hands could well have something to say as well. Ethridge said that he found that intriguing, too, and he promised to do what he could to find out about it. He said that he would give me a call and let me know when he did. He never did.

Ethridge also asked me for a copy of the Zodiac Crestomathy for evaluation by the FBI's laboratory division in Washington. I said that I would prepare him a copy as soon as I got home and mail it to him. Ethridge and his friend saw me to the bulletproof door and both of them pumped my hand vigorously on paring. They both said that they had seldom enjoyed a conversation so much before, and Ethridge told me, while shaking my hand, that I definitely did not have to worry about Federal prosecution, but that Michael O'Hare would probably use the living daylights out of me. He was smiling all the time he said it.

This wasn't the first time I had had a conversation with somebody from the FBI. A few years before, I had been interviewed in connection with a background investigation on a co-worker who had obtained a government job. It appeared to me that part of the training that FBI

agents are required to go through is indoctrination in smiling. I guess that it is considered good public relations to smile blissfully at all times. I even envisioned a Smiling School, perhaps part of the plant at the FBI Academy in Quantico. The local police are generally rather grim in appearance, so the FBI provides a welcome relief from their dear counterparts at the state and local levels. If you see somebody in plain clothes who is smiling all the time, he is probably an undercover G-man. KGB, please copy.

I went home and carried out my end of the bargain. Then I waited for something to happen. I waited and waited and waited. Nothing happened. I heard nothing from the FBI, nothing from the magazine. I wrote to Bates several times, updating him on what I considered to be the progress I was making with the Zodiac letters. He didn't respond.

Nothing continued to happen until 22 June. On that day, my phone rang at exactly 1:30 p.m. I answered. The caller asked, "Is Jim there?" I said no, he must have the wrong number. He replied with an "oh" and hung up. I was struggling with the Zodiac, wadding up one sheet of scratch paper after another and littering the floor with them. It wasn't until about three in the afternoon that I paused to look out of the window.

The whole eastern side of the mountains ringing the Napa Valley was in flames. There was a pall of smoke stretching up into outer space, it seemed. The fire was huge. I went outside and watched the orange flames lick their way around the mountains to the north. Before the darkness became too thick, I watched the boron bombers discharging their loads on the fire. It was quite a spectacle.

I stopped watching the fire about eleven o'clock and went to bed. It did not take me long to drop off to sleep. I was in the middle of a dream when the phone rang. I sat bolt upright in bed and looked at my digital clock. It was exactly 1:30 a.m. I picked up. "Hello," I croaked. "Is Jim there?" my caller asked. I said that he must have the wrong number. "Oh," he said, and hung up.

Some time later, it came out in the newspaper stories that the fire of 22 June 1981, which destroyed sixty homes and blackened some 25,000 acres of forest and chaparral, was started by an unknown arsonist who had planted a string of bombs alongside the access road to Rector Reservoir. There were nine bombs, all containing timers. The timers had been set to go off at 1:30 p.m. I didn't know yet about the Bus Bomb Diagram; I was not even to lay eyes on it until nine months later. But I knew who had set the fire anyway. I just added up the letters of IS JIM THERE. I is 9, S is 19, J is 10, , and E is 5. The sum is 112, binary 1111 0000, Morse OBI.

THE CRYPTOGRAM

The Zodiac's cryptogram was mailed in late July 1969, in three parts, to the *Town-Ronald*, the *Chronicle*, and the *Examiner*. In the cover letters accompanying the cryptogram-parts, the Zodiac claimed that the solution of the cryptogram would reveal his identity. He also insisted that the text of the cipher be published on Friday, 1 August 1969, or else he would go on a "kill rampage" lasting all weekend, during which he could murder many. The newspapers obliged him, and the text was published.

Not long afterward, a solution was in hand. It came from a high school teacher in Salinas named Harden who had worked on it for several days straight, together with his wife, who was also an amateur cryptographer. The solution was a disappointment in the sense that it did not appear to reveal anybody's identity. The cryptogram text had been composed in a rectangle of 24 lines and 17 columns, then divided into three parts of eight lines each for transmission to the newspapers.

When the solution was published, some spelling errors were corrected. Original spelling errors were introduced by the police, apparently on the theory that this would create a secret which only they and the author would share. Punctuation was introduced, and spaces were set between words. The whole text, as edited, was printed margin to margin in news-paper-column width. I suggest that the reason nobody ever made anything out of the cryptogram was that it was not printed the way the author wrote it, i.e., as a rectangle of 24 lines and 17 columns. In what follows, I will demonstrate that this message behaves exactly the same way as the interstellar radio message devised by Frank Drake. Expressing it in any way but the rectangular format renders it incoherent.

Here is the text of the cryptogram, first in cipher, then in the Harden solution. The original format and the original misspellings have been preserved exactly as they were composed by the author.

THE CRYPTOGRAM

Valley Times-Herald

A□P/Z/UB□KORΛXXΛB
W+EVGYF□DHROKLΘY
MJYVUIK▲QTNTQYDΦ
Φ/△BPORAU□TRΛY
SΦ/△BPORAU□TRΛY
R+GDAKIΦΦΦX▲ΦΦΦ
RNLTIEJDLQDQGBTOSΦ
L/D/P□BXΦEHMUARRΛ

San Francisco Examiner

OZKΦPΦIΦWΦJΛΦLMΦAΦ
BPDRT+DΦNΦEUEHΦF
ZΦOVWΦT+LΦIΦCΦHΦRΦHΦ
HADROTΦYΦ/EDΦXΦQΦAΦ
PΦMARUΦLΦNΦVEKHΦGΦ
RΦKΦJΦKΦJΦKΦJΦKΦJΦ
ΦAKPΦUΦBΦVΦWΦTΦTΦOΦ
ΦIMΦDΦGΦΦLΦRΦAΦVΦ

San Francisco Chronicle

NΦSΦKΦ/ΦAPΦBVΦ
WΦQΦWΦXΦEΦDΦ
CΦAΦ+ΦAΦAΦBΦ
WΦSΦVΦYΦDΦCΦUΦ
TΦLΦYΦAΦDΦQΦ
HΦEΦNΦGΦYΦKΦEΦTΦYΦ
KΦDΦAΦXΦAΦDΦAΦ/Φ
ΦDΦQΦLΦPΦRΦXΦEΦGΦ
ΦTΦQΦJΦLΦAΦRΦBΦPΦ
ΦEΦXΦAΦWΦIΦEΦHΦMΦKΦIΦKΦ

THE CRYPTOGRAM

ILIKEKILLINGPEOPL
EBECAUSEITISSOMUC
HFUNITISMOREFUNTH
ANKILLINGWILDGAME
INTHEFORRESTBECAU
SEMANISTHEMOSTDAN
GERTUEANIMALOEALL
TOKILLSOMETHINGGI
VESMETHEMOSTTHRIL
LINGEXPERIENCEITIS
EVENBETTERTHANGET
TINGYOURROCKSOFFW
ITHAGIRLTHEBESTPA
RTOFITISTHAEWHENI
DIEIWILLBEREBORNI
NPARADICEANDALLTH
EIHAVEKILLEDWILLB
ECOMEMYSLAVESIWIL
ENOTGIVEYOUUMMYNAME
BECAUSEYOUWILLTRY
TOSLOIDOWNNORSTOPM
YCOLLECTINGOFLAV
ESFORMYAFTERLIFE
BEORIETEMETHHPITI

T of THEB
is Character
#213

1000001000 = THEB
10000010 = THAE (10000010 = 130)
10000010 = BER

EAN = 3 + 1 + 14 = 18

Without even trying to analyze the text, there are several things which we can say about this document. First, the Zodiac insisted on its publication on 1 August 1969, Julian Date 213. Second, the document is divided into three equal parts. Third, it is written in a rectangular format having 24 lines and 17 columns. Fourth, the text consists of 390 letters of English followed by 18 letters of gibberish, EBORRIETEMETHHPITI. Analysts might have been better advised to consider a completely descriptive approach than drawing conclusions about the author's mental state from his egregious misspellings, which is what they actually did.

I have already demonstrated that the 17-column rectangular format implies the expression TIMES 17, which gives the date of Bern Margouleff's 38th birthday. The date on which Z. insisted the cipher be published, Julian Date 213, reproduces, by alphabetic quantities, that same person's monogram, BM (2 = B, 13 = M). I have also already pointed out that the two major themes, THREE and BUS, are digital synonyms. What I want to point out here is that THREE (1 0000 010 0 0) and BUS (1000 001 000) are revisions of something even more interesting: 10000010 00, binary 130 followed by the Morse letter 1 (00). It's a sentence: "I (am) 130." Once again, the pronoun I is used postpositively, following the predicate, to avoid the problem of leading zeros.

The text is subdivided into English and gibberish according to proportions provided by the integer and fractional parts of the number π . Both parts have been multiplied by 120. $390 = 1 \times 120$, $18 = 0.14159 \times 120$. What the subdivision of the text into English and gibberish represents is the number 130π .

Now I want to skip down to Lines 13-16. Speaking of the pleasures of killing people, the Zodiac says, "The best part of it is that [that] I will be reborn in paradise [paradise] and all the [sic] I have killed will become my slaves." There was a great deal of speculation in 1969 about what Oriental religion Z. might have gotten this concept from. Nobody paid any attention to the form in which it was expressed. I am going to demonstrate one more time that the verbal contents of this document are a red herring. The real message is contained in the form.

Note the misspelling THAE for "that." I submit that "that" must be one of the hardest words in English to misspell. And as with other misspellings in this and other documents, I suggest that it is disingenuous. It is misspelled for a purpose. Here's THAE written digitally: 1 0000 01 0. It's our old friend 130 again. Now look at the line above it. The letters THREE of "the best" immediately above it are written this way: 1 0000 0 1000. The first eight digits of THREE are 130 (underlined). They are followed here by two zeros, Morse letter 1 (00). 130 followed by two zeros is a revision of THREE. Now look down in the line following THAE. The BER of "be reborn" is written in Morse as 1000 0 010, binary 130 one more time.

The curious thing about these three formulations, all expressing the binary number 130, is that they are all written in the text in such a way as to begin in the same column of three consecutive lines. This would appear to be the product of design rather than coincidence. The proposition that this kind of structure will appear spontaneously in the bubble of an idiot is highly improbable.

I am going to suggest a model for you to use to test the probability of occurrences such as this. Let's suppose you are flipping a coin. Every time you get heads, you write down a 1. Every time you get tails, you write down a 0. What you are doing, in effect, is compiling a random list of binary digits. How many times must you flip your coin before you get any particular sequence or effect? In this case, the probability of an event such as the present one is fairly easy to calculate. Binary 130 is written in eight digits (10000010). There are two to the eighth power (2^8), or 256, permutations of eight digits. That means that to get any particular eight-digit sequence, such as 130, you would have to flip your coin 256 times.

What is the probability that any given pattern appearing as Roman letters will recur three times at regular 17-letter intervals, as binary 130 is doing here? That probability is given by the reciprocal of the cube of 17, or 1/4913. The probability that both of these things will happen at the same time is the product of 1/256 and 1/4913. That works out to odds of about one in one and a quarter million. In short, for you to get this same effect or anything like it by flipping your coin and just leaving things to chance, you would have to flip it one and a quarter million times. The Zodiac has achieved this same effect (counting up the number of digits expressed by the Morse values of the letters through the R of BER) in a few hundred tries.

The implication of the probability-analysis shown here is that this passage, if no other, was digitally composed, with digital values in the author's mind. But there is another way of using letters of the alphabet to express numbers: alphabetic quantities. In Line 16, directly under BER, we find EAN. Remember that in the Zodiac literature, E has the athesyntactic value of three. If E = 3, A = 1, and N = 14, the sum of these three letters is 18. Now let's go back to THEB. The T of THEB is the 213th letter of the cryptogram text. THEB itself is a digital revision of THREE, and its first eight digits give binary 130. It is followed by THAI, binary 130. And THAI is followed by BER, binary 130 again. Following BER, we find 18 written in a different system. Digital values and alphabetic values are different. Integers and fractions are different from one another. And so the Zodiac uses one kind of number to represent the integer and another to represent the fraction.

The reading of E = 3 in EAN is reinforced by the Zodiac's misspelling of "paradise." In this environment, EAN is preceded by C and followed by D. C = 3, E = 3, A = 1, N = 14, D = 4. 3,3,1,14,4 is a reduplicating series of the first three digits of 8 written to the base ten (3,14).

The structure THEB/THAI/BER/EAN expresses the publication date (213), the division of the document into THREE parts, and the subdivision of the text into 3×130 and 18 letters. It is a *microcosm of the cryptogram contained within the body of the cryptogram itself*. What it says in English is of no consequence whatsoever. The form is what contains the message.

The last of the three 130's is given in Roman letters as BER. This is an abbreviated form of the name BERTA. The fraction of it in binary notation begins like this: 00010010000111.... Carried out to these thirteen places, this fraction is identical in form with Morse 0 .000 01 0000 111, ERAHO, the family name OHARE in reverse. The descriptive facts noted above give Berta Margoties' monogram (213 = BM), her nickname BER (THREE = "BER [am] F"), her nickname in conjunction with her married name (130E), and the date of her 38th birthday

(TIMES 17 = 9145).

There are a number of interesting problems left in the text. Perhaps the most intriguing is the gibberish at the end, EBEDORIETEMETHHPTI. The police invested quite a bit of effort back in 1969 looking for "Robert Emmett, the hippie," because that is what they read into this passage. They thought it was a signature and that the author was so demented that he couldn't even spell his own name right. Let me suggest an alternative solution.

I said before that the repetition of letters yields algebraic summations. In this passage, we have five Es, three Ts, three Is, and two Hs. All the other letters are singletons. That gives us E5, T3, I3, H2, B, O, R, M, and P. The sum of 5, 3, 3, and 2 is 13. Remember also that the Zodiac uses MT as a passphrase for "circle" or "zero." With the 13 and the M and the T, we can make a reasonable facsimile of the number 130: 13MT. The P and the I make PI (π). BER is digital 130, and that leaves a remainder of O and H. I submit that this algebraic anagram is meant to be read as an equation:

$$13MT\ \text{PI}(\pi) \cdot \text{BER}\ \text{OH}$$

BER does indeed equal 130, in Morse Code. And as I have just shown, the fraction of π does indeed spell the surname O'HARE.

Of course, the only authority for the contents of an anagram is the author himself. However, this solution is based on the structure of the document within which the anagram is contained. It is divided up according to the proportions provided by the number 130π, and so I base my anagram-solution on that same number. All the parts fit and nothing is left over. What is more, the equation balances. $\text{BER} = 130 = 13\text{MT} \cdot \text{GH}(\pi\pi) = \pi$. QED.

No matter what we make of EBEDORIETEMETHHPTI as an anagram, however, there can be no dispute whatsoever about how it is spelled — either in letters or in Morse Code. Here it is in Morse:² 0 1000 0 111 010 00 0 1 Ⓛ 11 0 1 0000 0000 0110 00 1 00. Count up the digits. Or perhaps you will just take my word for it that there are 38 of them. The cryptogram is introduced by a sentence of 38 letters ("I like killing people because it is so much fun"). The first spelling error is the double R of PORREST, Character #96 (38 x 2). And bringing up the rear is gibberish, or anagram, or whatever you want to call it — but whatever you call it, it is written in 38 Morse digits. Is that coincidental?

The cryptogram offers us an opportunity to solve one of the most perplexing problems in the Zodiac literature, namely the significance of the crossed circle, which the author used as a signature on every document in the period 1969-1971. There was substantial speculation in the press about what it might mean. The usual interpretations were that it was the cross-hairs of a rifle telescope sight, that it was a borrowing from some Oriental religion (which one was never specified), and that it was a "mystical symbol of the universe."

The weakness of the derivational approach is that it leads so many ways at once. The crossed circle has been used historically for a number of different purposes. It is found stamped on benchmarks (BM), for instance. It is so well known in this context that it is used

as the trademark of the Benchmark Paper Products Company. It is used by astronomers to denote the earth. It is found on every Roman Catholic church in the world as a sign of consecration. It was used by the pagan Scandinavians to symbolize the sun. I have already mentioned its use by the Strategic Air Command. That hardly exhausts the list. By pointing to one derivation or another, you could prove anything, depending on your personal prejudice.

What I would like to do is to abandon the derivational approach entirely. It is not important where the Zodiac got this sign from, but how he uses it. And its use in the cryptogram appears to give us a very clear insight into what it means, or better, how we are to read it.

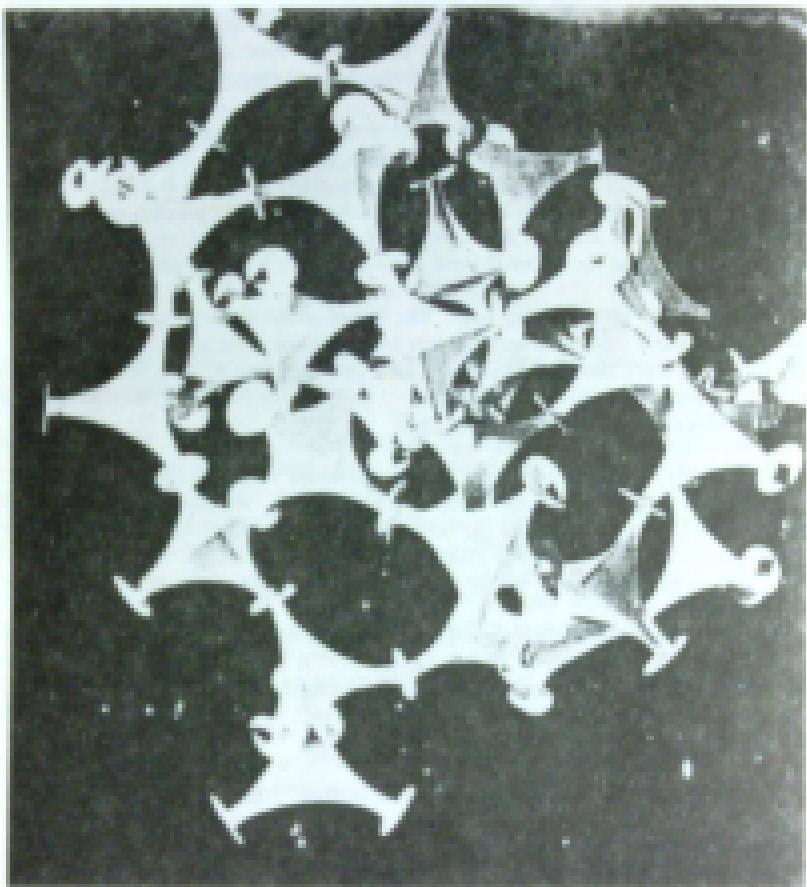
The cryptogram is the first place in which the crossed circle appears in the Zodiac literature. It is used here to represent the Roman letter D. The first D which it represents is the initial letter of the word DANGERTUE ("dangerous"), appearing in Lines 6-7. The D of WILD (Line 4) is given by a different cipher symbol. In another context, I pointed out that digital and alphabetic values for letters are two different systems. But different systems often converge at one point or another, and the letter D represents just such a convergence.

D in Morse Code is 100. 100 is binary four. The fourth letter of the alphabet is D. D, in other words, makes the number four both ways. Now look, in your mind's eye, at the crossed circle. Rather than trying to track down a derivation, let's just *describe* it. It is a circle divided into four parts. It is a graphic representation, then, of the number four. Is there anything else about the first instance that deserves mentioning?

The very first crossed circle in the entire Zodiac literature is the D of DANGERTUE. And that D is Character #100 -- it is preceded by 99 other letters. As just noted, four to the base two is written "100." One hundred, to the base ten, is also written "100." It's a curious coincidence that a circle divided into four (100) parts, used to stand for a letter written 100 in Morse Code, should just happen to be the one-hundredth (100th) letter in this document.

Of course, it is no more coincidental than THIEB/THAI/BER/IAN. It was consciously made into what it is, and placed where it is, for a purpose. It is a key to reading the literature. What it tells us is that the crossed circle has the ambiguous value of "one zero zero." It represents both the number four and one hundred. Why four? Why one hundred? What do they have to do with anything?

- To take one hundred first, let's write it in binary: 1100100. That subdivides neatly to 110 @ 10 0, Morse GENE. It's Michael O'Hare's father's name. I suggest that four is arrived at by casting nines out of 130: $1 + 3 + 0 = 4$. By this route, the Zodiac is able to express the names of both parents at their union. "100" stands for both parents at once. It is a short form for the marriage of Iberia Margoules and Eugene O'Hare. The best way to prove that the crossed circle's value is "100" is to substitute "100" for it to see if we get sensible results. I will do that from time to time. Let one example suffice for right now. The Halloween Card, postmarked 27 October 1970, is signed with a letter Z followed by a crossed circle. Z is Morse 1100; crossed circle, once again, is 100. 1100 100 is a redivision of Morse 110 @ 10 0, GENE.



Michael O'Hearn
Construction
Heavy paper Arch. Sci. 30

Speaking of short forms, now is a good time to bring up yet another subject, namely two-letter codes. Of the three members of the O'Hare family, only the mother, MARY, has a two-letter monogram by which she is known professionally, BM. By what I suspect is the force of symmetry, the other two family members have also acquired two-letter codes. EUGENE's is UE, formed from the first syllable of the name EUGENE. MIKE's two-letter code is IK. IK appears to have been formed from the name MIKE. First, MIKE is transferred by anagram into the sentence ME IK. The predicate, IK, then takes on a life of its own. I will point out examples as they occur.

The one closest to hand is the word DANGERTUE itself. It is spelled digitally as 100 01 10 110 0 000 1 001 0. It isn't hard to redivide it as 1000 11 0 11 0 00 101 001 0, BMx2ME IK/UE. The zero following BM is a two-multiplier. Z, often signs himself as BMx2. I read the zero as the Zodiac equivalent of a Roman numeral II, indicating succession or emulation, as Elizabeth II is the successor or emulator of Elizabeth I. Immediately following DANGERTUE is the word ANIMAL. Some commentators have remarked that this shows Z's callous attitude toward human life. Obviously, someone who looks on people as animals would have no trouble killing them. But again, I suggest that we look past the camouflage of the verbal content. The first three letters are ANI, None 01 10 00, a revision of 0110 00, PI (x). In DANGERTUE, we have two-letter codes corresponding to the three members of the O'Hare family. In ANI, we have another two-letter code standing for the surname which they share. I will show exactly the same thing in the 340-Character Cipher, expressed in mirror-image form.

During his senior year at Harvard, Michael O'Hare was editor-in-chief of *Cambridge 38*. That same year, he enrolled in the Carpenter Center, a brand-new facility at Harvard for the visual arts. In the February 1964 issue, he published an article of his own on visual arts education titled, "First Term in the Carpenter Center." Among other interesting points in the article is a photograph of an original Michael O'Hare sculpture, an abstract work in paper which consists entirely of circles and segments of circles. Also of interest are his comments on the need for teaching appreciation of graphic art to the man in the street as well as the Ivy League elite. People generally do not have the ability to understand content when it is expressed graphically, he argues, and the Carpenter Center provides the kind of curriculum that is needed to counter this deficiency in our educational system.

In that same article, he expresses interest in a new art form, which he calls "meta-writing." "Meta-writing," he says, is a form of writing in which the graphic form is more interesting than the verbal content of the text. For my part, I can't think of a better example of meta-writing than the Zodiac's cryptogram, whose verbal content says nothing worth knowing, but whose graphic form expresses the name of a particular individual and the date of that individual's 38th birthday.

Of course, the Greeks had a word for it. In the Hellenistic period, some poets practiced a transgression called *technopoeisis*. *Technopoeisis* amounts to writing a poem in the shape of its subject. Thus, a poem about trees would be written in the graphic form of a tree. *Technopoeisis* is also abundantly represented in the Baroque era, but it is not unknown in other periods, including the modern era. Probably the best-known example is "The Mouse's Tale,"

which is written in the form of a mouse's tail. "Meta-writing," insofar as it is embodied in the Zodiac's cryptogram, might better be called a mathematical variety of technopoesia. While the cryptogram does not represent its subject pictorially, the graphic form is descriptive of the subject in the mathematical idiom.

T H E M O U S E · S T A L E

Fury said to
a mouse, That
he ran in the
house, "Let
us both go
to law; I
will prosec-
ute you.
Come, I'll
take no de-
fense; We
must have
a trial;
For really
this morn-
ing I've
nothing
to do."
Said the
mouse to
the cat,
"Such a
trial, dear
Sir, with
no jury
or judge,
would
be wait-
ing my
death."
"I'll be
judge,
I'll be
jury,"
said
the
cat.
Fury,
"I'll
try
the
whole
court,
and
you
down
you to
death."

Alice in Wonderland,
Chapter Three,
"A Caucus-Race and
a Long Tale"

NOW I KNOW MY ABC

It was not long after the fire that I hit on the telephone number. By this time, I had become so proficient at reading numbers that I could get a sense of their contents by inspection. I knew that O'Hare's telephone number was 547-6266. I turned over 6266 in my mind and saw that it appeared to begin with his monogram, MHO (binary 791 = 110000111; Morse 11-0000-111, MHO). A few minutes with pencil and paper confirmed it. Here was something that seemed to go against statistical probability. It seemed to be highly unlikely that anyone could draw a telephone number at random which spelled his or her monogram. It suggested that he had requested the number. That in turn suggested that he was accustomed to reading Morse Code in numbers. Most important, this was not a Zodiac artifact that implicated Michael O'Hare; this was an O'Hare artifact that showed the work of the Zodiac.

The magazine had obviously cooled off on the subject of the Zodiac. I had written Bates several letters, but he could not be bothered to respond. It was also obvious that Cantor's adverse opinion had made them feel that I was a fool. Here they had been champing at the bit, all set to name O'Hare as the criminal, and Cantor had said that it was not statistically safe to do so. Bates had been talking about publication in the July 1981 issue. It was late June now, and I hadn't heard a peep out of Beverly Hills since May.

I decided to take the bull by the horns and write directly to Cantor. I composed a letter to him in which I said that I regretted not having had the opportunity to read his written opinion, as would have been the case had I been contributing to a scientific journal. I brought up the subject of the phone number and what I saw as the odds against coincidence, which I put at 217,000 to one. I said that if this caused him to modify his opinion, he might consider calling Elbridge. I gave him Elbridge's phone number.

I dropped this letter in the mail on Tuesday, 7 July 1981. On Thursday, the 9th, I got a phone call from Elbridge. It was the first time I had heard from him since our tête-à-tête in May. He told me that he was going to send the chestnut off to Washington. He had been meaning to for some time, but he just hadn't gotten around to it. He didn't say what had prompted him to call me up on that particular day.

The next day, Friday the 10th, I got another phone call, this one from Tom Bates. It was about six pm., after business hours. I noticed that he cleared his throat quite a lot as he spoke, and he stopped to lick his lips from time to time, as if his mouth were dry for some reason. It was the first time I had heard from him since May.

He told me that he had been meaning to send me a written copy of Cantor's opinion, but he had just not gotten around to it. Bates' excuse, which incorporated into itself a complaint which I had just sent to David Carter, suggested that Carter had been on the phone recently with Bates. It was the second time in twenty-four hours that I had heard exactly the same excuse, at any rate. He said that they just couldn't wait to get my wonderful article into the next open issue -- at this point, we were talking about October or November -- and we would be able to work on it together, because he was being transferred from Beverly Hills to the wilderness outpost which *New West* maintained in San Francisco.

The weekend went by without event. On Monday, the mail brought a letter from the magazine. It was dated Friday the 10th. It was signed by Anne Harnagel, an associate editor. She said that it was too bad about my Zodiac article, but they wouldn't be able to use it after all. She would be returning my research materials soon. She borrowed a phrase from Woody Allen when she referred to the article as a "dead shark." The logic of the expression is that sharks get oxygen to pass through their gills by continual swimming; a shark that doesn't keep moving is a dead one.

She was reflecting the opinion prevailing at *New West* that my story had stopped moving. When I talked to her face to face a couple of months later, she said that right up until 10 July, everyone at the magazine was agreed that they were not going to use my Zodiac article. Something had happened on the 10th -- she didn't know what -- that had turned things around 180 degrees. For her part, she had been severely reprimanded for writing me that letter.

By August, when Tom Bates moved up to San Francisco, I had discovered that the reason EHAWD was backwards was that it was the fraction of it. I had also discovered that TIMES 17 expressed the date of Bert Margouleff's 38th birthday. Things were now falling into place. I believed now that I understood the fundamental issues of the Zodiac literature, even if I didn't have an answer for every problem. When I met with Bates in San Francisco, I tried to educate him on post-May developments. His mind was closed.

Instead, he told me about his doctoral dissertation. His subject had been the writings of an Italian political philosopher named Gramsci. Gramsci had been imprisoned by the Fascists. While he was in prison, he continued writing, but in order to protect himself, he wrote in a very oblique, even cryptic manner. Initiates would know what he was talking about, but his jailers could not accuse him of treason.

The peculiar thing was that when I suggested that the Zodiac was doing essentially the same thing, using cryptic means of expression to state his piece without incurring the risk of punishment for doing so, Bates said that "people just don't do that sort of thing." Never mind that Gramsci had done it, not to mention hundreds of other historical examples. Jewish rabbis began using their reverse-alphabet cipher, atbash, during the Babylonian Captivity, so that they could express themselves without fear of punishment from the Persian authorities. So when Jeremiah defuses Babylon, he does not call it by its proper name. He calls it Shebaach instead. Giuseppe Verdi was popular in Italy in his own time partly because of his music, but

also because when Italians with nationalistic sentiments shouted his name, they were expressing the acrostic of "Vittore Emanuele, Re d'Italia" — Victor Emanuel, King of Italy (Italy was not united under one king yet, and regional governments took a dim view of those who thought that Victor Emanuel should replace them). "Verdi!" was a politically safe way of expressing a dangerous idea. Bates, who had spent a Fulbright year in Italy, had never heard the Verdi-story.

Then I told him about the BBC. During the Second World War, the British Broadcasting Corporation had signed on the air every morning with the opening bars of Beethoven's Fifth Symphony. Everybody recognizes it: dit-dit-dit-dah. The choice of music was dictated by the fact that dit-dit-dit-dah is Morse Code for V, as in "victory" and Churchill's famous V-sign gesture. It was even more appropriate because V is Roman numeral five, and the symphony in question is the Fifth. He had never heard of that, either.

We also argued about the Zodiac's state of mind. I represented the opinion that the criminal, far from being at mental loose ends, was given to behavior that was orderly, planned, highly designed, structured, and laid out according to an agenda. "Crazy," as I understand the word, means being unable to put two coherent thoughts together. Someone who is "insane" in the definition of the American Psychiatric Association is unable to function like a normal person, for instance, by holding down a regular job.

"Surely you can't mean that you think he is normal?" Bates exclaimed.

"No, I don't think he is normal at all," I replied. "He is obviously quite exceptional. But he is obviously not *insane*."

The APA didn't cut any ice with Tom Bates. Neither did Leonti Thompson's estimation that Z's problem was moral, not mental. Bates' self-issued license to practice psychiatry outweighed all the expert opinions.

It was about this point that I turned the conversation to the subject of the pencil. Ever since I had come into Bates' office, I had been intrigued by the fact that there was a pencil stuck in the acoustical tile covering the ceiling. The ceiling was fairly high, but the pencil was quite visible from the perspective of Bates' desk. It looked as if somebody had loaded it into a slingshot and fired it skyward at an angle of about 45 degrees. It had gone in about two inches, so it must have had some power behind it. I asked him what the pencil was doing up there. He asked me, "What pencil?" I had to point it out to him. He had been in that office for two weeks without noticing it.

That same day, I got what I believe was my deepest insight into Tom Bates. I had just demonstrated to him that the format of the cryptogram, TIMES 17, expresses the date of Bern Margoules' 38th birthday -- something which was not, under the ground rules, to appear in the published article -- and he responded to virtually every sentence of mine with an "Amazing!" When I was through, he said, "You know, one of these days, you'll be rich and famous, and I'll still be stuck here editing this magazine. YOU'RE GOING TO BE ON ALL THE TALK SHOWS." That was his idea of achievement. To him, the pinnacle of success in

He was fifteen minutes with Merv Griffin.

I drove Bates home at quitting time. On the way, he told me that there had been a rash of burglaries in his neighborhood. He was thinking about buying a shotgun to keep behind the door. I told him that Montgomery Ward had shotguns on sale; I was thinking of getting one myself. He said that he felt that having a "triple-action" shotgun around the house was what the doctor ordered for keeping burglars at bay. (I think he meant a shotgun with a three-round magazine.)

In September, I caught up with Darrell Bross. There was a new Mensa literary publication called *The Explorer*. The September 1961 issue was the first. One of the articles in this maiden issue was by Bross. It was a *Consumer Reports* type of article on anatomically correct inflatable female dolls for grownup men. Bross had tested one model and was reporting to the readership on its good and bad points.

I had talked to Bross in January, at which time he had promised to obtain information about O'Hare. It had been clear to me for some time that he was not going to live up to his promise, even though he had never called back to withdraw. In the interim, I had read letters to the *Intelligencer* from him in which he complained about Mensa's lack of seriousness. In an organization whose membership was made up of very brainy people, he found it deplorable that the activities sponsored by the group were heavily weighted in favor of fun and games. There were too many parties, too much pyromania, he said; why didn't Mensans get together to do something that was socially useful, something that would make the best use of their superior mentalities? Now I knew what he had been doing with himself over the last nine months. He was using the great cerebral capacity which good fortune had bestowed on him to copulate with plastic women.

I had lost the Court of Last Resort as an intelligence asset, but I soon gained another one. Leonti Thompson had been writing letters to everyone he could think of, trying to get someone involved who had the power to make things happen. He had scored with the news department of American Broadcasting Company in New York. In late September, I got a call from a Mike Smith at ABC, followed a couple of days later by a call from one Dan Goldfarb, who was a producer of the ABC magazine program, *20/20*.

You could tell that Goldfarb was from New York the minute he opened his mouth. He seemed very forceful and eager to get started. We talked about the Zodiac for upwards of an hour on the phone. He told me that he was going to be in San Francisco on 8 October, doing some legal work on behalf of the network at the law firm of Lilick, McHose and Charles. ABC was being sued for defamation because of a *20/20* story that Goldfarb had produced. The complaint alleged billions in damages, and although ABC considered it a nuisance suit, they had to defend themselves. Goldfarb produced the part of the show featuring Genito Rivera. He had talked over with Rivera what he had gathered from Dr. Thompson's letter, and he said that ABC's star reporter was very interested in doing it.

I showed up at the Lilick firm in San Francisco at the appointed time and met with Goldfarb. We took over a conference room. Goldfarb was, he said, an ex-policeman. He had gone to

law school, then started working at ABC. He looked more like a graduate student than an ex-cop. He wore horn-rimmed glasses and a jacket with leather elbow patches. Instead of an attache case, he carried his effects in a day pack. He acted as if he owned the place. He picked up a phone, dialed a number, and ordered coffee for us.

While we were waiting for the coffee, he dialed another number and ordered a tape recorder and a half-dozen blank cassettes. The tape recorder was brought by a young man of indeterminate appearance. The coffee was brought in by a turbaned Sikh with a very prominent gold tooth in the middle of his smile. He looked as if he routinely murdered two or three people every day before breakfast. I thought of Punjab in *Little Orphan Annie*. That made Goldfarb Daddy Warbucks.

We talked for about two hours, at which point Goldfarb suggested adjourning for lunch. When we went out into the foyer, he was joined by a very attractive woman who appeared to be very charmed by him. She was radiant. Obviously, I wasn't invited along. We arranged to meet in the conference room at one o'clock. I had brought along my own lunch anyway, a peanut butter sandwich and a banana. At least it was healthful. It was in a brown paper bag. The only thing lacking was my name written on it in my mommy's handwriting. I was just not in this league. It took my bag lunch down to Justin Herman Plaza and watched the pigeons peck up their lunches from around the sleeping winos as I ate it.

After lunch, Goldfarb and I resumed our conversation, which went on until after three. I asked him how he intended to approach the subject. He said that his first choice would be to wire a hotel room, lure O'Hare into it, then force a confession out of him. It sounded rather outlandish to me, but Goldfarb appeared very masterful and confident of himself. I gathered that this is the way things are done downtown. When we had run out of things to talk about, we took leave of one another. He departed for the metropolis of New York City, and I drove back to the sticks of Napa County.

The November issue of the magazine had gone to press. In the meantime, it had changed its name from *New West* to *California*. Bates sent me galley proofs of the Zodiac article. Ordinarily, writers receive galleys so that they can make corrections. In this case, it was superfluous, since the article was already in print when the galleys were sent. I was horrified by what I saw. The article was essentially written by Bates, not me. On the cover, the article was described as "A TALE OF OBSESSION" (more psychiatric jargon), and Bates had added a postscript.

The postscript had been the idea of Bill Broyles. I had exposed myself to civil litigation by my correspondence with Michael O'Hare. He could allege that he had suffered great mental anguish as the result of my weird postcards, and he could name the magazine as a defendant, too, if it appeared that he was the subject of the article. The purpose of the postscript was to make me look like a lunatic. That way, there would be some legal insulation between me and the magazine in case I should draw lightning. They didn't want a voltage leak in their direction. On the other hand, if the story was followed by an arrest, they could say that they knew it all the time. They wanted to have it both ways.

I had suggested to them at the outset that it would be worth investing a few hundred dollars in the services of a private investigator. That much money could easily prove me wrong, if I was. In that event, the story was worth nothing, and they would be wasting their time printing it. If the investigation bore me out, however, then they had a first-rate story on their hands. It was either the story of the century, or else it was worthless. They should do what they needed to do to make it one or the other. Instead, they tried to cut down the middle. What they wound up with was a fourth-rate article and an alienated writer.

Under the circumstances, there was nothing I could do about it. But I was furious about the postscript. It was apparent that I had gotten the galleys late because they didn't want any grief from me about the lies in it. It said, for instance, that I had found the murderer's telephone number in the Zodiac literature. In fact, I had not found the phone number in the work of the Zodiac; I had found the work of the Zodiac in a particular phone number. Bates, unable to restrain the self-appointed psychiatrist in himself, wrote that I had claimed to see an Edipal Complex in the Zodiac's writings. I had never made such a claim. I wouldn't know an Edipal Complex if it stepped on me.

Bates wrote that I had been a Zodiac suspect myself, but that I had been exonerated by my military record, which showed that I had been stationed in Oklahoma during the Zodiac episode. In fact, during the period 1968-1974, which encompassed all of the Bay Area events, I had been right in the Bay Area. Bates couldn't take five minutes on the phone to check his facts before printing this baloney. I demanded corrections but I didn't get them. It wouldn't do for the magazine to admit to error.

I did not like the way the article had turned out, to say the least, but it seemed likely to stir up some controversy. I thought that it might well bring some pressure to bear on the police. What did happen was completely unexpected. Starting in the first week of November 1981, my phone was suddenly ringing off the hook. People were calling up from New York and Hollywood with offers of film contracts. Cindy Williams weighed in first with an offer of \$25,000 for the movie rights to the article. Other offers followed thick and fast. I was unprepared for this kind of response. If you had asked me about doing a Zodiac movie, I would have envisioned a sort of drive-in movie sing-along, with a bouncing ball spelling out long strings of binary numbers. I couldn't see it as a dramatic screenplay.

The first call that I got in response to the article, however, was from a reporter on the *Riverside Press-Enterprise*. His name was Bob Webster. The paper was planning a feature story on the Chen Bates murder for publication on the fifteenth anniversary of her death. The California article had just come out, and they wanted to do a sidebar on it. Webster and I talked for a long time on the phone. It occurred to me that Elbridge had never followed up on his promise to find out about the Times. I asked Webster if he knew anything about it. He said that by coincidence, he had a police photograph of the watch right in front of him. It was stopped, he said, at 12:22. He offered to send me a photocopy of the first Zodiac letter, titled "The Confession," and a copy of his article when it appeared. It was this article that referred to binary numbers as "complicated mathematical formulas."

While I was talking to Webster, I wrote out 1222 in binary: 10011000110. Then I wrote out 838, the clock time implied by the sequence of weapons used by the Zodiac in the first two Bay Area crimes (22 before 9). 838 is binary 1101000110. Both numbers, I noted, end in the same seven-digit group, .1000110, identical to BMx2. The prefix in 838 is 110-, Morse ME. In 1222, the prefix, 1001-, is binary nine. I believe that nine is used here as a substitute for the ninth letter of the alphabet, I, first person singular pronoun. Both of these clock times express the same sentiment, using two different forms of the pronoun as subject: "I (am) BMx2." He could have used BMx2 with postpositive I, but that would have given him the number 380, which cannot be expressed as clock time. I suspect that that was the reason for the substitution. And there is a nice esthetic plus: the sum of the clock times 12:22 and 8:38 is nine o'clock sharp ($12 \cdot 22 + 8 \cdot 38 = 900$).

The next reporter who called was Jim Laube, who wrote at that time for the *Valley Times-Herald*. They had an office in Napa, and he was it. They wanted to do a full-page feature story on the *California* article for their issue of 1 November. I found Laube very intelligent and sympathetic. He told me not to expect too much from his article. It was written, like everything else in the newspaper, for the public to read to pass the time while sitting on the toilet. He did have some connections in the Napa Sheriff's Department, and he would try to use them to get me some more documents to work on. He saw the value of having good copies of original letters rather than the wishy-washy that resulted from the intervention of editors and typesetters.

He was as good as his word. When the story appeared, it was illustrated with a photograph of the letter to the *Times-Herald*, which had never been published before. It also featured a photo of Brian Hartnell's car-door from Lake Berryessa, on which Z. had left the inscription written in black felt-tip marker. The text had never been published verbatim before.

A couple of months later, Laube just tuisped into the Hall of Justice in Napa and came out with photocopies of the *Los Angeles Times* Letter, the Exorcist Letter, and both pages of the Gas Bomb Letter. I made a few dozen photocopies and went to work on them. It took me about two hours to get the results shown elsewhere in this book. At all events, Jim Laube made a substantial contribution to my efforts. I eventually lost contact with him and have never been able to tell him how much I appreciated what he did.

While Jim Laube was visiting with me in my home, the phone rang. It was Dan Goldfarb, calling from a pay phone in Boston. During our meeting in San Francisco, I had pointed out that DL in Morse (100-0100) — as in "Deer Lodge" — is a redivision of NINE (10-00-10-00). I also mentioned that RED is a Zodiac paraphrase for "circle." I suggested that the Zodiac was so bent on expressing everything in number that Goldfarb would do well to see whether or not Mike O'Hare had a vanity plate on his automobile. It would — in my opinion — probably express something that appeared to be completely innocuous to the uninitiated, but which would be significant to the owner.

I facetiously suggested that whatever the license plate said, it would be attached to a red Volvo DL. Now Goldfarb was in a candy store in Boston, calling me long distance for another lecture on the subject of DL and the color red. He had forgotten why I had suggested looking

for a red Volvo DL. I spelled things out in Morse Code while he wrote them down. When he told me that he had it all straight in his mind, I asked him what was so urgent about the subject at this particular juncture. He told me that he was amazed to find, while tailing O'Hare around the streets of Cambridge, that while his license plate was quite unremarkable, it was attached to a red Volvo. He wanted to know how I had pulled off this seemingly extraordinary feat. I assured him that it was a coincidence and that my red-Volvo prediction was meant as a joke. Even so, he sounded awed.

ABC News had a camera crew in Cambridge on and off for most of November and December. They followed O'Hare around, getting candid footage for use on the air. Goldfarb planned to do some other research, too. He knew someone in the Napa DA's office from law school, he said. He used the connection to obtain copies of the Zodiac fingerprints taken from the cab in San Francisco; he also got a copy of the coroner's report on Cecilia Ann Shepard, who had been stabbed by the Zodiac at Lake Berryessa.

Goldfarb called me up one Sunday to read me various passages from the coroner's report over the telephone. I could hear a televised football game in the background. I asked him if reading coroner's reports during halftime was his idea of relaxation. I also asked him how many stab wounds there had been. Reading directly from the coroner's report, he told me that there were ten, five in the front of the body and five in the back.

The newspapers had reported wildly divergent figures, which varied from paper to paper. The *Napa Register*, which was closest to the scene and also had standing contacts with the local police, reported ten wounds for Shepard and seven for Hatrell. That version seemed to be borne out by the documents Goldfarb had. The bizarre thing was that I was hearing about something that had happened over twelve years before in California by telephone from New York. At the conclusion of our conversation, Goldfarb told me that he was bone-dry on obtaining latest fingerprints. His next project in Cambridge would be to get some O'Hare fingerprints for comparison with the Zodiac's.

About this same time, I got a phone call from an attorney named Charles Duggan. Duggan was the partner of a theatrical producer named Howard Burman, who had read the *California* article and was interested in making a movie based on it. He assured me that Burman was very talented and intelligent and had serious intentions about the project. I suggested that Burman call me up so that we could talk about it. A couple of days later, I heard from Burman. It came out in our conversation that I belonged to Mensa. He very excitedly told me that he was a Mensan, too; he was, he said, very active in the San Francisco regional group.

As it happened, I had just received a copy of the latest San Francisco Regional Mensa roster of members. While we were talking, I leafed through the list, looking for "Burman, Howard." He was not to be found. I wrote it off to hype. I made an arrangement to meet with Burman and Duggan. To save them the trouble of having to drive all the way to Napa from the South Bay, where they lived, I proposed meeting in Vallejo, at The Wharf, a seafood restaurant overlooking Mare Island Strait.

By coincidence, the day on which we met was 26 December 1981, the anniversary of my dis-

covery of the radian. In the meantime, it had occurred to me that as a Julian Date, 28 December is 360, the number of degrees in a circle. It seemed very appropriate. Another curious coincidence marked this meeting. When we got to The Wharf, we discovered that it wasn't due to open for hours. There was just one other place in Vallejo that I was sure would be open on a Saturday afternoon; Terry's. We adjourned to Terry's, and it wasn't until after we had been seated in the bar that it occurred to me that Terry's was where Darlene Ferrin, a Zodiac victim, had worked as a waitress. She had been murdered by Z. at Blue Rock Springs. Vallejo is a very small town.

Burman and Duggan were both charming, and they seemed earnest about turning the Zodiac story into a first-rate movie. As I mentioned above, I hadn't the faintest conception of it as a cinematic property. That was the last thing I would have thought of. But Burman had ideas for dealing with it that sounded as if they would do justice to the central concern.

Eventually, I entered into a contractual relationship with the two of them. Among other enticements, the deal offered the possibility of more investigative efforts on the East Coast. I would say, in fact, that that was the deciding factor where I was concerned. These people had expressed a desire to get the goods on the criminal, if possible, and their motivation for doing so was good old-fashioned greed. They both professed to see that the commercial value of the property would be greatly enhanced by producing a major news story. In any case, before too long, the three of us were Zodiac Associates, Inc., a partnership whose purpose was to produce and market a screenplay based on the California article. At one point, I asked Burman what he intended to use for a title. He said that he had *7.22* in mind. A good title, he said, ought to be enigmatic.

There was something going on that I had not discussed with my prospective partners. At the moment, it looked to them as if the story was ancient history. There were some indications, however, that it was still going on. On 10 December, I had received another excited telephone call from Dan Goldfarb. This time, he was calling me from the police station of a small town near Boston called Saugus. He told me that there was a major story in progress. The daughter of a big-time corporate executive had disappeared at Logan Airport and her purse had turned up out in a marsh within Saugus city limits.

No one knew what had happened to the young woman, but foul play was suspected. Scuba divers had searched the bottom of the Pines River, near which her purse had been found. Helicopters had been used to scour the marshland for clues. The victim was attractive and wealthy; besides being a vice president of ITT, her father had once had a high position in the CIA. I asked Goldfarb what he was so excited about.

He said that this story had "Zodiac" written all over it. I asked him what made him say that, and he responded that it was obvious. The victim had been a graduate student at Harvard, in the field of architecture. Mike O'Han had ties to the architecture department at Harvard going back to 1960. (He had two architecture degrees from Harvard.) It couldn't be clearer. Hadn't I seen anything in the California news media about her? I said that I hadn't. He said that you couldn't hear about anything else in Boston. I asked him what the victim's name was. He told me that she was called Jean Webster.

340 CHARACTERS IN SEARCH OF AN AUTHOR

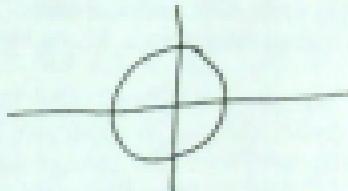
In November 1969, the Zodiac sent another cipher to the Chronicle. Like the cryptogram of the preceding July, it was composed in a rectangular format with 17 columns. These were only 20 lines, however; as already pointed out, the two formats have in common the implied expression TIMES 17. Whereas the cryptogram was solved in fairly short order, a solution to what came to be known as the "340-Character Cipher" was not forthcoming. Following the disappointment of the cryptogram, the American Cryptogram Association had issued a challenge to the Zodiac to come up with a cipher that really and truly revealed his identity, and they would attempt to crack it, no matter how hard he tried to make it. No member of the ACA has ever published a solution to this cipher.

To some extent, a solution was unnecessary. Much of the content of the cipher is expressed in very superficial form. This content agrees with what we have already found in the cryptogram. First, let's consider the postmark. I pointed out that the date of publication of the cryptogram, Julian Date 213, gives the alphabetic quantity of Berta Margoules' monogram (2 = B, 13 = M). The Zodiac did not specify a publication date for the 340-Character Cipher. But it was postmarked on 10 November 1969. That was Julian Date 314. 314 is 100e. Once again, one hundred to the base two is the Morse-to-binary writing of the name GENE, and the fraction of a spells the surname OHARE. In other words, the dates attached to these two 17-column documents identify, respectively, Michael O'Hare's mother and his father.

The cipher symbols used here are of three types: Roman letters, geometric forms, and dots. There are six dots. In all the years that have gone by since this cipher was received, it apparently occurred to no one to count the cipher symbols. It would have been instructive to have done so. The six dots fall on Character numbers 29, 116, 200, 232, 258, and 267. In this cipher as elsewhere, Z expresses significant numbers both by character number and by intervals between character numbers. For instance, the interval between Dots #94 and 5 is 26, which corresponds by alphabetic quantity to the letter Z, a Zodiac signature. The next interval, between Dots #95 and 6, is 9, corresponding to the pronoun I. I don't think it far-fetched to read this as a typical two-part sentence, "I (am) Z." As usual, I is used postpositively.

Dot #3 is 200, or GENEx2. It's that simple. And as to Dots #91, 2, and 4, here are their character numbers: 29, 116, 232. This could have been taken from an IQ test. It's a series of numbers representing the multiplication of 58 by a progression of powers of two. 29 is 58 times two to the minus one power; 116 is 58 times two to the first power; and 232 is 58 times two to the second power (i.e. the square of two). The number which has been omitted from this progression is 58 times two to the zero power, or 58 itself. It seems rather peculiar that this progression could have happened as the result of chance. I will come back to the number 58 later, when we get into the body of the cipher. But just by way of anticipating, let me point out that the name OHARE is written in Morse with five dashes and eight dots. As I believe

Н Е Р > 9 І А У Р < : О Л Т С О О
 Н 9 + 8 Ф ■ О В О В У : < О К Т ♦
 В Х И С М + И Х О В Ф + L ■ ♦ Н Т
 5 9 9 Д Л Ј А В У О 9 О + + R K O
 □ О Н + ♦ Л Т О I * F P + P O X /
 9 4 R A F J O - ■ O C B F > e D F
 ■ * + K O H a n c x c v . ♦ L I
 Ф G J Z T ■ O + O M U ♦ + O L A
 O < H + 8 + 2 R O F B Z X A O E K
 - ♦ J U V + A T + O 9 A < F B Y -
 U + R / * L E I D Y B 9 8 T M K O
 O < D J R T I O T * H . + P B F
 ♦ O A S Y ■ + N I * F B C O H A R
 L G F N A T * O B . Z U * L + +
 Y B X O H O A C E > V C Z - +
 I C . O + V K F O 9 A . F M D A
 R C T + L O O C < + F J W B I * L
 + + O W C ♦ W C P O S N T / ♦ 9
 I F K D W C D L B O U O B - C C
 > M D H N P K 5 ♦ Z o A I K I +



340-CHARACTER CIPHER

NB: Character #97 has been scratched out
 and replaced with reverse K (9-7 = BM's birthday)
 NB #2: Group VF = Characters 89-98; FV = 98-99;
 next VF-group (Line 10) = 166-167. VF and FV are
 mirror-images, just as 89 and 98 are. The intervals
 89 - 98 - 166 = 9 and 68. 68 = Morse 10 00 10 0,
 NINE. FV in the WIZARD-alphabet = UE.

will become clear later. 58 is a two-digit abbreviation for the family name in question. Haas's one example of 58, taken from another document, in the Has Bomb Letter of 20 April 1970, Z. writes that he is "mildly curious" to know how much money is being offered as a reward for his capture. For seventeen years now, it has been assumed by everyone that "curious" is a misspelling of "curious." In fact, it is a real English word, as consultation of any dictionary would have demonstrated. "Curious" means "containing curium." Now, turning to the periodic table of the elements, we find that curium has an atomic number of 58 and an atomic weight of 140. 140 is binary 1000 11 00, "BM (mu) L." Curium turns out to be a very useful element. Z. uses it here to kill two birds with one stone.

That's not quite all that needs to be said about the six dots. They prove to be quite eloquent. The dotted lines divide the text into groups of undotted lines of two types only: one-line and four-line groups. These groups occur in this order: 144114. Read zero for four, and you have the number 38 to the base two.

Another superficial observation that could have been made at any time in the last seventeen years, even without deciphering this document, concerns the use of the crossed circle, which appears here as a cipher symbol. I have already demonstrated what the significance of this sign is. But that knowledge is not necessary to analyze how it is used. We know that whatever its significance, it is important to the author, and it should be of equal importance to the interpreter to see how the author uses it in documents such as this one.

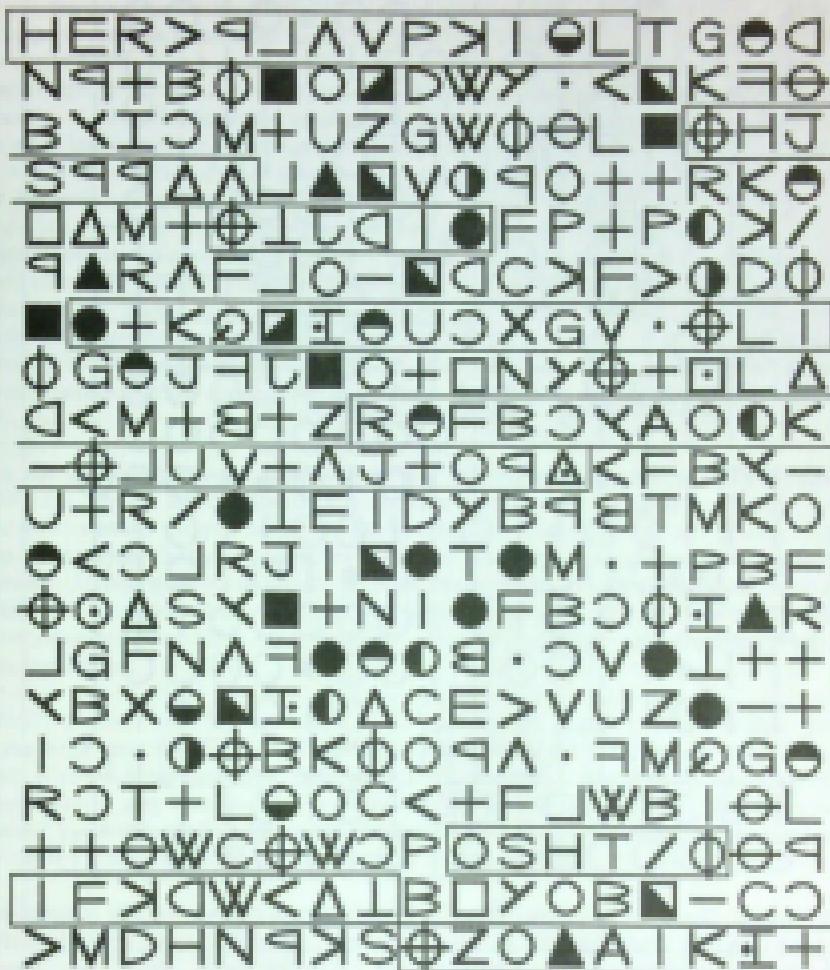
Crossed Circle #7, for instance, is Character #260. It does not require much mathematical sophistication to recognize that as the double of 130 ($130 \times 2 = 260$). Once again, multiplication of a binary number by any power of two does not alter the basic "spelling" of the original number: it moves the binary point around, or, as in this case, adds zeros. I suggest that as with BMx2, BERx2 is meant to imply emulation or succession (= BER II). Crossed circle #8 is Character #255. The interval between these two is 35, or Morse HM (1000 11 = binary 35).

Crossed Circles #5 and 6 are Characters #155 and 205. The interval between them is 50, or half of GENE (one hundred). Again, there is no difference in Morse Code between one hundred (1100100) and fifty (110010.0). These four crossed circles, in other words, express the identifiers attaching to Michael O'Hare's parents, BER, BM, and GENE, which we have found before and will find over and over again in the Zodiac literature.

Now let's consider the very last crossed circle, #9. Immediately following it is what has long gone unrecognized for what it is, namely a distorted spelling of the word ZODIAC. The distortions are these: triangle for D, K for C, and inversion of A and L. The substitution of triangle for D is justified by the fact that triangle has the same form as upper-case delta, the phonetic equivalent in Greek of Roman D. K for C, of course, is another phonetic substitution. A and L are in the right part of the word; they have just traded places. What is the theme that governs these substitutions?

First, I note that this crossed circle is the ninth of nine in the text. It is also the ninth character from the end. Two extraneous characters have been added after the misspelling ZO-

THE 340-CHARACTER CIPHER



Crossed Circle #85 & 4 = Character #88 155 & 289 (Interval of 29
+ GENE #1). Crossed Circle #7 = Character #264 (130 x 2).

Crossed Circle #8 & 8 = Character #298 (299 - 100 = Interval of 29).
Sums = Character #8 28, 114, 180, 222, 258, 287.

28, 114, & 222 = 26 times powers of two. 180 = GENE # 2.
258 - 158 = interval of 10 (2). 258 - 127 = interval of 9 (3).

00	00	0000	1	1	00	10
00	10	1	1	1000	•	0100
000	10	10000	1	1	1	100
000	10	111010	1	1	1	10
1	10	1000	1	00	10	10
0	1100	1110	1000	10	1	10
1	1100	1010	100	100	1	1
10	1000	1	1	100	1	1
000	1010	1	100	100	1	0
11	100100	1	01000000	1	1	1
0	111100	1000000000	1	1	1	1
10	111101	11010	•	1000	1	1
11	100110	101100	110	1	1	1
100000	1	10	•	1010	1	1
00	11101	1100000	11	1	1	1
11	•	11001100	•	0000	1	1
110	1111010100	100	100	11	1	1
1110	11010	10000	1	10	1	0
100000	100	1010	1	1	1	1
00000000	10110100	1	0	1	1	0

THE 340-CHARACTER CIPHER (DIGITAL TEXT)

Highlighted passages : fraction of pi; Morse ERAHO;
 binary 130; Morse BKR; binary 35; Morse BM;
 Morse MIKADO; $(-12 + 77) \times 2$ (paraphrase of 130);
 binary 35 and 130; 22 (10110) before 9 (1001)

DIAC to bring the total up to nine. Second, the symbols used in this cipher, other than the six dots, can be resolved into two classes: nine-multiples and non-nine-multiples. The geometric forms square, circle, and triangle all represent a sum of angles divisible by nine: square and circle are 360° , and triangle is 180° . $360 = 40 \times 9$, $180 = 20 \times 9$. Letters which have the same shape as certain geometric forms are also nine-multiples. C is a semicircle (180°), L is a right angle (90°), X is a cross (360°). There are two letters whose alphabetic quantities are nine-multiples: I (9) and R (18). I set all members of this nine-multiples class equal to 1 and all others to 0. My fundamental assumption was that since this cipher had not yielded to the efforts of a large number of very talented cryptographers over the years (who had assumed that it was a substitution cipher like the cryptogram), that it could not be a substitution cipher at all. The only other thing that seemed likely was that it was digital.

The distortions in the spelling of ZODIAC suggested that there was an underlying digital text which dictated the choice of cipher symbols. In this passage, Z had used a familiar word to demonstrate the theme that governed that choice. Here is the digital text of the nine-character passage beginning with crossed circle #9: 10110001. The first five digits, 10110, are binary 22. The last four are 1001, binary 9. "22 before 9" expresses the bore-sizes of the first two firearms used by this author in his Bay Area phase. And as clock time, "22 before 9" is 8:38.

Here is the opening passage, expressed by the first thirteen characters of this cipher: 001-0010000111. This is the fraction of π to the base two, carried out thirteen places. Before going on, let's examine the probability of the proposition that coincidence is responsible for this finding. Once again, I suggest using the model of coin-flipping as a yardstick against which to measure it. If you tried to construct any particular thirteen-digit passage by flipping a coin and writing 1 for heads, 0 for tails, you would have statistical certainty of doing so with two-to-the-thirteenth-power (2^{13}) flips, or 8192. That is, of course, not an astronomical number, but it is significant.

As already pointed out, the postmark of this document expresses the number 314, which gives the first three digits of π to the base ten. How likely is that to have happened by chance? If you assume that the Zodiac had no plan or agenda to go by, if he simply mailed letters on whatever day was personally convenient, then he had two chances of getting a date that would yield this result. He could have postmarked this letter on 14 March (3-14) or on 10 November (Julian Date 314). The latter is, in fact, the case.

The probability that any arbitrary methodology, e.g. flipping a coin, would produce this particular thirteen-digit string is 1/8192. The probability of this document getting a postmark also expressing π is 2/365. The probability that both of these things will happen to the same document is the product of both of those numbers (18192 \times 2/365), or 1/1,499,040. The odds against coincidence, in other words, are about one and a half million to one. Just as with the structure THEIR/THAI/HER in the cryptogram, the statistical probability here argues very strongly for design.

The next passage is 00100010111000. That brings us up to Dot #1. I redivide this passage as 001 0 00 101 11 1000, Morse UE BK MB. These three elements were also found in

DANGERTUE in the cryptogram. Here they appear in reverse order. I pointed out that the ANI (of "animal") following DANGERTUE is a revision of PI, which stands for the surname O'HARE. In the 340-Character Cipher, we find the same thing in mirror-image order: first the surname, ERAHO (fraction of π), followed by the two-letter codes for the three members of the O'Hare family, in the reverse order in which they appear in DANGERTUE. As to the reversal of BM, which appears here in my revision as MR, I suggest that the purpose is to construct out of these two-letter codes an approximation of the fraction of π . UEIKMB is, in fact, fairly close to the value of that fraction.

The third digital passage is 010010001000001111. The first seven digits are identical in form to the Morse spelling RED (010 0 100). In a previous chapter, I suggested that RED is a Zedication for "circle" or "zero." This appears to bear out that suggestion. The first two passages discussed above are binary fractions ordinarily found following the integer 3. This fraction is one which is accustomed to starting alone. People who work with decimal (or binary) fractions are accustomed to prefixing a zero to the fraction to indicate the absence of an integer and to emphasize the decimal (or binary) point. I submit that RED stands here for that zero.

If we place a binary point between Morse RED and the balance of this number, we get a very interesting formulation: 0.010100001111 is the reciprocal of the square root of ten written to the base two. Now I have to digress into the realm of mathematical curiosities.

The reciprocal of the square root of any base number is identical in form to the square root of that number, except for the placement of the decimal point. That is true provided that both numbers are written to that base. For instance, the square root of ten, written to the base ten, is 3.1622776. The fraction actually goes on forever, but these seven digits are enough for purposes of demonstration. The reciprocal of the square root of ten, also written to the base ten, is 0.31622776. The square root of two, written to the base two, is 1.0110101000001. Its reciprocal, to the same base, is 0.1011000100001. The same thing is true of three to the base three, seven to the base seven, or 139 to the base 139 (any number, incidentally, can be used as a base number).

This curious relationship between square roots and reciprocals of the square roots of base numbers holds true only when they are written to their respective bases. If you write the reciprocal of the square root of ten to the base two, then it no longer holds: the number takes on a completely different form. It occurred to me that the other form was what was wanted here. The reciprocal of the square root of ten to the base two appears to imply that there is something important about the hidden form of the number, which will be revealed on writing out the square root of ten to the base two. Here it is: 11.001010011000, . . . I redivide this number as follows: 11. 00 101 0 0110 00, Morse MIKE PI. Here we find yet another short form of the surname O'HARE, PI. In "The Confession," Z. says that he waited for his victim about two "MINUTS." Perhaps MINUTS is a typographical error, but I think that we already have some reason to suspect deception when confronted with Zodiac misspellings. MINUTS is Morse 11 00 10 001 1 000, which I redivide as 100 0 10 0 0110 00, GENE PI. PI appears in the literature occasionally as the number 169 (P = letter #16, I = letter #9).

Now we come to a passage which begins with Crossed Circle #1. The first eight digits are an old friend, 10000010, binary 130 (BER). Just to skip over to Crossed Circle #2 for a moment, it is the first character of a six-digit string that is another old friend, 100011, 35 (BM). Immediately following 130, we find 111010, binary 58. If 130 is a given name, then 58 occurs right where we might expect to find a surname. As already mentioned, I propose that 58 is a two-digit shorthand for the surname O'HARE.

These first two crossed circles express a rather curious pattern. The first one (#1) is third from the end of Line 3. The second is fifth from the left margin of Line 3. 3.3 and 3.5: 35. The digital passage underlying #2 is binary 35, or Morse BM.

Let me skip over to Crossed Circle #4 now. It is Character #132. By alphabetic quantities, 13 = M, 2 = B. The two characters preceding #4 are the letters NY. In the WIZARD-alphabet, NY is MB. It appears, in other words, that Crossed Circles #1, 2, and 4 form a pair of bookends. The first two express, two different ways, BM; #4 expresses, also two different ways, MB. Sandwiched in between these two mirror-image bookends is Crossed Circle #3, Character #117.

There are two noteworthy things going on here. One is the use of bookends to enclose important information. This technique will be encountered again and again in the Zodiac literature. It is a stylistic trait that serves as a Zodiac hallmark. The other thing is the use of the number 117. That is something else which we will find again and again in the literature. It refers to the city of Riverside, California, where the Zodiac murdered his first victim in October 1966. The longitude of Riverside is 117° west of Greenwich. "117" in the Zodiac literature is a numerical way of saying "Riverside."

It was not known until November 1970 that the Zodiac had committed that murder. The identification was made on the basis of handwriting evidence. On 16 and 17 November 1970, the *Chronicle* ran a two-part series by reporter Paul Avery in which it was revealed for the first time that the author of the Bay Area crimes attributed to the Zodiac was also responsible for the death of Cheri Jo Bates. Z. went to great lengths to make sure that no one else could get the credit for the four Bay Area crimes, but he said nothing explicit about Riverside. It remained a deep, dark mystery until Avery's story was published. Repeated use of the number 117, however, appears to constitute a cryptic reference to this crime, one which went completely unnoticed at the time.

At this point, I would like to digress into the Michael O'Hare literature. Reproduced here is a photograph which appeared in a page of illustrations accompanying Michael O'Hare's maiden journal article, "Wind whistles through MIT tower," which appeared in the March 1967 issue of *Progressive Architecture*. What the photograph shows is a scale model of the Earth Sciences Building at MIT. The model is being tested in a wind tunnel owned by the Harvard engineering department. In the photograph, the front of the model has been detached to show its internal plumbing, tubes connecting holes in the skin of the model to manometers, which measure air pressure. In the foreground are familiar objects: a setepad, a mechanical pencil, and a slide rule. These objects give the onlooker a sense of scale.



PLAN SEC. AT-B.

4

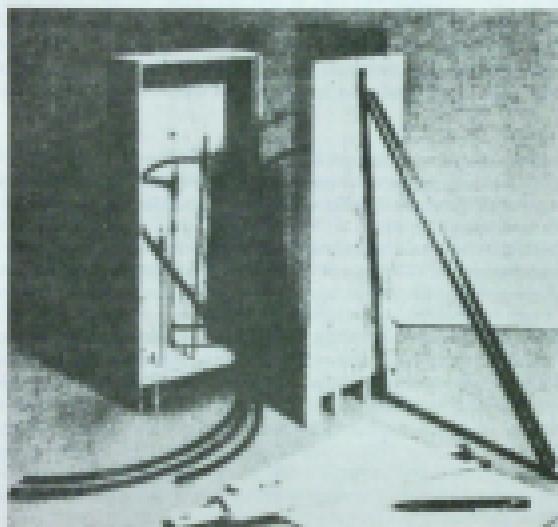
in order to
and through
higher gusts
in pressure

from curved
n of eddies.

7 tubes can-
ometers.

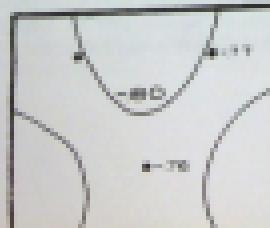
Numbers on
ratio between
normal and a
ist if the air

Isochor pattern
some propane



6

25 - RELATION OF
PRESSURE TO TIME
25 - ISOBARS



Leaning against the front of the model is an unfamiliar object, a rod or tube or stick of some sort. Its function is not explained either in the text of the article or in the caption to the photograph. It does, however, cast a shadow. Take a careful look at this shadow. At its upper end, it projects out beyond the end of the stick into an otherwise brightly-illuminated area. Worse, at its lower end, where it touches the table, the stick casts a shadow both away from and toward the light source. In nature, shadows do not behave in this way. Either there is a new law of physics at work here, or else this photograph has been doctored.

In a prelatory chapter, I suggested that significant statements in the Zodiac literature are usually tagged with error. Misspelling is a typical sort of Zodiac error. Here, we have a physical error. Sticks are not supposed to cast shadows toward light sources, just as people who write English are not supposed to spell "dangerous" as DANGERTUE, or "minutes" as MINUTS. The alteration of this photograph to produce the unnatural, erroneous effect cost the author some effort. It did not happen because his hand slipped. And since he went to some trouble to do it, we are, I feel, justified in asking what his motive was.

A very simple description of the erroneous shadow would be that it is an angular artifact. Physics tells us that it is an artifact. Inspection tells us that the two parts of this shadow form an angle. I measured this angle with a protractor. It subtends an arc of 117°. Curiously, and I think not so coincidentally, this 117° angular artifact was published just four months after the Zodiac murdered Chen Jo Bates in Riverside. I submit to you that it is an advertisement.

In Line 7 of the 340-Character Cipher, we find a rather significant passage: 11000101001111. It is identical in form to the Morse spelling of the word MIKADO (11 00 101 01 100 111). The significance of this finding is that in two other documents, the letter of late July 1970 and the Exorcist Letter (late January 1974), the Zodiac quotes from the Gilbert and Sullivan operetta of the same title. For the better part of two decades, Bay Area policemen attending performances of The Lamplighters, a local Gilbert and Sullivan theatrical company, have routinely scanned the audience during intermissions to see if they could spot the Zodiac. Back in 1970, the San Francisco police even did extensive checks on the records of everyone who had ever sung tenor parts with The Lamplighters, since both of the patter-songs quoted in the Zodiac letters are sung by Ko-Ko, a tenor part.

I suggest that Z. is neither a Gilbert and Sullivan fan nor a singer. He means something entirely different. When he quotes from *The Mikado*, he implies the title. Here, in the 340-Character Cipher, he spells out the word MIKADO letter for letter. In "Reading the Zodiac," I mentioned the use of the rebus, particularly to imply subtraction. One number before another implies subtraction of the leading number from the following number. In this case, the first digit of MIKADO is Character #103. MIKADO is preceded by 100 digits. Let's suppose that we are to read this as "103 before MIKADO." With that in mind, let me write the word MIKADO in Morse Code again: 11 00 101 01 100 111. The underlined part is binary 103.

If "103 before MIKADO" means the same thing as "MIKADO minus 103," then we ought to subtract, take away, the 103. When we do, what we are left with is 11 00 101 0, Morse MIKE. The statistical hardness of this finding rests on two things. First, this same formula-

tion occurs in other Zodiac documents, and second, the probability of my finding any particular fifteen-digit string by any arbitrary methodology (e.g. flipping a coin) is one in two to the sixteenth power, or 1/32,768. The odds against coincidence are not astronomical, but they are quite respectable. Finding exactly the same formulation, 103 before MIKADO, in another Zodiac document, potentiates those odds into the realm of astronomical numbers.

I would like to add a footnote here about the very first Zodiac letter, titled "THE CONFESSION." Following the title, there is a by-line (literally): "BY _____". The author's name is left out. There is also no signature at the foot of the letter. A confession which is not signed is as good as no confession at all. As usual, I believe that the Zodiac is truthful when he says that this is a confession. The signature is just not obvious. I counted up the letters on the page, finding 1623 in all. 1623 in base-two notation is 11001010111, which I re-divide to read 11 00 101 0 111, Morse MIKE O.

The passage given by Characters #144-163, in the 340-Character Cipher is rather interesting, partly because of the virtuosity to which it attests, and partly because of what it reveals about compositional principles. Here it is in digital form: 110010011011001001101. What both the PII laboratory and I had failed to notice (until about six months later, when I noticed it) is that in this 22-digit passage, the second eleven digits exactly repeat the first eleven. The probability of this kind of thing happening by accident is $1/2^{11}$, or one in 2048. But if you were to try to reproduce this result by flipping a coin and writing down a one for each heads, zero for each tails, the number of trials involved would be 22 times that many, or 45,088. Our author has achieved this result with only 163 trials. This is just more powerful statistical evidence of design and purposefulness.

Here's my interpretation. The first four digits, 1100, are binary twelve. The first digit is Character #144; 144 is the square of twelve. I suggest dividing the unique eleven-digit passage into 1100 (12) and 1001101 (77). This suggestion is reinforced by the fact that the last digit of this passage is Character #154, and 154 in TT is 2. "12 before 77" in rebus-logic is 77 minus 12, or 65. This expression is given twice, suggesting doubling, $65 \times 2 = 130$. It's simply a paraphrase of a Zodiac commentplace.

The fact that this paraphrase is written in 22 digits suggests that Z.'s compositional principle is to invent formulations that are appropriate thematically and will help him fill up his grid. In a sense, he is in much the same kind of position as a crossword-puzzle writer. In this case, though, he cannot simply black out inconvenient squares. The whole grid has to be filled up. He has put in the fraction of a digit at the outset, MIKADO in Morse Code following 103 digits, etc., and now he has to fill in all the gaps left between these significant expressions. Here, he has a gap of 22 digits, and he has used his ingenuity to come up with a formulation which repeats a standing theme at the expense of brevity. Furthermore, he has placed it in such a way as to let the character numbers suggest what the contents are.

Finally, the six-digit passage beginning with Character #299 reads 100011 (binary 35, Morse BM), and the eight-digit passage beginning with Character #307, 10000010, is binary 130, Morse HER. Note that these two formulations are physically in close proximity to one another, just as they were toward the beginning of the cipher, and that they appear here in mis-

ror-image order to the first two occurrences.

There are a number of other interesting things that could be said about the 340-character cipher, but those are the highlights. I will come back to some of those other points in connection with the discussion of other documents. An important thing to bear in mind about this one is that it is not written in English. In fact, it is completely non-linguistic. Perhaps the best way to describe it is as a tapestry of digital expressions. I think that it is helpful to look at it as a graphic composition rather than as a verbal one. And the author uses number in much the same way that a painter uses color. This perspective will be of use in the consideration of every other Zodiac document. In accordance with Michael O'Hare's dictum on the nature of meta-writing, the graphic form is more expressive than the verbal content of the text. In the 340-Character Cipher, the Zodiac has freed himself completely from the trammels of verbal expression.

THE ST. PATRICK'S DAY MASSACRE

Dan Goldfarb was getting more excited about Joan Webster by the day. I thought it was a sidetrack. Women disappear all the time. The Zodiac can't be responsible for all of them. These were the connections with Harvard and the architecture major, but that could easily be coincidence. One thing did happen, however, that made me wonder. Joan Webster's purse had turned up out in the middle of a marsh between Boston and Lynn; her suitcase was found in storage at the Greyhound bus terminal in downtown Boston. Her murderer's behavior was anomalous. If he was simply concerned about getting rid of the evidence, why didn't he dispose of everything all in the same place? Joan had disappeared, and so had her tote bag. But the suitcase and the purse had been left in two widely-separated locations where they were certain to be found. There was also the theme of the bus, which had been so important to the Zodiac.

Even so, it all seemed rather tenuous. I didn't try to dissuade Goldfarb, because I wanted to keep his interest alive. He had behind him the power of a national television network with enormous resources. At one point, I said that it might be instructive to see the information relating to Joan Webster laid out on a Geological Survey map. Goldfarb asked me if New York Public Library would be likely to have USGS maps of Boston. I replied that I thought it highly unlikely that they would. I said that the next time he was in Boston, he should pick up some maps at a bookstore. I requested an extra copy of each map for myself.

Eight hours later, he called back. He had used ABC's money to fly up to Boston from New York for the purpose of buying about five dollars' worth of maps from a bookstore. Then he had flown directly back to New York. Of course, he didn't buy extra copies for me. Instead, he tried to describe them to me over the telephone. I cast my mind back to that black night in late December 1980 when I had called SFPD about what I had found on my map. I had given up without even trying.

Goldfarb had gone beyond the architecture connection. He had obtained a copy of the 1964 Harvard yearbook. Up to this time, I had never seen a photograph of Michael O'Hare. Goldfarb thought the yearbook photo bore a strong resemblance to the SFPD police-artist sketch of the Zodiac. But between 1964 and 1982, O'Hare had lost a lot of hair, he said. He had also grown a mustache somewhere along the line. He didn't send me a copy.

Goldfarb borrowed the name of another 1964 Harvard graduate who had been in O'Hare's social club (Dudley) and called up O'Hare's parents in New Jersey. He got Eugene on the phone. Goldfarb, pretending to be the classmate, contrived some story that he felt could elicit information about the Thanksgiving weekend, when Joan Webster had disappeared. He told me that Eugene O'Hare had unequivocally stated that his son had been in New Jersey visiting with him and Berta Margoulies for Thanksgiving, and that he had flown back to Boston Saturday evening. That was the evening on which Joan Webster had flown back to Boston. Pre-

somewhat, both would have flown out of Newark; certainly, they both would have landed at Logan. I didn't think it the clincher that Goldfarb did, but whereas I had been looking for ways to keep his interest in the California crimes alive, he was now finding ways to keep my interest in Joan Webster alive. I had to admit that he seemed to have something, although I didn't see enough to it to warrant all the excitement.

Not long after, Goldfarb called again, in a very excited condition, as usual, to tell me that he had just run into an investigator from the Massachusetts State Police who told him that he had been assigned to go to Arthur D. Little in Cambridge and reconstruct O'Hare's itinerary during the Zodiac years. He had been an ADL employee in the years 1967-1970. I asked Goldfarb what had been found out at ADL, and he said that he didn't know. He also did not follow up on this himself. As I subsequently learned, a trip to the personnel department at ADL would have yielded some very interesting information. I will come back to that later. But Goldfarb seemed to become less and less interested in making his case against O'Hare as time went by. Finally, about mid-January 1982, I found out why. He told me about our movie project.

I had started working with Dan Goldfarb because of what I thought he might contribute to the prosecution of the murderer. He had the resources that I did not have. For that matter, he had resources at his disposal that most police departments would envy. I thought he was in it for a news story. I would have been very pleased to see ABC get the credit for solving the mystery of the Zodiac. I was of the opinion, as I told him, that the news story came before the movie deal. Get the evidence, make the arrest -- the rest would flow from that.

But his idea now was to abandon the news story and write a screenplay instead. He called me repeatedly to tell me how many millions were at stake, millions that we could split between us. He was going to bring in Brian De Palma to direct the picture. He was writing the screenplay himself. He said that the case of his story was how the police refused to listen to me. He said that he and I would have to have another face-to-face conference so that he could get all the details on that aspect. And he was tending to business. He had flown to Los Angeles and retained an agent. He didn't say whether ABC had paid his airfare.

It was becoming increasingly obvious that Goldfarb was a lost cause. He had expressed interest at one point in obtaining fingerprints from the subject, which might have made the case definitively. Instead, he was gallivanting all over the continent in search of the great movie deal. I already had one -- one which I had hoped would supplement ABC's efforts, if needed. Now it was becoming clear that it would have to replace them entirely.

Howard Barrus had a friend in New England named Alan Neigher. Neigher practices law in Westport, Connecticut. He had agreed to do some research in the New England area. I started getting phone calls from Neigher. He had a friend who worked for New England Bell. It seemed like a good research assignment for him to put together a list of addresses and telephone numbers for Michael O'Hare. He came up with a list going back to 1960. There were three years in which there was no listing in the New England Bell white pages, 1963, 1965, and 1967. He had graduated from Harvard in 1964. It was not surprising to find the hiatus of three years beginning right at that point.

Goldfarb was no longer calling me every few days. Neigher was instead. At this time, he had no financial interest in the Zodiac project; he was just helping out. Yet he was calling up every so often with more information, more questions. He was obviously becoming very involved. At one point or another — I don't recall the date — he bought out Charles Duggan's interest in Zodiac Associates Inc. Then he took an even bigger step. He hired a private investigator.

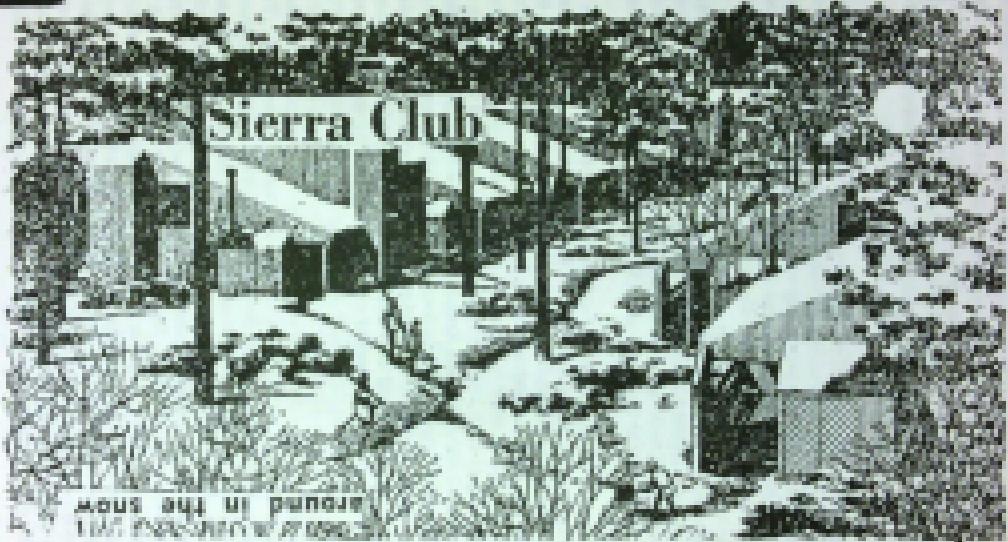
The investigator was Whit Caldwell, who worked at the firm of Dow Services Group in Boston. Alan had nothing but high praise for Whit, whom he had interviewed personally in Boston. All of a sudden, everything seemed to be clicking. Where the police had failed for twelve years because of mental lazitude, and where a national television network had failed because of Dan Goldfarb's personal ambitions, everything seemed to indicate that this Connecticut lawyer was going to succeed. He had what I felt to be the right place: make the arrest first, then peddle the movie.

Starting in March 1982, we began to get spectacular results. Whit Caldwell did what any competent private investigator would do, and everything that he did produced paydirt. He went to publicly available sources of handwriting samples, for instance, the local hall of records. O'Hare had been married in 1968, and he had been divorced in 1981. He had purchased real estate both in Massachusetts and Vermont, and those transactions had all left records bearing his handwriting. He was represented in the 1964 Harvard yearbook — Whit presided over with the first photographic likeness that I had ever seen. Mike O'Hare did look like the Zodiac. At least, he was not six-foot-five and black. But had he been in Melbourne, Australia, in 1969-1970?

Whit also went to ADL and ingratiated himself with the personnel department. They let him look into Mike's file. Soon after he looked into that file, he called Alan, who didn't wait long to call me. He was jubilant. He told me that Whit's research had established that Mike had been traveling to California in the employ of ADL during the Zodiac years. What the records showed was that he had been transferred to the San Francisco office of ADL at the beginning of November 1967 and that he had returned to the Cambridge home office at the end of February 1968.

I told Alan that it was interesting to find that Mike had indeed been in California about this time, but that there had been no Zodiac events during those four months. What was he doing out here then? Alan said that the personnel file had indicated that he had been assigned to work on a condominium project at Lake Tahoe for ADL's client, Boise Cascade Corporation. I asked him if he was sitting down. He hesitated, then said that he was. Why did I ask?

The Zodiac appeared in the Bay Area in December 1968, when he murdered the two teenagers at Lake Herman Road. Three crimes and about twenty letters later, he vanished from the scene, in March 1971. He did not return until almost three years later, in January 1974. The last document received in the period 1968-1971 was a postcard on which Z had affixed



Sierra Club

round in the snow
in the snow

Sought victim 12

"Peek through the pines,"
pass, LAKE TAHOE areas.

(O.L.-6)



3 - 23 - 71

0802 RECEIVED BY

an artist's rendition of a condominium project which had been proposed for development by Boise Cascade Corporation at Incline, Nevada, on the east shore of Lake Tahoe. Ray Lauritsen, then chief of the South Lake Tahoe, California, police department, had identified it publicly as such back in March 1971. Not only had Whit placed Mike in California, but he had connected him with a Zodiac artifact. I had served in the artillery when I was in the Army. When I heard the words, "Boise Cascade," coming from Alan's mouth, I felt as if I had fired a 155mm round over a range of twenty miles and had it land on a dime.

Whit even called Carol Ann Buschard O'Hare, the ex-wife, to inquire about Mike, on the pretext of doing a credit check. Somehow, he elicited from her the information in the course of that conversation that Mike had been commuting to California in late 1968 and the first half of 1969 on an ADL job for San Diego International Airport. Five minutes after he hung up, Whit received a telephone call from Michael O'Hare himself.

Mike told Whit that it wasn't necessary for him to call his ex-wife to get information that he wanted for credit purposes. All he had to do was approach him directly. As proof of his good faith, Mike said, he was willing to tell him that he had been in Rome in the spring of 1960. Furthermore, he said, he would presently send Whit a copy of his current résumé, which would fill in all the gaps.

In fact, the résumé opened up a few new gaps. According to Mike's own account, he had worked for ADL only in the years 1960 and 1968. But his ex-wife had just told Whit that she recalled him working for ADL in 1969 as well. I had acquired a store of offprints of articles published by Michael O'Hare over the years. I remembered one that had appeared in *Architectural Record* in July 1969, titled "Fence designs to keep wind from being a nuisance," in which Mike and his co-author, Richard Kreuzer, identified themselves as ADL employees. Eventually, Whit obtained a copy of Mike's doctoral dissertation for me. At one point in that dissertation, the author admits to having worked for ADL in 1970. Yet on his current résumé, it was as if the years 1969 and 1970 did not exist, where ADL was concerned. And those were the two years in which most of the Zodiac events in the Bay Area had taken place.

The earliest employment admitted to in this résumé was in 1967, when Mike had worked as a designer at the architectural firm of Skidmore, Owings & Merrill in New York. That was why there had been no telephone listing in the Boston area in 1967. But what about 1965 and 1966? There was nothing in the résumé to account for his absence from the area in those years. He admitted to working as a freelance consultant to the Museum of Fine Arts in 1974 but to no other consulting work. Another document obtained by Whit was the tenth anniversary report of the Harvard class of 1964. There, Mike said that he was teaching at MIT and working on the side as a consultant, "primarily" for the Museum of Fine Arts. That meant that he had at least one other client, whom he did not name. As of the present, he did not admit to working as a consultant for anyone but the MFA in 1974. While omission of information from résumés is not criminal, it is curious that the years 1965, 1966-1970, and 1974, the four years in which all but four Zodiac events took place, are the ones about which this résumé was demonstrably not telling the whole story.

By February 1982, relations with Dan Goldfarb were poisonous. Zodiac Associates had tried to talk to him about collaboration, and his response, through his Beverly Hills agent, was that we needed him, he didn't need us. It was about the middle of the month that he called me for the last time, to tell me how sorry I was going to be for having signed with Barnes et al., rather than with him. He was going to make millions, and I was going to get little if anything. I said that I was sorry to hear that he felt that way about it but that I would just have to take my chances.

I was feeling a bit depressed about this conversation and decided to lift my spirits by taking a walk. I had built my house on a one-acre lot in the mountains east of Napa, and other than the area immediately around the house, it was wild. The nearest house, belonging to a Mike Poole, was six hundred feet away, measured horizontally, and a hundred feet uphill. Poole had threatened me with a lawsuit several times for spoiling his view. Every time he had a dispute with his neighbors, he would forget his legal threats against me and try to enlist me on his side of the alteration. I consistently refused to get involved in his fights, which endeared me to him even less. Over time, I had grown accustomed to his showing up at my door every couple of months, when he would scream in my face for fifteen minutes or so. After a few weeks, he would dinner down and wait me civilly until the next blowup.

My lot was indented here and there with wooded ravines, and it wrapped itself around the hillside, forming a sort of U on the map. Where my house stood was within view of the Poole's picture window. The back part of the lot was behind their house. It was wet, and the undeveloped part of the lot was covered with tall wild grasses, so I put on a slicker and boots and trudged off.

In the last ravine, 'behind Poole's', I found a bag of garbage. There was some junk mail in it, from Friends of the Earth, addressed to Mike Poole. A couple of minutes later, I ran into Mike, who asked me what I was doing there. I told him that I was just taking a walk on my property. Incidentally, I said, I had just found a bag of his garbage dumped on my side of the line. He grinned smugly and said that it couldn't be his garbage. I didn't say it, but the way things were, it either came from his house or it fell out of an airplane. I did tell him that the garbage bag had junk mail in it addressed to him. He stopped grinning. He said that his dog must have done it.

I wandered around in the last ravine for a while, picking up garbage that had been thrown down there by the neighbors, then went home. I hadn't been there but ten minutes when there came a mighty pounding at the door. This time, Mike was accompanied by his wife, Jeanine. Both of them were hammering on the door with their fists and hopping up and down.

When I opened the door, they both screamed at me for several minutes. I was a trouble maker, sneaking around their hillside, spying on them, making an unwarranted fuss about their garbage. I had done nothing but interfere with their lives. They had had the hillside all to themselves, and then I had bought my lot and built my house within their view. Their property value was ruined. They were going to sue me. They were both quite red in the face from all the belling they had been doing.

I told them that if they were minded to sue me, they had best get cracking. My house had been there for three years already. In the meantime, they could stop screaming in my face. In fact, if they weren't back across my property line by the time I counted to ten, I would call the sheriff's department and have them removed forcibly. I never saw either of them, before or since, move quite so fast. They had crossed the frontier before I even got to the count of eight.

By mid-March, Whit Caldwell had come up with contemporary photographs of Mike O'Hare and a bundle of handwriting samples. The handwriting was striking. O'Hare formed more than a dozen letters and numbers exactly the same way the Zodiac did. If I had ever had any doubt about my identification of him as Z., it had evaporated completely. I was spending my time now putting together handwriting comparisons. I had piles of photocopies stacked up on the dining room table, where I was collating them.

On St. Patrick's Day evening, I was alone at home when I thought I heard a skunk outside. I loaded up my Montgomery Ward 12-gauge shotgun with six rounds of duck and pheasant shot and went outside to see what I could see. There was no moon, so I could not see much. Maybe ten yards away, I thought I saw something moving. It looked black and white, like a police car. I drew a bead on it and let fly. It jumped. I pumped another round into the chamber and fired again. I fired six times in all, perhaps over ten seconds' time. What I thought was a skunk was hopping up and down like a little black-and-white yo-yo. I missed every time.

I went back inside and put Old Betsy away. Then I passed myself a glass of wine and went back outside to enjoy the cool air. About ten minutes passed, then I could see three cars in convoy coming up the road about a quarter of a mile away. They came roaring up Green Valley Road past my driveway, then continued on to the Poole's. I watched what was going on up there as what appeared to be a small army milled around their house. From time to time, one of these figures would stop milling around and stand in front of the Poole's neighbors' brightly lighted picture window to peer down in my direction. If I had had a rifle with a scope sight, I could have picked off two or three of them without any trouble.

After a while, it dawned on me that they were trying to see if I was down there and that they couldn't because I was standing out in the parking lot, where it was pitch black. I turned on the porch light and waved at them in a friendly, inviting manner. I didn't want them to think that I was some kind of sinister person. After I had done this for a while, there was a conflagration of some sort, then they disappeared, and I heard three supercharged cop-car engines starting up.

They came back down the road in convoy. When they got to my driveway, they didn't keep going. They turned up it. I stood up at the high end, beckoning them on, with the wineglass in my left hand. The lead car trained a spotlight on me, then somebody stuck a bullhorn out the window. "PUT DOWN THE WINEGLASS! PUT DOWN THE WINEGLASS!" he bellowed at me. I complied, leaving the glass in the tall grass beside the driveway. Then they came all the way up and parked. A *News Register* headline materialized in my head: MADMAN ATTACKS SIX ARMED DEPUTIES WITH WINEGLASS.

I was frisked and questioned. I told them about the nocturnal skunk hunting that I had been doing. They informed me that there was really bad blood between me and the Poole's. I said, no kidding. I gave them a little background. We went inside, where the conversation went on for another half hour or so. They asked me if I had aimed at the Poole's house, and I said it wouldn't have made much difference if I had. The effective range of D&P is about 150 feet. I might as well have tried hitting Oakland. For sheriff's deputies, they didn't know much about firearms.

From what they told me, it appeared that Mike Poole, being the most important object in the universe, and therefore having the greatest gravitational attraction, naturally felt that when the shot was flying, it was all headed in his direction. When they heard me shooting at my skunk, the Poole's had turned off all their lights and started creeping around on the floor on all fours. My son Felix was on good terms with the two Poole girls, and he confirmed this account the next day. He also told me that the girls thought it was pretty funny. But Mike and Jeannine thought that World War III had broken out.

Shagans are just part and parcel of life in the country. I had had a neighbor who used to sit out in the garden all night long with his 20-gauge, waiting for gophers to pop up, and when they did, he would blow them to Kingdom Come. He did this about fifty feet from my bedroom window, and it was invariably about 3 a.m. when he did it. Maybe the Poole's ought to move back into town.

One of the deputies had been eyeing the dining table. Because of the skunk and whatever, I hadn't gotten around to washing the dishes. There were four places set for dinner, and the dirty plates were still set there. I was the only one in the house. I knew exactly what he was thinking. He asked me where my family was. With a great deal of difficulty, I restrained the wicked urge to tell him to go look in the bottom of the nearest ravine. Instead, I told him the truth: Mary Ann and the kids were at a Boy Scout troop meeting.

Another deputy saw the handwriting comparisons and asked me what they were. I told him. He thought they were pretty nifty. He said that I should give a copy to Captain Narlow. He had been chasing the Zodiac since 1968. I said that I would consider it.

In parting, the deputies offered to help me look for my wineglass. They also advised me that I should steer clear of the Poole's. I said that I would be only too happy to comply. But as to their request that I refrain in future from nocturnal skunk-hunting, I said that I was not too sure that I could oblige them. Skunks are, after all, nocturnal animals, and the only time you can hunt them is at night.

I put together a side-by-side comparison of the 1964 O'Hare photograph with the composite sketch of the Zodiac and about a dozen pages of handwriting comparisons. I made up a cover letter to go with the package, which I called a "Zodiac Identification Kit," or ZIK for short. I coined the verb "to zick" to denote bestowing a ZIK on someone. Having made up the verb, I zicked Narlow, Tidridge, Shaffrin, the San Francisco DA's office, and Lieutenant Jim Husted of the Vallejo police department. Husted was responsible for investigating the shooting at Blue Rock Springs, now almost thirteen years old. I also zicked Bob Webster at the *Press-Enter-*

prior" and Jim Laube at the Times-Herald.

I heard from Webster. He called me up a couple of days after I had zicked him to thank me profusely for the material. He said that he was going to pass it on to his contacts at Riverside PD. Jim Laube said that he was amazed that with this much on Mike O'Hare, the cops weren't moving. I heard nothing from Narkow, who was keeping his own counsel. I also heard nothing from Etheridge. Husted called three times when I was out of the house. Each time, he asked if it would be all right for him to call back.

Some time in April, I gave up on waiting for him to call a fourth time. I called him instead. He said that in the interim, he had talked to Captain Narkow, but he didn't explain the relevance of that. I gathered that it meant that Narkow had told him that I was a lunatic and had cooked up the handwriting comparisons. I asked Husted if he knew that the subject of the photograph and author of the handwriting samples had also been responsible for the work on the House Cascade project shown on the Lake Tahoe Card. He said, "Yes, we've known that for a long time."

I couldn't tell from the way he said it whether it meant that he was referring to information from the Massachusetts State Police (the investigator that Dan Goldfarb had said was assigned to look into O'Hare's itinerary at ADL), or whether it was just his way of saying, "There, there, now, everything is going to be all right." In either case, I never heard anything from Husted again.

About mid-April, I heard from Shiffrin. He called me up one evening to jubilate about how I had proven that O'Hare was the Zodiac. The handwriting, he said, proved it beyond any doubt. He spent some time reminding me of things that I hadn't even known before, such as how he had always been on my side, and when everybody else at the magazine had turned against me, he had threatened to resign. Whatever the truth of these assertions, I gathered that he wanted his place in history.

He said that the police would have to act now. I said that since they had already taken a position on the other side, I doubted that they would have the emotional maturity to back down. He insisted that I was wrong. They would look even worse if they let it slide now. I wasn't convinced, but I bit my tongue anyway.

He also asked me if I would be open to an offer from *California for The Sequel*. I wouldn't have the same problems I had had before. Bates had been kicked upstairs. Bruyles had gone off to run *Newsweek*. The magazine was now being run by "real" journalists; Scott Rauffer was in charge. I could have a free hand with the form of the article, and the financial terms would be quite a bit more generous than the last time. This time, they would name O'Hare as the Zodiac. I told him that I would consider it. I didn't mention, because it probably had already occurred to him, that if *California* had spent a few hundred on a private investigator to do what Whit Caldwell had done, they would have had this same material, and this same degree of conviction, about a year sooner. And if they were so bent on naming Mike O'Hare as the Zodiac back then, they would have had a lot more factual foundation to base the story on.

They hadn't wasted any time. The next day, a fat envelope arrived from Scott Kaufer. I should have opened it to see what he had to say. I knew that most of the fatness was a writer's agreement. But I had cast my lot in with Barron and Neigher. For one thing, publication at this time might be contrary to their wishes. For another, they were the ones who had done the investigative work that California had been unwilling to do. Why should California profit from Alan Neigher's wisdom? I took my text from "The Little Red Hen." California magazine was willing to eat the bread, once it had been baked, but they were unwilling to do any of the preparatory work leading up to the baking. I had just had a rubber stamp made that said BULLSHIT in inch-high letters. I inked it with a red stamp pad and imprinted my response on the outside of Kaufer's envelope, then returned it to him.

The next month, on 19 May 1982, I got a phone call from the San Francisco office of California. They said that they had received an inquiry from the newsroom at KPIX, the San Francisco CBS affiliate. KPIX was going to do some kind of Zodiac story and wanted to talk to me about it. They gave me the name and number of the person at KPIX who had called. I called him. He told me that there was a Zodiac news story coming from the afternoon news show of KPIX's sister station in Los Angeles, KNX, and he didn't know what it was about. That wasn't very helpful, because I couldn't offer any comment on unknown information. We talked in generalities about the police mentality for about twenty minutes, then hung up.

There was nothing on the six o'clock news show, but there were teasers all evening long about a Zodiac story on the eleven o'clock news. KTVU, an independent station, had similar teasers. Their late-evening news show, however, is on at ten o'clock, so I was able to watch both. Here is what they said. Riverside Police Department had determined the identity of the Zodiac based on certain recently-received handwriting samples, and they anticipated an arrest shortly. As usual, for those who had difficulty remembering after all this time who the Zodiac was, or who confused the Zodiac murders with the Zeta murders (both were in San Francisco, and both began with Z), he was introduced as "The Zodiac, who may have murdered as many as 37 people. . . ." (The Zodiac had sent the Chronicle a letter in January 1974 at the foot of which he had written what appeared to be a box-score, "Me 37, SPPD 0." It didn't say that he had killed 37 people; it just said, "Me 37.")

The next day, Riverside PD held a press conference to deny the reports that had been circulated by the television news. Their press release was quoted in the issue of the Press-Enterprise for the 21st, two days after the television reports. Some time later, I called up the news department at KNX in Los Angeles to see if they would be willing to tell me who their source had been in the first place. Was it Bob Webster? If so, why had they said that it was Riverside PD that had made the identification? My informant said that he would do some research, then call me back. In the meantime, I zicked him.

A few days later, he called again, to thank me for the ZIK, which he said he found most interesting, and to tell me that KNX's story had merely reflected what Riverside PD had put out at their press conference. When I asked him how they could have reported on 19 May on something that didn't happen until the 20th, he said that he was stuck for an answer. Five years later, I have no more idea than I did then as to what went on between Riverside PD, KNX, and the Bay Area television stations.

INVISIBLE GEOMETRY

This chapter is going to deal not with a single Zodiac document but with a class of documents. I concluded the chapter on the 340-Character Cipher with the observation that our author had freed himself from the constraints of conventional language. This chapter will make that even more obvious.

First, let's consider the Exorcist Letter. That might seem an odd choice, since it comes chronologically late in the Zodiac episode. This letter was the first letter received by the Chronicle in 1974, following a nearly three-year hiatus. The reason that I would like to discuss this document first is that it is the first one which I subjected to a geometric analysis. I would like to add that I did so at the suggestion of Dr. Thompson, whose insight into the author's mentality proved to be uncannily accurate.

This letter is characterized by spelling errors which involve misplacement of the letter I in three out of five cases. Dr. Thompson suggested that since this letter comes with a dot, the dots might form a geometric pattern. I tried out his suggestion and found it to be very apt. In the opening paragraph, a mini-review of the movie *The Exorcist*, I measured the distance between the I-dot center-to-center, in syntactic order. From the dot on the I of "think" to the dot on the I of "Exorcist" is 78mm. From the second dot to the dot on the I of "satirical" is 58mm. And from the dot of "satirical" to the dot over "comedy" is 95mm.

Note that the 78mm line is above the 58mm line. I have already suggested that the Zodiac is fond of ribases. Here we have 76 over 58; "76 over 58" is another way of saying "76 divided by 58." The binary form of 95, the dimension of the third line, is 1011111, which redivides in Morse Code in a very sensible 1 - 011 111, TWO. The statement, "76 over 58 (is) TWO," is correct both mathematically and orthographically.

I suggest reading this statement as what you might call a "tutorial," a little lesson in how the document is intended to be read. Incidentally, the interstellar radio message sent from Arctice in 1974 by Drake et al. opens with just such a tutorial for the benefit of extraterrestrial readers in the binary notation used for writing numbers in the message.

The next thing we find, following the tutorial, is a closing salutation, "Signed, yours truly." In a normal letter, we would expect to find it followed by a signature. Here, we find it followed by a quotation from *The Mikado*. Please note the wide gap separating the word "truly" from the colon. The dimension expressed by the distance between the I-dot of "Signed" and the upper dot of the colon is 58mm. Just as in the 340-character cipher, we find MIKADO (or a quote from the operetta of the same title) preceded by 103 somethings. Again, if we are to read "HO before MIKADO" as "MIKADO minus 103," then the statement implies the name MIKE (MIKE + 103 = MIKADO). And this (implied) MIKE is right where you would expect to find a signature.

I saw & think "The Exorcist"
was the best satirical com-
edy that I have ever seen.

Signed, yours truly :

He plunged him self into
the billowy wave
and an echo arose from
the sullen grove
tit willo tit willo
tit willo

P.S. if I do not see this
note in your paper, I
will do something nasty,
which you know I'm capable of
doing

1


RE - 37
SPPD - O

I saw & think "⁹⁴The Expert" was the best satirical comedy that ⁹⁵I have ever seen.

Signed, yours truly,
¹⁰³

He plunged him self into
the billowy wave
and an echo arose from
the soggy robe
~~tit will~~ ^{tit will}
¹⁷~~tit will~~

P.S. If I do not see this
note in your paper, I
will do ~~something~~ ⁹⁵ nasty,
which you know I'm capable of
doing

76 over 38 = 76 + 38 = TWO
TWO = 1 011 111, binary 95
TWO over 58 = 2/58 = 1/29
102 before MIKADO = MIKADO - 102 = MIKE

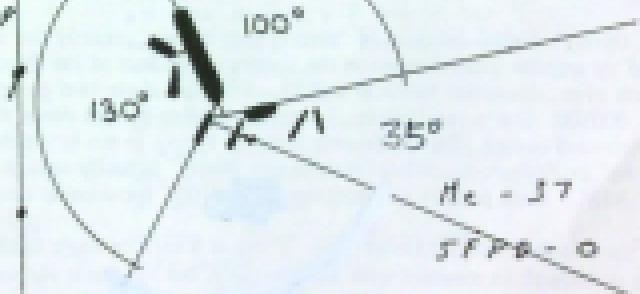
I saw + think "The Exorcist"
was the best satirical com-
edy that I have ever seen.

Signed, yours truly :

He plunged him self into
the billowy wave
and an echo of
the sociable gr-
fit with the
fit with

BER = 134
BM = 35
GENE = 100
13° angle = "Pole"
ME = 6
4 before 37 = 31

P.S. if I do not see this
note in your paper, I
will do something nasty,
which you know I'm capable of
doing



There are a few other points of interest among the I-dots. In each repetition of the word "will," the I-dots are exactly 17mm apart. I suggest reading this as THREE TIMES 17, a play on favorite Zodiac themes. And in the postscript, the I-dots in the first line ("if" and "this") are 98mm on center; in the third line, the I-dots ("will" and "something") are 58mm on center. There are no I-dots between them in the second line. 98, once again, is the Morse-to-binary writing of TWO. TWO over 58 is 258, which simplifies to 1/29. That is the date of the postmark on this letter, 1/29, the 29th of January 1974.

Of even greater interest are the figures drawn at the foot of the letter. They were obliterated when the letter was reproduced in the newspapers. I have annotated these figures to show the angular measurements which they express. The largest figure of this group expresses an angle of 130°. To its right, we find a 100° angle. Adjoining that, there is an angle of 35°. You will recognize 130 as HHS, 100 as GENE, and 35 as BM, three identifiers pertaining to the parents of Michael O'Hare. Two figures appear to form the Roman letters PV (the V is inverted). PV is the WIZARD-form of UE, the two-letter code corresponding to BM.

Now I would like to turn for a moment to another document, the Dragon Card, mailed to the Chronicle on 28 April 1970. In that card, Z. complains that he sees no one wearing a Zodiac "button." It being 1970, he sees people wearing buttons bearing the peace symbol, the slogan "Black Power," and the sentiment, "melvin eats bluber." By this time, he had threatened repeatedly to attack a bus without carrying through on the threat. He had also, as far as anybody knew, not killed anyone since the previous October. "Melvin eats Bluber" appeared to be proof of insanity, and instead of evoking shudders of horror, it elicited a chorus of titters at the expense of the poor madman. A digital analysis might have caused a different reaction. Here's MELVIN EATS BLUBER in Morse Code. I have left out the spaces between the original letter-groups.

<u>1100100-000100</u>	<u>000111</u>	<u>000100</u>	<u>0010</u>	<u>0001</u>	<u>10000010</u>
hundred	33		F	V	130

I have written "hundred" instead of "100" to avoid confusion, since "100" is also binary four.

We find, through digital analysis of "melvin eats bluber," exactly the same vocabulary as is expressed by angular measurement in the figures at the foot of the Exorcist Letter. The only groups left over follow one hundred and 35. Note that these two groups are identical to one another: 000100. It is a palindromic. I suggest dividing it right down the center, into 000 (5) and 100 (crossed circle). This is the only instance known to me in which Z. uses a form of the verb "to be" in Zodiacese. What "melvin eats Bluber" actually says is "GENES-100, BM'S 100, FV, BER." Both parents are represented by "100," the crossed circle sign.

Let's go back to the Exorcist Letter now. There is a smaller angle contained within the 130° angle. It is difficult to measure with any accuracy, but I make it out to be between 122° and 123°. I suggest that it is the supplement of the radian, namely the angle which when added to the radian makes a total of 180°. If we truncate the value of the radian at 57°17', then its sup-



THE DRAGON CARD (28 April 1970)

Second of three commercial greeting cards. Taken together with the theme of the first greeting card (pen), this completes the surname PENDRAGON, whose most famous bearer was King Arthur (as in "Arthur D. Little, Inc.")

If you don't want me to
have this blurb you must
do two things. Tell every
one about the last book with
all the details. I would like
to add some like Merlin became
grandfather about Arthur. Every
one else has done better like
the black power, nuclear war
blurb, etc. but it would cheer
me up considerably if I had
a lot of people writing me
letters. Please see my web
site <http://www.mrdrago.com>

Thank you



This is the Zodiac speaking.
I am the murderer of the
taxi driver over by
Washington St & Maple St last
night, to prove this here is
a blood stained piece of his
shirt. I am the same man
who did in the people in the
north bay area.

The S.F. Police could have caught
me last night if they had
searched the park properly
instead of holding road races
with their motor cycles seeing who
could make the most noise. The
con drivers should have just
pulled their cars & sat there
quietly waiting for me to come
out of cover.

School children made nice targets,
I think I shall rape and
kill a school bus some morning. just
shoot out the front tire & then
pick off the kids as they come
running out.



plethora is 122°47'. 1-22-48 is the date of Michael O'Hare's birth.

There is another feature of interest here that seems to make the identification of persons indisputable. A line drawn through the centers of the two large dots to the left of the large figures intersects with the extension of the upper leg of the 13° just tangent to the W of the first "twinkly." The open space between the two large dots is 23mm. The angle formed is 23°. And W is the 23rd letter of the alphabet. If you were determined to express everything in number and wanted to identify someone by nationality or ethnic background numerically, you might be hard put to come up with a suitable shorthand in number for anyone except a Pole.

The Poles of the earth are characterized by a 23° angle. That is to say, the Poles are tilted out of perpendicular to the Plane of the Ecliptic by an angle of that size. This is a fact that everyone learns in grade school. And it is also a fact that Berta Margoudies was born and raised in Poland. She is, by birth, a Pole. And it would seem to stretch coincidence past the breaking point to argue that this 23mm dimension, the 23° angle, and letter number 23 all being joined together in this structure is not intentional.

The box-score, "Me 37," is the basis of the cliché, "The Zodiac, who may have murdered as many as 37 people," which is heard on the television news programs and read in the newspapers whenever this subject comes up. As with other such box-scores, it does not really say that he has murdered so many people. All it says is, "Me 37." I suggest reading it as a rebuc. ME is Morse 110, binary six. Six before 37 is 37 minus six, or 31.

Eugene Robert O'Hare was born on 16 October 1908. Berta Margoudies was born on 7 September 1900. On the date of their marriage, 28 September 1938, they were both thirty-one years of age. And their son, Michael Henry O'Hare, celebrated his thirty-first birthday the week before this letter was mailed. As far as I know, no one has ever interpreted "Me 37" as a self-description. Interpreting it as a claim of victims killed is more sensational and helps sell newspapers.

In any case, what these figures show is a constellation of expressions identifying a particular man and a particular woman joined together. Since they are expressed as angular measurements, it is appropriate to say that they are shown joining legs. I believe that that is exactly what is intended here. This is a mathematical picture of a copulation. Note the resemblance in the two large dots to the left of this group to sperm and egg. The upper dot has a tail, just like a spermatozoon.

Before leaving this document behind, I would like to indulge in some speculation as to the significance of the particular form of this configuration. If you will turn to the 340-Character Cipher, you will find that Characters #97-99 take the form of a backwards K, an F, and a lazy V. Here we have backwards K, F, and inverted V. The resemblance is rather striking. Note that in the 340-Character Cipher, Character #97 has been struck out and replaced with the K. I read that as a form of emphasis; it is meant to draw our attention to the expression. In other words, it is important. Here's my speculation.

The expression KFV in Morse Code is 101 0000 0000, binary 1313. Two thirteens are 26. I

hypothesize an original form KPV 26, from which the 26 is omitted as superfluous. KPV 26 is 101 0000 0000 11000, binary 42042. Read as a date, 4-20-42, KPV 26 falls 277 days before 22 January 1943. Standard obstetrics texts give the length of the human gestation period as 280 days. I believe that "KPV" is a shorthand for the date on which the author was conceived by his parents. In support of this, we have an angle which appears to express his birthdate inside the angle expressing his mother's name. This interpretation must remain speculative because it requires truncation of KPV 26.

Having dealt with a late document, let's go back to an early one, specifically the letter of 14 October 1969, in which Z. claims credit for murdering Paul Stine. This letter has only two misspellings, "motorcycles" and "husrt." The type of linguistic error which is most prominent in this letter is the run-on sentence:

*I am the murderer of the taxi driver over by Washington St & Maple
St last night, to prove this here is a blood stained piece of his shirt.*

*School children make nice targets, I think I shall wipe out a school
bus some morning.*

It appeared to me that since he rather pointedly omits periods where they belong, he is drawing attention to them. There are seven periods in this letter. I connected them with straight lines, center to center, in syntactic order. The lines form angles of 40°, 152°, 74°, 52° and 44°. The largest angle, both in terms of angular measurement and in terms of leg-length, is the one of 152°. 152 is binary 100110 00, 38 followed by 1, or "1 (and) 38."

The difference between each pair of consecutive angles appears to contain the message. 152 minus 40 is 112, 152 minus 74 is 78, 74 minus 52 is 22, and 52 minus 44 is eight. 112 is binary 1111 0000, Morse OH, 78 is 10 00 11 0, Morse NAME, 22 is binary 10110, eight is 1000. Fused together, as 101101000, 22 and eight combine to make 360, a paraphrase for "circle."

The next document is the Pen Card, which accompanied the 340-character cipher. There are three misspellings, "head," "though" (for "thought") and "husrt." MEAD is Morse 10 0 01 000, a revision of 1000 11 00, "BM (and) L." This is underscored by the threefold repetition of the word "new" (once as "new," twice as "news"). Morse NEW, 10 0 011, is our old friend 35 (or BM) once more. The other two misspellings have the letter T in common. Like the dot over I, the cross of T is a point which can be used for the formation of invisible geometric structures. I joined the crosses of these two Ts to the center of the crossed circle sign. The three crosses form a 169° angle. By alphabetic quantities, 16 = P, 9 = I.

There is another box-score here: "Des July Aug Sept Oct = 7." For some time, the *Chronicle* attributed the murder of two little girls in San Jose to the Zodiac, having its judgment on this statement. At the time, it was not known that he had murdered Cheri Bates in Riverside. As of this date, he is known to have murdered six people and nearly murdered two others. Another interesting point is the semantic distinction which the *Chronicle* consistently made between dead and live victims. According to this newspaper, the two survivors were not to be

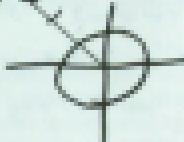
This is the Zodiac speaking
I am the murderer of the
taxi driver over by
Washington St & Market St last
night, to prove this here is
a blood stained piece of his
shirt taken the same man
who did the people in the
north bay area.

The S.F. Police ⁵² people have caught
me last night if they had
searched the park properly
in stead of holding ~~the~~ ⁵² men
with short motor cycles ~~so~~ who
could make the most noise. The
car drivers should ~~have~~ ⁵² just
parked their car in set places
quietly waiting for me to come
out of cover.

School children make nice targets,
I think I shot wife and
a school bus some ~~targets~~ just
shot out the front ~~target~~ then
pelt off the kids as they come
running out.



This is the Zodiaco speaking,
I thought you would need a
good laugh before you hear
the bad news, and i
news for a while yet do a
PS could see prima
this non cipher -
in your ^{169°} sun
I got an fully lonely
when I am ^{90°} alone
so lonely I could
do my Thing!!!!



Sorry I haven't written,

but I just washed
my pen.



Des Joly Day
Sept Oct = 7

PEN CARD, 18 November 1949

Front of card is shown in back

16 x P. 8 x L. 160 x PI

RE: Encipherment points following
THING = binary 111011, 62 (= 9 x 7)
Alphabetic quantities of THING = 59

counted as "victims." Never mind that one had been shot twice with a 9mm automatic at point-blank range and that the other had been stabbed seven times with a butcher knife. I believe that most reasonable people would consider these two people to be victims every bit as much as the other six. They just had the good fortune to survive. Counting them, the Zodiac had eight victims at this time.

Z. seldom makes explicit claims about the number of people he has killed. Generally, he writes a number somewhere and just lets the *Chaos* leap to its own conclusions, knowing exactly what they will do with it. The first explicit statement, using the phraseology "I have killed" is found in the cryptogram, in the seeming syntactic lapse, "all the I have killed." It appears that the author has left out a word. Remember that I said that in the Zodiac's idiosyncratic usage, E = 3. He also camouflages claims and seeming claims of victims by casting out nines. The word THE is made up of a 20 (T), an 8 (H), and a 3 (E). Their sum is 31. By casting out nines, we get four (3 + 1). The statement, "all four I have killed" is both grammatically and historically correct. Let's see if this same technique works here.

DES is $4 + 3 + 19$, or 26. JULY is $10 + 21 + 12 + 25$, or 68. AUG is $1 + 21 + 7$, or 29. SEPT is $19 + 2 + 16 + 20$, or 56. OCT is $15 + 3 + 20$, or 38. 68 is binary 1000100, Morse 10 100 10 0, NINE. 68 is synonymous with the number nine in the Zodiac literature just as 95 is with two. The numbers 26, NINE, 29, 58, and 38 are also expressed by the six dots in the 240-character cipher, which this card accompanies. And their sum is 160 (26 + NINE + 29 + 58 + 38). Casting out nines, we get 1 + 6 + 0, or seven. "Des July Aug Sept Oct = 7" is a true statement, and it has nothing to do with murder victims at all. It is just a problem in arithmetic.

This is probably as appropriate a place as any to say something about the origin of E = 3. In the first place, there is a rather strong graphic resemblance between Arabic 3 and the letter E. Anybody who owns a digital clock has noticed the similarity. Lazy E is Roman three. But I think that these graphic similarities are just a bonus. We find again and again in the Zodiac literature the names of the two parents, sometimes separately, sometimes fused together in one way or another. They are shown joined together as angles in the Esoteric Letter. They are compressed together into the crossed circle sign. At every turn, Z. finds new ways to show the equivalence between the father and the mother.

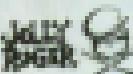
The mother is identified very frequently as EM. The alphabetic quantities of these two letters are 2 and 13. The father is frequently identified as UE. By manipulation of the alphabetic quantity of E, Z. is able to make the one form a revision of the other:

B	M
2	13
21	3
U	E

The Dragon Card does not contain much of interest beyond "mehr als blutig" (already discussed above). Like the Pen Card, it uses the cross of the letter T as a geometric point, together with the center of the crossed circle. Z. misspells "button" twice here. Curiously, he

If you don't want me to have this blast you must do two things. Tell every one about the bar bomb with all the details. I would like to see some nice Tedies before wandering about town. Every one also has these buttons like, , black power, melvin eats bluber, etc. Well it would cheer me up considerably if I saw a lot of people wearing my button. Please no party ones like melvins

76°
Thank you







THE DRAGON CARD

Highlights:

MELVIN EATS BLUBER is a digital redivision of the sentence, GENE'S 100, BM'S 100, FV, BER (same vocabulary as found in graphic gibberish at foot of Exhibit Letter). Angle BUTON, crossed circle-BUTON = 76° (38 x 2). BUTON is Morse Code 1000 001 1 111 10, binary 10111, latitude of Cambridge, Mass. Letter-quantities of inappropriate word NASTY (14 + 1 + 19 + 20 + 25) add up to 79. Binary 79 = 1001 111, 9.7, Bert Margoties' birthday.

This is the Zodiac speaking
By the way have you cracked
the last cipher I sent you?
My name is —

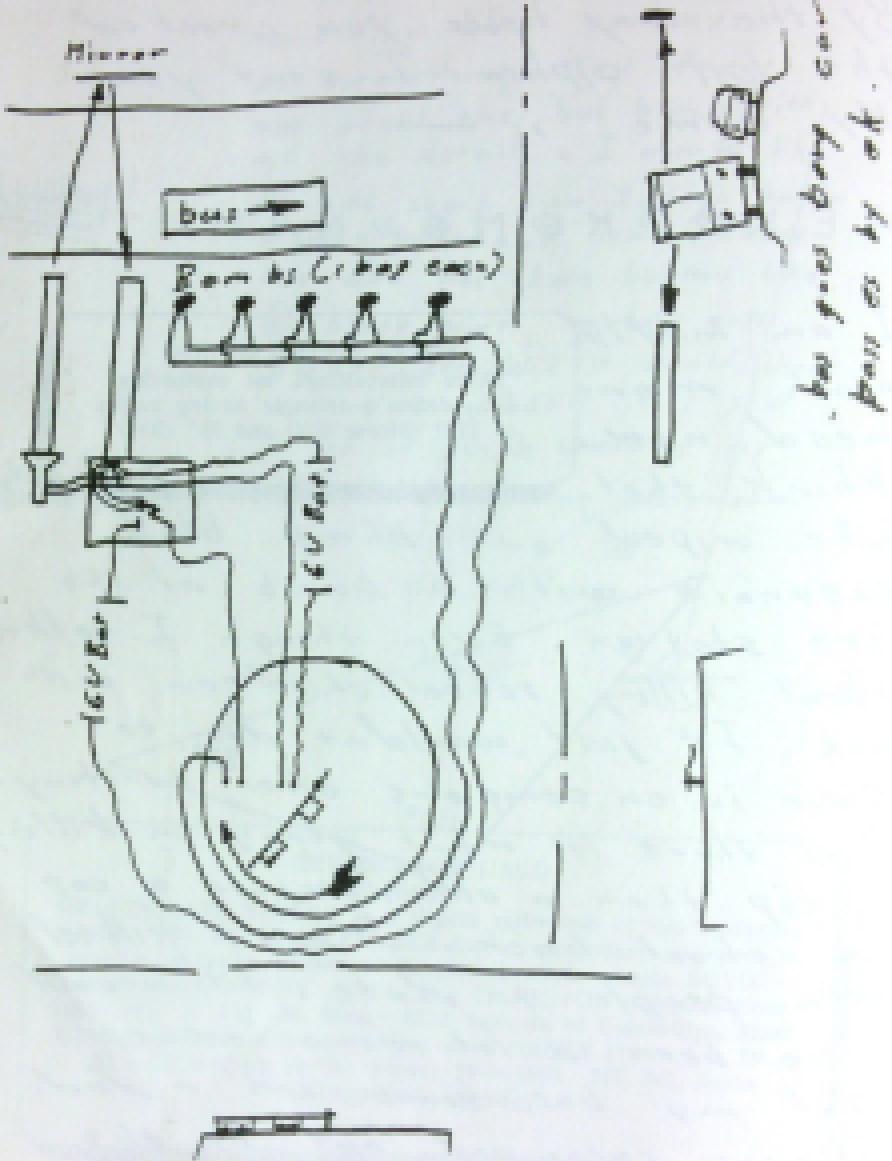


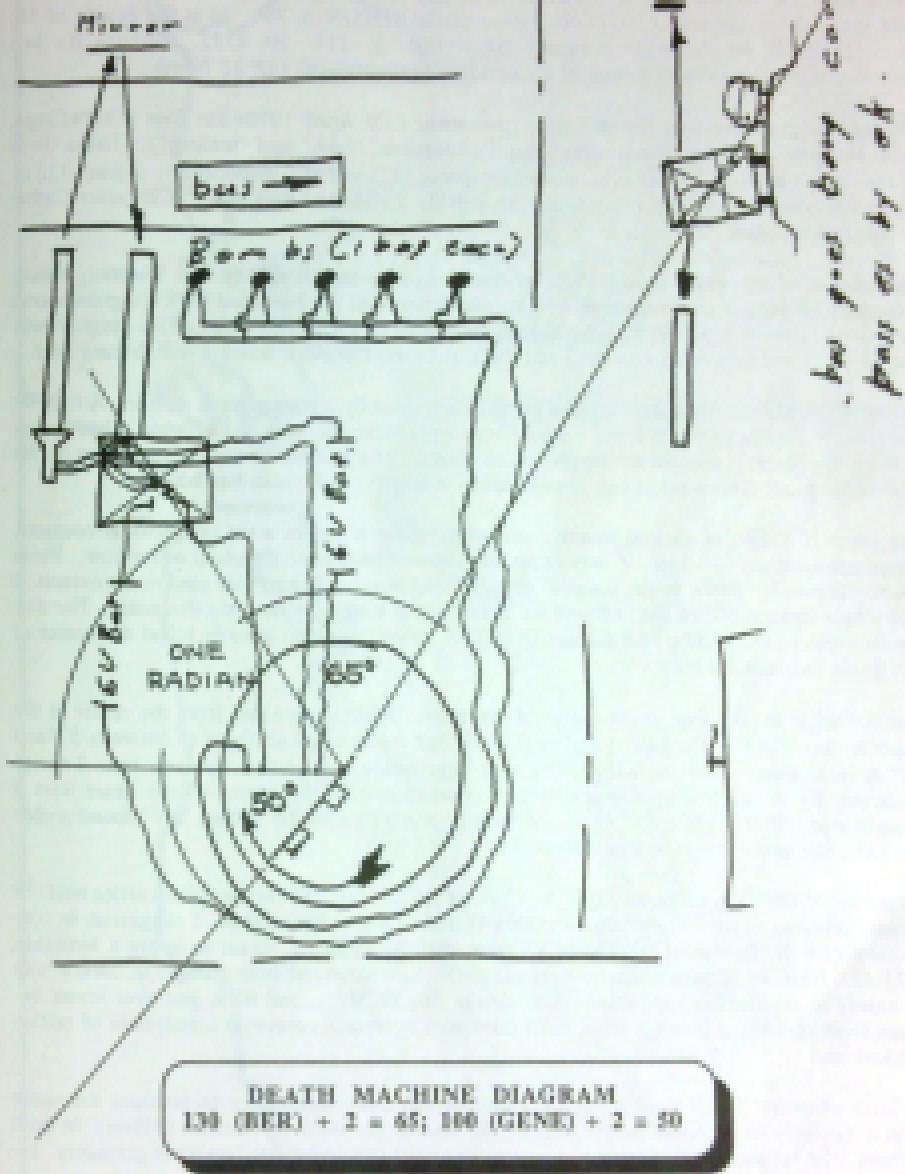
A E N @ K @ M @ L N A M

I am mildly
much more
head now.
think that
who wiped out that blue
~~mechanic~~ with a bomb at the
cop station. Even though I talked
about killing school children with
one. It just wouldn't do to
move in on someone else ~~totally~~.
But there is ~~one~~ glory in killing
a cop than a kid because a cop
can shoot back. I have killed
ten people so date. It would
have been a lot more except
that my last bomb was a dud.
I was swamped out by the
rain we had a whiteout.

THREE LITTLE WORDS

Three misspellings, all containing
1-dot, define a triangle having angles
of 112° (Morse OH) and 35° (BMO)





gets it right the second time he uses the word, just not the first and third times. To make a long story short, the angle BUTON-crossed-circle-BUTON is 36° . 36 is the double of 18 , Morse BUTON, by the way, is binary 1000 001 1 111 10, 4222. Perhaps it's just coincidence, but that's the latitude of Cambridge, Massachusetts ($42^\circ 27'$ North).

The first page of the Bus Bomb Letter (postmarked 20 April 1970) has four misspellings, three of them involving words with letter I ("meantie," "cid," and "territory"). These three points form a triangle, two of whose angles express 112° and 35° , respectively. Again, 112 is the Morse-to-binary writing of OH, and 35 is RM. I will deal with the 13-Character Cipher on this page in another chapter.

The last document which I would like to discuss here is the Death Machine Diagram, which accompanied the 340-character cipher, a lengthy letter, and the Pen Card. The diagram shows the internal device which Z. says he is going to use to attack a school bus. This diagram was later revised and submitted as what I call the Bus Bomb Diagram, which I will discuss later.

According to the diagram, the Zodiac's bomb is activated by a photoelectric device. A light on one side of the road reflects from a mirror into a photoelectric switch, and when a bus passes through the beam, it sets off the bomb, which consists of a number of bags of explosive by the side of the road. The whole thing is powered by a battery, and it also has a timer.

The timer is shown as an arm rotating around to where it strikes a set of electrical contacts, which are attached to wires. Z. has drawn an arrow showing the direction of rotation. From where the arm is shown in the diagram to its resting position against the electrical contacts, it will rotate through 50° of arc. I found the center of the battery by drawing diagonals. The diagonals cross in the middle of the black dot. The author has, then, already found the center of this figure and marked it for us.

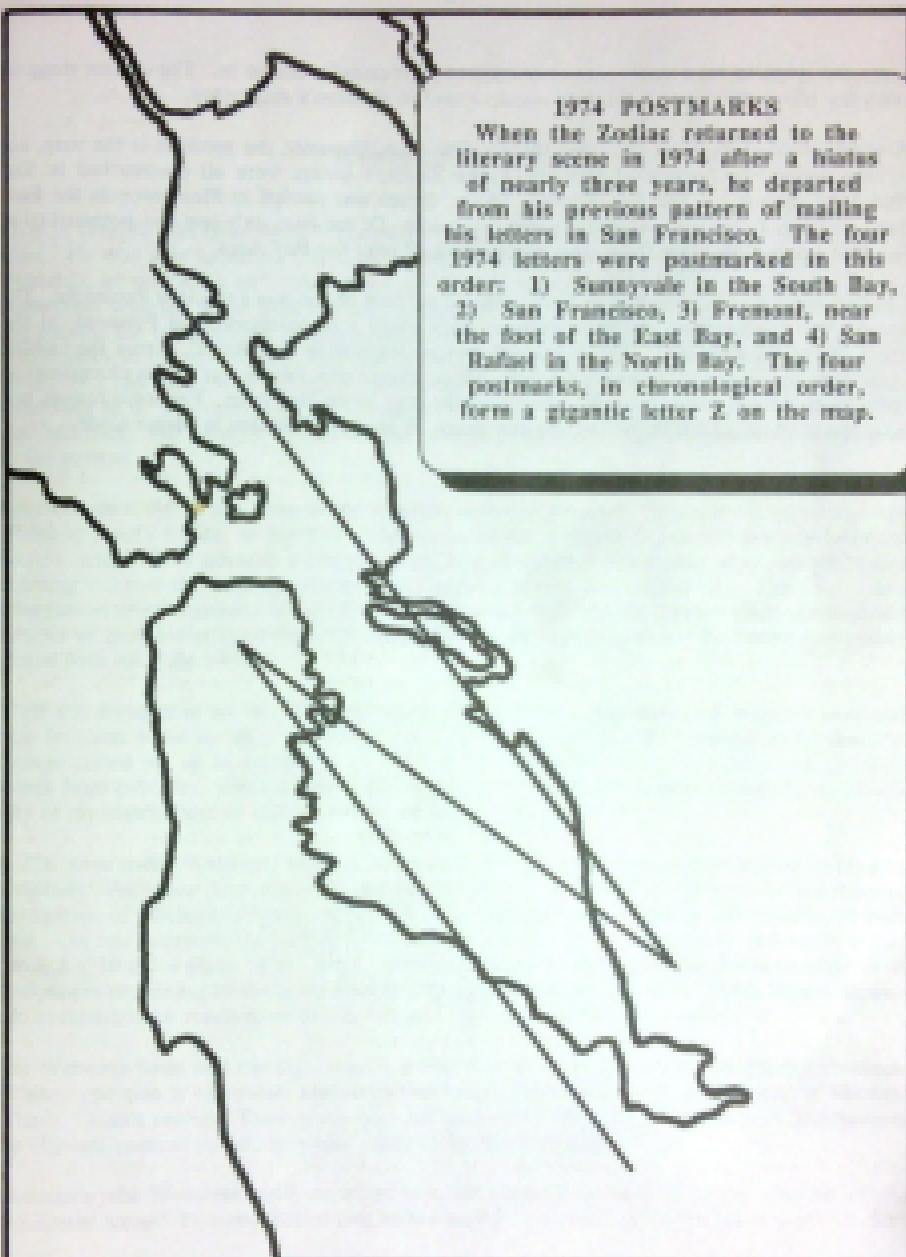
The 50° angle has its apex at the center of the timer. By drawing a line from the center of the timer to the center of the battery, I found that I had constructed an angle of between 57° and 58° . It is, in other words, a radian. The next large figure over is the side-view bus. I found its center by drawing diagonals in it, then connected it to the center of the timer with a straightedge. This angle is 65° . This seems to be reinforced by the writing "VV" found within the 65° . The letter V is Roman numeral five.

50 is half of CENE (one hundred). 65 is half of BER (130). Everyone alive carries half the genetic material of his or her father and half of that of his or her mother. I suggested, in connection with the figures of the Encrucifix Letter, that the radian is meant to imply a birthdate, 1-22-43. Here we have a radian connected to the half-names of both parents in such a way as nearly to supplement the radian. The sum of 50, 57.29, . . . , and 65 is just over seven degrees short of 180° . It is not precise, but I think that epigonaria covers up a multitude of mathematical sins.

In later chapters, I will demonstrate the use of the same techniques to produce the same effects not only in the work of the Zodiac, but also in the work of Michael O'Hare. In both authors, the vocabulary is the same. I have called this technique "invisible geometry" be-

1974 POSTMARKS

When the Zodiac returned to the literary scene in 1974 after a hiatus of nearly three years, he departed from his previous pattern of mailing his letters in San Francisco. The four 1974 letters were postmarked in this order: 1) Sunnyvale in the South Bay, 2) San Francisco, 3) Fremont, near the foot of the East Bay, and 4) San Rafael in the North Bay. The four postmarks, in chronological order, form a gigantic letter Z on the map.



cause the lines, in most cases, are only implied, not actually drawn in. The closest thing in everyday life is the connect-the-dots puzzle found in children's magazines.

Here's another example of the same thing. This time, however, the medium is the map, not writing paper. In the period 1969-1971, the Zodiac's letters were all postmarked in San Francisco, save one. The *Los Angeles Times* Letter was mailed in Pleasanton in the East Bay. In 1974, Z. mailed four letters to the *Chronicle*. Of the four, only one was postmarked in San Francisco. The other three were postmarked all over the Bay Area.

The first letter was postmarked in Sunnyvale, at the foot of the San Francisco Peninsula. The second was postmarked in San Francisco. The third was postmarked in Fremont, at the south end of the East Bay. And the fourth was postmarked in San Rafael, across the Golden Gate from San Francisco in Marin County. These four places, joined together in chronological order by postmark, form a gigantic letter Z on the map of the Bay Area. For some reason, nobody has ever noticed it in the last thirteen years. It isn't even written in Morse Code.

MYSTERIOUS CABAL.

Charles Duggan had been using a computer service to get updates on the Joan Webster situation. He was able to access wire-service stories written for papers outside the Boston area. In March, he sent me a UPI story about the suitcase being found at the bus station. Just the connection with the word BUS sounded ominous. I got a Geological Survey map of Boston and located the bus terminal by comparison with a Rand McNally street map. There are four benchmarks in central Boston, and one of them, BM 9, is right at the Greyhound terminal. Whatever I had thought of Goldfarb's theory before, it now looked as if there really might be something to it. For one thing, the murderer's behavior was anomalous, and anomaly is a Zodiac hallmark. For another, he had left her effects all over the map. BUS and BM seemed to fit the pattern.

I decided then that it was time to get together with the Websters. I wrote a letter to George Webster, Joan's father, at his ITT business address. I didn't claim to have supernatural powers, and I didn't advance a claim for any reward money. I was also very cautious about claiming to know the answers which he was buming to hear from somebody. I said that I had information about someone living in the Boston area which indicated that he had committed a number of murders in California. He seemed to be the sort of person who could easily have picked Joan up at the airport.

I felt that I ought to let the Websters know what I knew, even though it was tenuous, and then let them make up their own minds as to what, if anything, they wanted to do about it. George called me up to discuss it, saying that he was skeptical. He had been deluged with letters from psychics, water-witches, and what have you. But he was impressed by the modesty of my claims, and he didn't want to leave any stone unturned.

A ZIK went to the Websters, along with the little information that had been turned up by Dan Goldfarb. For some time after that, they acted as very outspoken advocates for a police investigation of Michael O'Hare. They invested some effort in gathering information on their own. On one occasion, they even flew over his summer house in Vermont and made a gorgeous 8 x 10 color photo of it. They sent me a copy. I don't know what I was to make of it. The papers pertaining to the property from the Stratford Town Records, which Walt Caldwell had obtained, were much more useful. They contained handwriting samples.

The Websters both told me that wherever they turned, to Federal, state, or local authorities, all they got was a stonewall treatment whenever they brought up the subject of Michael O'Hare. Joan's mother, Terry, even told me once that when she had mentioned his name to the Harvard campus police, they had suddenly become "paranoid."

Eventually, the Websters and I went our separate ways. They had been persuaded by a local prosecutor named Timothy Banks that someone else was responsible for the murder of their

daughter. His name was Leonard Paradiso. No charges have ever been filed against him in the abduction and murder of Joan Webster.

In July 1982, I drove up to Lake Tahoe. Whit Caldwell had turned up the information at ADL that Mike had been responsible for the planning work on the Boise Cascade condominium project depicted on the Zodiac's post card of 22 March 1971. At the time, the police assumed that Z. was announcing the location of a new murder -- although the card contained no such claim -- and had gone up to Incline, Nevada, to poke around in the snow, looking for a fresh victim. They were wasting their time. I had an idea that there might be more useful information available in the records of the local planning commission.

Prior to 1971, planning in the Tahoe Basin was divided up between several different county agencies on the California and Nevada sides. Big developers like Boise Cascade had an easy time getting what they wanted by playing off one county against another. Standards varied from one jurisdiction to another, and the far-sighted could see that it wouldn't be long before Tahoe was ruined. In 1971, a new planning commission was created by bilateral compact between the two states, with jurisdiction over the whole basin, from the watershed to the lake.

The Boise Cascade project had been under the jurisdiction of the Regional Planning Commission for Reno, Sparks, and Washoe County in 1968-1970. In 1971, some of the pertinent records had been transferred from the Reno RPC to the new Tahoe Regional Planning Agency in South Lake Tahoe. That was where I went first. The paperwork from the transitional period in 1971 had been stuffed into cardboard cartons and put in TRPA's back room. It was still there in the original cartons. There was no system to the papers that had been inherited from Reno and other agencies.

I dug around until I found a folder containing papers pertaining to the Boise Cascade project. The tab on the folder said, "Incline Village Unit 6." Inside, among other things, was an 18 x 24-inch copy of the drawing that Z. had pasted on his postcard. Leafing through the folder, I found a handwritten memorandum concerning the dates on which Boise Cascade's permit application had been dealt with by the RPC.

Boise Cascade had applied for their permit in July 1969. The permit was up for a vote by the commission in mid-October of that year. At that time, it was voted down. It came up again at another RPC meeting in April 1970. It was voted down again. The third time might have been the charm, but wasn't. Boise Cascade tried again (and this time I had a precise date) on 4 November 1970. Their permit application was voted down a third time. And this time, the developer threw in the towel. Reading between the lines in the notes of testimony heard by the RPC in the RPC's records in Reno, my next stop, it appeared that Boise Cascade could not have gotten their permit if they had promised to pave the streets with gold.

When I got home, I compared the chronological facts that I had gained with my Zodiac chronology. The results were very interesting. What has intrigued virtually everyone who has studied the Zodiac problem over the years is the spasmodic nature of Zodiac events. Events might be separated in time by as little as three days or as much as three years. These were three main periods. Riverside lasted from 30 October 1966 to 30 April 1967. The first Bay

TIME LINE, 1968 - 1971

Zodiac events by date

12-31-68

7-4-69
7-25-69
8-1-69

9-22-69
10-11-69
10-14-69

11-10-69

12-30-69

3-15-70

4-28-70
4-28-70

6-25-70

7-22-70

10-6-70
10-27-70

11-16-70
11-17-70

3-15-71
3-22-71

Other events

Boise Cascade applies for building permit,
July 1969

Regional Planning Commission holds first
meeting on Boise Cascade permit application,
mid-October 1969

RPC holds second meeting on BCC permit,
April 1970

RPC takes up BCC permit application
for third time on 4 November 1970

Chronicle publishes Riverside story

Event #1: Z. responds to Riverside story
Event #2: Z. sends Chronicle picture of
Boise Cascade project

Area period began on 20 December 1968 and ended on 22 March 1971 (with the mailing of the Lake Tahoe Card). Then Z. had returned to the literary scene in January 1974, mailing four letters in all that year, the last on 9 July. Even within the mainstream period of 1968-1971, events were very sporadic. The first event was followed by the second after an interval of more than six months. Then it took only three weeks for the third event. That was followed by two months of inactivity, following which came two more murderous attacks, and a letter, in the space of two and a half weeks. Two more events followed in 1969, at intervals of about a month apart. The next event didn't happen until four months after that; it was followed by another at an interval of eight days. And so it went.

What I noticed, in comparing the Unit 6 chronology with the Zodiac chronology, was that in every case but one, the pairs of events separated by the shortest periods of time occurred immediately preceding major administrative events concerning Unit 6. The first such group, covering a span of about three weeks, coincided with Boise Cascade's permit application in July 1969. The second group immediately preceded the first RPC meeting at which the application was rejected. The third coincided with the second RPC meeting in April 1970. The fourth covered a space of just over three weeks preceding the RPC meeting on 4 November 1970, which had killed the Unit 6 project for ever and all time.

Then something very curious happened. Two weeks after that last RPC meeting, the *Chronicle* published Paul Avery's two-part story in which it was revealed for the first time that Z. had murdered Cheri Bates in Riverside. This was a major Zodiac story. It was the first and only instance of good journalism having to do with this case. The Zodiac obviously read his press notices. He sometimes responded to them, often to correct what he considered to be factual errors.

But he did not respond to this most important Zodiac story of all. He continued not to respond for four months, until 15 March 1971, when he sent the *Los Angeles Times* its one and only letter, in which he owned up to the Riverside murder, in a strangely laconic manner: "I do have to give them credit for stumbling across my riverside [sic] activity, but they are only finding the easy ones. There are a hell of a lot more down there." Then, a week later, he sent the *Chronicle* the postcard with the picture of the Boise Cascade project on it. After that, there had been three years of silence.

I don't think that it requires a hyperactive imagination to see that this pattern is quite consistent with the picture of the Zodiac as a controller. His flurries of activity coincided with periods during which Boise Cascade, and its consultant, Arthur D. Little Inc., would have been getting ready for their next appearance in Reno. Note that the last murder occurred at the time of the first RPC meeting. If Z. had an agenda to adhere to, it would have to be complete as of October 1969, since Boise Cascade and its consultant, ADL, would have reasonably expected the permit for Unit 6 to have been issued at that time. The permit having been approved, the ADL engineer responsible for work on the project would have no more reason to travel to California. The RPC's dislike of Boise Cascade and its repeated rejection of BCC's permit application simply prolonged the Zodiac episode for over a year. And after the third RPC meeting in November 1970, the project was dead, and Z. had no reason to return to the Bay Area -- or at least, no company business to justify ADL's paying his airfare and

living expenses.

He had been following his press notices from out of state, and when he read Avery's story about Riverside, he had to return to the Bay Area to respond. He could not very well reply from Massachusetts. The postmark would have brought in the FBI. Worse, it would have demolished his best defense. They would have stopped looking for him in Northern California.

As long as they were wasting their time on that wild goose chase, they would never find him. This time, he could not afford either the time or the living expenses for an extended trip, since it was now coming out of his own pocket. So he stayed just a week, at the end of which he sent them a post card with all the information on it they needed to determine his identity. It was the easiest clue of all; but because it was graphic rather than verbal, they didn't tumble to it. It did not show the location of a new victim's grave; it was a picture of the murderer's handwriting.

My marriage to Mary Ann had never been a source of much joy to either of us. After sixteen years of struggle, we were no closer to being happy together than before we met. I decided to cut my losses and leave. I moved out on 9 September 1982. 9-9 seemed propitious somehow.

Not long after, Mary Ann forwarded some weird postcards. The pictures were nonsensical, and the press on the message side was no less so. Whoever it was signed himself "Cabal," punctuated the text here and there with groups of dots, sometimes triangles and sometimes quincunxes. The card had a New York postmark. Finally, I got a letter from this individual, who said that his name really was Alan Cabal. He wanted to collaborate with me on the Zodiac. Ken Narlow had been quoted in Tom Bates' postscript to the *California* article, and Cabal had just called up Narlow and asked him who "George Gakes" (my pseudonym) really was. Narlow just gave him my real name, address, and phone number.

Cabal was originally from the Bay Area and was living in New York now. He had read the article during a trip to California. He had an urgent personal need to get involved, he said, and he would like to meet me and discuss the matter. He was going to be in the Bay Area about Christmas time. I gave him my new phone number (but not my address) and suggested that he call when he was in town.

In late November, Mary Ann forwarded another letter, from an old friend. He wasn't aware of our separation and had sent the letter to my old address. The letter had been opened, then ressealed. Enclosed was a newspaper clipping from the entertainment section of the *San Jose Mercury News*. The clipping was of a story by Glenn Lovell based on an interview with local entertainment personality Howard Burman. Part of it was devoted to Burman's new movie project, the screenplay about the Zodiac murders titled *12-22*. It had something to do with a Bay Area person who had arrived at an identification of the Zodiac through analysis of the Zodiac letters. The screenplay had been optioned by an independent producer, the story said, and Columbia Pictures might be interested. This statement was not enclosed in quotation marks, and it was not attributed to anyone. Lovell simply stated it as a fact.

That was news to me. I called up Burman, and he told me that his statements to Lowell had been nothing but "hype." I called up Alan Neigher, and he said that he didn't know anything about it. He thought Burman was just shooting his mouth off. He was scheduled to meet with an independent producer named Clapsaddle the following month, but they had not even been any discussions yet, let alone an agreement on anything. Then I called Lowell at the *Mercury-News*. He told me that Burman had told him that Columbia had optioned the screenplay. Afterward, he had called Columbia to confirm the facts. Columbia told Lowell that they had did not know Howard Burman from a hole in the ground. (At that point, I had to confess that there was a resemblance.) Lowell called Burman back and confronted him with his lie. Burman told Lowell that he must have misunderstood what he had said. He had meant to say that an independent producer had optioned the screenplay and that Columbia might be interested.

Obviously, there was no way that Columbia Pictures could possibly be interested in a screenplay whose existence was unknown to them, written by an author of whom they had never heard. And Burman had no way of knowing whether they "might" be interested in it or not. Lowell had already caught Burman in one fib, but he did nothing to ascertain the truth of the second version. He should have asked Burman for the name of the independent producer. He didn't. Then he printed this assertion as if it were a fact in black and white in his newspaper.

I called Lowell back and pointed out to him that I was just getting involved in a divorce. A story like that was the last thing I needed, particularly because it was a falsehood. He said it appeared to him that I had a personal problem, and that was none of his concern. I said that while I might have a personal problem from this story, he had an ethical one, and that of the two, I preferred having the personal problem, because at least I could sleep better at night. He refused to print a correction.

I wrote a letter to the city editor of the *Mercury-News*, pointing out that the information was false. I ought to know. I had a 14 percent share in the proceeds of sale of the screenplay, and I could assure him that it had been optioned by no one. I asked that they print a correction. They never printed it. What I got instead was an angry telephone call from Glenn Lowell, who accused me of trying to make him look bad with his city editor. The purpose of newspapers in our culture is not to serve as tributes of the people. Woodward & Bernstein to the contrary notwithstanding. Their mission is rather to look out for the interests of their own employees, no matter what harm that might cause others.

Not long after that, I received a summons to an OSC ("order to show cause") hearing on child and spousal support. I had never earned as much as Mary Ann did, and at the time, while she enjoyed a good-size paycheck, I was without a source of income. In fact, I was living on food stamps and cash advances from a credit card. It was the beginning of what was going to turn into a nightmare of litigation, which lasted for two and a half years and cost the two parties something just this side of \$20,000 in legal fees, not to mention lost sleep and other aggravations. It produced no lasting benefit to either side, just more bills. And what fueled this mechanized meat grinder of a divorce case was the delusion that I had made off with millions in movie money. It was the same madness that had infected Dan Goldfarb. The word "Hollywood" just conjures up a chorus of cash registers in some people's mental ears.

In October 1982, I received a copy of Howard's screenplay. I suppose "dismayed" would be a mild way of putting my reaction to it. He had sold me on this project with a representation that he was going to do something serious with the subject matter. What he came up with, among other things, was a car chase borrowed right out of *The Dukes of Hazzard*. A month after Lovell's erroneous story was published, Howard met for the first time with his independent producer, Joseph Clapsaddle, whose only memorable credit was *Come Back to the Five and Dime, Jimmy Dean, Jimmy Dean*. Clapsaddle signed an option agreement with Zodiac Associates Inc. (Alan, Howard, and me) the following May. He was \$200 short on the first option payment, and when the second installment was due six months later, he said that he was going to have to form a consortium to raise the money. That just goes to show you how they do things in Hollywood. Most people, faced with the need to come up with \$1500, would get a cash advance on their credit cards. Hollywood producers have to form consortiums. Needless to say, the big deal that Lovell had said was already consummated in November 1982, and which was actually concluded in May 1983, collapsed like a house of cards in November 1983.

In early January of that year, I got my phone call from Alan Cabal. I wasn't sure, from the postcards that he had sent, that I wanted to invite him into my home. I suggested instead that we meet on neutral ground, and I suggested the Hyatt Regency in San Francisco. We could go up to the revolving rooftop bar and talk over a couple of drinks. He said that he would be accompanied by his wife. I said that I would be accompanied by Diana Marill, with whom I was now living. She can't be missed because of her long red hair. I suggested meeting in front of the elevator bank at seven o'clock.

When we got to the Hyatt Regency, I asked Diana to hang back while I scouted the lay of the land. I went on ahead and spotted a group of three people standing in front of the elevators. One of them was a middle-aged man in a business suit. Another was a young woman who looked attractive and was nicely dressed. The third was a young man wearing a kind of Robin Hood hat with a long feather stuck in it, a baggy safari shirt with a poncho over it made out of an old blanket which had been brightly embroidered and seeped, and a pair of black leather Errol Flynn hip-waders. He looked as if he were trying out either for *Let's Make a Deal* or a part in a Flash Gordon serial.

These three were the only people standing in front of the elevators at the appointed time. I walked past them without giving any sign of recognition, so that I could eavesdrop on their conversation. As I did, I overheard the young man in the peculiar attire tell the middle-aged man in the very straight business suit that Captain Norlow had not been returning his calls for over a week now, and he was getting suspicious. This was definitely Alan Cabal. But I didn't like his get-up, and I didn't like having this third character, the one in the business suit, ring in on me at the last minute.

I was deliberating with myself about what to do when all three of them, like St. Nicholas, got into an empty elevator and shot up to the roof. I went back to Diana to bring her up to date. We waited in the lobby for another half-hour to see if anybody would come back down to look for us. Nobody did, so we were back home.

The next day, Alan Cabal called me up. He wanted to know why I had broken our appointment. I said that I hadn't and told him what I had observed. He said that he had been approached by the man in the business suit and that he, Cabal, had thought that he was me. I asked him how he had dealt with the absence of the promised redhead, and he said that he thought that I (meaning the man in the business suit) had been pulling his leg.

As it turned out, the man in the business suit was a homosexual from out of town who had been cruising the lobby of the Hyatt Regency, looking for a date. He had seen Cabal, thought he was advertising, and tried to pick him up. Being broad-minded, as Norther Californiaans are, he had not been put off by the fact that his intended date was accompanied by a woman. It had taken two and a half hours of verbal fencing up in the bar before the gay man had figured out that Cabal was straight and didn't want to be picked up. It had taken Cabal the same amount of time to figure out that the other man was not Gareth Penn.

Cabal wrote to me later to suggest a second meeting. I was rather annoyed and responded unkindly, perhaps. I do remember using the expression "space cadet" in my letter. He wrote back to say that he was hurt and felt that I had wronged him. Perhaps I had been too harsh with him. I called him up at his Bay Area number and talked with him for a while. In response to his queries, I named Michael O'Hare and gave his current whereabouts, i.e. teaching public policy at the Kennedy School of Government at Harvard. I gave him Mike's full name, including the middle name "Henry." He sounded mollified.

In the spring of 1983, Steve Shiffman was in Boston. Besides functioning as California's defamation attorney, he was a professor at UCLA Law School. He had taken a sabbatical from UCLA to teach for a year at Boston University. One night, he called me in San Rafael to tell me very excitedly that he was sure that he had seen Michael O'Hare in a local bar. I didn't ask him what he had been drinking. I never heard from him again.

By this time, I had published several articles on the Zodiac in *The Explorer*. The Beck's editor, John Canning, invited me to give a talk on the same subject at the San Francisco Regional Mensa gathering in Santa Rosa over the Mother's Day weekend of 1983. I said that I would be only too happy to accept. I suggested the title "Times 17" for the blurb in the program. I took my graphic exhibits to a copy shop that had a machine that made transparencies for use with overhead projectors.

"Times 17" was moderately well attended. I counted about forty people in the audience. One of them was a non-Mensan named Ed Woodmanson. Woodmanson was a retired policeman who taught police science at Sacramento City College. He had read the California article and was quite excited by it. He had been trying to get across the idea to his students that there were non-conventional means of criminal investigation, and he felt that this was a particularly good example. He had wanted me to come up to Sacramento and lecture his class, but since I now had a full-time job, I couldn't get away on weekdays.

I suggested that Woodmanson come to the presentation in Santa Rosa instead. Woodmanson had had the same problem in contacting me that Cabal had had. He solved it the same way, by calling up Narlow and asking him for my phone number. This time, Narlow told

him that it was against department policy to give out phone numbers like that. Instead, Narlow called Mary Ann and left a message for me to call him. When I did, he gave me Woodmansee's Sacramento telephone number. I couldn't figure it out. When some unknown private person like Cahal calls him up, Narlow discloses freely what he tells a comrade-in-arm like Woodmansee is confidential.

"Times 17" was scheduled to take one hour. By the end of the appointed period, I told my audience that I had lots of material left and that I had not gotten to it because of disorganization on my part. Would they be willing to suffer through another hour of it? Dinner was another hour and a half down the road, and nothing else was scheduled for the the following hour in any case. I got a very enthusiastic demand for more. I didn't pull any punches. I named Michael O'Hare as the Zodiac, and I used a lot of literary evidence to prove it. I backed that up with the connection to the Rose Cascade project at Taftoc. I showed them a slide of the *Progressive Architecture* photo. I got the impression that it was a hit. I also got a very gratifying reaction to a part of the presentation which I had drilled myself into presenting in a very theatrical manner, milking the most out of the power of suspense.

The rules had not been clear in Riverside. The Zodiac left quite a bit of self-identification behind, but he had not given the authorities any clues as to how to use it, as he had with the hint about the radian on Mount Diablo. If, for instance, they had had the idea of reading the brand name on the watch, TIMES, in Morse Code (and there was no reason why they should have had that idea), they would have seen that it spells 617, the Area Code of Boston and environs.

If they counted up the letters in "The Confession," they would have found that there were 1622, which, written in binary, spells MIKE-O-(11 00 101 0 111) in Morse Code. If, supposing that they had had any reason to see either of these things, they had then screened the Boston area for people with the given name Michael and a surname beginning with the initial O, they would have come up with a fairly good-size list of suspects. There are a lot of people of Irish ancestry in Boston. The information would have been helpful, but not conclusive.

There is one means of expressing one's identity in number which is both definitive and unique, and one which can be applied to the choice of murderer itself. The longitude 117° 32' 21.28" denotes a meridian which passes through the western part of the city of Riverside, California. Decimalized as 117.322128°, this same sequence of numbers denotes a meridian found passing through the eastern part of Riverside. That same sequence of numbers, written 117-32-2128, is Michael O'Hare's Social Security number. I have never had any theatrical shivvies. But the audible gasp which that elicited from my audience, coming from forty throats simultaneously convulsed by horror, gave me what I think must be the same degree of satisfaction that professional actors get from a lifetime of reading the boards. Aristotle says that tragedy is supposed to evoke fear and pity in the onlooker. At that moment, I knew that I had the fear down cold. I might still have to work on the pity.

A few months later, Laurie Pallaracis, who had been present, met me at another Mensa gathering in Pacific Grove. She told me that she had walked into "Times 17" thinking, from the claims advanced in the program, that I was just another fruitcake. She had come out con-

vinced, she said. But there was one person present who seemed to take umbrage at what I had to say. To this day, I don't remember his name. He asked me if Mr. O'Hare was aware of the fact that I was going around identifying him as a mass murderer. I replied that Mr. O'Hare had a general idea about what I was doing, but he might not be too pleased by the specifics. I suggested that he might feel that he ought to do something about it, and what that might be was between him and his conscience. He left me with the impression that the first order of business, after dinner, was a phone call or letter to Michael O'Hare.

The reception that I got in Santa Rosa had restored my sagging spirits. I had been in this for two and a half years without seeing any concrete results. I felt as if I had just gotten a big pat on the back from people whose opinion of me mattered. One thing that I had brought up in the presentation was a hypothetical redivision of the expression GENERBERTA. Here it is, in Morse Code: 11001000000010101. Here's my redivision: 1000-100-100-00-01-0101. If you read the second group, 100, as crossed circle, i.e., as a substitute for the letter O, and considering the fact that 0101 is not an American Morse letter — but that it is the mirror-image of the letter C (1010), you have what may be the source of the pseudonym ZODIAC. I had done an exhaustive redivision of GENERBERTA on the theory that one or another possibility would show up in the Zodiac literature. All that you can make out of GENERBERTA that even remotely resembles English is MELTS INK (or MELT SINK) and MIXES ART. There was a bit of rule-bending involved, but I suspected that GENERBERTA was the origin of the Zodiac murderer's most frequently used *non de plume*.

I had a bundle of postcards of paintings by the conceptual artist Christo, whose best known project was Running Fence, executed in the Bay Area in 1976. One of the postcards that I had showed a painting of the projected work, Surrounded Islands, which was just going up in Biscayne Bay in Miami. By coincidence, my supervisor at work, Andrew Parker, was soon going to be in Miami on business. I typed GENERBERTA on a Surrounded Islands card in Morse Code, redivided it as ZODIAC, bending the rules as suggested above, franked it with two 17-cent stamps (to imply the phrase, TIMES 17), addressed it to Michael O'Hare, and gave it to Andrew to drop in Miami. It was mailed on 28 May 1983.

On 15 June 1983, Diane and I were just sitting down to dinner when the phone rang. I got up and picked up the handset. There was a click and a dial tone. I hung up and sat down again. The phone rang again. The same thing happened. I stood there, waiting to see if it would ring again. It did. In all, we got six one-ring hangup telephone calls in the space of a minute and a half, beginning at exactly 6:15 p.m. The date was 6-15, the time was 6:15. "Ring" is a synonym for "circle." The alphabetic quantity of the letter O (another circle-paraphrase) is 15. Six rings at 6:15 on 6-15. Six = ME. He was doing the same thing three different ways.

It was a typical Zodiac sentence: ME CIRCLE. Two days later, we got two rings at 10:23 p.m. The date was 6-17. 617, besides spelling TIMEX in Morse Code, is the Area Code for Boston. 1023 is binary 11111111, Morse 11111-11111, zero zero. Zero zero is two rings. Two rings is Morse letter I (00). Mike and I were back in contact, after almost two years. This time, our correspondence would go on with hardly a break for more than two years.

GENEBERTA

111 0 10 0 1000 0 010 1 00

1000 100 100 00 00 0000

Z Ø D I A C

KEDIVISION OF "GENE BERTA" INTO "ZODIAC"
PARENTS' NAMES AND PSEUDONYMS

THE RADIAN CIPHERS

In late June 1970, the Zodiac sent the *Chronicle* the Mount Diablo Letter. This letter contained a new cipher, of 32 characters. The author claimed that this cipher, in conjunction with the enclosed map, gave the location of a hidden bomb. The map in question was a Phillips 66 road map showing Contra Costa County. Z. had annotated the map by drawing a clock face centered on Mount Diablo. The letter was not published for sixteen years; I did not get a look at it until April 1986, when it appeared in Bob Graysmith's book, *Zodiac*.

It was this letter in which the Zodiac suggested the radian cipher. On the second page of the letter, which is still unpublished as of now, he said that the police would find "something interesting" if they placed a ruler on Mount Diablo. He said that to find the "buried bomb" it was necessary to go "four inches along the radian." Furthermore, they would have to "turn the magnetic indicator" on Mount Diablo to north. I will come back to these points in a later chapter. I would like to concentrate here on the cipher.

The following month, July 1970, Z. sent another letter to the *Chronicle*, which he concluded with a postscript:

PS: The Mount Diablo Code concerns radians & # inches along the
radius.

Now, when he had sent the cryptogram, claiming that its solution would reveal his identity, there was nothing against which to compare the contents. You couldn't just go to an encyclopedia and look up "Zodiac, Identity of." In this case, there is an explicit statement about the contents of the cipher, and the claimed contents are such that they can be looked up. All that was necessary was for the police, the *Chronicle*, the FBI, for anyone who had access to the information I have just cited, to consult a book of mathematical tables to determine the numerical value of the radian. I went to the tables in the *Handbook of Chemistry and Physics*, but any set of tables would have done just as well. The radian-value is decimalized as 3.2997795131...¹.

The fraction of the radian-value begins with 29. A very superficial examination of the 32-Character Cipher would have revealed that the crossed circle, which appears here once, is Character #29. This observation might have been instructive, had anyone taken the trouble to make it -- which no one did between 1970 and 1986. It would certainly have provided some insight into what the author was up to.

There is another clue contained in the postscript to the July letter. Note that Z. uses two nonalphabetic symbols in that postscript, & and #. On a typewriter keyboard, & is upper-case T, and # is upper-case 3. If Morse Code values are applied to the Roman letters in the 32-Character Cipher and to them alone, the resulting digital text is made up of 73 characters,

There are more hints about how to read the text. The first cipher symbol is C. It occurs again as Character #26. 1-26 is the range of the Roman alphabet. The second cipher symbol is triangle. It appears three times, once as Character #2, again as Character #12, and the third time as Character #32. 2, 12, 32 is a numerical series of the sort that you find on intelligence tests. There is a logical principle binding the members of the series, from which one number has been omitted. Using that logical principle, the person being tested is supposed to deduce the identity of the missing number. In this case, the missing number is 22.

Now, turning to Character #22, we find it given by V, which happens to be -- I think not coincidentally -- the 22nd letter of the Roman alphabet. The stress appears to be on Roman letters, which is not surprising in an author who relies so heavily on Morse Code. There are no Morse groups to express triangles, squares, and circles, let alone Character #8, which resembles an inverted ambrella. This sign occurs in only one other cipher, the 13-Character Cipher of April 1930 (Bee Bomb Letter). There is also a Greek letter here, Character #13, which is omega, the 24th and last letter of the Greek alphabet (upper-case Ω). This is the only time that this symbol is used in any Zodiac cipher.

The Roman letters appear in this order:

CROKAMPORTGXFDVJHCELPW

I pointed out above that the crossed circle is Character #29, and that 29 is the beginning of the radian-fraction. The three symbols immediately preceding crossed-circle are Roman letters CEL. Morse 1010 0 0100. I think that it makes sense to redivide this sequence as 10 10 00 10 0, or "2 NINE." Once again, the Zodiac has found a means to express the same thing two different ways. He gives "29" as a cipher symbol and as a Morse digital spelling.

The 18 Roman letters preceding CEL, CROKAMPORTGXFDVJH, are Morse 1010 0111 00 111 101 01 11 0010 111 010 1 110 1001 0010 100 0001 0111 0000. Please note that they are written in 57 digits. So we have a field of 57 digits followed by "29" written two different ways. It would be appropriate for the author to find another way of writing 57. And so he does. Near the beginning of this 57-digit passage, we find a sequence of 26 digits, nearly half of the total, which I redivide as follows:

111001 111010 1110010 1110101

The first group, 111001, is binary 57. The second, 111010, is 58. 57 and 58 are the integers which bound the value of the radian, which is larger than 57 but smaller than 58*. The third group, 1110010, is binary 114, or the double of 57. The fourth group is 117, or the double of 58 plus one. I think that it would make things clearer to express 114 as (57 x 2) + 0 and 117 as (58 x 2) + 1. If you look at the base-two writings above, you can see that 114 is just 57 with a zero-suffix, and 117 is 58 with a one-suffix.

I have already suggested that the Zodiac uses "117" as a numerical reference to Riverside. And I suggest that in this particular case, "117" is a "buried bomb." He says in the letter that

a hidden bomb will be found using the contents of the cipher and the enclosed map. What the (Phillips 66) map has to contribute is the number 66, which is the calendar year in which the Riverside murder was committed. "117" gives the location of this "bomb" in space; "66" gives its location in time. I submit that "bomb" in this context is a figure of speech akin to the word "bombshell," which my dictionary defines as "something which startles, amazes, or upsets." It is not an infernal device at all. It is shocking news. As of the postmark on the Mount Diablo Letter, five months were to elapse before the Zodiac's authorship of the Riverside murder was revealed.

There are other buried bombs here. One of them is the radius itself. The police did their level best to keep the public from learning the contents of this letter. Had it been known in 1970 that the Zodiac had marked the cab driver solely for the purpose of constituting a radius on the map, the Bay Area would have been in a state of shock. I believe that the Zodiac would also have been behind bars in fairly short order. But that is water over the dam now.

A third buried bomb is the number 114. 114 is not only the product of 57 and two; it is also the product of 38 x 3. Remember that Morse THREE is a digital synonym of BUB. 117 refers back in time, to an unknown crime committed in the past. I won't go into it in detail here, but "114" refers forward in time to an unknown crime as yet uncommitted. I will come back to that point in the next chapter.

The fourth buried bomb is the author's name. The last two Roman letters are PW. They immediately follow the crossed circle, a Zodiac signature. In the cryptogram, Z uses no fewer than seven cipher symbols to represent the letter E. This made the solution rather difficult, since E is the cryptographer's usual entry-point into English-language substitution ciphers. The seven symbols, in order of appearance, are 2PW=ONE. The last four make sense in light of what we know about Riverside. There was one male victim that had been accounted for in 1968. "Plus 1" is, I suggest, the sensible way to read this. The first three letters, 2PW, form a sentence, where Z is the subject, and PW is the predicate: "Z (is) PW."

This sentence is essentially the same thing that we find in the 32-Character Cipher. I pointed out before that the Confession Letter, the Zodiac's very first missive, is written in a total of 1623 letters, and that 1623 is the Morse-to-binary spelling of the expression MIKE O. By alphabetic quantities, P = 16, W = 23. "PW" is just another way of writing the author's name. Please note that in the 32-Character Cipher, "PW" is found where one would expect to find a signature, at the end. My reading of this cipher is that it is divided into four parts. The first part is what you might call the integer-line. The second is a parents-line. The third is a fraction-line. And the fourth is the author's signature. Here they are in digital form:

This is the Zodiac speaking

I have become very upset with the people of San Fran Bay Area. They have not complied with my wishes for them to wear some nice ♀ buttons. I promised to punish them if they did not comply, by annihilating a full School Bus. Bay now school is out for the summer, so I punished them in another way. I shot a man sitting in a parked car with a .38.



1FPD-O

The Map coupled with this code will tell you where the bomb is set. You have until next Fall to dig it up. ♀

C Δ J I ■ O X L A M T A N O R T G
X O F D V T □ H C E L * P W A

ZPW

ΔΩP/Z/UBΩKORΛXΛB
ILIKΕKILLINGPEOPL
WV+3GYFΩΔΗΡΩΚΛΩYΕ
ΕΒΕCAUSEITISSOMUC
MJYΛUΙKΑΩΤΙΝQYD●○
HFUNITISMOREFUNTH
SΦ/ΔΩBPORAUΩRΛΩΕ
ANKILLINGWILDGAME
KALMΖJRDΛFHVΛEAY
INTHEFORRESTBECAU
ΩΩGDAΚΙΩΩΩX▲●ΦSΦ
SEMANISTHEMOSTDAN

The letter E is given here by the cipher symbol ΖΨΩ+ONE appearing in that order four times. This appears to be a cryptic statement within a cryptic statement relating to Karpis, about which the author had as yet said nothing overtly. "Plus one" would signify an additional murder victim, i.e. Charie Jo Bates. ZPW is a typical Zodiac two-part sentence, "Z TO PW". In the 53-character cipher of a year later, the symbol sequence "PW" appears at the end, where one would expect to find a signature. P = 16, W = 23. The unsigned Confession Letter, in which Z claims the authorship of the Bates murder, is composed in 1623 letters. Binary 1623 reduces to 11 00 101 0 111. Name MIKE O. Note also the first crossed circle for the P of DANGERTUE. Character #100.

INTEGER-LINE

10000 111001 111000 1110000 1110001 1101000 (38 digits)
 20 57 58 114 117 105

PARENTS-LINE

001 + 1000 0 010 111 0000 (19 digits [58/2], running total = 57)
 (UE BER OH)

FRACTION-LINE

10 10 00 10 0
 (2 NINE)

SIGNATURE

P W (= 1623, MIKE O)

The first line is written in 38 digits. The second line is half that, or 19. Marking the boundary between the first and second lines is the dotted circle, Character #19. The sum of 28 and 19 is 57. The sequence 57, 58, 114, 117 takes a total of 26 digits. It was necessary to add twelve to fill out the line to its intended length of 38. The first group is 10100, the last group 1101001. Taking these two groups as a unit, within which 57, 58, etc., is enclosed, we have 10100-1101001. The first six digits are the same as the last six. They redivide sensibly into 10 0001 11 1001, binary 2, 9, 2, 9. And this twelve-digit sequence has been divided up by the author into groups of five and seven digits. Remember that the value of the radix is 57.29%. The expression is thematically appropriate. The use of thematically appropriate filler material is another consistent stylistic trait of the Zodiac. Most of the 340-Character Cipher is just such filler material.

The second line here begins with the two-letter code for Eugene, UE. It is followed by BER (binary 130), the commonplace shorthand for BERTA. The line ends with OH, a commonly-used abbreviation for the family name O'HARE. That completes the field of 57 digits. I have already discussed the contents of the fraction- and signature-lines. A few remarks about the remaining non-alphabetic symbols would be in order.

The non-alphabetic symbols are used in this cipher as punctuation marks in some cases and as signposts in others. The role of the triangles has already been mentioned, as has that of the dotted circle and the crossed circle. Non-alphabetic symbols also mark characters 5 and 8 (as in 58, the two-digit shorthand for O'HARE). When the cipher-characters are arranged in the fashion outlined above, i.e. divided into four lines, the first square lines up directly over the second square. I believe that this effect is intended to underscore the suggested organization into four lines as correct.

That leaves Characters #88, the inverted umbrella, and 13, Greek letter omega (Ω). I will suggest a particular significance for #88 in connection with the 13-Character Cipher, which follows in this chapter. I will save omega for a later chapter.

At all events, the 30-Character Cipher does indeed concern the radix, as the author claims in

THE 32-CHARACTER CIPHER

CAJIB■OKJLAMF▲NORTG
X○FDVT□HCEL♦PWA

CAJIB■OKJLAMF▲NORTGX○

Morse letters (38 digits)

1010 0111 00 111 101 01 11 0010 111 010 1 111 1001

Redivision

1010	110011 57	111010 58	1110010 114	1110101 117	1101001
	Radian value 57.29, . . .		57 x 2 28 x 3	Boston episode	Riverside episode

10100, . 1101001 = 10 0001 10 1001
binary 2 9 2 9, divided into groups of 5 and 7 digits
1 radian = 57.29, . . degrees

FDVT□H

Morse letters (19 digits; running total = 57)

0010 100 0001 0111 0000

Redivision

001 0 1000 0 010 111 0000
U E B E R O H

UE = Uppercase
BER = Berta
OH = O'Hare

CEL○

Morse letters

1010 0 0100

Redivision

10 10 00 10 0
2 N I N E

P W A

P = 16, W = 23

1623 = 11001010111

Redivision

11 00 101 0 111
M I K E O

NONALPHABETIC SYMBOLS AS PUNCTUATION

CAJI ■ OXJLAMF▲NORTGX○
FDVT ■ H
CEL○
PWA

Nonalphabetic symbol
#19 marks the end of
Line containing 28
More characters (18 + 28/2)



Characters #42, 12, 32 constitute a missing-number puzzle, in which the missing number is 22. Character #12 = Roman letter V, letter #32



Characters #86 and 24 confirm that Line 1 ends after Character #19



Character #8 appears only in this cipher and the 13-Character Cipher, both of which give the radian value. J = inverted lower-case letter R, standing for "radian." (R = #16)



Character #13 Greek letter omega, synonymous with "the last," relates graphically to invisible-geometry rendition of Boston Triangle, signifying finality



Character #19 punctuates end of Line 1



Character #29, Zodiac signature, appears following digital "2 NINE"

his postscript to the July 1970 letter. And the match between claim and contents is made by use of Morse Code as an analytical tool. I suggest that the purpose of the 32-Character Cipher is to serve as a kind of Rosetta Stone which will enable future scholars to make an entry into the Zodiac letters the same way that Champollion made his entry into ancient Egyptian. The Zodiac wants his letters read. He wants to be identified. But it appears that he wants this identification to follow submission of the letters by a comfortable interval of time, perhaps decades. That way, he can separate the credit for his accomplishments, which he craves, from the consequences, which he would rather avoid. He has, in effect, created a time capsule which he could be fairly confident the police would keep from the view of people who might have the skill to open it while being incapable of dealing with it themselves.

Two months before the Mount Diablo Letter, Z. sent the *Chronicle* a two-page letter, the second page of which is an elaborate diagram of his new bus bomb. For this reason, I refer to this letter as the Bus Bomb Letter. On the first page of the Bus Bomb Letter, Z. presents a new cipher of 13 characters, which he claims expresses his name. As usual, I assume that he is being truthful when he makes this claim. And as usual, I look to a digital analysis to reveal the truth. This little cipher is written in three types of characters: block letters, circles, and the singular upside-down umbrella, which also occurs once in the 32-Character Cipher. In fact, these two ciphers are the only documents in which it occurs. It is not found either in the cryptogram or the 340-Character Cipher.

First, let's look at the structure of this cipher to see if there are any superficial clues to its contents, just as we did with the 32-Character Cipher. It is made up of alphabetic symbols and non-alphabetic symbols. Set the first category equal to A, the rest to X, and you have the following sequence: AAAAXXAXAXAAA. It's a palindrome, something which can be read backwards as well as forwards to achieve the same result. (A well-known palindrome is the Napoleonic pseudo-quotation, "Abba was I and I was Baba".) If this is a hint about the nature of this cipher, then we ought to find the same contents in it when it is read backwards as well as when it is read forwards. Unless the contents are also palindromic, however, then we will have to apply two different methods of analysis in order to get this result.

Let's try the same method that we just tried on the 32-Character Cipher, i.e. applying Morse Code values to all Roman letters and ignoring the non-alphabetic symbols. The letters are AEKNMNAM. In Morse Code, they spell 01 0 10 101 11 10 00 11. I would like to re-divide that string as follows: 0010 01111 100111. The last group is binary 57, written in mirror-image order. The second group is binary 29, also written in reverse order, digit for digit. The first group, 0100, is Morse telegrapher's shorthand for "end of message." Note that it occurs at the beginning. In other words, analysis along the same lines as the 32-Character Cipher produces the same result, 57 followed by 29 (followed by "the end") -- in reverse order. This should not be surprising in a palindrome; the question now is whether or not we can find a way to get the same result by reading it forward.

The next approach that I tried was to assign the digit 1 to all block letters and 0 to all circles. That left Character #10, the upside-down umbrella, which is neither a block letter nor a circle. If this approach is going to work, then we have to find a digital value for that symbol which is neither one nor a zero. We have one of two possibilities. Either that symbol is a hybrid con-

This is the Zodiac speaking
By the way have you cracked
the last cipher I sent you?
My name is —

A E N * @ K @ M @ L N A M



I am mildly curious as to how
much money you have on my
head now. I hope you do not
think that I was the one
who wiped out that blue
meannie with a bomb at the
cop station. Even though I talked
about killing school children with
one. I'd just wouldn't do to
move in on someone else territory.
But there is more glory in killing
a cop than a kid because a cop
can shoot back. I have killed
ten people so date. It would
have been a lot more except
that my bar bomb was a dud.
I was swamped out by the
rain we had a while back.

sisting of ones and zeros, or else it has no value at all. I will try both assumptions here.

Character #10 is found in two ciphers and two ciphers only. I have already demonstrated that both of them give the value of the radian ($57.29\ldots$). That is what both ciphers have in common, in addition to containing this singular symbol. I suggest that it is nothing more nor less than the letter R, standing for "Radian," written both lower-case and inverted in order to distinguish it from the other (block) letters. If that is the case, then the logical choice for a hybrid value would be Morse R, digital 000. Now let's substitute our digital values, 1 for block letters, 0 for circles, and 010 for Character #10. That gives us this rather distinctive number: 111001.010010111. The underlined part is Character #10. I have added a binary point to set off the integer 37 from the fraction of the radian, which is carried out here to nine places. 0.2997785131... to the base ten is binary 0.010010111... Since this number is written in 15 digits, the probability of coincidence having made it turn out this way is one in two to the fifteenth power, or 1/32,768. That seems to make this reading statistically sound.

Now let's try the other alternative, reading Character #10 as nothing. I will give it with dash 111001010-111. Z claims that this cipher reveals his name, and I believe that it does indeed. Here's my suggested revision: 11 100 101 0 - 111. The second group, 100, can be read as a crossed circle. This reading is supported by the fact that the first circle of this 100 is a crossed circle, just as the first of the next three-digit group (101) is Roman K; 101 is Morse letter K. Our author is trying to do three things at once with this cipher. It gives the value of the radian when read forwards, it gives the same thing when read backwards, and it gives his name, or so he claims. Somewhere along the line, he has had to bend the rules in order to make this composition so versatile.

The Zodiac uses the crossed circle as a signature. I use the name "Gareth" as a signature. It appears at the end of every personal letter that I write. But in the body of every one of those letters, as well as in everyday speech, I refer to myself as "I," first person singular pronoun. If the statement "I am Gareth" is correct, then there is an equivalence between "Gareth" and "I." I may substitute one for the other. If you ask me who I am, the answer "I" is just as correct as the answer "Gareth." I suggest that the Zodiac is using here the equivalence between the crossed-circle signature and the same pronoun in order to fulfill his pledge of writing his name in this cipher. By substituting letter I for crossed circle (100), the above digital sequence reads, in Morse Code, MIKE O. It's the Riverside signature, which also appears as "PW" in the 32-Character Cipher.

Near the foot of the first page of the Bay Bomb Letter, the Zodiac states that he was "swamped out" by recent rainfall. I would like to note in passing that BY RAIN is an acronym for BINARY, but that is a minor point. The police expended some effort back in 1970 to identify basement-dwellers in the Bay Area. Basements are few and far between in California, since almost all houses in the Golden State are constructed on concrete slabs or over crawl spaces. They thought it was a very helpful clue. Once again, they might have found it instructive to consult a dictionary.

"Swamped out" does not mean "inundated." Swamping out is what you do to a cluttered office or a weed-infested back yard. It means "cleaning up," not "flooding." Again, erroneous or in-

THE 13-CHARACTER CIPHER

MORSE VALUES FOR LETTERS, NOTHING FOR OTHERS

A E N + * K @ M @ J N A M Code cipher

01 0 10 101 11 10 0111 Morse letters

1110 01 11 101 01 010 Morse signs

111001 11101 01010 Redundancy

57

29

THE END

Binary numbers.
Morse coded

1 FOR LETTERS, 0 FOR CIRCLES, #10 FOR SYMBOL #10

A E N + * K @ M @ J N A M

1 1 1 0 0 1 0 1 0 010 1 1 1

111001 . 010010111

57.29...

SMART RADIAN VALUE

BASIC TEN RADIAN VALUE

J
T
F

010

1 FOR LETTERS, 0 FOR CIRCLES, NOTHING FOR SYMBOL #10

A E N + * K @ M @ J N A M

1 1 1 0 0 1 0 1 0 - 1 1 1

11 100 101 0 - 1 1 1

M + * K E O

REDUNDANCY

MORSE LETTERS

*
#10
I

appropriate use of language is used here to mark a formulation as significant and worthy of analysis. Here's a digital revision of SWAMPEDOUT that makes this point, I believe, quite clear:

0	00	0100	11001	100	10	0	111001	1
a2	I	P	29	D	N	E	53	-

Again, we have all the components of the radius-value. This time, they appear in reverse order unit by unit, not digit by digit. The T (1) has been added on just to make the expression look like English rather than Zodiacese. The zero following PI is a two-multiplier (there are 2π radians to the circle). And the concept END is found connected with the fraction of the radius. I will discuss that at greater length in a later chapter, but for now, I would like to suggest the origin of this connection. We are going to find, in several other places, that the expression "29" in Zodiacese means the same thing as "the end."

The path that Z. takes to get from one to the other is, I submit, the kind of semantic transformation that Lewis Carroll called a "Vortex," that is, a series of linked steps. Remember that Morse NINE is binary 10, and that 10 and the number nine are interchangeable in Zodiacese.

TWENTY NINE

20	68				
2088					
100000010000					
1000000 0 10 100					
T	H	E	E	N	D

English words, word to number, fusion of numbers, base-ten number to base-two number, base-two number to Morse Code, Morse Code to English words. There is nothing left to say except to end this chapter with

MIKE WEST

When I moved in with Diane, I did not get her telephone number listed to my name. I don't think it was so much paranoia as it was inertia that kept me from doing it. To this day, in fact, I don't have a telephone listing, although my number is listed. The reason that I mention this is that as of June 1983, there was no way for anyone to get my telephone number, except by referral from Mary Ann, whom I asked about it. In fact, in keeping with the litigiousness surrounding *Pew v. Pew*, she was deposed in the fall of that year, and she testified, under penalty of perjury, that she had not given out my telephone number to anyone.

The number was listed to my name in only one place: the Mensa roster. My mystery caller was either someone I knew from elsewhere, a Mensan, or someone who had gotten his information from a Mensan. After a while, I had to rule out Mensans, because I thought the calls received betrayed too much sophistication, too much dedication, and too much knowledge of the Zodiac literature. Finally, I received absolute confirmation of what I suspected, that they originated with Michael O'Hare. I believe that the Mensan who challenged me at Santa Rosa contacted him and passed along my phone number.

The calls that came in June did not relate specifically to the Miami Card. I had been hoping for a confirmation of the ZIMMIEC-redivision, but as far as I know it was not forthcoming. In early July, I had an enlargement of the Progressive Architecture photo dropped in New York in July 1983. I drew red circles around the shadow-extensions, to show that they had been noted, and a red arc in the apex of the shadow-angle (117°), to show that it had been measured.

The photograph referred to Riverside and had appeared in print just four months after the murder in that city. In the Confession Letter, the Zodiac had created a document of 1623 letters, 1623 being the Morse-to-binary writing of MIKE O. He had picked Riverside as the site because it was near the 117th Meridian. The envelope in which this mailing was enclosed had a return address reading "1623 West 117th Street, New York, NY 10017." Anyone who was accustomed to Zodiacese could be expected to read the first line as "MIKE O WEST, . . ." This mailing, too, drew no obvious response. What I was looking for was a response which was specific to a particular stimulus, and within a reasonable period of time. Otherwise, while we might be communicating with one another, this communication was taking place on two one-way streets.

As time went by, the level of sophistication rose. I got the impression that the telephone-clock medium was a new one to him and that he was just getting the feel of it. He had already done everything else to death. On 9 August 1983, the phone rang once at 7:56 pm, and then went silent. Two days later, on the 11th, we got a one-ring hangup at 10:56 pm. On Friday the 13th, there was a similar call at 9:56 pm. I think that it is obvious that the probability of getting randomly-caused one-ring hangup calls at regular intervals of two days and

every time at 26 minutes after the hour three times running is less than microscopic.

I thought it was very clever, myself. The first time, the call came after seven, followed the next day by nothing. The next time, the call came after ten, followed the next day by nothing. The third call came after nine. Seven followed by nothing is 70, BBM12. Ten followed by nothing is 100, GENE. Nine is the alphabetic quantity of the letter L, first person singular pronoun. 26 minutes is 5660 of an hour. 5660 simplifies to 14/15, a fraction written with the same sequence of numbers as the base-six fraction of π , 1415. . . . This group of calls belongs to the type which I call the "family portrait." It gives the first names of the parents, their family name, and a presenential reference to the third member of the family, the author himself. I believe that the reason he began this series of calls on the date he did is because 9 August is written 8-9, corresponding to the letters H-L. It was yet another way of saying "Hello."

My caller kept on saying "Hello" for the next six months. Here are a few samples. On 26 October 1983, the phone rang twice at 1:30 a.m. and then went silent. The two rings were 60, Morse letter L, subject of the sentence. The "130" is the predicate. Eight days later, on 3 November, the phone rang once at exactly 1:30 p.m. On 24 December, we get a one-ring hangup at 9:12 a.m. 512 is the ninth power of two. Z, occasionally refers to Berta Margoules as "232," or 4 x 58. (The four is derived from 120 by casting out nines [$1 + 3 + 0 = 4$], and 58 is a two-digit shorthand for the surname O'HARE. Dot #4 of the 240-Character Cipher is Character #232. On the Lake Tahoe Card, Z, passed the expression "Around in the snow." When you write the word SNOW in Morse and then turn it around, you get 110 111 01 000. The first group, 110, is Morse ME; the balance, 1110000, is binary 232.) On 12 February 1984, there were two rings (00, I) at 2:32 a.m. These are just examples. I didn't know what the purpose was, except perhaps to give me a vocabulary quiz. In any case, I was pretty sure as to where the calls were coming from, but none of them was a specific response to anything that I had transmitted to my interlocutor.

October 1983 saw me in court. Having used up all the pretrial "discovery" tactics known to the legal profession, we had to go to trial. Mary Ann's psychiatric witness was a graduate student in chemistry named Carol Balle. Balle testified to having observed me correct my son's use of the English language some years back. The judge broke in to say that he had corrected his children's English all the time. How else could they learn to speak correctly? Mary Ann's attorney, Vic Fershein, switched tactics. Balle testified that I was "obsessive" about the Zodiac. I had been working on the problem day and night, and it occupied my thoughts all the time, she said. I had, as best I recall, spoken with her once or twice in the last two and a half years about it, but suddenly she was able to account for all my time over that period.

My "obsessiveness" was a trait that would make me unfit to have custody of the children, she testified. What she was calling "obsessiveness" was what would have been called, in another age, "persistence" or "dedication." My grandmother, who arrived in the Oregon Territory in a covered wagon, would have called it "nacktiveness." But that was before the age of psychobabble, when even pioneer virtues are considered to be pathological and everyone with U. S. citizenship is licensed to utter psychiatric pronouncements.

Not only was I "obsessive" — i.e., spending all my time on one project — I was also unable to finish anything that I started, because I never stuck to anything. I'm not kidding. That's what she actually said. Her star example of my not being able to finish anything was that I had quit my job as a librarian after seven years. On cross-examination, it turned out that Bally had been a nun for seven years, then quit. Then she had been a high school teacher for seven years. She had quit that, too. (Actually, she had taken a sabbatical from the school district under false pretenses to finance her return to graduate school.) Then she spent seven years working on her doctorate. Now she was planning to do something else. The hypocrisy in the court room was so thick you could slice it with a chain saw. The judge wasn't impressed by my "obsession" with the Zodiac. He said that he didn't care if I was "obsessed" with Paul Bearer. It was funny that he should take his example from Massachusetts.

The stage manager of this show, Vic Fersikos, was trying to have everything both ways. The Zodiac project was a potential financial asset (the Zodiac Associates movie contract), therefore it was good. It could be presented in court as a symptom of psychopathology on my part (my being "obsessive," which caused me to spend a lot of time working on it), therefore it was bad. I was a bad risk as a custodial parent because I gave up on things too easily, like quitting my job after seven years. I was also a bad risk as a parent because I was too dedicated to this project and wouldn't give up on it.

Somewhere along the line, Fersikos even introduced into evidence a letter that I had written to my daughter as proof of my unfitness as a parent. Mary Ann had blown up at me on the telephone and ordered me to send letters to my children care of Vic Fersikos. At that time, Amanda couldn't even read. So I filled up a sheet of paper with some nonsense verses from Walt Kelly and added an acid comment or two about Fersikos, thinking that he was going to read it. I forgot what the theory behind it was, but this letter got marked as an exhibit and we had a half hour's worth of testimony about it. I am not well-versed in the history of litigation, but I suspect that this was the first time since the trial in *Alice in Wonderland* that nonsense verses had been used as evidence.

There was something about Fersikos that stuck out about a mile that I picked up the first time he walked into the court room. The others seemed to have picked up the same emanation; in the middle of this legal agony, he ran for the Board of Supervisors of Napa County as one of a slate of three candidates who were all endorsed by the *Register*. He lost as handily as his two state-mates won. It wasn't the first time he had lost an election. Not long afterwards, he changed his letterhead to read "Victor Fersikos." Victor are winners. Perhaps he thought that sympathetic magic would accomplish what political prowess could not. *Nomen est omen*. There may have been something else, though, that he couldn't change, something that had rubbed off on him from somewhere else in a former time. He had graduated from Bronx Science in 1961. He was a high school classmate of Mike O'Hare's.

I was just recovering from the trauma of trial when we began getting calls about the Atari softwares. About mid-January 1984, people started calling to inquire about the ad they had seen on Golden Gate BBS. In case you don't know what "BBS" means, let me explain. It stands for Bulletin Board System, which is a type of computer software that enables the operator of a computer to receive and record messages from other operators. When you call up a

BBS through your computer's modem, you can read off all the messages that have been left on the BBS. And you can leave messages of your own.

Up to this time, I had never heard the term "BBS" myself. I am not only not "computer-literate," I am not even "microwave oven-literate." According to all the callers, I had an advertisement in a San Francisco-based bulletin-board system called "Golden Gate BBS" saying that I was selling pirated Atari videogame software. Moreover, I had "interesting phone numbers." The ad began with the lead-in, "Pirate's delight" and ended with the information that I was available "Wed-Sat 7-9." The first two letters, PI, gave me a pretty good idea who had placed this ad on the BBS. WEDSAT, by alphabetic quantities (again, P = 1), adds up to 76, BMx2.

Here's a mathematical curiosity. Berta Margoulies' birthday is 9-7. When you write those numbers in binary, you get 1001-111. Take out the hyphen and fuse the numbers together, as 1001111, and you have binary 79. Nine and seven flip-flop. I believe that this is the only pair of numbers that does this. At all events, the hours on WEDSAT when I was open for business, "7-9," are a thinly-disguised writing of BM's birthday. As to the "interesting phone numbers," I imagine that what was meant was my own, 499-0870. Six is ME, 70 is BMx2. That really was coincidental. But it must have struck Mike as being too good to leave unobserved.

In early February 1984, after the ad had been in Golden Gate BBS for some time, I had another of those Three A. M. Thunderbolts. Up until now, I had been half convinced of Mike's authorship of the Joan Webster murder; but I was also half unconvinced. There wasn't quite enough to it. These were the two sites marked by her effects, but what did they mean? If it was a geometric structure on the map, all it was was a straight line. You can't make anything but a pointer out of a straight line. What did it point at? Salem? Roxbury? Finally, it came to me in the middle of the night that there was a third point involved in the Joan Webster mystery: the Eastern Airlines terminal at Logan Airport. That was where her murderer had picked her up. It was the only other thing known about her as of 28 November 1981 besides the feeds on Highway 107 and at the bus terminal. I got up and turned on all the lights in the living room.

I spread out the USGS maps of the Boston area on the floor and laid a clear acetate overlay on them. With a marking pen, a protractor, and a straightedge, I constructed a straight line connecting the site of the pane on Highway 107 with BM 9 at the bus terminal. At the bus terminal, I turned a 38° angle and carried it out as far as my straightedge would reach. It went right through a building at Logan Airport with two ramps giving out on the central airport concourse.

As soon as I got to work the next morning, I photocopied the part of the map showing Logan Airport and sent it to Terry Webster. I asked her to mark on the map, as closely as possible, the point at which Joan had last been seen before her presumed abduction. The map came back with an X drawn on it on the part of the building with the two ramps right where my line had gone through it.

That was one confirmation. I needed one more. I made a photoreduction of the whole map and drew the 38° angle on it, joining the Highway 107 site to the bus terminal and Eastern. I addressed an envelope to Mike, franked it with two 35-cent stamps (BMs2), and sealed the map inside it. Then I gave it to Theresa Thielk, who was leaving for Honolulu the next day. Theresa told me later that she had mailed it at the airport in Honolulu on the morning of the 19th.

On the 18th, the phone rang at 2:35 a.m. I waited to see if the caller was going to hang up, and when he didn't, I picked up. It was a man inquiring about my Atari videogame software. I asked him if he knew what time it was, and he said that my ad in the BBS had said that I was operating a 24-hour service. I told him that I didn't have an ad in any BBS, and he said I did, too; it was in a BBS called "Golden Gate II" operated by one Mike West in Tamiami, Florida. He gave me Mike West's telephone number. As I was talking to him, the facts were falling into place.

The time of this call, 2:35, replicated the postage with which I had franked the Honolulu Letter, two 35-cent stamps. The location of "Golden Gate BBS II" was South Florida, the same area in which the Miami Card had been mailed the previous May. And "Mike West" had been put together out of the return address on the New York Letter, "1623 West 117th Street." What my caller was doing was demonstrating that he was someone who was familiar with the contents of Mike O'Hare's mailbox. He was naming himself without actually naming himself. I finally made it clear that I had no Atari videogame software for sale, printed or otherwise, and he hung up.

I could hardly wait for the sun to rise on Florida. In the meantime, I thought over what the implications of this phone call were. It was a voice call, not a one-ring hangup. It was traceable and would leave a paper record. It must have been prompted by something important. I used long-distance information to locate Mike West. There was nobody by that name with a Tamiami listing, but between directory assistance and a Florida road map, I was able to locate a Mike West in Pompano Beach whose telephone number matched the one my mystery caller had given me. I wondered what Tamiami had to do with it.

When it was a nearly decent hour in the Eastern Time zone, I called up Mike West. I said it was "nearly" decent. He was still groggy with sleep when he answered. I told him what had happened and asked him what he knew about it. He said that like me, he did not own a computer, had never heard the term "BBS" before, and he certainly did not operate one. All that he could contribute was that the night just past, his phone had been ringing repeatedly, sometime around 3 a.m., and every time he answered, all he got was a click and a dial tone.

The next evening, the 19th, Diane and I went to a party, then came home and went to bed. At 12:58 a.m., the phone rang, then went silent. Three minutes later, at 12:41 a.m., it rang again, just once. Yet another three minutes later, it sang once more (at 12:44 a.m.). Then it was still for the rest of the night. We had three one-ring hangup calls at three-minute intervals, beginning at 38 minutes after midnight. THREE is a digital synonym of BBS. The map I had sent Mike O'Hare from Honolulu had shown a 38° angle centered on the bus station in Boston. I was now getting stimulus-specific responses. He was sending me receipts.

The following evening, the phone rang at 9:36 p.m., just as it had the previous Friday the 13th, in August. It was my caller of the 13th again, inquiring about my Atari videogame software. I told him that I didn't have any for sale. In fact, I didn't have any, period. He said that he had it from Mike West that I did. I asked him if he had it from Mike West's BBS, or from Mike West personally. I added that I had talked to Mike West, and that he had said that he didn't operate a BBS.

My caller said that he and Mike West were old friends and that Mike had told him face to face that I was selling the software. There was a lot of long-distance biss on the line, so I asked where he was calling from. He said he was calling from San Jose. San Jose is perhaps 75 miles from where I live. I said it sounded like a lot further than that. He changed his mind and said he was calling from Los Angeles. Then he hung up.

The Area Code of San Jose is 408, or 130B; Los Angeles is 213. The 130B-shaped cryptogram was published, at the Zodiac's insistence, on 1 August 1969, the 213th day of the year. 2 is B, 13 is M. The choice of Atari software cleared itself up over a year later, when I happened to read by chance that the grid on which Atari videogames are based has 20 columns, 17 lines. An Atari videogame, in other words, has the same grid-format as the 340-Character Cipher turned sideways. I still couldn't figure out Taurus. Mike had obviously located a "Mike West" in South Florida by using long-distance information, but the operator must have told him that the listing he wound up using was in Pompano Beach. Why had he supplied the Tauric detail?

There was no way I could answer that question, but I was so charged up that I couldn't get to sleep. So I thought about something else. If you look at the *Progressive Architecture* photograph in map-perspective, with south toward the reader, east to the right, west to the left, the apex of the 117° shadow-angle falls at the northeast corner of the building. The USGS maps showed five benchmarks in all of Cambridge, Massachusetts. One of them was on the MIT campus, right at the northeast corner of the Earth Sciences Building. That building was the one that Mike O'Hare had tested, as a scale model, in the wind tunnel belonging to the Harvard engineering department.

The peak of Mount Diablo was the apex of the sphenoid which the Zodiac had constructed in the Bay Area with the blood of three victims. It was marked by Vertical Angle Benchmark (VABM) 3845, the most important geodetic landmark in the San Francisco Bay Area. VABM 3845 is the crossing-point of an arbitrary meridian and an arbitrary baseline which are used as the zero-points in the township-numbering scheme used in Northern California.

The 38° angle which was formed on the Boston map by the three Joan Webster sites had its apex at BM 9, one of four in central Boston. All three of these structures were artifacts, all were angular in form. All three expressed Zodiac vocabulary (117, radian, 38). All had been constructed at the cost of some effort on the author's part. And each and every one of them had at its apex a U. S. Geological Survey benchmark (BM). These three structures all shared

Reward

MISSING HARVARD GRADUATE STUDENT



Joan L. Webster

DATE OF BIRTH: AUG. 19, 1959
SOC. SEC. NO.: 138-36-0024
HEIGHT: 5'3"
WEIGHT: 112 lbs
HAIR: DARK BROWN,
LONG, STRAIGHT
EYES: DARK BROWN

Last seen at Boston Logan Airport at the Eastern Airlines Terminal on Saturday Evening, Nov. 28, 1981, wearing long, brown, chesterfield-style coat, black worsted suit, red print blouse. Carrying large, tan, suede tote bag containing phonograph records, architectural pamphlets, etc.

\$25,000.

OR

\$50,000.

Total reward for information leading to her present whereabouts, or

Total reward for information leading to her present exact whereabouts and her condition AND for information leading to the identification, apprehension and conviction of any person(s) who may have been criminally responsible for her disappearance.

ALL INFORMATION WILL BE HELD IN STRICTEST CONFIDENCE. THIS REWARD WILL EXPIRE OCTOBER 31, 1982.

Persons having any information are requested to call or contact:

Lt. Col. John R. O'Donovan

CHIEF OF DETECTIVES

MASSACHUSETTS STATE POLICE
BOSTON, MASS. 02115

617-566-4500

Donald M. Peters

CHIEF OF POLICE

OR SAUGUS, MASSACHUSETTS 01906

617-233-1212

MOUNT DIABLO

The peak of Mount Diablo is marked by Vertical Angle Benchmark (VARM) 2849, which is used as the crossing-point of the Mount Diablo Meridian and the Mount Diablo Baseline. These arbitrary navigational lines are used as zero-points for numbering townships in Northern California. Mount Diablo was chosen for this function because its peak is the highest point of land between the Sierra Nevada and the Pacific Ocean. In good weather, it is visible from all of the Zodiac murder sites. More of this planet's surface can be seen from the peak of Mount Diablo than from any other spot on earth, except Mount Kilimanjaro in East Africa.

STATE GAME REFUGE

Eagle Pass STATE

STATE

STATE

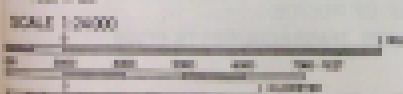
GAME

REFUGE

Rocky Pass

MT. DIABLO STATE
REFUGE

SCALE 1:200,000



ROAD CLASS

Highway
Medium road



the descriptive characteristics.

It appeared to me that if you looked on these structures as manifestations of behavior, they were very peculiar indeed. In fact, they seemed so peculiar to me that they took on the aspect of a behavioral fingerprint. One of these phenomena is found in the work of Mike O'Neal, published under his own name. Another is found in the work of the Zodiac murderer. And a third is found in the work of the unknown person who abducted and murdered Joan Webster in Boston on 28 November 1981. I suppose you could say that it constitutes a behavioral signature.

When I got to work the next day, I asked Andrew if he had mailed the Miami Card in Miami proper or somewhere else. He said that he had forgotten about it until he was on his way to Jacksonville for a settlement conference. Somewhere north of Miami, he had pulled off the turnpike to fill up the tank of his rental car. He had dropped the card in the mailbox, nearest to the gas station. I went to see the office manager and asked for Andrew's expense sheets for the Miami trip. Stapled to the sheets was a stack of supporting documents: cut-rental agreements, restaurant tabs, hotel bills, and credit card vouchers. I leafed through the stack until I found what I was looking for, about in the middle. It was a credit card slip imprinted by a service station in a town a few miles north of Miami, Florida. The name of the town was Tamiami.



THE ONCE AND FUTURE KILLING

On 20 April 1970, the Zodiac, ending a silence of exactly four months, mailed a two-page letter to the *Chronicle* containing a diagram of the new bomb which he proposed to use in his often-threatened bus attack. As with the Death Machine Diagram, the Bus Bomb Diagram shows a side as well as a top view of the infernal device in action. This time, however, the Zodiac dispenses with the mirror and the light source. Instead, he uses two photoelectric "switches" to trigger the device; the light source is the sun.

This diagram was suppressed by the police for almost sixteen years. It was published for the first time in the December 1985 issue of *The Explozor*, in an article having the same title as this chapter.

The first thing that struck me when I first saw the diagram in April 1982 was the quality of the draftsmanship. It is, to put it mildly, shoddy. Tag ends stick out where one line joins another. Lines are wobbly, circles are out of round, and the cross in the crossed circle at the foot of the page does not form a perpendicular. In the other documents that I had seen up until then, this cross was about as close to forming a right angle as Feynman drawing could make it. Here, it is distinctly out of kilter.

The tag ends showing where Z. began and ended his circle are also exaggerated. Right where they cross is the point at which the equals-sign of " $= 10^{\circ}$ " is aimed. I measured from the center of the circle to where the tag ends cross and found it to be 10mm. I don't believe that this is a claim of ten master victims at all, which is the way it was interpreted by press and police. It is a key to reading the diagram. All dimensions are expressed in millimeters.

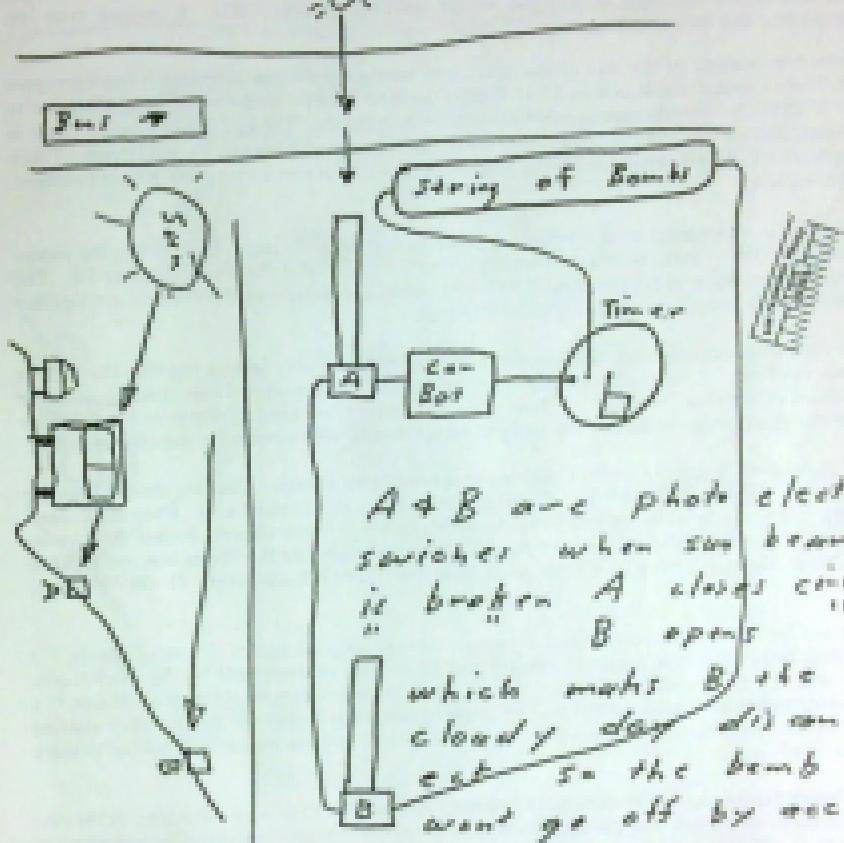
There is a strange-looking figure drawn inside the "Times." The long stroke of this figure appeared to me to line up with an extension of the vertical stroke of the cross in the crossed circle. A straightedge confirmed this. Looking over to the right, it appeared to me that an extension of the horizontal stroke of the cross would pass through the center of the zero in "SFPO = 0." Again, a straightedge proved this to be true.

So far, I had three circles joined center to center by straight lines. There were two other large circles in the diagram, the suns of the top and side views. Above the top view, Z. has written the word "sunlight." The H of "sunlight" has a peculiar up-tick that makes it resemble an Arabic numeral 2. Within the side-view sun, the author has written the word "sun." The lower case U of "sun" resembles the mirror-image of Arabic 2. Remember the use of mirror-images or bookends to enclose important information.

I drew lines joining the points of these Arabic 2's to the center of the "Timer" figure. Carrying the lines all the way through the two suns, I then bisected them within the sun-figures. Each

The new bomb is set up like
this

sun lighted in early morning



PS I hope you have fun trying
to figure out who I killed

10

S F P D = 0

of these lines, *sun-Timer*, measures 95mm on center. The clue to their existence was the appearance of the Arabic 2's. These are two of these lines. TWO in Morse Code is 1 011 111, binary 93. It seemed a bit much for coincidence that these two lines should be of exactly equal length, let alone that their dimensions should spell the number TWO. It seemed even less coincidental that they should form a 28° angle.

Geometric analysis of this five-circle figure continued to yield non-surprises. The line upper *sun-Timer*-crossed circle comes to 130°, and the line *Timer-crossed circle-zero* turns out to be 70° (MMx2). The dimensions also prove to be significant. The line *Timer-crossed circle* is 147mm, and the crossed circle-zero line measures somewhere between 74 and 75mm. Taken together with the two 95mm lines, the total of dimensions comes to between 408 and 409mm. $100 \times 4 = 408.4$.

The angular dimensions of this figure, in other words, give the name BER (130), the monogram BM (28) — here, with a two-multiplier suffix (x2) — and the theme-number 38. The linear dimensions express the word TWO (93) twice, and these two TWO's add up, together with the other two lines, to 138 (BER O'HARE).

The logic of the diagram appeared to me to be invisible geometry joining together like figures center-to-center. I had exhausted the class of circles. The next obvious class to examine consisted of the four "switches." I drew diagonals in them in order to find their centers, then used my straightedge to supply the straight lines. Again, very interesting patterns emerged.

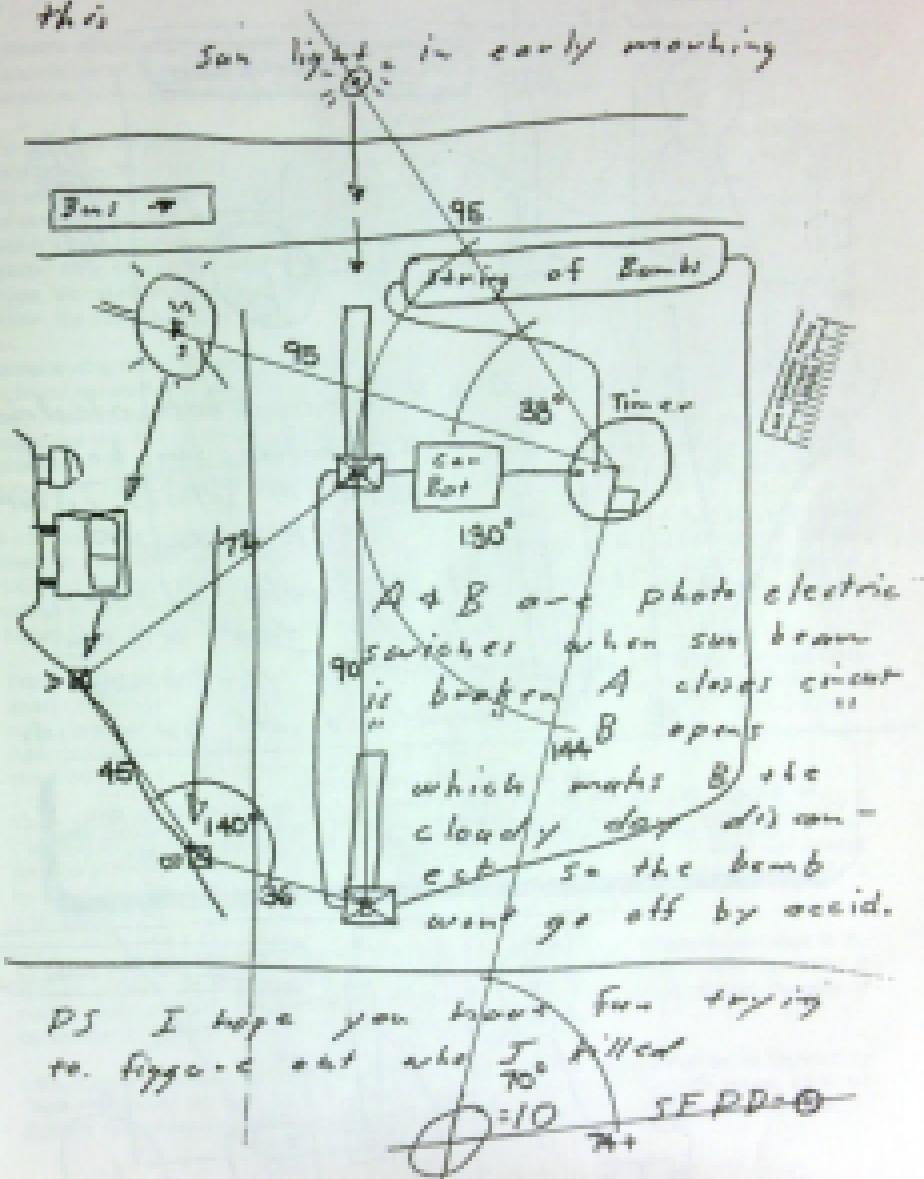
All of the lines in the "switches" figure are exact multiples of nine. The two shorter lines are 45mm (5×9) and 36mm (4×9). Together, they add up to 81mm (9×9). Even more interesting, the opposite sides of this irregular four-sided figure are exactly double their counterparts. Opposite the 45mm line, we have a 90mm line; opposite the 36mm line, we find one of 72mm. The two shorter lines form an angle of 140°. 140 is binary 1000 11 00, "BM (ans) 1."

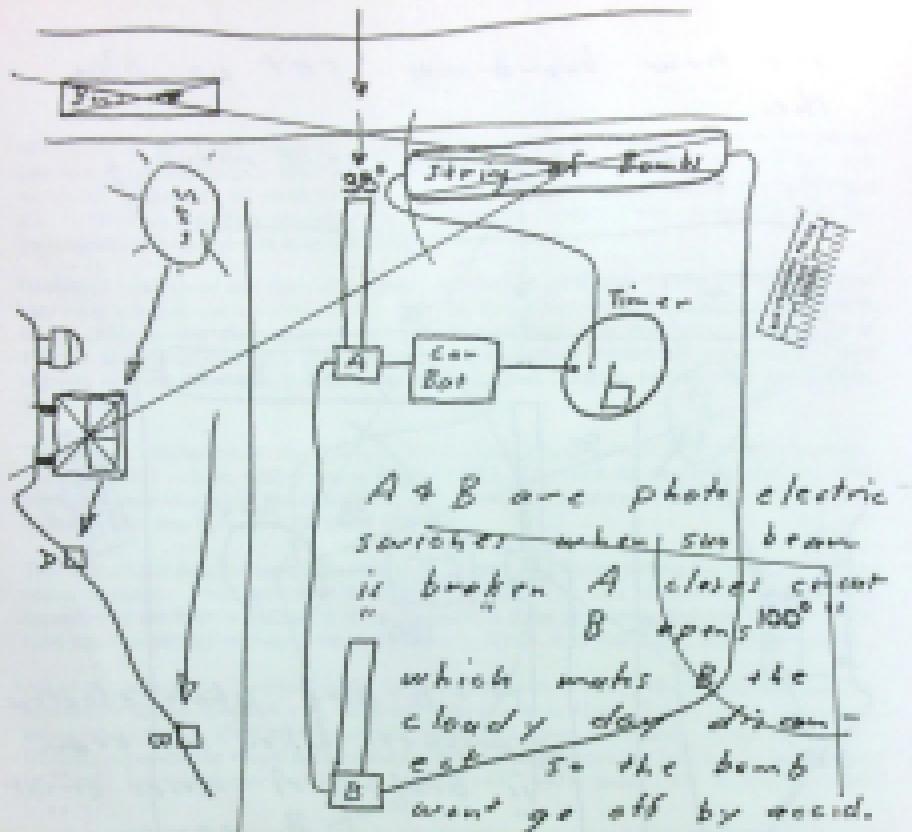
That left the two buses, the car and car battery, and the singular figure, "String of Bombs." I assumed that car and car battery formed a pair (both were characterized by the word "car"). This time, I related each of the pairs, bus-bus and car-car battery, to "String of Bombs." I found the center of "String of Bombs" by drawing diagonals within the figure. They crossed right on the cross-bar of the letter F in "of." Z. appeared to have used that cross-bar to mark the center.

The figure car-car battery-F forms a 117° angle. It was in 117° off west longitude, in the city of Riverside, California, that the Zodiac got his first victim into his power by disconnecting her car battery. Note the appearance of the word "disconnect" in the accompanying text. I read this figure as an allusion to that crime. Note also the coy postscript: "I hope you have fun trying to figure [sic] out who I killed." The "who" is quite clearly Cheri Jo Bates.

The figure bus-Timer-bus forms a 38° angle. Considering that the figure on the Boston map formed by the three Joan Webster-sites is an angle expressing the same number, and given the fact that its apex is at the bus station, it seemed reasonable to me to read this figure as a

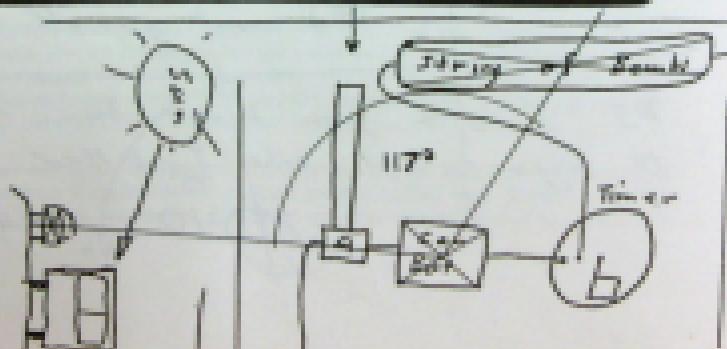
The new bomb is set up like
this





THE ONCE AND FUTURE KILLING

Bomb-Sun = 10° , 30 and 300 are major elements in James Wileman murder in 1991.
 Car-Bat Battery-P = 117° , Radio activated by murder of Choi-Soo in Korea, 1991.
 1-type of triggering SWITCHES, CIRCUIT, ACCUR from 100° (SENSE angle)



geometric allusion to yet another unknown crime. But whereas the first figure alludes to an unknown crime committed in the past, this one alludes to an unknown crime that has not been committed yet -- and as of April 1970, was still more than eleven years in the offing.

The principle of symmetry is very important in the work of the Zodiac. It manifests itself in several ways, but the most prominent is the use of mirror-images. The murder of Joan Webster in 1961 is the mirror-image of the killing of Chen Bates in 1966. Mirror-images are similar in some respects and exact opposites in others. In both cases, the murderer offered his victim a ride home, and the offer was accepted. Both victims were lone women. In those respects, these two crimes were alike. Where opposites are concerned, one was on the West Coast, the other on the East Coast, on opposite sides of the continent. And one was the first crime, the other the last.

In discussing the 32-Character Cipher, I pointed out that in the series 57, 58, 114, 117, which is found encoded in digital form in that cipher, 57, 58 alludes to the sailor, which the Zodiac constructed in the Bay Area with the lives of two victims. 117 alludes to Riverside. I suggested that 114 alludes to a future crime. It is not only the product of 57 x 2; it is also the product of 38 x 3. Since THREE in Zodiacese is a digital synonym of the word BUS, the product of 3 and 38 expresses two of the most important motifs of the Joan Webster story.

I also said that I would leave a discussion of the Zodiac's use of the symbol omega, also found in that cipher, until a later chapter. This is it. The letter symbols giving digital 114 are followed first by a triangle, Symbol #12, then omega (Ω). Both this triangle and the following omega have a bearing on the reading of this passage. But first, let's look at the rest of the Mount Diablo Letter in the light of invisible geometry.

There are three crossed circles in the body of this letter. One is very large, the other two quite a bit smaller. The largest of the three is the second of the group. It is followed by a dash, then Arabic 12. As usual, this was interpreted at the time as a claim of twelve victims. And also as usual, the author does not actually say anything like that. The three crossed circles, connected center to center, form a 108° angle.

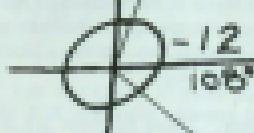
There are four misspellings in the letter. Three of them are words containing the letter I ("anilating," "promise," "until"). The fourth is the word "bass," which contains an erroneously doubled letter. The three I-words are accompanied by I-dots. "Bass" is followed by a period. The second I-dot of "anilating" forms, with the dots over "promise" and "until," a 144° angle.

Z. writes a straightforward Arabic 12 following Crossed Circle #2. That crossed circle is the apex of a 108° angle. The three I-dots just mentioned form a 144° angle. 164 is the square of twelve. 108 syllables is binary to 11 0 1100; ME 12. Why is the author suddenly harping on the number 12? Why does he want to bring it to our attention?

Let's leave that question unanswered for the moment and turn our attention to the misspelling "bass." I pointed out that this word is followed by a period. The first three letters, BUS, are digitally synonymous with the word THREE. The superfluous letter S is Morse Code 000.

This is the Zodiac speaking

I have become very upset with the people of San Fran Bay Area. They have not complied with my wishes for them to wear some nice ♀ buttons. I promised to punish them if they did not comply, by annihilating a full School Bus. Bay now school is out for the summer, so I punished them in an another way. I shot a man sitting in a parked car with a .38.



The Man killed with this
INVISIBLE GEOMETRY
 $144 = 12^2$
 $108 + 11 = 119$, ME 12
Triangle #2 in 32-Character Cipher
is Character #12

C Δ J I ■ O K L A M T ▲ N O R T G
X @ F D V T ■ H C E L ♀ P W A

When you add 100 to a binary number, it has the mathematical effect of multiplying the root number by eight. You might read BUSS as THREEx8. In the next line down, we have the number 38 (THREE, 8), with a decimal point in front and a period behind.

I used my straightedge to connect the period following "base" to the period following "38." An extension of that line passes straight through the 1-dot over the misspelling "until." That seems to be rather much for coincidence. I then connected that same period to the decimal point preceding "38." An extension of that line runs right through the middle of the second triangle, Character #12. From the point where that line reaches the triangle to the 1-dot of "until," I drew another straight line, to form a triangle.

The angle whose apex is tangent to the triangle is 38° . The angle tangent to the 1-dot of "until" is 122° . If you draw a line on the Boston map from the Eastern Airlines terminal to the Highway 187 site, it forms, together with the 38° angle centered on the bus station, a 122° angle centered on the airport. This triangle in the Mount Diablo Letter of June 1970 is exactly similar to the triangle formed by the three Joan Webster sites in Boston. As to why 122 is significant, let me point out that the last birthday celebrated by Michael O'Hare prior to Joan Webster's disappearance was his 38th, and he celebrated it on 22 January (1-22) 1981. At all events, we have another prefiguration of that crime more than a decade before it was actually committed.

In both of these Zodiac documents, then, we find allusions to Riverside expressed with the number 117. Allusions to the crime in Boston of 1981 are expressed with combinations of THREEBUSES and 38 (114 as 3×38 , a 38° angle connected with buses). In both cases, Riverside and Boston appear linked together. Let's see if we can't find another document in which the number 117 is linked with a mathematical description of a Joan Webster site.

In 1973, Michael O'Hare filed his doctoral dissertation at Harvard, titled *Circumferential utilization and space management*. I will discuss other aspects of this document at length in another chapter. I would like to single out one for inclusion here, however, since it is relevant to this subject. On pages 3-4 through 3-7, there is a table showing data pertaining to a sample of classrooms drawn from the Harvard physical plant. The classrooms are identified by building name, classroom number, seating capacity, and square footage.

One building has come unnammed. The author confesses that he has been unable to discover which building it is. Considering that he started with a finite list of buildings and that the name of only one is missing, it should have been easy to establish by process of elimination which one that was. But he prefers to let this error stand. Once again, the use of error to tag important information is a consistent Zodiac trait.

The mystery building has been given the ingrown name of "whatsit." "Whatsit" has four entries in this four-page table, which is arranged in descending order by seating capacity. Let's consider the seating capacities first. Room 7 has 81 seats. Room 1 has 72. Room 2 has 39. And Room 107 has 24. This is rather curious, especially since these rooms have been, at least ostensibly, drawn more or less at random from the stock available at Harvard University. $81 = 9 \times 9$. $72 = 9 \times 8$. $(39 + 24) = 9 \times 7$. The seating capacities, in other words,

form a perfect series of nine-multiples. The last one, expressed by the sum of 39 and 24, is the product of the numerical elements of Bern Margulies' birthday, 9-7. And the product, 63, has been subdivided according to proportions provided by the Golden Section (0.6180339...). $63 \times 0.6180339... = 39$.

The room numbers are even more interesting. $7 + 1 + 2 + 107 = 117$. Considering that we have another Michael O'Hare artifact expressing this number (the angular shadow in the doctored photograph), it would seem, especially in the light of the seating capacities, that these crimes have been fabricated for some purpose and tagged with error (the misplaced building name) to draw our attention to them.

Following the text of this chapter are copies of the four pages of that table as well as a copy of part of the U. S. Geological Survey map for Lynn, Massachusetts. On that map, I have marked with an X the spot at which the murderer of Jean Webster left her purse and wallet following her abduction on 28 November 1981. The terrain to the west of the highway is so flat that the map does not even show contour lines. There is no vegetation other than grasses. The only artifacts or landmarks for some distance, other than the two highways shown, are a hair shop (black rectangle) and the WRYT radio tower, on the east side of the state highway.

The left-hand margin of the map is the 71^o Meridian. This thin black line is the line of longitude found 71° west of Greenwich. Reading from left to right, the next feature is Interstate 95, under construction at the time this map was published (1970). The next feature over is state highway 107, at whose side Jean Webster's purse was left by her murderer.

Once again, the English word TWO in Morse Code, 1 011 111, is binary 95. The series 71, 95, 107 replicates the sequence of classroom numbers found in the "whilst" entries in Michael O'Hare's table: 1, 1, 2, 107. Just as in the Bus Bomb Diagram and the Mount Diablo Letter, geographical data pertaining to Riverside are connected to geographical data pertaining to the murder of Jean Webster.

In the 32-Character Cipher, the number 114, which I read as an allusion to the Boston murder, is followed by triangle (symbol #12), then omega (#1). Omega occurs directly under the 38-122-30 triangle described above. This is the only time in the entire Zodiac literature that this symbol is used.

Omega is the 24th and last letter of the Greek alphabet. It is because of that that John the Divine has God say, "I am the Alpha and the Omega, the beginning and the end, the first and the last." Omega has come to be synonymous in English, thanks to John, with the concept "last." I suggest that this letter is used here to signify that the murder of Jean Webster in 1981 was to be the last Zodiac crime of all.

Building No.	Name	Room No.	Date	Area (sq. ft.)
105	gymnasium	000000-	12/23	160000
211	LAWRENCE	000000-	08/19	162000
220	ARTHUR	000000-	08/26	162000
104	WILSON	000000-	08/26	162000
103	CRAVEN	000000-	08/26	171000
104	REGINA	000000-	08/26	171000
101	BUREAU	000000-	08/27	129400
205	UNCLIC	000000-	08/26	151500
625	THEATRE	000000-	08/26	161400
204	LIBRARY	000000-	08/26	128000
202	TEACHERS	000000-	08/26	125000
407	OPERATOR	000000-	08/26	20000
204	OFFICES	000000-	08/26	81000
106	SECRETARIES	000000-	08/26	120000
223	KITCHEN	000000-	08/26	122400

THE ROOMS OF "WHATSIT"

This and the following three pages contain a table showing data having to do with classrooms drawn from the Harvard physical plant. One building, which supplies only four rooms to the table, has lost its name, and the author cannot restore it. This building is given the expedient name of "whatsit." On p. 67, building number 349 is assigned to the classroom 28 Kirkland. Out of fourteen pages of such tables in this section of the dissertation, only this entry for 28 Kirkland is typographically misaligned. Note also that the last building number entered in this table is 314 (= 108a).

478	CLINIC	000000-	08/26	102100
479	GYMNASIUM	000000-	08/26	102000
417	ROBERT	000000-	08/26	102000
418	REGINA	000000-	08/26	102000
206	LIBRARY	000000-	08/26	102000
124	SECRETARIES	000000-	08/27	102000
205	UNCLIC	000000-	08/26	102000
204	CRAVEN	000000-	08/26	102000
→ 203	REGINA	000000-	08/26	102000
104	WILSON	000000-	08/26	102000
210	ARTHUR	000000-	08/26	102000
221	THEATRE	000000-	08/26	102000
222	WILSON	000000-	08/26	102000
223	KITCHEN	000000-	08/26	102000
126	SECRETARIES	000000-	08/26	102000
128	KITCHEN	000000-	08/26	102000
129	THEATRE	000000-	08/26	102000

Table 6-1 (p. 1 of 4)

Harvard Faculty of Arts and Sciences CLASSROOMS

Source: (13a)

Table 5-1 (p. 2 of 3)

37-5	Iowa City	003007-	50.55	000000
37-6	Lowell	003002-	50.55	000000
37-6	Lake Charles	003010-	50.55	000000
37-6	Lima	003008-	50.55	000000
37-6	Lima	003007-	50.55	000000
37-6	Lincoln	003007-	50.55	000000
37-6	Long Beach	003006-	50.55	000000
37-6	Long Beach	003007-	50.55	000000
37-6	Louisville	003005-	50.55	000000
37-6	Madison	003012-	50.55	000000
37-6	Milwaukee	003005-	50.55	000000
37-6	Montgomery	003007-	50.55	000000
37-6	Newark	003004-	50.55	000000
37-6	Odessa	003002-	50.55	000000
37-6	Omaha	003006-	50.55	000000
37-6	Ottawa	003007-	50.55	000000
37-6	Philadelphia	003005-	50.55	000000
37-6	Phoenix	003006-	50.55	000000
37-6	Pittsburgh	003007-	50.55	000000
37-6	Reno	003007-	50.55	000000
37-6	Riverside	003005-	50.55	000000
37-6	Sacramento	003006-	50.55	000000
37-6	San Antonio	003005-	50.55	000000
37-6	San Francisco	003005-	50.55	000000
37-6	Santa Barbara	003005-	50.55	000000
37-6	Seattle	003007-	50.55	000000
37-6	Spokane	003004-	50.55	000000
37-6	St. Louis	003004-	50.55	000000
37-6	St. Paul	003005-	50.55	000000
37-6	Stockton	003004-	50.55	000000
37-6	Tampa	003004-	50.55	000000
37-6	Toledo	003004-	50.55	000000
37-6	Tucson	003004-	50.55	000000
37-6	Tulsa	003004-	50.55	000000
37-6	Waco	003005-	50.55	000000
37-6	Washington	003005-	50.55	000000
37-6	Wichita	003004-	50.55	000000
37-6	Youngstown	003004-	50.55	000000
37-7	Albuquerque	003005-	50.55	000000
37-7	Bakersfield	003004-	50.55	000000
37-7	Bakersfield	003005-	50.55	000000
37-7	Barstow	003005-	50.55	000000
37-7	Bakersfield	003005-	50.55	000000
37-7	Long Beach	003004-	50.55	000000
37-7	Long Beach	003007-	50.55	000000

Table 3-1 (P.3 of 4)

155	00000000	00000000	00000000
175	00000000	00000000	00000000
195	00000000	00000000	00000000
215	00000000	00000000	00000000
235	00000000	00000000	00000000
255	00000000	00000000	00000000
275	00000000	00000000	00000000
295	00000000	00000000	00000000
315	00000000	00000000	00000000
335	00000000	00000000	00000000
355	00000000	00000000	00000000
375	00000000	00000000	00000000
395	00000000	00000000	00000000
415	00000000	00000000	00000000
435	00000000	00000000	00000000
455	00000000	00000000	00000000
475	00000000	00000000	00000000
495	00000000	00000000	00000000
515	00000000	00000000	00000000
535	00000000	00000000	00000000
555	00000000	00000000	00000000
575	00000000	00000000	00000000
595	00000000	00000000	00000000
615	00000000	00000000	00000000
635	00000000	00000000	00000000
655	00000000	00000000	00000000
675	00000000	00000000	00000000
695	00000000	00000000	00000000
715	00000000	00000000	00000000
735	00000000	00000000	00000000
755	00000000	00000000	00000000
775	00000000	00000000	00000000
795	00000000	00000000	00000000
815	00000000	00000000	00000000
835	00000000	00000000	00000000
855	00000000	00000000	00000000
875	00000000	00000000	00000000
895	00000000	00000000	00000000
915	00000000	00000000	00000000
935	00000000	00000000	00000000
955	00000000	00000000	00000000
975	00000000	00000000	00000000
995	00000000	00000000	00000000

Table 5-1 (part of 4)

Building 520 cannot be identified by map or Survey Hall.

LYNN, MASSACHUSETTS

The left-hand margin of this map is the T1st Meridian, i.e. the line of longitude found 71° west of Greenwich. Reading across from left to right from that line, the only landmarks found are Interstate Highway 95, under construction at the time of publication (1970), and state highway 107, 95 - binary 1 411 111, Mass. TWD. The site at which Joan Webster's purse was found in late 1981 is marked with an X (next to the Pines River). Landmarks = T1, TW0, 107
Rooms of "whatit" = 7, 1, 2, 107
 $7 + 1 + 2 + 107 = 117$

EASTERN TIME

Several other things were happening while the Mike West events were going on. Terry Webster wrote me to suggest that I might be able to make some headway with the FBI by putting my case against Mike O'Hare directly to Roger Depue, the head of the Bureau's Behavioral Sciences Unit. I have already quoted Depue on the accuracy rate of psychological profiles. It happened later that several people suggested quite independently of one another that Depue would be interested, since behavior was his specialty. Since then, I have come to the conclusion that he would have the normal bureaucratic reaction to anything that contradicted the premises on which his empire was built. Bureaucrats do not like people who point out their nakedness. Edridge had told me that the FBI's profiles said that people like Mike O'Hare do not do what I said he had done, and that was that. Never mind the objective evidence. My experience with Depue bears out this theory. I sent him a ZIK in February 1984. Not only did he not respond, but I had proof within four months that it had not registered with the FBI.

With Caldwell had been taking a new tack with the Boston research. Every week or so, he had somebody go over to Brookline in the middle of the night to go through Mike's trash can. We got some interesting papers in this way. There was a pencil copy of his 1981 Federal income tax return. There were sketches and notes on a regular job he was doing on the back steps, a letter from somebody in San Francisco named Lucy Johns, and an invoice from Sears Roebuck for a wheelbarrow and a dolly. When I called up Alan next, I could not contain my jubilation. We had made a major breakthrough in the Zodiac case, now we knew where Mike O'Hare purchased his wheelbarrow. I was being sarcastic. (Actually, as it turned out, the wheelbarrow invoice did come in handy.)

The letter from Lucy Johns was more interesting. It was dated in September 1982 and informed Mike that she would be arriving in Boston on a certain date. She said that she would be staying at the Copley ("whatever that is") and was looking forward to seeing him when she got there. Since the Copley Hotel is a major downtown Boston landmark, her unfamiliarity with its whereabouts indicated to me that she had most likely not been in Boston before. From that, I concluded that her acquaintanceship with Mike was from San Francisco, not Boston.

Lucy Johns had an "MPH" after her name in the San Francisco white pages. Either it denoted velocity, which meant that she was a fast woman, or else she had a master's in public health. I used the photocopy machine at work to print up a questionnaire from a nonexistent organization, the "Association of Public Health Professionals of the San Francisco Bay Area." It was supposed to elicit information for publication in a directory. I knew that most people can't resist seeing their names in print; this approach was based on an appeal to vanity.

I wrote up an appropriate-sounding cover letter, in which I even included an appeal for the re-

splendid to supply return postage, since the (phony) Association was short of funds. I thought that this realistic detail would make my questionnaire all the more plausible. The return address was Diane's post office box in San Rafael. About a week later, the questionnaire was back, filled out down to the questions about birthdate and family. I had figured she wouldn't answer them anyway. An appeal to vanity has its drawbacks, too. I got there in just to make the questionnaire look authentic. When I sent Alan my questionnaire, filled out in Lucy Johns' handwriting, he was floored. He had never heard of an undercover investigation taking such a discreet approach. Then I told him that the first time I had called Bertha Margoules to get information about her son's whereabouts, I had posed as a genealogist. He said that whatever else I might be, I was certainly original.

Lucy Johns got her MPH at Berkeley in 1967. That supplied two more pieces of information. She was about Mike's age, and she had probably been in the Bay Area during the Zodiac episodes of 1968-1971 and 1974. At least, she had been in Berkeley in 1963 and was living in San Francisco now. Normal human inertia would leave her in the Bay Area in between. It was possible that she could recall his having been in these parts on certain dates. She just might be a valuable witness.

As interesting as my correspondence with Mike was, I really didn't relish the idea of his using BBS ads to generate a list of third-party calls, which contributed nothing to the dialogue but confusion. I set out to cure him of it. I had an American Express card authorization from Crimson Travel in Cambridge, which Terry Webster had sent me. (The signature on the authorization was "Mi OME." Mi is Morse is a digital revision of the letter Z.) And I had the wheelbarrow invoice from Sears Roebuck. I called Hammacher Schlemmer in Virginia on their toll-free line and placed an order in his name, charged to the American Express card number, for two alarm clocks, coming to exactly \$29. The clocks were \$39.50 each, and since there was no sales tax on a California order (and Hammacher Schlemmer does not charge for shipping), it came out exactly even.

Then I went over to the Sears outlet in San Rafael and put together a catalogue order for Atari videogame software and ancillary equipment (a joystick) coming to \$79.97. I called up the catalogue order desk in Boston and charged the order to Mike's revolving charge account number, which I had obtained from the wheelbarrow invoice. I don't know how much sales tax the Commonwealth of Massachusetts added, but I felt that I had made my point. I had the software sent to him at his home address.

On 16 March 1984, I received a phone call at 5:24 p.m. from a male operator who asked me if I would accept a collect call from "Michael Henry O'Hare." He even used the middle name. I accepted, of course. But all I got was a click and a dial tone. The charge for the collect call never appeared on my bill. As it happened, I had a cousin departing for El Paso the next day. I gave her a mailing to drop when she got there. It was a schematic analysis of the cryptogram, printed on ledger-size paper, which is 11 inches by 17. The 11 x 17 format was half the message (TIMES 17). Three days after this letter was dropped in El Paso, we got one-ring hangup calls at 2:15 p.m. and 8:15 p.m. The Zodiac had insisted on the publication of the cryptogram on 1 August 1969, Julian Date 213. 2 is B, 13 is M, 8 is H, 15 is O.

Up until this time, the relationship between Mike and me had been one in which I supplied the stimulus and he supplied the response. Ever since February, I had gotten what I wanted. There was no doubt about the fact that we were now involved in a dialogue. In March and April, things continued in that vein. I sent him another Christo postcard, this one with a digital revision of "Melvin eats Bluber," from St. Louis (Area Code 314). Another courier dropped an explication of the Bus Bomb Diagram in Dallas. Both of these mailings occurred in the middle of Easter Week. On Easter Sunday, we got a one-ring hangup call at 11:06 p.m., 110 is binary six, and both stand for ME in Zodiaco. The Bus Bomb Diagram was postmarked on 20 April 1970, Julian Date 100. It might have been neater for him to call me at 1:10 a.m., but he was handicapped by a three-hour time difference. Calling me at 1:10 my time would have meant either staying up until or getting up at 4:00 a.m. By calling me at 11:06 p.m. my time, he only had to stay up until 2:06 Eastern Time.

In May 1984, we suddenly switched roles. Mike became the active member of the dialogue, and I became the passive one. Now I had to dance to his tune, and I had the further disadvantage of having to figure out what it was. His response to the Heseluhn Letter had indicated that he was very excited by the topic of Joan Webster. He had given me voice calls and had started sending specific receipts. While the receipts for the cryptograms and Bus Bomb readings were specific, they were also laconic. The ancient literature was not what really interested him at this point. The Joan Webster murder was.

I had a guess about where he had hidden her body. The geometric design formed by the Highway 107 site, BM 9 at the Greyhound bus station, and the Eastern Airlines terminal at Logan had formed a 38° angle centered on the bus station. But three points also form a triangle, which has two other angles. One of them was centered on Eastern. It was 122°. The last birthday which Mike Dillon had observed before Joan Webster's murder was his 38th, and he celebrated it on 22 January, 1971. That must have been what had determined the location of the purse-drop-out in the marsh. He had triangulated it from BM 9 and the Eastern terminal.

There were numerous indicators in the ancient literature from California that appeared to allude to Joan Webster, or rather to her murder. One of them was the 38° angle formed by the two bases and "String of Bombs" in the Bus Bomb Diagram; another was the 38-122-20 triangle appearing, via invisible geometry, in the Mount Diablo Letter. This crime appeared to form a counterpart to the Riverside murmur, which was uniformly referred to as "117." Diane Merrill supplied the term "bookends" to describe these two murders. In some ways, they were exact opposites; in others, they were exactly alike. They seemed to constitute a beginning and an end. The Bay Area episodes of 1968-1971 and 1974 were sandwiched in between them.

The map that Z. had chosen to accompany the Mount Diablo Letter was a service-station road map. It was hardly scientific, being intended only to show motorists what route to get from one place to another. I have already suggested the motive for his selection of the particular map. In any case, the Geological Survey map of the same area shows a number of features that do not appear on Phillips 66 road maps, one of which is latitude and longitude.



SAN FRANCISCO
BAY REGION
Map Sheet 1 (of 2)
USGS, 1970

What is shown here is about one square foot out of eight square feet of Map Sheet 1. It shows Mount Diablo, in the lower right-hand corner, and the Concord Naval Weapons Station in the city of Concord, California. The cross in the middle of the Navy facility marks the intersection of the 38th Parallel and the 122d Meridian.

SCALE 1:125,000

CONTOURS INTERVAL 200 FEET
INDEX LINES INDICATE 1000 FEET ELEVATION
DASHED LINE IS MEAN SEA LEVEL

DEPTH CONTOURS AND ELEVATIONS IN FEET - Elevation of Mean Sea Level
TOWARD THE NORTH

In 1970, the USGS published three map sheets which give a compressed view of the entire San Francisco Bay Area (and quite a bit of hinterland). These maps, being a kind of Reader's Digest condensed version of the more detailed map sheets, contain a good deal of shorthand. For instance, intersections of major lines of latitude and longitude are marked with crosses on the map.

The Zodiac had used the words "buried bomb" in the Mount Diablo Letter. I had always assumed that he was fundamentally truthful about everything that he said, and I had discovered several "buried bombs" in that letter. There was no reason to think that there might not be more. Also shown on the Mount Diablo Map was the city of Concord, California. There is a U. S. government installation in Concord where there are a lot of buried bombs. I refer to the Concord Naval Weapons Station, hundreds of acres of rolling real estate dotted with huge underground bunkers in which the military stores bombs of every description, ranging in size from hand grenades to hydrogen bombs. The USGS map of the area shows a cross right in the middle of the Naval Weapons Station. What it represents is the intersection of the 38th Parallel and the 122nd Meridian.

Joan Webster's purse had been found at the intersection of a 38° and a 122° angle. It seemed to me that analogy was involved. What the Boston area and the San Francisco area had in common was a place called "Concord." I carried on the analogy and got Miss Caldwell in Boston to purchase a USGS map of Concord, Massachusetts, and send it to me.

On 23 May 1984, we received one-ring hangup calls at these times: 1:04, 1:08, 1:16, and 1:17 a.m. 117 was easy. It said "Riverside." And by that, I believe that the author meant something that was like Riverside. 116 was almost as easy. It's half of 232, an occasional jingle-phrase for Buena Margarita (4 x 58). But 104 and 108 had me baffled. I lay awake for two hours staring over them. It finally hit me that I was in the wrong time zone. Both of them made a great deal of sense if I would stop being parochial. Read as Eastern Time, 104 is 404, or MIKEs2 (MIKE = 202), 108 is 408, or 1308. By displacing his clock time reference to the Eastern Time zone, he was implying the word "Eastern." 116 (half of the familiar number 232) conveyed the concept "one half." The Honolulu Letter had told only half the story; what about the angle centered on the Eastern Airlines terminal at Logan? I am sure that both of us were thinking our lucky stars that he had not caught up with Joan Webster at some other airline. How could he have communicated "Allegheny" in clock time, for instance?

I read this series of calls as eliciting an acknowledgement from me of the existence of the 122°angle at Eastern. At work, I had some junk mail from Eastern Airlines on a letterhead with a return address at Chicago's O'Hare Airport. I used the copying machine to forge some blank Eastern letterhead with that address. I made an envelope with the Eastern Airlines logo in the upper left-hand corner. I used the letterhead to write Mr. O'Hare a missive from a fictitious Eastern Airlines official in which he learned that his ton bag (the missing piece of Joan Webster luggage) had been found on Eastern Airlines flight 122.

By a very lucky coincidence, a friend named Mark Fenn was leaving the very next morning, the 24th, for Chicago. I gave him the Eastern Airlines Letter to drop when he got there. It was franked with a 25-cent stamp, for IBM. Mark was thoughtful enough to drop me a post-

card at the same time so that I could see what the postmark said. The stimulus had come in the wee hours of the morning of the 23rd; the response was postmarked in Chicago ("North Suburban Illinois") the morning of the 24th. Federal Express couldn't have done any better.

That was Thursday. On Sunday the 27th, we got a one-ring hangup call at 6:58 a.m. Six is 110, ME. 38 is the two-digit paraphrase for O'HARE. It was a specific receipt for the O'Hare (Airport) mailing.

About a week before this started, I had been invited to give a talk on the Zodiac at a private home in Mill Valley. There were about a half-dozen people in attendance. One of them was Paul Avery, the Chronicle reporter who had by-lined the newspaper's Zodiac stories in the years 1969-1974. I had picked him about a year before, but he had never responded. It was not until hours into the presentation that he recalled having received the ZIK. I gathered that he had used it to line the interior of the nearest wastebasket.

At one point in my presentation, I repeated something that I had considered to be gospel for years, namely that Paul Stine, the cab driver, had been shot with a 9mm automatic. Avery got very excited and interrupted me to say that I was wrong; the weapon had been a .38-caliber revolver. Was he sure of that? Yes, the bullet had originally been mistyped as a 9mm slug (which is of similar size). Once that was printed, the authorities colluded with the news media to leave it that way, so that the murderer and the police would have a shared secret (what police detectives call an "investigative key") that could be used to sort him out from all the compulsive confessors who make life miserable for the police. Q. "What did you use to shoot Paul Stine?" A. "I shot him with a 9mm pistol." Q. "I see. [Looking at watch] Well, thank you for your time and trouble, Mr. Turkeltop. If we need any more information, we will get in touch with you." [Shows Turkeltop to the door.]

Avery had invited Bob Graysmith, with whom I had talked toward the end of December 1980, to attend this presentation in Mill Valley three and a half years later, but Graysmith had something else to do or just did not consider it worth his time. I was relieved that he did not show up, because I felt that having two very opinionated people in the same room together would have led to a disputation instead of a presentation. While I don't shy away from debate on this subject, I barely got through my material in the time that I had (all evening) without also getting involved in an argument.

Between 27 May and 3 June 1984, we got no mystery calls at all. I had already acquired the Concord, Massachusetts, quadrangle from Whit Caldwell, because I theorized that the 122° and 38° intersection in Boston analogizes the one in Concord, California. I further analogized to Concord, Massachusetts. If 122/38 implied the place name "Concord," then it referred to a place that was much better suited to disposing of a body than Boston is. It is about a half hour's drive from Logan Airport.

On 3 June 1984, there came a one-ring hangup call at 1:59 a.m. Two days later, on the 5th, we got the same thing, at 11:31 p.m. On the 11th, Mark Fenn dropped a mailing (containing an annotated copy of the Exorcist Letter) to Mike O'Hare from Rockford, Illinois. The return address read "J.W., 12238 Concord St., Mt. Ivy IL 61623." I am not aware of a receipt for this

mailing. On 19 June, there were two one-ring hangup calls at 10:06 and 10:08 p.m. On the 26th, Mark Penn dropped another letter to Mike in Boston (Mark was getting anxious). This time, the contents were three diagrams from Mike's doctoral dissertation which harped on the number 38. They were annotated in red ink so as to bring this out. On the 27th, the day following the Boston drop, we got a one-ring hangup call at 12:50 a.m. I chose to read it as a receipt for that letter. Twelve before fifty, by *ribes-logic*, is 30-12, or 38.

On 2 July 1984, a postcard addressed to Mike O'Hare was dropped in Hawaii by Theresa Thalk. On the message side there was nothing but a commemorative stamp issued for the exposition in New Orleans on clean water. The painting depicted a cross-sectional view of a pond, on the surface of which a geyser was erupting. On the 5th, four days after that mailing, we got a one-ring hangup call at 12:11 p.m. Five days later on the 10th, there was another at eleven o'clock sharp. On the 16th, there was one at 12:19 p.m. On the 24th, we got two rings, then silence, at 12:48 a.m., one ring at 1:00 a.m., and another one-ring hangup at 1:21 a.m.

Before I go back to comment on this series of calls, I have to offer some history about events of the 5th and 10th of August 1984. On the morning of the 5th, about 8:30 a.m., the phone rang. I answered. A woman asked to speak to Diane. I called Diane to the phone, by which time the caller had hung up. On a hunch, I looked up Lucy Johns' telephone number in San Francisco. About nine o'clock, I had her on the line.

I asked her, "Is Jim there?" She sounded nervous. She said that there was nobody there by that name. It was the voice of the woman who had asked for Diane just five minutes before. I apologized and hung up. I suppose that the reason she was nervous was that she recognized my voice, too. One thing that had intrigued me about the 1:30 a.m. calls on 9 May 1981 following Bill Wallace's story in the *Chronicle* was that it should have taken considerably longer than four days for copies of a San Francisco newspaper to have found their way to Boston Public Library.

The process would be sped up considerably if one had an agent on the West Coast who could scan the *Chronicle* for Zodiac stories and report on them by telephone. The same agent could be used to consult a local edition of the *Hansen Cross-Cross Directory* to determine that my phone number was listed to a Diane Merrill. She would then call my number and ask for Diane to make sure that there was somebody by that name living with me.

Some time after five o'clock on the afternoon of 11 July 1984, I received a telephone call from someone who identified himself as Donald Hubbard, an agent of the Federal Bureau of Investigation. He asked me if it would be convenient for me to receive him in my home later that afternoon. He said that he would not take up too much of my time. I said that I would be happy to see him, and I gave him directions as to how to get to my house. It struck me as odd at the time that he would have my phone number, which is not listed to my name, but not be able to connect the phone number with an address. I didn't wonder about it too much.

Just before Mr. Hubbard was scheduled to show up, I sent Felix to pick up Amanda at her day school and walk her back home. Just after he had left, a large American-made car pulled into our driveway. The individual sitting in the car was observed making some notes on a clip-

board). After a long pause, he got out and came to the front door. I had just been washing the dishes from dinner the evening before. We looked at one another through the screen door. He flashed identification at me that said he belonged to the FBI. I looked at his face. He wasn't smiling. In fact, he looked grim. I decided to keep my guard up against the possibility that he was an imposter. FBI people always smile.

Diane, Mr. Hubbard (if that is who he really was) and I all settled down at the dining-room table. He got out a note pad and a sheaf of papers done up in pale green covers. On the front was typed the title, (something or other) VICTIM: MICHAEL O'HARE. He asked me to identify the woman sitting across the table from him. I told him that she was named Diane Merrill and that she lived in the home of which he was now a guest. He replied that the reason he was asking was that it was important to him to know if she had anything to do with the news media.

He then proceeded to ask me if I knew somebody named Michael O'Hare ("How do you know this man?" he asked me, semi-Biblically). I said that we had never been introduced. He asked me if I had ever had a telephone conversation with Michael O'Hare. I said that I might have, but that I was not sure. He asked me if I recognized the contents of the pale green-bound documents. There was a schematic diagram of the cryptogram, an annotated copy of the Bus Bomb Diagram that I didn't recognize -- the annotations were the kind that I would have made, but it was not a copy of an annotated Bus Bomb Diagram that I had made. For instance, as I said to him, I recognized the Bus Bomb Diagram as being from the hand of the Zodiac. But I didn't know how this particular copy got into the hands of Michael O'Hare. For instance, my copies had inch-scales superimposed on them by San Francisco Police Department's crime lab. This copy didn't.

Mr. Hubbard told me further that Mr. O'Hare had complained to the FBI about receiving certain merchandise which he had not ordered. Had I sent him a quantity of clocks? I pleaded innocent. How about some videogame software? I walked hard and lied. He said that the reason he was asking these questions was that Mr. O'Hare had said that if I answered "yes" to any of these questions, he would sue me. In other words, the FBI was using Donald Hubbard to act as Michael O'Hare's attorney, in proposing the terms of this projected civil lawsuit.

Mr. Hubbard was sitting here before me after normal business hours. He was acting on his own time, not the government's. Secondly, he was practicing law on Michael O'Hare's behalf. Thirdly, and most important, he was not smiling. That clinched it. I was dealing with an imposter. This man had no connection with the FBI at all. I wondered if he was a confidence man. An FBI badge gets you into anybody's front door. As to Mike O'Hare's role in this encounter, if you have a beef with another citizen which might warrant a lawsuit, you don't get the FBI to serve notice for you. You pay your attorney \$25 (or \$50) or more -- depending on your attorney -- to write the other party a nasty letter telling him to cease and desist.

I didn't mind lying to Mr. Hubbard. In the first place, I wondered if he really was from the FBI (the absence of smile etc.). In the second place, I wasn't under oath, and he hadn't given me a waiver to sign saying that I didn't mind not having my attorney present. If he was a go-

vernment employee at all (which I rather doubted), he was here in my (and Diane's) home on his own time, performing a private service as Michael O'Hare's attorney, soliciting a civil lawsuit between two private citizens. I felt no obligation to be honest with him, as he was not being honest with his employer, the U. S. government. Why did he willingly lend Mike O'Hare the use of his FBI badge like this?

Mr. Hubbard asked me if I knew that the FBI Laboratory Division had "discounted" my interpretation of the Zodiac literature. I told him that it was the first I had heard this directly from the Bureau in the three years since Ethridge had finally "gotten around" to sending the Zodiac Cheesemonthy to Washington. When I mentioned the subject of Jean Webster, he told me flatly that there was no possibility that her murder was a Zodiac crime. There had been no letters to the Boston newspapers, and that proved it. Apparently, there had been some discussion of a connection between O'Hare and Webster in FBI circles. There was no other way that Hubbard could have heard about the Jean Webster murder. I asked him if he was aware of the fact that Z. had said in his letter to the *Chronicle* of 10 November 1969 (concerning the 340-Character Cipher) that he would not take credit publicly for future murders. He wasn't aware of the contents of this Zodiac letter. In fact, he said, he had been overseas during the period in question, and didn't know anything about it at all. He was simply repeating what someone else had told him to say.

I pointed out that we had quite conventional evidence, including handwriting comparisons, employment history, firearms registrations, and the like more, which left everyone who took the trouble to look at them to the conclusion that O'Hare deserved at the least a thorough investigation. I had proven that there was an absolute synchronicity between the Boise Cascade housing project that O'Hare had worked on at ADL's San Francisco office and the Zodiac events of 1969-1970. I had published an article on the subject. I gave him a copy. He thanked me for it and said that if it turned out that I had indeed identified this notorious criminal, he would come back and shake my hand.

On leaving, Mr. Hubbard assured me that if I had admitted to doing what Mike O'Hare accused me of doing, Mr. O'Hare would sue me. He looked so grim that I asked him if he was feeling all right. He said that he had a headache. I offered him an aspirin. He said that he would wait until he got home. I can't say that I never saw him again.

CLASSROOM UTILIZATION AND SPACE MANAGEMENT

One of the first things that I found out about Michael O'Hare was that he had a doctorate from Harvard. That meant that he had written a dissertation. My involvement with the Zodiac problem had been, up to that point at least, a literary one. I had discovered certain patterns in the Zodiac letters that appeared to identify a particular individual. One way to confirm the identification was to look for the same patterns in writings published by the person so identified. Until the spring of 1982, I still had not seen a photograph of O'Hare, nor had anyone obtained handwriting samples so far. Until then, I had no idea what might have brought him to California from Massachusetts. But I felt quite confident that if the Michael O'Hare literature showed the same linguistic traits as the Zodiac literature, there couldn't be any doubt that the two persons were one and the same.

A doctoral dissertation is, in effect, a self-published book. It is one of the few types of documents over which the author has absolute editorial control. Of course, the doctoral candidate who is writing a dissertation has to answer to his adviser and his dissertation committee. But they would have little reason to quibble about the use of this word here or that word there, and they would certainly have no reason to quarrel with the proper composition of the work. If there were going to be manifestations of invisible geometry in anything from O'Hare's hand, they would be found in the dissertation for sure.

I called up University Microfilms in Ann Arbor, Michigan. University Microfilms is the national clearing-house for dissertations. Since very few dissertations are ever published commercially, scholars have to have some way to get copies of dissertations in their field of research other than traveling to the university where the dissertation they want is filed. For a fee, University Microfilms will provide customers with either a microfilm or a paper copy of any dissertation filed in the United States.

These are exceptions, however, and as it turned out, Mike O'Hare's dissertation was one of them. University Microfilms had a listing of it, but for some reason, they were unable to provide me with a copy. I asked the lady to whom I was talking if she could find out why this was so. She asked me to hang on for a minute or two while she checked. When she came back to the phone, she informed me that they were unable to copy this title because the author had reserved copyright. That had made this dissertation legally out of bounds. She did give me the title, however: it was *Classroom utilization and space management*.

The title sounded very dry. It certainly didn't have the shock value of, let's say, "I like killing people because it is so much fun," the final sentence of the Zodiac's cryptogram. Yet the two utterances did have two things in common. Each was the first thing you read of that particular document. The second thing that they had in common was that each is written in 38 letters.

Over a year later, I got Whit Caldwell to go over to Widener Library at Harvard and obtain a photocopy of the dissertation. He leafed through it and then passed it on to Alan with the observation that "this thing is just crawling with Z's." It was, indeed. The letter Z was prominently displayed in just about every diagram, graph, and flow-chart. But it went way beyond that.

The more I looked through the dissertation, the more obvious it became why he had reserved

copyright. He had done so in order to keep this book out of the hands of University Microfilms, because that made it considerably more difficult for anyone in California to inspect it. Not every university professor teaching decision theory is going to hire a private investigator in Boston to photocopy a dissertation filed at Harvard.

Here's a passage found on page 5-36 of Chazanoff utilization. The subject is matching grants.

*... even an accessory building looks like a bargain if it does not cost anything. David understood this behavior when he awarded his son the first recorded matching grant (*1 Chronicles* 13).*

It was a good thing that this dissertation was in engineering and not in English. If it had been, someone on the dissertation committee would probably have noticed the error. 1 Chronicles 13 has nothing to do with matching grants whatsoever. It has to do with the fate of the unfortunate Uzza, who inadvertently touches the Ark of the Covenant and is blasted to smithereens by an easily irascible Jehovah, through no fault of his own. What the author refers to is found in 1 Chronicles 22:

Because of his sinfulness, King David was forbidden to construct the Temple. But the prohibition did not cover the acquisition of building materials. Here is the "matching grant" to which Mike O'Hare refers:

Now, behold, is my trouble I have prepared for the house of the Lord an hundred thousand talents of gold, and a thousand thousand talents of silver; and of brass and iron without weight; for it is in abundance: timber also and stone have I prepared; and thou mayest add thereto.

This isn't a matching grant. A matching grant is a gift in which the beneficiary is required to put up something in a mathematical ratio to the gift. Typical matching grants are 50-50, or 90-10, or any of a number of other numerical ratios. But what David says to Solomon is just "Thou mayest add thereto." Solomon may also say add thereto, if he feels like it. The main thing is that this allusion is inappropriate. It has been dragged in by the hair, in order to make some other point.

This Biblical reference also has another outstanding characteristic. It is a miscitation. "13" is not a typographical error for "22." It is intentional. It is just as intentional as the erroneous extensions on the shadow-angle in the *Progressive Architecture* photograph or the misspelling of "merry" as "mery." It is another example of error-tagging. The error draws our attention to what it adheres to, in this case, the word "chronicle," which is the title of the Zodiac's favorite correspondent in the San Francisco Bay Area.

Another non-eccentric observation that can be made about Mike O'Hare's doctoral dissertation is the quality of the draftsmanship. As the graphic exhibits pertaining to this document demonstrate, his hand shows the same wobbly lines and exaggerated tag-ends that characterize the Bus Bomb Diagram. One of the better diagrams from the dissertation illustrating this point is the one found on page 1-7 (Figure 1-2, "Decision process for classroom management"). Note that in this "decision tree," the central node is marked with the letter Z. The three ascending nodes are separated, on center, by intervals of 35mm and 70mm. Given the overall slovenliness of the drafting, it seems peculiar that the one interval should be exactly the double of the other, let alone that they should spell, in Morse Code, the monogram of the author's mother (BM).

In the branches leading up to the Z-box, there are five S-boxes, two B-boxes, and the rest are singletons. The Z-box stands outside of the main body of the diagram, just as the figure "String of Bombs" stands by itself within the Bus Bomb Diagram. By analogy to that document, I decided to

single path through a decision tree -- that cover operation & scheduling and management system. We will discuss the nodes

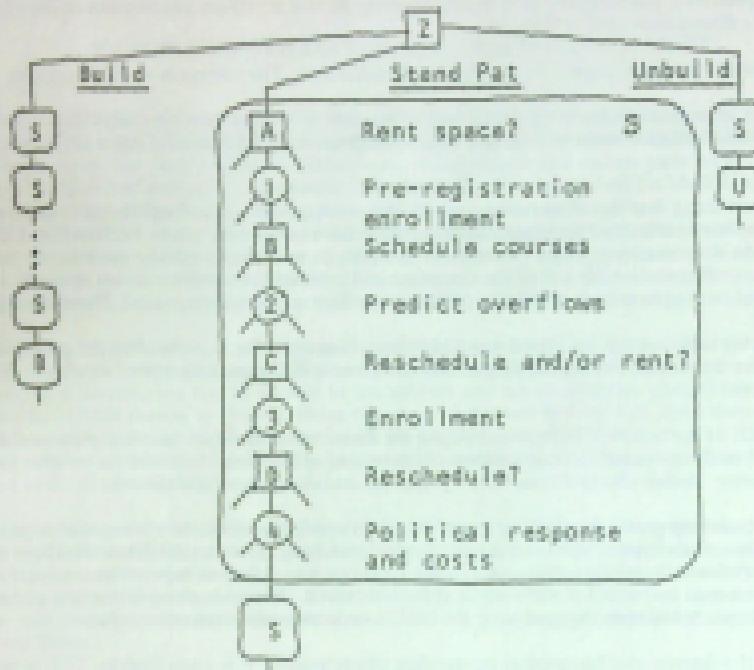


Figure 1-2
DECISION PROCESS FOR CLASSROOM MANAGEMENT

DRAFTSMANSHIP

This is an enlargement of a diagram found in the dissertation. The author has an advanced degree in architecture and has presumably had considerable experience in drafting. Note the wobbly lines, the exaggerated tag-ends sticking out, and other signs of what seems to be rather studied slovenliness. Having examined this drawing carefully, please compare the draftsmanship you find here with that of the Bus Bomb Diagram.

Classroom Programming and Scheduling

To attempt to knit together the various tools available for classroom management we will sketch the decision process faced by an academic administrator insofar as this extremely complicated process impinges on or is affected by space-planning issues. We will then point out where in this scheme some existing techniques are relevant, and where the techniques developed herein apply.

Figure 1-2 displays schematically a sequence of decisions -- a single path through a decision tree -- that cover operation of the room scheduling and management system. We will discuss the nodes in order:

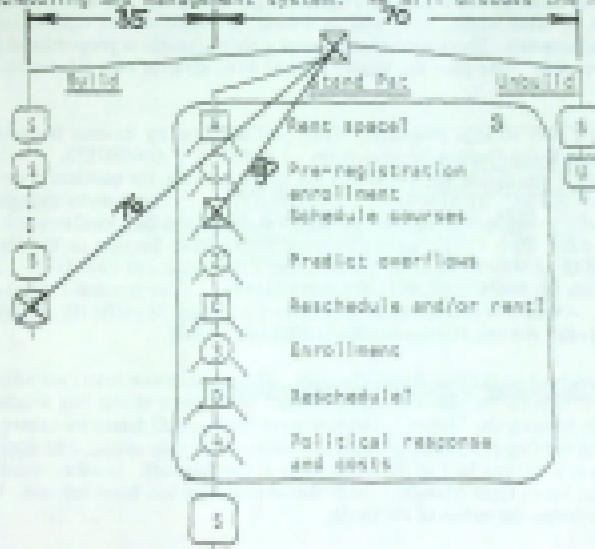


Figure 1-2
DECISION PROCESS FOR CLASSROOM MANAGEMENT

examine the relationship of the two B-boxes to the Z-box. I drew diagonals in all three figures and then connected the two B-boxes to the Z-box by straight lines. Curiously, the nearer B-box expresses an interval of 28mm; the other one expresses an interval of its exact double, 56mm.

Then there is the case of Figure 3-1. I can't say for sure what this figure represents in terms of classroom utilization policy, but I can say what it comes to in millimeters. The very first pair of coordinates shown are 55mm and 38mm long. The axes form a right triangle whose area is equal to half the product of 55 and 38, or 1045. This is 10101 in binary, with my revision into Morse letters: 1000 0 000 1 01, BEHTA. Please note that in this formulation, the number 38 has become a factor in the expression of this name.

Before going on with the dissertation, it will be necessary to take a detour back to the Bus Bomb Diagram -- and to ancient Greece. The subject is going to be the Golden Section (sometimes called the Golden Mean). Greek mathematicians of classical antiquity were fascinated by what they considered to be a most singular number known as the Golden Section. In decimal Arabic writing, it is 1.6180339... . It is also given with the Greek letter phi, as ϕ .14159... is given with π . The fraction of phi, like the fraction of π , goes on forever and ever. The ellipsis (...) indicates that it has been truncated, cut off, at an arbitrary point.

The Golden Section is arrived at by adding one to the square root of five, then dividing the result by two. These numbers are taken from the parts of a right triangle whose legs are to one another as one is to two. They are, in other words, unity and its double; the form of this right triangle is determined by binary mathematics. The hypotenuse of such a right triangle is proportional to the legs as the square root of five. One plus the square root of five, all over two ($(1 + \sqrt{5})/2$), is 1.6180339....

The Golden Section has a very strange property. When you divide it by its own fraction, i.e. 0.6180339..., the quotient is the Golden Section again. 1.6180339... / 0.6180339... = 1.6180339.... Conversely, when you divide the fraction by the larger number, the quotient is the fraction. In other words, 0.6180339... / 1.6180339... = 0.6180339.... The Greeks thought that the gods must have something very special in mind for such a number, and they tried to use it every way they could in everyday life. Greek architects used the Golden Section as the basis of proportions in public buildings, which might be, for instance, a foot wide and 1.6180339... x feet long. In binary, the Golden Section is 1.100111000110111011.... The fraction carried out to five places is 0.10011.... Note that it is identical in form to the integer 28 (100110). In fact, the Golden Section truncated after the fifth fractional place is 19/12 (or 38/24).

Now let's turn our attention back to the Bus Bomb Diagram. There is a device inscribed within the flag labeled "Timer." It looks a bit like a semaphore flag. One corner of the flag touches the circumference of the circle forming the "Times." The bottom of the flagstaff marks the center of the circle. The square forming the flag is standard geometric notation for a right angle. The dimension of the edge of the flag is exactly one half of the dimension of the flagstaff. In other words, this flaglike thing is a Golden Mean right triangle -- only the hypotenuse has been left out. If that hypotenuse is drawn in, it forms the radius of the circle.

I measured the radius at that point, between the end of the flagstaff and the corner of the flag tangent to the circumference. It is 9.5mm. A circle with a radius of 9.5 has a circumference of 60. Curiously, the product of the circumference and the Golden Section (60 x 1.6180339...) is 97, or the date of Bertrand Mangoules' birthday (9-7). Take a look at the way the Zodiac has written the word "Times." There is a rather wide gap between the group TIM and the following ER. TIM in Manx is 100 11, the fraction of the Golden Section carried out to five binary places. The "Times"

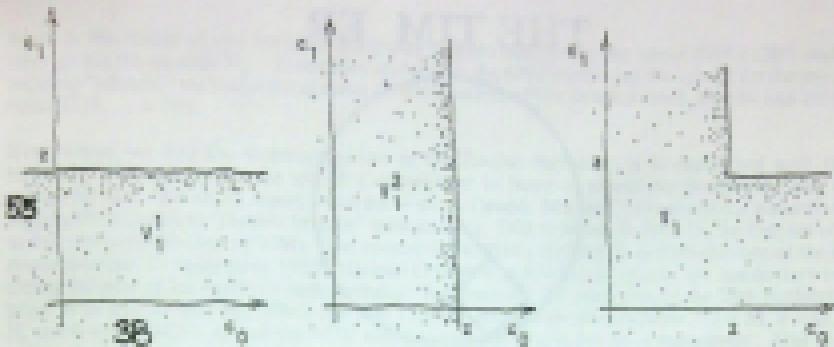


Figure 3-1
RELATIONSHIP OF V_0^2 TO V_0

RIGHT TRIANGLE

The figure in the upper left corner of this page is made up of a pair of axes, one of which is 55mm, the other 38mm. The area of the right triangle formed by these axes is equal to half the product of the operation 55×38 , or 1045 square millimeters.

$1045 = 1000 \cdot 0 \cdot 010 \cdot 1 \cdot 01$, Morse BERTA.

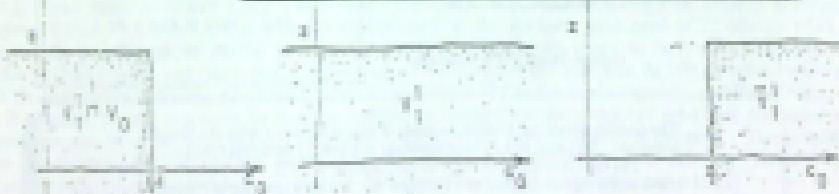
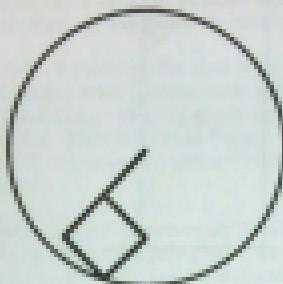


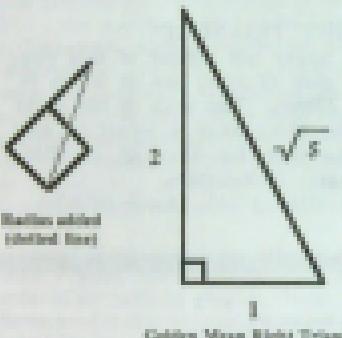
Figure 3-2
EXAMPLE OF EQUATION 3-8

THE TIM ER



The center of the circle is marked by the end of the flag-shaped device. Tangent to the circle is a square, standard geometric notation for a right angle. The long part of the flag-shaped device is exactly twice the length of all other parts. By drawing in the radius of the circle at the point where the two figures touch, we obtain a right triangle whose parts are proportional to one another as one, two, and the square root of five. This is a Golden Mean Right Triangle. The Golden Mean is equal to one plus the square root of five, all divided by two, or

LATHEMIS . . .



FII

A REMARKABLE NUMBER

$$1 = 1.414213562373095050113781126093414649661162247243143762357$$

$$1 = 0.618033988749894848507757814152658453617319549724489756$$

$$28 \text{ TIMES } 17 = 466$$

$$466 \times 1.6180339 = 764.5$$

$$764.5 - 764 = 0.5$$

B. E. R. T. A.

The Golden Mean (or Golden Section) is also designated with the Greek letter phi. Its value in base-two notation is 1.100111001100110111... .

The first five digits of the fraction, .61803, is 1931 — or 2844. 1931 is the digital spelling of FII (just the Zechar's spelling of "Fines" in the Run Beach Diagram). 1931 can also spell Morse 556, which the Roselle uses as a percentage for the Golden Mean. It also appears incidentally as "4-13" (by alphabetic quantities, 4 = D, 13 = M.)

The Golden Mean (or Golden Section) is also designated with the Greek letter phi. Its value in base-two notation is 1.100111001100110111... .

figure is the center of two invisible-gemometry angles, one giving the name BERTA (139°) and the other giving the number 38. Remember also that in the table containing the entries for the mystery building "whatsit," we found the number 63 (the product of 9 x 7) subdivided into 29 and 24 (63 x 0.6180339... = 39).

Everywhere we find the Golden Section in the Zodiac literature, it is connected with BM's birthday. When Z. called the sheriff's department in Napa to report the murder at Lake Berryessa, he said, "I want to report a murder — no, a Double Murder." He corrected himself, thus tagging the expression "Double Murder" with an error. DM in Morse is 100-11, the fraction of phi to five places (revision of TTM). The connection to BM's birthday is that on the date of the Berryessa murder, 27 September 1969, Michael O'Hare was 9345 days of age; his age in days replicating the date of his mother's 28th birthday. Incidentally, the attraction of the 28th birthday appears to be that on that day, BM's age was 11.886. By alphabetic quantities, 13 = M, 8 = H, 8 = H, and 0 = O. MHCO, as that would be written alphabetically, is her son's monogram. That seems to have been what the whole Zodiac rampage was about.

Before getting back to the dissertation, one more aspect of the Golden Section deserves to be mentioned. The special birthday was the 38th, and its date was 9-7-43 (= TIMES 17). Once again, the Golden Section is written 1.6180339... . The product of 38 x 17 x 1.6180339... is 1045, the Morse-to-binary writing of the given name BERTA (1000 0 000 1 001). I suspect that this reinforces Z.'s fascination with the Golden Section and its connection with BM's birthday.

On page 4-14 of Michael O'Hare's dissertation, we find Figure 4-1. There has been an error in pagination. A handwritten note informs the reader that page 4-13 is missing ("PMR: The thesis has no p. 4-13"). By alphabetic quantities, 4 = D, 13 = M. A Zodiac formulation ("Death Machine," "Double Murder") is error-tagged, which draws our attention to it. The error here is the missing page, just as with "whatsit" it was a missing name.

The vertical axis of Figure 4-1 is divided up into even multiples of one inch. Between 1. and .95 is one inch. From .95 to .9 is one inch. From .9 to .8 is two inches. But the last segment, from .8 to the junction of horizontal and vertical axes, is about 1.756 inches. I said "about" that much; in metric units, it is exactly 28mm. To make a long story short, the vertical axis overall is 147.5mm; the horizontal axis is 199mm. The area of the right triangle formed by these axes is (147.5 x 199)/2, or 14,676.25 square millimeters. The product of 14,676.25 x 0.6180339... is 9070, Berta Marguerite's birthday is 9-7.

In the spring of 1982, Whit Caldwell had obtained a résumé from Mike O'Hare. In that document, Mike admits to working for Arthur D. Little only in the years 1967-1968. In the summer of 1982, I had gone to South Lake Tahoe and established that the chronology of Mike's housing project, Incline Village Unit 6, which was depicted on the Zodiac's post card of 22 March 1971, ran exactly parallel to the Zodiac events of 1969-1970. Those two years, in fact, were when most of the Zodiac events had taken place, including all but three of the murders. In 1983 I talked with a Bill Benson, who had been employed by ADL in 1966-1972 in the same capacity as Mike O'Hare. He had told me that it would have been normal procedure for the engineer who had designed a project to return to the field to help shepherd it through the permit-approval process. These field trips would normally last several weeks at a time. If Mike had not worked for ADL in 1969-1970, as appeared to be the case from his résumé, then the connection was purely coincidental.

Whit had also talked to Carol Burchard O'Hare, the ex-wife, and she had told him that she remembered Mike's commuting heavily to California in the latter part of 1969 and the first part of

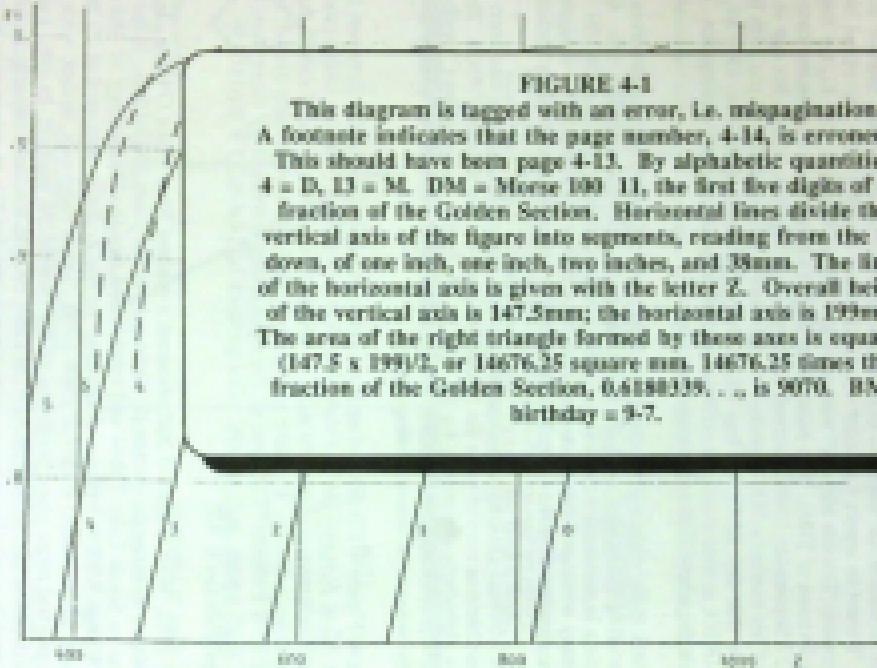


FIGURE 4-1
This diagram is tagged with an error, i.e. mispagination.
A footnote indicates that the page number, 4-14, is erroneous.
This should have been page 4-11. By alphabetic quantities,
 $A = D$, $D = M$. $DM = \text{Morse 100/11}$, the first five digits of the
fraction of the Golden Section. Horizontal lines divide the
vertical axis of the figure into segments, reading from the top down,
of one inch, one inch, two inches, and 38mm. The limit
of the horizontal axis is given with the letter Z. Overall height
of the vertical axis is 147.5mm; the horizontal axis is 199mm.
The area of the right triangle formed by these axes is equal to
 $(147.5 \times 199)/2$, or 14676.25 square mm. 14676.25 times the
fraction of the Golden Section, 0.6180329... is 9070. BM's
birthday = 9-7.

Figure 4-1
COMPARISON OF SMOOTH AND NOISY DISTRIBUTIONS [10]

1969 on an ADL job for San Diego International Airport. According to her recollection, he had been an ADL employee in 1969 as well as the two years he admitted to in his résumé. And in an article which appeared in *Architectural Record* in July, 1969 ("Fence designs to keep wind from being a nuisance"), Michael O'Phare and his co-author, Richard Krenauer, both admit to having just completed a job for Tampa International Airport in the employ of ADL.

At one point in the dissertation, Mike makes a remark about classroom utilization policy at the University of Illinois. He then footnotes the remark as follows: "The author's familiarity with the Illinois higher education system is derived from consulting work through Arthur D. Little, Inc., during 1969 . . ." (pp. 1-19 and 1-20). The work in this case entailed travel to Illinois, not California. But it is apparent that the information in his 1981 résumé is not quite complete. At some time after he learned that I suspected him of being the Zodiac, he "fudged" half of his employment record with ADL, and he omitted the years 1969-1970 on his résumé. The *Architectural Record* article and this footnote in the doctoral dissertation set the record straight. He was working for ADL in 1969-1970, the two years of Incline Village Unit 6 and the two hairy-duty years of Zodiac activity in the San Francisco Bay Area.

All things considered, it was not surprising that Mike had chosen to reserve copyright on his dissertation. It had made things much more difficult for anyone living in California. He was able to leave a time capsule in Harvard's Widener Library which would help to ensure that he got the credit for the Zodiac murders, but it would take so much time and effort to get at the evidence that it would postpone preservation by decades — or even enable him to avoid the consequences of his actions entirely.

THE GAME OF GOOSE

The city of Concord, Massachusetts, has two claims to fame. Its Old North Bridge over the Concord River was the scene of the first battle of the American Revolution, where the patriots fired the Shot Heard 'Round the World. The other thing about Concord is that that is where you find Walden Pond, where Henry David Thoreau lived the simple life for a while. Walden Pond is now a state park. Along the northern boundary of the state park runs a highway, the Concord Turnpike.

The four phone calls of 23 May were intended, I believed, to set the stage for some further information. The purpose was to see whether I had observed that the other big angle in the Boston scheme, the one whose apex was on the Eastern Airlines terminal, was 122°. Having determined that, I was to notice that John Webster's purse had been left by her husband at the intersection of a 38° and a 122° angle. I surmised that I was intended to analogize from the intersection of the 38th Parallel and the 122nd Meridian in Concord, California, to Concord, Massachusetts. If that is what my mystery caller intended, his expectations were indeed fulfilled. I was now poring over the USGS quadrangle titled "Concord, Massachusetts." And in doing so, I saw something curious about the Concord Turnpike.

The first nocturnal call after 23 May had come on 3 June, at 1:59 a.m. I noticed that on the Concord Turnpike, where it crosses the Cambridge Turnpike, there is a benchmark, BM 159. About two miles west of that point, where it crosses the Boston & Main right of way, there is another benchmark, BM 195. The clock time 1:59 can be expressed verbally two different ways: as "one-fifty-nine," or as "one before two." The word TWO in Morse is 1 011 111, binary 95. 195 is, via Morse Code, "one before TWO." This one ring at 1:59 a.m. could well refer to both of these benchmarks at once. There was also the element of symmetry: 95 and 195 are mirror-images of one another. There were numerous instances in the Zodiac literature of something important being enclosed within pairs of such bookends.

The next nocturnal call came at 11:21 p.m. on the 5th. It appeared to confirm my suspicions about the 1:59 call. Binary 1131 is 0000101001. The first group, 00001-, is an old friend, Morse BM. I set it apart as a vocabulary item. The following zero has the effect of multiplying what precedes it by two, 000010 is BMs2. What was left over was 1011, binary eleven, BM times two eleven. I went back to the Concord map. About halfway between BM 195 and BM 159 on the Concord Turnpike is a third benchmark, BM 211.

I took a closer look at the dates. My friend had waited a week between confirming receipt of the Eastern Airlines Letter (call at 6:58 a.m.) and starting this series of calls. I believed that the date of the first call must have been chosen for some purpose. The third of June is 6-3. 63 is one of those picket-fence numbers in base-two arithmetic: 111111. Of course, it is the product of 9 x 7. But in its picket-fence form, it has the same shape as two rings: 111 111. Morse 000. I was pretty sure that the date of the second call, 6-5, was significant. 65 is half of a familiar -- or familiar -- formulation, 130. He had just got through using 116, in the series of four calls on 23 May, to imply the concept "half." Having started using it, he appeared to have decided to keep on using the device. It made sense, in this case. BM 211 was about halfway between BM 159 and BM 195.

In the meantime, the same courier who had dropped the Eastern Airlines Letter in Chicago dropped

CONCORD, MASSACHUSETTS

Note BM 130 in downtown Concord, at the intersection of Main Street and Sudbury Road. A second BM 130 is found to the northeast of town, cut on the old railway grade. These two benchmarks, the only BM 130's on the entire mapsheet (approximately six square feet as printed by the USGS), are exactly 130mm apart on center -- within the microcosm of the map.

BM 130 written digitally = 1000 11 10000018 5000,
which can be paraphrased as "NINE One"

another in Rockford, Illinois, with the return address "J.W." (Joan Webster's initials) and a street address of "12238 Concord St." I wanted Mike to know that he and I were on the same wavelength.

On 19 June, there were two one-ring hangup calls, at 1006 and 1018 p.m. I struggled with it for hours before it started to make sense. It does make sense in the present context to see these two calls as a composite form. What I am going to make out of them may seem contrived, but you have to consider that what is going on here bears a closer resemblance to the game of chatades than it does to cryptography. In chatades, everything is contrived.

The number 1006 breaks down into two parts, 100 and 6. 100 is an old friend, the crossed circle ("One zero zero"). I read it here as the X in "X marks the spot." Six is binary 110, Morse letter G. The next number, 1018, is binary 1111100000. The first part, the picket fence, is binary 10 (11111). The last part, the four zeros, can be read as 000 0, Morse ZE. These two nocturnal calls at 1006 and 1018 p.m., can be read as saying, "Crossed circle, GOOSE." Right next to BM 211 on the Concord Turnpike is a topographic feature called Little Goose Pond. It missed being the title of a book by Henry David Thoreau by about a half-mile.

On the 26th, the same courier, who was now in Boston, dropped another letter. On the 27th, there was a receipt call for that mailing. But the Boston Letter had had nothing to do with the current disappearance. I believe that Mike was waiting for some kind of indication that I was following him. On 2 July, my courier in Hawaii mailed a USPS postcard to Massachusetts. On the message side, I had pasted a commemorative stamp showing a pond; swimming on the surface of the pond was a Canada goose.

That seemed to get things going again. On 6 July, there was a one-ring hangup call at 12:11 p.m. I chose to read it as "one before 211." There are two Goose Ponds; Little Goose Pond and Goose Pond proper. As you read from left to right (or west to east) on the map, Little Goose Pond is to the west of BM 211. Goose Pond is to the east of that point. It looked as if Little Goose Pond was the right spot.

There were calls on 11, 16, and 24 July, that turned out subsequently to make sense. But at the time, I was mystified by them. At all events, it appeared at the moment that Little Goose Pond was it. I had been in communication with Alan Neigher about what was going on. I believed that Mike was pointing out the location of Joan Webster's body. Obviously, finding her remains would be a major coup.

Alan made an appointment with Whit for the 22nd to take a look at the lay of the land. On that day, the two of them combed the area around the two Goose Ponds. Little Goose Pond turned out to be the center of a huge landfill project. If Joan Webster was buried there, she would never be found. But something turned up just west of Goose Pond, in a wooded area far from the nearest human habitation: it was a little picket fence enclosing a circle about seven feet in diameter. The fence was a foot high. It couldn't keep anything in or out. I asked Alan to describe its location on the map as precisely as possible. We were both using the same map as we spoke on the phone, the USGS map of Concord. He said that the picket fence was right where the USGS had printed the word "Goose" (of "Goose Pond"). In fact, it was right under the double G.

I interpolated the latitude and longitude to the nearest second. All of a sudden, the calls of the 11th and the 16th seemed to fall into place. On the 11th, there had been a one-ring hangup call at 11:00 p.m. sharp. On the 16th, there was another at 12:19 p.m. 1219 in binary begins with a familiar group, 100110-, Morse TIME. Here is 1219 spelled out in full: 1 00 11 0 000 11, Morse for

GOOSE POND

BM 185 and BM 189 are highlighted with circles.
The meridian 71°20' West passes through the waters of Goose Pond. Note that the G of "Goose" forms a meridian with the K of "Turnpike" and a parallel with the F of "Pond" (printed "Id"). Binary 7120 is 110 111 101 000 0, Morse GOOSE. The circular picket fence was found at the spot marked by the OD of "Goose."

TIMES 3. The spot at which Alan had found the little picket fence was $71^{\circ}20'11''$ west of Greenwich. Its latitude was $42^{\circ}26'30''$. Eleven was the longitude in seconds; eleven times three was the latitude. The dates contributed, too. The first call was on 7-11. By alphabetic quantities, 7 = G, 11 = K. The second call was on 7-16. That's GP. Directly over the G of "Goose" is the letter K of "Turnpike." The G and the K form a meridian, a line of longitude; the G of "Goose" and the P of "Pond" form a parallel, a line of latitude. The phrase **TIMES 3**, giving the latitude in seconds, came on that day.

I had read the clock time 12:11 as "one before 211," meaning the pond to the west of 100° 211. It wasn't the pond at all. It was the word "Goose" itself. It suddenly dawned on me that my caller was using words and numbers printed on the map as landmarks; he was working within the microcosm of the map as well as in the macrocosm of Concord. The word "Goose" was, within the macrocosm, a geographic reality.

Then I noticed something else. The nearest whole minute of longitude was $71^{\circ}20'$. I wrote out 7120 in binary and analyzed it for Morse Code spelling. I nearly fell off my chair. $71^{\circ}20'$ West runs through the waters of Goose Pond. And it comes within a hair of spelling the word GOOSE. Here it is, with my revision into Morse letters: 110 111 101 000 0, GOOSE. The second G is one digit different from the letter properly spelled (001 for 111). It's not perfect, but it is an astonishingly close coincidence. There can't be many instances of this in the whole world. The system of nomenclature for places and topographic features is completely arbitrary and has nothing to do with the system of assigning geographic coordinates. There are a handful of instances in which people have deliberately used geographic coordinates in place names, such as Treinta y Tres ("thirty-three") in Uruguay (Treinta y Tres is at 33° south latitude). But that is obvious. The coincidence between a place name given for any other reason -- such as a pond being frequented by migratory waterfowl -- and its latitude and longitude is an astrological long shot.

Here's an example. The word TEXAS in Morse is binary 1120(1 0 1001 00 000). The closest that any meridian or parallel with that number comes to the state of Texas is $137^{\circ}20'$ north latitude, which runs through Nicaragua. These days, right-wing politicians like Ronald Reagan would like to have you believe that Texas and Nicaragua are check-by-check. But I think that most people go along with geography and recognize that they are nowhere near close to one another. The nearly-perfect spelling of GOOSE by the meridian of Goose Pond is a convergence of systems, like D, letter number four, being four in Morse-to-binary, or Morse TEPA (1 0 11) and binary ten (1010) being the same. For someone whose mental life is based on number and Kabbalistic transformations of reality through manipulation of numbers, a coincidence like this one has to come as a confirmation. I believe that the purpose of the little circular picket fence was to correct the imperfect second letter G of GOOSE. The only other alternative would have been to correct the longitude by moving Goose Pond thirty-two minutes west, about twenty miles in the latitude of Massachusetts.

I talked Alan into getting Whit to have the spot dug up. On the 24th, the same day on which the last series of calls came, the area enclosed by the little picket fence was dug down to about four feet. There wasn't anything there but tree roots. It cost \$400. It was at this point that Alan began to grow visibly tired of Joan Webster. When I talked with him about it, he sounded irked. I could just hear him thinking about an endless series of \$400-craters all over the Commonwealth of Massachusetts. But it seemed to me now that this was really just the beginning. The spot marked by the little picket fence was the jumping-off point.

One of the best investments I have ever made was the \$40 that I spent in 1978 for a 1981 edition of

the *Encyclopédia Britannica*. It contains a wealth of knowledge that you can't find in subsequent editions. It seems appropriate at this point to quote one entry in its entirety from that edition:

GÉNOSSE (GAME OF). an ancient French game, said to have been derived from the Greeks, very popular at the close of the middle ages. It was played on a piece of card-board upon which was drawn a fantastic town, called the *jardin de l'Isle* (*garden-pavilion*), divided into 63 spaces marked with certain emblems, such as a tree, an inn, a bridge, a labyrinth, &c. The emblem inscribed on 1 and 63, as well as every ninth space between, was a *passe*. The object was to lead one's counter to number 63, the number of spaces marked through being determined by throwing two dice. The counter was advanced or retarded according to the space on which it was placed. For instance if it rested on the *tree*, it must remain there until each adversary, of which there might be several, had played twice; if it rested on the *ghost's head*, the player must begin over again, if it were beyond 63 it must be retarded a certain number of spaces. The game was usually played for a stake, and special fines were exacted for resting on certain spaces. At the end of the 18th century a variation of the game was called the *jeu de la Révolution Française*.

Readers will recognize in the Game of Génoise the origins of Monopoly and other modern board games. I wondered if it might not have something to do with what was coming over my telephone in the dead of night in the summer of 1984.

The calls were now coming not only in the middle of the night. They had also started coming to my place of employment, Litigation Support Corporation in San Rafael. The one-ring hangup at eleven o'clock on the eleventh of July was the first one of which I was aware. I was standing by the reception desk when it came in. The receptionist made a remark about it, and it occurred to me that Mike might have caught up with me at work as well as at home. I asked her to keep a record of all such calls. There was a digital clock at the reception desk, and I checked it against the telephone company time service for accuracy every now and then.

On 27 July, there were five one-ring hangup calls at work. They came at 10:43 a.m., 11:09 a.m., 2:14 p.m., 4:08 p.m., and 4:17 p.m. The last three were the easiest. They were another family portrait. 314 is 1000, 408 is 1100, 4:17 follows 4:08 by nine minutes, and four seventeens is 68, binary 10 00 10 0, binary NINE. It makes the number nine two different ways, and as in other places, it makes sense to read it as the numerical equivalent of the ninth letter of the alphabet, the phonetic L. GENE OHARE, BRR OHARE, and I -- that was the message.

In his letter suggesting the stellar exercise, the Zodiac had said that in order to find the "buried bomb," it would be necessary to "turn the magnetic indicator on Mount Diablo so north." I took this as a coded reference to magnetic north. At Concord, Massachusetts, the magnetic declination is 13°12' northwest. I laid out an astrolabe on that bearing anchored between the two O's of the word "GEOSES" and ran it out as far as my straightedge would go. It went straight through the center of the first O of the word "CONCORD," which was printed just north of the city. In the Bas-Bonh Diagram, the compositional principle had been to join circles together, center-to-center, by straight lines. I thought it odd that the same thing would happen here so precisely. And in the Bas-Bonh Diagram, there were five circles joined center-to-center. The series of calls of 27 July had consisted of five rings.

One of the first things that I had noticed, on looking at the Concord quadrangle, was that in the middle of town, at the intersection of Sudbury Road and Main Street, there is a benchmark, BM 130. There is one other BM 130 on the map: it is north and east of town, on the old railway grade east past the sewage treatment plant. Curiously, in the microcosm of the Concord quadrangle published by the USGS, these two BM 130's, the only ones on the map, are exactly 130mm apart.

center to center. What a coincidence! The first in this series of five calls was at 10:43. Binary 1043 is 10000010011. It is pretty easy to analyze. The first eight digits are our old friend 136 (10000000). The rest is 011, Morse letter W. "136W" was not hard to relate to the map in front of me; it referred to the BM 136 in downtown Concord; of the two, it is the westernmost.

The second call, at 11:09, took more work. There were five calls, five rings. I had grown accustomed to reading a particular number of rings (calls) as the same number of circles. The family portrait (3 14, 4 08, 4 17) contributed nothing in and of itself, other than to prove who had sent the message, unless its purpose was to bring the total number of rings up to a certain figure. The only other place where five circles were of any particular significance was in the Bus Bomb Diagram. I assumed that the purpose of adding on the three extra calls was to convey the concept of joining circles together by straight lines -- by analogy to the Bus Bomb Diagram.

There is a second O in the word CONCORD. I joined the two O's together, center to center, by a straight line, then joined them both to BM 136 in downtown Concord. A very interesting figure emerged. It was an isosceles triangle. The two base angles were 35° each, or BM in Morse. The third angle was 110°, or ME, ME BMx2.

What was even more interesting was that this isosceles triangle was divided by the magnetic-north azimuth coming up from "Ozone" into two similar isosceles triangles, each a 110-35-35. And the whole thing very much resembled an arrow pointing to the northwest. The first O of CONCORD, whose center was the tip of the arrowhead, was just above a feature called Poplar Hill.

I had actually hit on this scheme just before the calls of the 27th; they appeared to confirm it. In the meantime, I had purchased a postcard with an Olympic stamp on it (the Los Angeles Olympics had just begun). It was sheer coincidence that it turned out that way; the Olympic symbol is five rings linked together. On the message side, I typed "Having wonderful time. Wish you were here." I signed it, "O. Pop'l HIL". A courier took it with him to Los Angeles and dropped it on the 27th. By accident, I got off a receipt for the five calls of the 27th, in Los Angeles, the day before the calls came in. I am sure that the addressees must have been dumbfounded.

In any case, the call at 11:09 appears to refer to the 110° angle of the arrowhead. He had received the Bus Bomb Diagram the previous April with a nocturnal call at 11:06. Six is binary 110, Morse ME, a form of the first person singular pronoun. The first part is 110, the postmark of the Bus Bomb Diagram (Julian Date 110, or 20 April). In this case, 110, which I read as referring to the angular measurement of the tip of the arrowhead, is followed by another form of the same pronoun, I. The five-call series on 27 July 1984, then, contained the elements "136W," apparently referring to a particular point in the city of Concord, "110," referring to the angular measurement found at the second point, the center of the first O of CONCORD, and "five rings," to convey the concept of joining that second point to a third, also the center of a circle.

Now I was furiously reviewing in my mind the ancient literature. I thought I knew why the Zodiac had gone through all the migraines he did on 27 September 1989 at Lake Berryessa. Mike O'Hare was 9745 days old on that date. That explained the ceremony, the hood, the elaborate story that Z told his victims before attacking them with his butcher knife. But it did not explain the contents of the story. He had said that he had been born in Colorado and had escaped from prison in Deer Lodge, Montana. A quick call to Montana had proven that the prison-escape story was fabricated. But why did he tell it at all, and why did he pick on Deer Lodge?

There are two things that you can say about Deer Lodge. The first is that it is the home of Montana's only adult penitentiary, and the second is that it is right on Interstate 90. The initialism DL in

ISOSCELES TRIANGLES

The line of magnetic declination (15.5° west of north) carried forward from the OO of "GOOSE" passes through the center of the first O of "CONCORD." Joining that O to the second O by a straight line, according to the logic of the Bas-Point Diagram, and joining them both to the BM 129 in downtown Concord (1043 in "LMW"), forms an isosceles triangle having angles of 110° (NE) and 25° (SW). The magnetic-north azimuth divides this isosceles triangle into two smaller triangles, one of which is another 110° - 25° - 35° isosceles triangle. The whole figure appears to form an arrow. Just beyond the tip of the arrow, in a small grove of trees just south of the Concord River, there is a 120-foot contour line. A benchmark on that contour line would be designated "BM 130."



Morse, 100 0100, is a subdivision of the word NINE, 10 00 10 0. The postal code for Montana is MT, in Morse, 11 1, a subdivision of 111, Morse O. By reference to this subdivision and to the Interstate, Deer Lodge makes the expression "NINE O" two different ways. Just as a thought-experiment, I took the expression BM 130 and wrote it out digitally: 1000110000010. Curiously, the binary number formed is base-ten 9990. And the O at the tip of the arrowhead is the end of the expression CO. CO is the postal code for Colorado.

There was something very special about 27 September 1989 because the Zodiac's age on that date replicated the writing of the date of his mother's 38th birthday. But it wasn't just her 38th birthday. He was going to have his own 38th birthday in 1981, and part of the ritual at Lake Berryessa incorporated material that would be important in marking that occasion. "Deer Lodge, Montana" was just his oblique way of saying "Benchmark 130," and "Colorado" was just a disguised way of expressing the CO of CONCORD that marked the spot at Poplar Hill.

I noticed that just past the tip of the arrowhead, there was, in a little patch of trees just south of the Concord River, a 130-foot contour line. Where that contour intersects with the magnetic-north azimuth carried up from "Goss" I placed an imaginary benchmark. The number of a benchmark is its altitude in feet above mean sea level. Since the 130-foot contour is 130 feet above sea level, this would constitute a third BM 130, had the Geological Survey chosen to survey it in. I connected my imaginary BM 130 to the other two BM 130s. I was interested to see that the angle formed by the three, whose apex was in the little patch of woods, was 127°.

127 is another of those picked-fence numbers, 1111111. It redivides to form an interesting word in Morse Code: 11 111 11, MOTHER. The Zodiac is given to short forms because the long forms of many words and names form very large, unwieldy numbers. Take MOTHER, for instance. Via Morse to binary, this word is 16,130. It's a curious coincidence that in base-ten notation, it ends in .130. It might even be seen by a Kabbalist, especially one whose mother's name is actually 130 in Morse Code, as a convergence of systems. In any case, MOTH is only 127, which is a lot easier to deal with.

About this time, I got a phone call from Daphne Mohr, who was on the editorial staff of *The Intelligencer*, the monthly newsletter of San Francisco Regional Mensa. She told me that she had received a challenge from Darrell Bross to which I was supposed to respond. I couldn't imagine why he had chosen to express this challenge through intermediaries. Perhaps he felt that since the Code Duello requires seconds, he would use the pages of *The Intelligencer*, in a manner of speaking, to throw down his glove for him. Since our one telephone conversation in January 1981, over three and a half years before, he had never called or written me once.

Here is the text of the challenge and of my response, as it was published in *The Intelligencer*.

To Gareth Penn:

Please provide to me (or this publication) the names of people that you have in the past claimed were responsible for the "Zodiac" killings and a brief explanation of why you no longer believe them to be the perpetrator. While we are at it you might also provide the names of any police agency [sic] who [sic] has ever investigated any of your theories and the results of any such investigation.

To Darrell Bross:

My response to your first challenge is to observe that it is premised on a falsehood. I have never

changed my mind about the identity of the Zodiac, and therefore your challenge is meaningless.
In response to your second challenge, I would like to make several points.

- 1) *The police do not report to me. Consequently, I cannot tell you what they are doing, or have done, about this matter — if anything.*
- 2) *Efforts by private citizens, on the other hand, have resulted in the acquisition of considerable evidence corroborating my identification of the criminal. The evidence includes contemporary photographs, handwriting comparisons, firearms registrations, documented behavioral patterns, and biographical data placing the subject in the right place at the right time and in connection with a particular Zodiac document (see my article, "Tiebar Village Unit 6," in the August 1981 issue of The Eophorizer). . . .*
- 3) *Some of this evidence is in the hands of the Intelligence staff right now. I presented it in a two-hour talk at the Regional Gathering in Santa Rosa last May. Any time anybody wants a similar public presentation, I would be happy to oblige.*
- 4) *I have published a general challenge to Humans to examine the evidence and make up their own minds. (The Eophorizer, December 1981 and November 1982). I got no takers, including you. Now, having chosen not to examine the evidence, you demand that I respond to a challenge from you which is based on ignorance of that evidence.*

- 5) *Three years ago, I approached you, in your capacity as coordinator of the Court of Last Resort, about using the investigative capabilities of COLR to obtain evidence such as that enumerated above. You agreed to do so, but then you failed to keep your word. You also didn't even call me back to inform me that you had changed your mind. I also note that you were at the Regional Gathering in Santa Rosa last May and could have attended my presentation of that evidence, and that you did not.*

After this item appeared in print, I sent Bross a copy of the Progressive Architecture photograph, pointing out in my cover letter the peculiar extensions of the shadow. I issued a challenge of my own; either to explain the behavior of light in this photograph, using the known laws of physics, or else to provide me with some kind of reasonable explanation for the author's behavior. I didn't demand that he base his answer on any special knowledge; I asked simply that he use his imagination and come up with any plausible story that would explain why the author had retouched the photograph to produce the phony shadow. In the nearly three years that have gone by since then, he has never responded to my challenge, even though I responded to his.

On 3 August 1984, one-ring hangup calls were recorded at 9:04 a.m., 11:40 a.m., 12:51 p.m., 2:22 p.m., and 2:26 p.m. These were five rings, like the Olympic symbol printed on the Los Angeles Card. I believe that this series was intended to be a receipt. Over the next week, there were three single calls of no particular interest.

On 10 August, however, one-ring hangup calls came at 12:38 p.m. and 9:22 p.m. 12:38 was the first clock time marked by the three nocturnal calls on 19 February (at three-minute intervals). My mystery caller was to mark that particular time with one-ring hangups on four more occasions. This time, the call at 12:38 was associated with another at 9:22.

These two times replicate the bore-sizes of the three firearms used by the Zodiac: a .38-caliber revolver, a 9mm automatic, and a .22-caliber firearm. Just in case there is any doubt about the iden-

ity of the person placing these calls, the fact that the Zodiac had used a .38-caliber firearm to kill Paul Stine had never been published. It was known to a handful of newspaper reporters and police investigators. There may have been a few people close to that circle who knew about it, but it was not generally known. In the California article, I had followed published newspaper accounts (which identified the Stine murder weapon as a 9mm pistol). It was only when I met Paul Avery in May 1984 that I found out the truth.

1238 has another interesting property. It divides in binary as 100101010, 38 followed by 22. It thus replicates two of the firearms-calibers in binary. Whereas in the base-ten number, 38 is the second element, in binary it is the first. The calls at 12:38 and 9:22 came on the 22nd day of the year. A new kind of game had started.

THE NUMBER OF A MAN

On the evening of 30 October 1966, the Zodiac was waiting in the parking lot of the Riverside City College library, looking for a suitable victim. He intended to use a knife on his homicidal debut, and the victim would have to be someone he could easily overpower. And given the device which he planned to use to gain his victim's confidence, it would have to be someone who could be made to feel helpless at the prospect of having a disabled automobile. His choice was a woman of small stature.

When Cheri Jo Bates drove up in her Volkswagen beetle, parked, and went into the library, all the requirements were filled. While she was away from her car, he opened the cover of the engine compartment and disconnected her battery and the middle wire of her distributor. When she came back out again with a couple of books on English composition, she turned the key in the ignition lock and nothing happened. She did not even hear the click of a solenoid.

About that time, Z. approached her and offered her a lift. She accepted, and on the pretext that he was walking her to where her car was parked, he lured her about three blocks away into an alley, where he struggled briefly with her, then succeeded in pinning her to the ground, at which point he cut her throat from ear to ear. She had screamed a few times, but nearby residents who had heard her did not think to call the police. Finally, he reached into his pocket and took out a man's Timex watch, set at 12:12, and left it beside her body. He had broken the wristband in advance so that it would look as if it had come off accidentally during the struggle over her life.

In all likelihood, he did not know the name of his victim until the next day, when her death was reported in the *Press-Enterprise*. About a month later, he sent the letter titled "THE CONFESION" to the newspaper and the police. In it, he referred to his victim once by name: "MISS BATES WAS STUPID. SHE WENT TO THE SLAUGHTER LIKE A LAMB." It didn't strike anyone as odd that he should refer to her as "Miss Bates" (MB). I am not speaking from experience, but it seems to me that there are few relationships as intimate as the one between murderer and victim, especially when the murder is carried out at such close quarters.

Five months after that, a second letter was mailed in Riverside. This time, there were three copies, and they went to the newspaper, the police, and Joseph Bates, Cheri Jo's father. Here is how it looked:

BATES HAD
TO DIE.
THERE WILL
BE MORE.

The copy addressed to Joseph Bates was signed, "Z." The Z was made to look like an Arabic numeral three.

While "Miss Bates" sounds overly formal, "Bates" is not only off-hand, but it is also a marked change of tone from the first letter. Why did he refer to her here as "BATES" -- and why did she have to die? I don't think it had occurred to him at the time of the Confession Letter, but when it

did, the discovery mandated a return to Riverside in order to mail the second letter. There was a point that needed to be made.

Here's the name BATES in Morse Code: 1000 01 1 0 000. It's binary 1072. Now here's the word DEATH: 100 0 01 1 0000. It is another redivision of the number 1072. Of course BATES had to die; her very name was DEATH.

There was no way that the Zodiac could have known in advance just how suitable a victim Cheri Jo was going to be. It was perhaps the most amazing coincidence to date in a life filled with remarkable -- and Kabbalistic -- coincidences. It must have had the effect of reinforcing his belief in his singularity. How many other people are there who have a surname which is spelled by a natural number? And of those, how many were born on a date which gives the supplement of the index? And if there was such a person, did the mother who bore him have a monogram which spelled her age at the time of his birth (BM = 35)? And did the year of his birth also spell the place of his birth (YY = 40)? And even if there was just one other person like that in the whole world, was it likely that his mother had celebrated her 38th birthday (8 = TIME) on a date which spelled TIMES 17 -- or anything even remotely like it?

From being the passive recipient of so many coincidences, it is a short step to the willful creation of coincidence. I was born on 1 January 1941. By coincidence, my sister was born on 8 August 1948. It was a standing joke in my family; I was 1-1-41, and she was 8-8-48. By another coincidence, I married a woman who had been born on 2 February, 2-2 (the year didn't fit this time). Our first child was overdue in late March, and if he didn't make it by 4 April, we decided to have him induced so that his birthdate would be 4-4. My sister told me in all seriousness that she was hoping that her first child, who was due in the summer of 1973, would hold off until 7 July, so that her birthdate would be 7-7-77. I suppose that if people attach this much importance to coincidence surrounding birth -- so much that they would consider hastening it with a pitocin injection -- it is not too far-fetched that someone else would extend manipulation to death as well.

There's another interesting coincidence, by the way. DEATH in Morse Code is binary 1072. BIRTH is binary 8272. They both end in 72. And the difference between them is 7200, which begins with 72. It has no intrinsic significance at all, but it is a remarkable coincidence, one which appears to demonstrate how the phenomenal world, in which people are born, live and die, converges on the universe of numbers. Here's another one. When you write out the English words for certain numbers in Morse Code, you get another entirely different number. ONE, for instance, Morse 111 10 0, is binary 66. TWO, Morse 1 011 111, is 95. THREE, 1 0000 010 0 0, is 520. The numbers FOUR through EIGHT cannot be written this way so as to produce a distinctive number, since they all begin with leading zeros. NINE, however, is 10 00 10 0, binary 68. None of these Morse-to-binary writings bears any resemblance to the quantity of the number expressed. That is the case until you get to TEN, which is Morse 1 0 10, binary ten. TEN is a convergence of systems, rather like the near-convergence of the word GOOSE and the longitude of a geographic feature having that word in its name. It is, moreover, the base number used in everyday arithmetic.

Bernie Margoldies had as little choice about her birthdate as the Zodiac had about his first victim in Riverside. Yet she just hit on a date that has a very peculiar property. The date is written numerically as 9-7. Binary nine is 1001; seven is 111. Written in that same order, 1001 111, 9-7 is a redivision of 1001111, binary 78. Seven and nine trade places, via base-two.

We all have some degree of control over our lives. Even though we are given names at birth, we have the power to change them. Women customarily change their surnames on marriage -- or may

choose not to change them. Given names are frequently abbreviated; men who were christened Michael usually prefer to be known as Mike. Men in particular who are not fond of their given names may use their middle names instead, or resort to a nickname. For any one of a dozen different reasons, many people choose to change their names completely, by court order. In most states, it is now possible to exercise some control over automobile license plates, and vanity plates have proven to be a bountiful source of revenue. It is also possible to request a telephone number which expresses a name, a product, or a set of initials (even in Morse Code).

We do not have this same degree of control over our Social Security numbers. They are issued by a government agency that does not care in the least whether the number they hand out to a particular individual expresses anything about that person's peculiar circumstances. If it does, then it is purely coincidental, a statistical long shot. It seems likely that when those coincidences do take place, they go unnoticed. How many people have ever examined their Social Security numbers in binary, for instance, looking for patterns that confirm their opinions of themselves as being extraordinarily singular?

Let's look at Michael O'Hare's Social Security number. It was issued in New York City, which is why it begins with 117-. There was no way that that could be changed. The balance of the number is determined by the order in which it was issued, with respect to other New York City numbers. The rest of it is 33-0128. There is another mildly peculiar coincidence. This part of the number is made up entirely of powers of two, $32 = 2^5$, $2 = 2^1$, $128 = 2^7$. The exponents, the powers of the base number two, appear in this order: 5, 1, 7.

117 is commonly read in spoken English as "one seventeen." It is highly ambiguous when read that way. It means either "one hundred seventeen" or "one times seventeen." "One seventeen" can mean "one of the class of things called 'seventeen,' i.e., 17." Let's look at it both ways and let's do the same thing with the sequence of powers of two in the latter part of the Social Security number, 512.

117 plus 512 is 634. 634 divided by 2 rounds off to 202, which is the Morse-to-binary spelling of the name MIKE. 634 is just about 202₅. 117 appears in the Social Security number before the 5-1-7 sequence of powers. So let's read it as a minus. 117 before 512 is 512 minus 117, or 400. 400 in binary 110 0 10 0 00, GENE (and I).

One seventeen, 1 x 17, plus five seventeens, 5 x 17, is 102, or 6 x 17. Six seventeen (617) is the Area Code of Boston, Massachusetts. One seventeen before five seventeens, or 85 minus 17, is 68, binary 10 00 10 0, Morse NINE, which can be substituted in Zodiakese for the ninth letter of the Roman alphabet, the first person singular pronoun, I.

The Social Security number is written in nine digits. The sum of the nine digits of this particular Social Security number, $1 + 1 + 7 + 3 + 2 + 2 + 1 + 2 + 8$, is 27; when we cast out nines, we get nine ($2 + 7 = 9$). Now here's the most interesting thing about this Social Security number: let's divide it by nine, $117332128 \div 9 = 13035792$. The first three digits of the quotient, 130, are Mike O'Hare's mother's given name. The next two, 35, are her monogram. And if we read 792 as T9 to the base two — we have her birthday. 9-7 in base two notation, once again, is binary 79.

The Social Security Administration had nothing to do with this rather remarkable concatenation of personalia relating to Mike O'Hare and his parents appearing in his Social Security number. It was sheer coincidence that such a thing should happen. But the number that had bestowed on this individual identified him not with a mindless string of digits, but with very significant information

identifying him by his name and by his parents' names, when subjected to a few simple Kabballistic manipulations.

Charl Bo Rizzo was well suited to be the Zodiac's first, and possibly most important, victim, not just because of her gender and physical stature, but because of where she was. Mike O'Hara's Social Security number gives the longitude of Riverside, and Z. refers to Riverside repeatedly as "117," the abbreviated form of that number. Her life was the sacrifice that honored the number that marked its owner as being chosen by the universe for utter singularity. His choice of site for his first murder identified him; it was an expression of his individuality. His victim was just a token drawing attention to that site, attention which for the better part of two decades resulted neither in apprehension or comprehension.

The work of the Zodiac was perceived as being without plan, design, or order. It was considered to be meaningless. But it had a very profound meaning. The author, who had had many considerations of infinitesimal probability bestowed on him by blind chance, saw design in random happenstance. Then he turned things around and created a design of his own, which he disguised as the work of random happenstance. The work challenged the viewer to find the design imposed on it by its maker, and by finding it, to determine his identity as one who had himself been singled out for distinction as the recipient of a supernal design.

The Zodiac had been named in the language of God. Having discovered that, he set out to learn that language, so that he could speak it himself. And speaking it, he found that there was no one in the universe with whom he could converse other than himself. He was as solitary on the earth as God was in Heaven, if there was a God. And doubting that, he tested the system. He did outrageous deeds, using the language of God, to advertise his existence to anyone else as singular as himself, and he got no response. There was obviously a vacancy in the universe, and he promoted himself into it. He scanned Heaven and looked down on the earth from the perspective of the Zodiac. From there, he amused himself by idly tracing designs on the planet occupied by the race that had no power over him. He was not just beyond the law. He was beyond words.

HIDE AND SEEK

About a year after I had first gotten into contact with the Websters, Terry Webster called me to say that there was another suspect in the murder of her daughter. This person was named Leonard Paradise, and there were a lot of things about him that made him look likely. She told me that the strongest evidence was a jail-cell confession that Paradise had made, in which he had admitted to two fellow-prisoners that he had murdered both Jean Webster and somebody named Marie Iannuzzi. I didn't get a lot more detail out of her than that, and since I didn't know at the time what to make of what I had, I was inclined to believe that she knew what she was talking about. The events of February 1984 completely changed my mind, however, and subsequently, I found out a lot more about Paradise.

The confession had been reported by two inmates, one of whom was under a death sentence at the time he reported the supposed confession. The other informant had murdered his own girlfriend. A relative of hers, convicted of a felony himself, was about to be sent to the prison where her murderer-boyfriend was incarcerated. The first convict got his death sentence commuted and eventually got a retrial at which the state declined to put on any evidence against him; this time, he was acquitted of the charges for which a jury had originally condemned him to die. The other convict was transferred to another prison in exchange for his testimony against Paradise. Both men obviously had bought their lives with their evidence against Paradise. For his part, Paradise denied having uttered this confession. All three men took polygraph tests, and even though two diametrically opposite stories were being tested, all three passed with flying colors.

The more I found out about Paradise, the less sense the story made. According to the jail-cell confession, he had just driven up to the baggage-claim area at Eastern Airlines and offered Jean Webster a ride home. She not only accepted the lift home, she also agreed to a midnight cruise on his fishing boat, during which he raped and murdered her by bashing her with a whiskey bottle. At least, that's what the reported confession says happened.

George Webster is a vice president of ITT. Before that, he had a rather exalted position in the Central Intelligence Agency. Terry Webster called me up once to apologize for having been out of touch. She said that her father-in-law had died and that she and George had been spending a lot of time in New York tending to his estate. She said that they had had to auction off a Velsquez, and she complained to me about the low price that they had got for it. I forgot the amount, but it was enough to put my two children through college. George told me that he had given Jean a going-away present of \$200 at Newark the evening of her disappearance. I know from Terry's account of her relations with the police in Massachusetts that she and George had been throwing their weight around and they had considerable weight to throw. The Websters, in short, are the kind of people that C. Wright Mills once characterized as "The Power Elite."

Leonard Paradise grew up in a blue-collar neighborhood. He dropped out of school in the eighth grade so that he could pursue a career of peddling claims door-to-door out of a bucket. He had acquired the sobriquet "Lenny the Claims" for this reason. He had a knack for losing cars and boats. Insurance carriers had found reason to doubt his veracity when it came to these losses, and he had been in trouble with the law on this account. (I wonder why it never occurred to anyone that he ought to be called "Lenny the Claims.") Whatever he calls himself, Paradise is the next best thing

to illiterate. He is the kind of person who writes "probaby" when he means "probably." At the time that Joan Webster disappeared, he was working as a bait salesman in a clam diggers' shop. Leonard Paradise, in short, is the kind of person that C. Wright Mills would have called a "lowlife."

Add to that the fact that Joan Webster was a graduate student at Harvard and was in her mid-twenties, and that Paradise was in his early fifties, not to mention overweight, and it makes it appear highly improbable that a person like her would have accepted the offer of a lift home from a person like him. In fact, the only circumstances under which I can imagine such a thing happening would be her being stranded by a blizzard on the Al-Can Highway and that Leonard Paradise came by, driving the only snowcat within a five-hundred-mile radius.

Logan Airport has excellent public transportation. It is one of the few airports in the world which are served by subway. There are the usual buses and taxis available, and Joan had had plenty of folding money in her wallet. She had left her parents' home early in order to work on a project that was due in class on Monday morning. Why would she impulsively go out on a midnight date with a ruffian like Paradise, whom she had just met for the first time at the curb of the Eastern Airlines passenger loading zone?

She had to have left the airport willingly with her abductor. It was the middle of a holiday weekend, and the airport was thronged with travelers. If she had been abducted forcibly, some impression should have been made on the witnesses standing around by the hundreds. Nobody remembered seeing a struggle or hearing cries for help. Nobody saw any weapons. And whoever picked her up also took her luggage along. That raises an interesting question of etiquette. If you abduct someone who has a tote bag and a suitcase, who carries the luggage, the abductor or the abductee? If there had been a struggle, you would think that the luggage would have been abandoned. But even in the scenario provided by the jail-cell confession, there is no question of violence having been used. The two convicts both testified under oath that Paradise had told them that Joan Webster had come with him of her own free will.

She had to have gone willingly with her murderer, and that suggests that he was the type of person to whom a Joan Webster would entrust her safety. The idea that Leonard Paradise was that type struck me as the most outlandish theory I had heard in ages. And it was that line of reasoning that had intuitively suggested Mike O'Hare to Dan Goldfarb in the first place. It made sense for all the reasons that the Paradise theory did not. A Harvard faculty member, who also had ties to the architecture department, would be just the kind of person who might offer her a ride and not get turned down. It is not at all implausible that Joan and Mike had a nodding acquaintance ship. It would have been easy in that case for him to pick her up. For some time, that made sense to the Websters, too. But somewhere along the line, they were persuaded by an ambitious prosecutor named Timothy Burke that all the sociological and educational differences between their daughter and Leonard Paradise didn't matter. The testimony of the two convicts who purchased their lives with their evidence against Paradise was all that counted.

In July 1984, about the time that Alan was having The 5400 Hole dug at Goose Pond, Paradise was convicted of the murder of Marie Lannuzzi. Terry Webster, who was close to the prosecution, told me that the prosecution strategy was to get Paradise convicted of as much as they could pin on him, jail him, and then throw the key away. When it was clear to him that he would never get out of prison anyway, they would offer him a deal. He could get any prison he wanted, choose his own work assignment, enjoy a private cell if he wanted one, as long as he confessed to the murder of Joan Webster. In that sense, at least, the Marie Lannuzzi murder trial was not about the murder of Marie Lannuzzi, but about the murder of Joan Webster. It certainly didn't bear much resemblance to justice.

Marie Iannuzzi had been a voluptuously built young woman in her early twenties. She lived with a boyfriend, David Doyle, but she was often unfaithful to him. They had fought constantly about her infidelity. On at least one occasion, Doyle had attacked her, putting his hands around her throat as if to strangle her. When they fought, she often scratched his face. Their neighbors were familiar with their battles.

On the evening of her death, Marie and David had been at a wedding reception together with Leonard Paradiso and his girlfriend. Marie was very drunk and made passes at all the men. David flew into a rage; they fought and made quite a scene. He stormed out of the party by himself. The host asked Paradiso and his girlfriend to take Marie home; she was too intoxicated to make it by herself. She was wearing a black leotard, black tights, a red wraparound skirt, and a scarf.

Paradiso dropped her off at a bar near the apartment which she shared with Doyle. She said, he recalled, that she was afraid to go home and confront Doyle. Some time later, Paradiso came back to the bar and left with Marie. Or perhaps it was Paradiso's girlfriend, or Paradiso and his girlfriend; the testimony of the people in the bar was mixed on this point.

In any case, her body was found the next day out in the marsh near the clamdiggers' shop where Paradiso peddled his. She had been strangled with her own scarf, and her shoes and tights were missing. The medical examiner found semen in her vagina. Ordinarily, if there had been any reason to suspect rape, the semen would have been examined to determine the donor's blood type. But in this case, there were none of the scratches, cuts, or bruises that usually suggest that a rape has taken place. Rape was the furthest thing from the medical examiner's mind when he examined her body, and so no semen test was made.

Here is what the state had against Paradiso. He had been seen leaving the bar with the victim. Her body had been found near his place of employment. And the two coroners had said that he had admitted killing Marie Iannuzzi to them. Of course, they had also said that he had admitted to the killing of Joan Webster. But the judge instructed the jury not to consider anything that they had heard or read about Joan Webster in considering the matter of Marie Iannuzzi. Paradiso had already been convicted of the Webster murder — in the pages of the *Globe* and the *Herald*, which had acted as mouthpieces for the prosecutor, Timothy Burke. Burke had revealed every bit of evidence that he thought he had against Paradiso to the newspapers even before there was an indictment — which is not to say that there ever was an indictment, because to this date, no grand jury has found Burke's evidence to be persuasive enough to warrant binding Paradiso over for the Webster murder.

Three days after the Iannuzzi murder, David Doyle fled to New Jersey. He tried making his living by carrying baggage at Newark Airport, but his new career was interrupted by the police, who returned him to Massachusetts. He said that he had fled the state because the people in his neighborhood were openly accusing him on the street of Marie's murder. One of the things that made them think him guilty was that he had big scratches on his face the morning following her death. Doyle testified variously that the scratches had been inflicted by the family cat (to the Massachusetts State Police) and that he had acquired them in a barroom brawl (to the Suffolk County Grand Jury). His story changed with the occasion.

Some time later, a friend of Doyle's went to the Massachusetts State Police and told them that while they were doing drugs together, Doyle had admitted killing Marie to him. When Doyle learned of this, he attacked his friend with a length of pipe. He was prevented from braining him only by the intervention of passers-by. On another occasion, Doyle threatened his friend with a knife. On another occasion, he kicked a vicious dog on him.

At Paradise's trial, Doyle testified that he had been at his mother's home after he had left the restaurant. The Massachusetts State Police had not thought to check his alibi with his mother until more than a year after the murder. When they asked his mother, she said that her son had stayed home with her that evening, except for some time when he went out for a walk. She didn't remember how long his walk had lasted.

Many women wear tights over their leotards; others wear them under. If Marie Lanza was one of the latter sort, then in order for her to have sexual relations with anyone, she would have had to take off her leotard first, then her tights. In order for her to be found wearing only the leotard, in that case, her murderer would have had to take off her leotard, remove her tights, rape her, kill her, and then put her leotard back on her. If she was wearing the tights over the leotard, he could have pulled them off; but then, he would have had to contend with the catch of the leotard, which did not have a snap closure. Besides that, there was just no evidence of rape whatsoever, only that she had had sexual relations with a man whose identity was unknown.

Rape doesn't make much sense, based on what we know about the character of everyone involved. Marie had been flirting with everything in pants that evening. She had a history of promiscuity. She was very drunk. It would not have taken much effort on the part of a man to get his way with her. Yet the state alleged rape against Leonard Paradise. The reason that they had to allege rape was that without rape, there was no motive for murder. And under the circumstances, they had to have a motive. They didn't have anything else.

The prosecution scenario went like this: Paradise took Marie Lanza away from the bar to a secluded location, where he forced his attentions on her. She resisted. He wrapped her scarf around her throat and strangled her into a state of unconsciousness, then raped her. After he had finished raping her, he strangled her some more so that she died. Nobody saw him do this, and he did not confess to it. There was no physical evidence to support it. It was the only way that a rape charge could be made to stick, given the lack of evidence.

There was another difficulty. If Marie was in fact already dead at the time of the alleged rape, was it rape? Can you rape a dead woman? The jury sent to the judge for instructions on that point. While the jury is out, let me suggest another scenario. Marie Lanza had had sexual relations with a man, but willingly. She removed her own clothing and dressed herself again afterward. She did not put her tights back on because it was too much trouble; that may be so because she was in an automobile at the time. Maybe it was Paradise's automobile. Then she went home, pants in hand, to the apartment which she shared with Doyle. He had been sitting there fuming for hours, looking at the clock every two minutes and tapping his foot. When she walked in with her tights wadded up in her hand, he put two and two together. One of the few bits of circumstantial evidence against Paradise was that the body was found near where he worked. The site was also a hundred yards from the route along which Doyle had used to haul trash for a living.

When the jury came back, they found Paradise guilty of both rape and murder. They had had to create the rape out of the whole cloth in order to justify the murder charge; otherwise there would have been no case. But it should not be too surprising that the state got its verdict. Paradise had already been convicted of the Joan Webster murder in the press several times over. The judge instructed the jury that Joan Webster had nothing to do with the present case, but he was asking them to dismiss from their minds what they had been reading in the papers for almost two years. The very fact that he had to give them that instruction is an indication of the atmosphere within which the Lanza trial took place.

I was in communication at the time of Paradise's conviction with someone who lives just outside of Boston. The subject of Joan Webster came up, and she informed me that her boyfriend had told her that Joan Webster's murderer had just been convicted. That gives you some idea of the power of the press. What she meant to say was that someone who had been accused of murdering Joan Webster by the newspapers only had been convicted of another crime. But she easily got the two confused. At all events, it was the explicit intention of the prosecution to use the Mario Iannuzzi trial to punish Paradise for the crime with which he could not even be charged. And it is obvious that the jury felt the same way about it.

Terry Webster was sitting in the courtroom throughout the Iannuzzi trial, looking at the man she was now convinced had murdered her daughter. She thought it was justice that she was getting. She didn't get much else. The Suffolk County courthouse does not have a public restroom for women. There is a restroom for women employees, however. She pulled strings, and all her wealth and power and influence with the prosecution got her a key to the ladies' room. Also sitting in the courtroom was a reporter from the *Lynn Daily Evening Item*. He wrote a series of stories for the item about the trial. His newspaper was the only one around that was not publishing stories that took Paradise's guilt for granted. His name was David Liscio.

For his part, Paradise was sentenced to prison without possibility of parole. Some time later, he was approached by the state with a deal. Confess to the murder of Joan Webster, and he would get better accommodations and a shift work assignment. Paradise said that he would be happy to cooperate, but he couldn't, under the circumstances, because he hadn't killed Joan Webster in the first place and consequently did not know where her corpse had been buried. The state's extortion attempt had failed. The offer was repeated two years later, and it got the same result.

Lucy Johns had called me at home on 5 July and asked for Diane, then hung up when Diane came to the phone. I imagine that she had found, by using the *Master Cross-Cross Directory*, that the phone number which Mike O'Hare had given her was listed to Diane's name. She had called just to make sure that there was somebody named Diane living with me. I suspect that she did some other research, too. It was about a week later that I started getting one-ring hanging calls at work as well. When they began coming, I asked the receptionist to keep a record, using an electronic digital clock at the reception desk. On 10 August 1984, we got a call at work at 12:38 p.m. There was another at home at 9:22 p.m. on the same day. These two calls replicated all of the frequency-patterns used by the Zodiac. On the 11th, there was a nocturnal call at 12:20 a.m. After that, there was nothing for almost two weeks. At the same time, a new pattern began to emerge.

Over the next ten weeks, there were no nocturnal calls at all, and no calls on weekends. Everything that came during those ten weeks was received in the office. I am going to reproduce the list here in tabular form, with the shape of a calendar grid. I contend that this calendar grid constitutes a Zodiac document. Instead of writing it on a sheet of paper, he wrote it on the calendar, using telephone and clock instead of a pen. I also contend that it is an artistic composition, just like the cryptogram or the 360-Character Cipher, with which it shares the grid format. I would also like to suggest that this composition and others like it (to be discussed later in this book) are compositions in pure time. The materials employed by the artist are the clock and the calendar.

Here are a few formal features. Note that on Friday of the fifth week, there is a call at 2:10. I suggest that this is a key to reading the form. That was the end of the fifth of ten weeks, or 5/10 of the composition. Just before this new pattern began, there were two calls at 12:38 and 9:22. On Wednesday of the fifth week, we find the same group of numbers again, in a series of calls at 11:02, 12:38, and 2:29. Binary 1102, by the way, is Morse 10 00 10 0 111 0, NINE On2. I have al-

THE TEL-WIRE MESSAGE

Nocturnal calls shown by Bellairs

readily pointed out that BM 120 written digitally is binary 1000. NINE On2 is an algebraic way of saying the same thing.

In any case, that grouping of clock times falls on 12 September, the 256th day of the year. 256 is a power of two, i.e. 2^8 . Note that in the following week, there is a call at 1024. 1024 is another power of two, i.e. 2^{10} . This suggested to me that information in this grid is organized on vertical lines. It also suggested a series from which one member had been omitted. My caller had marked Day 256, 2^8 , with a rather significant group of calls, then called the following week at a time giving 2^{10} . What was missing was 2^9 . I have already suggested that the two people who were wounded by the Zodiac were just as much victims as the six who were killed, no matter what the *Circeo* says. I believe that Z. counts his victims the same way. If Joan Webster is a Zodiac victim, she is number nine. And she is the missing one.

You will also notice that toward the end of the grid, the author begins heaping up groups of calls expressing fairly large numbers. This suggests that he is trying to push the total up to a certain predetermined amount. And in fact, if you add up all of the clock times here as numbers, they come to 38,838. The call at clock time 2:42 comes on Thursday, 11 October 1984, the fifteenth anniversary of the murder of Paul Stine. The total up to and including 242 is 34,489, or eight-ninths of 38,838. Clock time 242 is also eighteen before three. Arithmetically, eighteen before three is 3 - 18, or -15. On that date fifteen years before, the Zodiac had murdered Paul Stine in the 3800 block of Washington Street with a .38-caliber revolver. If the Stine murder anniversary was marked with a call adding up to 89 of the total, the caller seemed to be implying that this whole message had to do with the missing ninth. In order to underscore the number 18, the interval between calls on the preceding day is 190 minutes. The cryptogram is 290 letters of English followed by 18 of ana-gram.

The Stine murder anniversary is in the Thursday column of the calendar grid. Reading from the top down, we find in that same column 1:22, 12:58, 11:50, each on a separate date, then 2:19 and 2:23 on 20 September. The next entry in that column is the Stine murder anniversary. The first number is the easiest one. 122 is the angular measurement of the corner of the Boston triangle centered on Eastern Airlines, and the subject of my correspondence with Mike O'Brien of 23 and 24 May. 1150 is almost as easy. Every number between 1120 and 1151 begins in binary with 100001. Morse 1000 11, BM 11150 is 10000111110, Morse 1000 11 11110, BM 9. BM 9 is the benchmark at the Greyhound bus terminal in Boston, the apex of the 38° angle found opposite the 122° angle at Eastern.

12:58 was more of a challenge. Highway 107, on which Joan Webster's purse was found, originates in Revere at a roundabout called Brown Circle. It runs off to the northeast just about dead straight through the marshes, with only a slight bend at one point on its way up to Lanes. If you center a clock face on Brown Circle and read due north as twelve o'clock, Highway 107 is where the hour hand points at 12:58. The first three entries in the Thursday column, in other words, all can be related to the things that are known about Joan Webster's disappearance.

The next entry before the Paul Stine anniversary is on Thursday, 20 September. The two calls on that date came at 2:19 and 2:23. 2:19 is not too hard to read; two nineties is thirty-eight. Thirty-eight is TIME. That seemed to reinforce my reading of 12:58 as referring to the Highway 107 site. And it suggested that clock time had something to do with finding Joan Webster. The first entry in the Thursday column was 122, which appeared to imply the first known fact about Joan, the Eastern Airlines terminal. The second in order reflected the chronologically second known fact about her, namely the find on Highway 107. Some time later, her suitcase had turned up at the bus sta-

12:00



Clockface
showing
hour hand
at 12:00

N



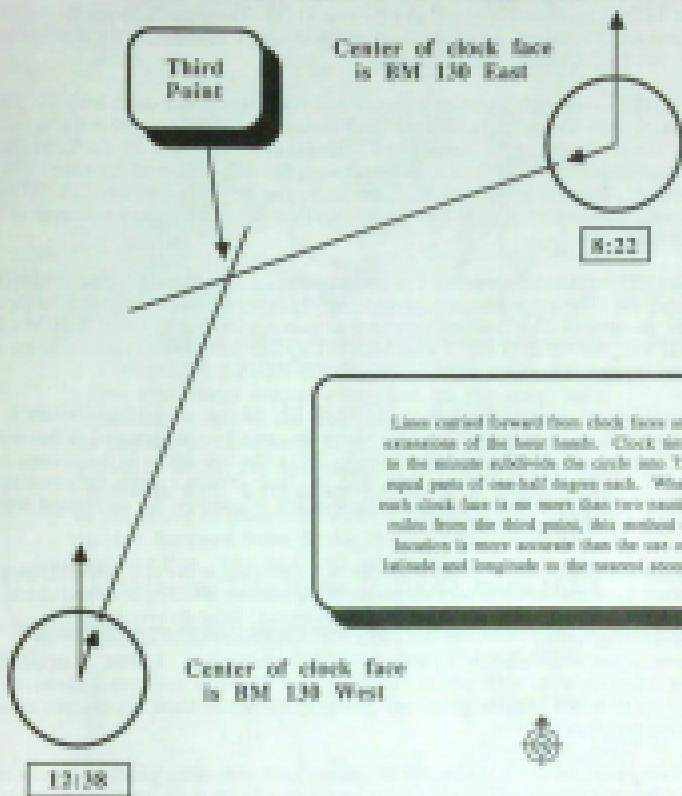
12
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TRIANGULATION BY CLOCK FACE



tion (BM 9, or 1150, on the map). The next entry in this column, then, really ought to have something to say about what was *not* known about her, i.e. the location of her body.

2:19, or 38, was just a hint. The next must be at the next call, which was recorded at 2:23. There must be something about the number 223 that would tell me something. I went back to the calendar. The Zodiac counts the passage of time in days, not years and months. On 11 August, we got the call which appeared to be the jumping-off point for this new pattern, the Ten-Week Message, at 12:20 am. It was a Saturday. For the next ten weeks, there were no nocturnal or weekend calls, only calls to the office during business hours. On Saturday, 20 October, there were two one-ring hang-up calls at 11:59 pm. The 12:20 call and the two 11:59 calls were the brackets enclosing the Ten-Week Message. 10 August, when the calls at 12:28 and 9:22 came, is the 223rd day of the year. I believe that the 2:23 call refers to that date.

(1220 is binary 100110-00100. The first group of this subdivision is our old friend 38. I read the second group as 00-100, Morse ID, in the colloquial meaning of "identity." ID is the subject of the sentence. 38 is the predicate. "My identity is 38" seems to set the tone for the following composition. The composition ends with two nocturnal rings [00 = L, subject of sentence] at 11:59, or "one before twelve." Another way of writing "one before twelve" is 112, binary 111-0000, Morse OH. This is another sentence: "I am OH." Let's say that that is the artist's signature at the bottom of the painting.)

The calls of Day 233 served as the title for this composition, and the title contained the information that I was looking for. The same information, in a slightly different form, had come on Day 236 as 12:28 and 2:28, along with 1102, which appeared to give a reference to BM 130 (BM 130 = digital 0000; 1102 = digital NINE O'clock). I went back to Day 223 and looked carefully at the way the information was expressed.

These numbers appeared there in this order: 12, 38, 9, 22. 38 was after 12 but before 9. Now I compared them with the data given on Day 236, where the same figures appeared in this order: 12, 38, 22. In the first case, 38 is after 12, but before 9. 38 before 9 is 8:22. In the second case, we have 12, 38, 22, 9. Let me redivide them: 123, 822, 9. Both groups express the clock time 8:22 in one way or another. In the second instance, the numbers in question are associated with NINE O'clock, which I read as referring to BM 130.

Here's a new kind of treasure hunt. Conceal an object somewhere in the continental United States; then communicate its whereabouts to another player using nothing but telephone and clock. Verbal communication is prohibited; only numbers may be expressed. How do you do it?

There are various ways of identifying a particular USGS quadrangle. In this, as in other things, the only limitation on the form is the player's imagination. But once you have agreement between the two players as to which quadrangle to use as a playing-board, there is only one economical means of locating the hidden object.

You identify two points whose location can be determined with some precision, such as crossroads, intersections of parallel and meridians, or benchmarks. On each, you superimpose a clock face, with twelve o'clock at the north. The Zodiac had drawn such a clock face on the Mount Diablo Map. In the accompanying letter, he had said that in order to find the buried horns, it was necessary to turn the "magnetic indicator" to north. The instrument depicted was a clock: on that clock the numeral 3 was at the eastern quarter, 6 at the southern quarter, and 9 at the western quarter. The zero pointed due north.



TRIANGULATION BY CLOCKFACE - ON MAP

Two clockfaces are superimposed on the map, each centered on one of the NW 1/4's. 12:00 o'clock is set at due north. The hour hand of the western clockface points to 12:30; the hour hand of the eastern clockface points to 8:30. Extensions of these hour hands cross in the gross of area where the magnetic-north azimuth carried forward from Goss Pond crosses the 120-foot contour line. The two hour hands form, at their apex, a 127° angle. 127 = binary 11 111 11, Morse MDM.

Having superimposed a clock face on each of your two reference points, you then connect the center of each to the hidden object with straight lines. Then you read each of these lines as a clock time, i.e., as the position of the hour hand when it points to that time. Within the limitations imposed by topography, it is possible to communicate the location of the hidden object with no more than four one-ring hangup calls: two to identify the two benchmarks forming the centers of the clock faces, and two to identify the clock-time azimuths pointing to the hidden object. What topography has to do with this is that the number attaching to a benchmark or a crossroads denotes elevation in feet above Mean Sea Level. Obviously, there are many places in Colorado which would not be suited to a game like this, since the range of useful numbers on a clock face is 100-125.

Let's say that in the quadrangle which you have chosen to use for this new variety of hide-and-seek, there is a BM 125 and a BM 310. You find a hiding place somewhere between them on the map. When you connect these two benchmarks to the hiding place with straight lines, the line from BM 125 corresponds to the position of the hour hand at 2:30; the line from BM 310 corresponds to the position of the hour hand at 6:17. Four phone calls, at 1:25, 2:30, 5:45, and 6:17 are sufficient to convey the location of the hidden object with a high degree of accuracy. In fact, where each of the benchmarks used is no more than two nautical miles from the hiding-place, this method is more accurate than using latitude and longitude to the nearest second. Beyond that range, angular error causes whatever discrepancy may exist to increase at a rate greater than what comes naturally with latitude and longitude (a circular error of about 100 feet).

I have had something to say here about symmetry in the Zodiac literature. I have pointed out the use of bookend-structures in the work. In connection with my discussion of the Bus Bomb Diagram, I have stated that I see the murder of Juan Webster as the bookend to the murder in Riverside. In many respects, they are exact opposites, mirror-images; in others, they are exactly alike. That is what bookends are, opposite yet alike. The Times' watch left in Riverside was stopped at 12:22; the gigantic clock face constructed on the map of the Bay Area read "22 before 8," or 8:22. Now, my mystery caller was harping on 12:28, and I had indications that the number with which it was intended to go was 8:22. The pair 12:28-8:22 was a bookend to 12:22-8:28. Both pairs added up to nine o'clock sharp.

Going back to the Concord quadrangle, I laid down due-north azimuths passing through both of the BM 130's. Then, setting each of these twelve-o'clock readings equal to a compass bearing of zero degrees, I used my protractor to find the position of the 12:28 hour hand as seen from BM 130 West, the one in downtown Concord, and the 8:22 hour hand as seen from BM 130 East, the one out on the old railway grade. I carried them out to where they crossed. The intersection was right in the patch of pine trees where I had found the 12° angle (MOM), next to Poplar Hill.

About this time, I received a letter from Leonard Paradesco. He had gotten hold of a publication of mine in *The Explorer* about the Juan Webster murder in which I had expressed skepticism about his authorship of the crime. He told me that I should tell whatever I knew to David Liscio, the *News* reporter who had covered his trial. I had read Liscio's series on the Lammazi trial, and while he was professionally objective, it was apparent that he had grave doubts about the outcome; he was, in other words, sympathetic to Paradesco.

Paradesco told me that Liscio would be able to develop whatever information I had with all confidentiality. I contacted Liscio and sent him a ZIR. I also sent him a photocopy of the Concord map with an X marking the spot that I had just found by the method described above. I did not go into any detail about how I had arrived at this location, simply telling him that I had been in communication with the subject of the ZIR and had gotten responses that appeared to point to this spot. Looking at it from a non-existent standpoint, I thought that the evidence in the ZIR made a clear

connection between Mike O'Hare and the Zodiac. If he had murdered a number of people in California, then he was a very likely candidate for suspicion of having murdered Joan Webster as well. Unlike Paradise, he was exactly the kind of person to whom a Joan Webster would have entrusted her safety, and even a nodding acquaintance ship from the Harvard campus could have given him the cover with her that he needed.

I briefly sketched the history of my relations with the police for Liscio and suggested that he check out the site himself before trying to involve the police. If there was something there, then the police could be apprised of it. If there wasn't anything to be found, then it would be a waste of time to talk to the authorities about it, not to mention the danger of being branded a crackpot. I suggested further that he just take a garden trowel along, and if anyone asked him what he was doing, he could say that he was looking for Indian arrowheads. It's a perfectly plausible cover story, one which is not likely to cause alarm or opposition. Liscio agreed, and I sat back and waited to see what would happen.

What happened next was another calendar-grid composition. This one is even more complex than the Two-Week Message, however, and I would like to take it out of the stream of this narrative and discuss it later. During that period, on the third anniversary of the disappearance and presumed murder of Joan Webster, the Lynn Daily Evening News ran a story by David Liscio on its front page recounting his difficulties with the Massachusetts State Police. The story said that he had information from someone living in California who claimed to be in contact with the murderer of Joan Webster. This person said that he had some information relating to the whereabouts of her body, which three years' worth of searching had failed to turn up.

Liscio had gone straight to the state police and demanded that they dig up the site. They had said that his information was false. The press was now making a public issue of their recalcitrance to do anything that might exonerate Leonard Paradise. According to the jail-cell confession, Paradise had dumped Joan Webster's corpse into the sea from his fishing boat. Obviously, if she turned up twenty miles inland, there was something very wrong with the reported confession, not to mention the veracity of the two convicts who had reported it. The authorities refused to dig. The press pilloried them for their refusal. And they not only stated verbally where the spot in question was. They printed my copy of the USGS map of Concord on their front page, with an X where the 12:38 and 8:22 hour bands crossed.

That story appeared in the news on 28 November 1984. On the 29th, we got a one-ring hangup call at 1:30 pm. The Zodiac had used the number 150 explicitly on one occasion, in the letter 106, giving the 340-character cipher. In recounting his brush with the San Francisco police, he said that they were "150 IT" from him. PT in Morse is 0110 1, a subdivision of IK, Morse 00 101, the two-letter code for MIKE. I read IK as the subject of the sentence; 150 is the predicate. 150 is a kind of mirror-image number. In binary, it is 10010010. The last four digits are the reverse of the first four. I have reason to believe that the intended reference is 1 00 1 00 10, Morse TITAN. "IK (is) TITAN" makes perfectly good sense as an expression of megalomania. TITAN appears again in the Mount Diablo Letter, where, speaking of his hidden "bombs," the Zodiac says that the authorities have "until next fall to dig it up." I read "dig it" as a subdivision of "dig it," or 1. UP is Morse 000 0110. "Dig UP," 1 000 0110, is binary 150, and I believe that it is meant to denote the author as TITAN.

In the 150 call on 29 November 1984, my mystery caller was referring, I believe, to the information published in the news on the day before. In this case, 150 is meant to be read as "dig it UP." Two confirmations of this reading came on later dates, and I will discuss them in detail as they arise in the course of the story. But it is time to end this chapter. The last entry in the Thurs-

day column of the Ten-Week Message, following the anniversary of the Paul Sines murder, is a solitary one-ring hangup call at 2:31. I have already shown that the Zodiac uses "29" to denote "the end." But 29 is a number that does not fall within the range of expression on a clock face. Read as angular measurement, however, 29° is the same thing as its reflex-angle, 331°. And 331 can be expressed as clock time. "331" is just another way of saying "the end."

ABANDON ALL HOPE

There is a passage in the 340-Character Cipher which I have saved for special discussion here. In an introductory chapter, I compared the misspellings MERRY and FRY, pointing out, among other things, that the group BT makes the number 43 both digitally and alphabetically. I did not point out at the time that "43" is the year of Mike O'Hare's birth; as such, it is important to him, especially since, by another of those coincidences that seems to dog him, his birth-year is marked by a convergence of systems. In the passage in the 340-Character Cipher beginning with Character #029, we read: 110 011001 (my reading) ME 43. Here, the leading zero has been omitted. It is left in in the passage beginning with Character #007, which I read as 1000 0 110 000 1001. More MERRY. Following that, we have a ten-digit passage, 1100000000, followed by the concluding passage, introduced by Crossed Circle #9, which I read as "22 before 9."

BERRY begins with the mother's name and ends with the year of birth; it is also the first part of the place name "Berryness." The second part, ESSA, is Morse 0 000 000 01, which is written with a string of eight zeros. The passage falling between BERRY and "22 before 9" is also written with eight zeros, but they are prefaced by two ones. Let me attempt a reading: 110 (ME)-0000000 (Circle 7). Here's a parallel from another document. The very first Zodiac letter, mailed on 29 November 1966 to the *Riverside Press-Enterprise*, was addressed in this fashion:

Daily Enterprise
Riverside Calif
Attn: Crime

The Ps were dotted with exaggerated circles, about the diameter of a pencil eraser. The colon in the attention line was also written with two large circles. The l of "Calif" was undotted, and there was no period following this abbreviation. The text called for nine circles (l-dots, colon, period), but the author pointedly supplied only seven. I mentioned before that the distortions of this address produced a text of 28 letters. Of course, nothing was gained or lost by the incorrect use of the word "Daily," which has the same number of letters as "Press." But "Press" does not contain the letter L. That's why that substitution was made. At all events, this address expresses the number 38, and it is embossed with seven circles.

In discussing the seeming misspelling "corros," I suggested that the Zodiac uses the periodic table of the elements as a source of words and numbers. There is another work which he employs as a catalogue of themes that can be referred to by number, namely the *Divine Comedy* of Dante Alighieri. The first third of Dante's masterpiece — the Inferno — is organized physically as a series of concentric circles, nine in number, each corresponding to a particular type of sin. Circle Seven is appropriate to the work of the Zodiac, since it is where the poet finds Balucane, the River of Boiling Blood, which is the eternal abode of the murderers. "Circle Seven," or the digital 0000-000 (alphabetically speaking, 07), is just another way of saying "homicide." Both the passage in the 340-Character Cipher just mentioned, 110 011001 (ME Circle 7), and the seven circles of the Confession Letter address, appear to allude to the same thing.

Dante and the Zodiac have quite a bit in common, strange as that may seem. For instance, each of the major sections of the *Divine Comedy* is divided into 33 cantos, each canto corresponding to a

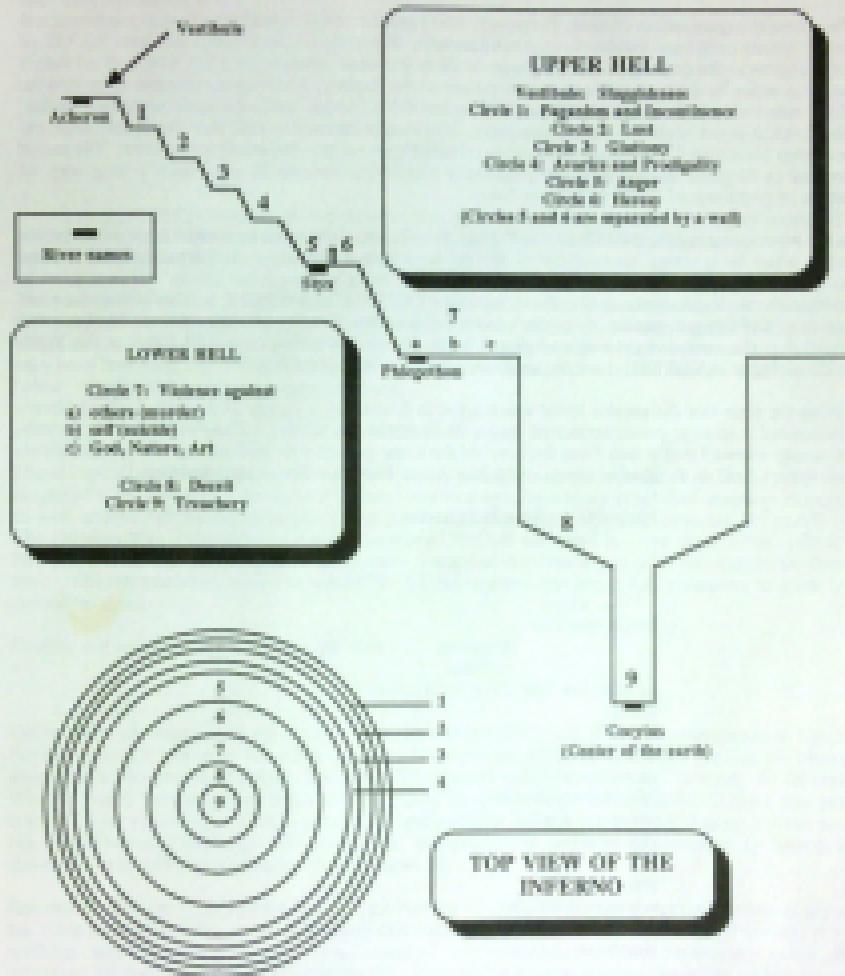
RAPHEL MAY AMECH ZABI ALMI



NINTH CIRCLE
Dante and Virgil meet Nimrod

THE INFERNOS

(Cross Sectional View)



year in the life of Jesus. Medieval people were quite struck by the coincidence that the two great conquerors of ancient times, Jesus (conqueror of the spiritual world) and Alexander the Great (conqueror of the temporal world) had both died at the age of 33. To the three parts of 33 comes each, Dante adds a single introductory cance, to bring the total up to one hundred.

The internal organization of Hell, Purgatory, and Paradise shows great attention to mathematical detail. Dante even uses number to express concepts. For instance, he predicts in Canto XXXIII of the Purgatorio the coming of the cinquante anni e cinque (Italian for 515), who will set Italy's house in order by destroying the temporal power of the Papacy. Most commentators agree that the "515" referred to is the sum of the Roman numerals DVX, which spells the Latin word for "leader" (the English word "duke" is from Latin *dux*). It is also of interest to note that Dante had been exiled from his native Florence for expression of anti-Papal (or pro-Imperial) sentiments. The use of number to disguise anathemas and politically dangerous statements goes back a long way, of course, e.g. the use of "666" to refer to Nero.

In the letter covering the 340-Character Cipher, the Zodiac claims that he cannot be recognized because when he is doing his homicidal "thing," he wears a "deserve." He says, further, that the police will never be able to catch him because he has been leaving false "clues" all over town to confuse them. Read alphabetically, the misspelling DISCTSE is D E 2 S 2 C 1. This contains the anagram of DISC, a paraphrase of "circle" and the remainder (E = 3) adds up to seven. I believe that DISC 7 is the intended reading and that it refers to the Seventh Circle. CLEWS in the WIZARD-alphabet is XOVDBH. I see the anagram-sentence, "OH (is) DVX."

About the time that the second letter was mailed in Riverside, a junior at the City College library discovered a strange poem scratched into a desk top at the library. Handwriting analysis subsequently showed that it was from the hand of the same person who had written the second Riverside letter -- and all the Zodiac letters at the Bay Area. Here is a diplomatic rendition:

Sick of living/unwilling to die
 CHL
 clear,
 if red
 clear,
 blood spurring,
 dripping,
 spelling,
 all over her new
 dress,
 oh well,
 it was red
 anyway,
 life draining into an
 uncertain death,
 she won't
 die,
 this time
 someone'll find her,
 just wait till
 next time.

A couple of features deserve comment. First, the letter-count is 197. That is a rather interesting number. It is the Morse-to-binary writing of the sentence ME IK, for one thing (11.0.00.1001). For another it has a kind of chameleon property. It can undergo a series of cryptic-transformations and come out unchanged:

I	9	3	number
A	1	0	number to letter
Z	8	T	WIZARD transformation
1000	810	1	letter to Morse Code
10000101			Morse to binary
197			binary to base ten

I don't suggest that this series of transformations has any intrinsic significance, but it would obviously hold some fascination for the Kabbalistic mind. The second feature that needs to be mentioned is the fact that this composition ends in the word "time."

The passage "out, clear, if red! clear" is set off by a margin which it does not share with the rest of the composition. The poem appears to allude to the murder of Chen Ji Hates, but this part is rather enigmatically; it does not make a lot of sense. As usual, I suggest that whatever semantic content it may have has been subordinated to the cosmic content. First, let's read the repetition of the word "clear" algebraically. The passage then reads:

Cat II Red! CIRCLE 2

I have capitalized what appears to be the word with which the author started, i.e. CIRCLE. He has disguised it by addition of the second "clear," and I submit, by adding in another anagram element, as well as WIZARD-pairs as rails. These pairs can be cast out. The pairs here are I-R and P-U. The problem here is that you can't write the word CIRCLE without I-R. And while I don't like offering solutions that involve bending the rules, I suggest that that is just what our author has done here. The imperative to write the word CIRCLE takes precedence over the imperative to abide by consistent rules.

Casting out only P-U, then, we are left with:

CTIREDCLEANZ

Using those elements, it is not hard to make DANTE CIRCLE 2. The sin appropriate to Circle Seven is murder; in Circle Two, it is passion. The denizens of the second circle of Hell are blown about and buffeted against mighty buildings. The active ingredient in Circle 2 is wind. At the time that this poem was scratched into the desk top at Riverside City College, Mike O'Hare was pioneering in the use of wind tunnels to evaluate architectural designs. In fact, his maiden journal article, "Wind whistles through MIT tower," had appeared in the pages of *Progressive Architecture* the month before the poem appeared on the desk top.

Around the beginning of January 1981, Ken Naylor had shown me the Existist Letter and asked me what I thought of it. The first thing that came to mind was that it contained several misspellings, and the first one I noticed was "twills." I have already recounted his reaction to this observation; he thought it was spelled correctly. If anything is to be learned about the authorship of the Zodiac letters from misspellings, then a detective who does not know how to spell English

words correctly can hardly be expected to corner his quarry. At all events, here is TITWILLO in Morse Code, followed by a digital revision which appears to make sense in the present context.

TITWILLO is 1 00 1 01 00 0000 0H0 111; I redivide it in Morse Code as 1 00 1 01 00 00 10 00 10 0 111; TITAN I NINE O. TITAN I is a typical two-part sentence, I being the subject and TITAN the predicate. NINE O is, I suggest, a locational element, referring to Circle Nine (O = "circle"). The first denizen of the Ninth Circle encountered by Dante and his spiritual guide, Virgil, is the giant Nimrod, king of Babylon, who had brought on the Confusion of Languages by building his tower to the heavens. Dante condemns him to the unceasing punishment of speaking a language that no one else understands. The parallel with the Zodiac is fairly obvious, I think; like Nimrod, the murderer has a private language, and like Nimrod, he has a reputation as an architect.

Properly speaking, Nimrod is not a Titan. But there are other gigantic personages in the Ninth Circle who are frequently confused with Titans. Dante names four in all: Nimrod, Briareus, Ephialtes, and Antaeus. Briareus and Ephialtes are, like Nimrod, bane-stormers. They have been placed here by Dante because they tried to use the mountains Ossa and Pelion as a stepladder to get into Olympus, the abode of the gods. In some traditions, Briareus was ordered by Zeus to guard the Titans after they had been consigned to the underworld, Tartarus. In others, Briareus fought the gods on the side of the Titans. Briareus may be called a Titan by association, and Nimrod is one by association with Briareus. I realize that there is no traditional authority for referring to Nimrod as TITAN; but then, St. Augustine had no authority other than his own imagination for describing him as a giant. I believe that the Zodiac's usage is proven by internal consistency.

TITAN has an advantage over GIANT in any case. Morse GIANT is binary 781, which cannot be expressed as clock time or drawn as angular measurement. TITAN (150) can. Moreover, TITAN has a pleasing symmetry when written in Morse Code (see above).

The Zodiac told his victims at Lake Berryessa that he was born in Colorado and that he had escaped from prison at Deer Lodge, Montana. Once again, DL in Morse, 100 000, is a redivision of NINE, 10 00 10 0. The postal abbreviation of Montana, MT, redivides in Morse to O. DL,MT is another way of saying NINE O. When we meet Nimrod in Hell, he is buried up to his waist in the soil of the Ninth Circle. He is fettered with chains, and he is blowing a melancholy-sounding horn. (Another attribute which Nimrod acquired in the middle ages was a reputation as a bawler, which required that he be depicted carrying a horn.) His punishment is to spend eternity not being understood. He addresses Dante and Virgil by saying, "Raghet over amoych rait alor." These words mean nothing in any known language. They are as enigmatic as anything the Zodiac ever uttered. I contend that the Zodiac's "escape" from Deer Lodge, Montana, was nothing more nor less than an escape from the Ninth Circle. How this "escape" was effected I leave to those with psychiatric credentials.

Both Dante and the Zodiac are authors of art works of incredible audacity and wide geographical scope. *The Divine Comedy* encompasses the entire (Ptolemaic) universe, and Dante presumes to get in the last word with leading historical figures. The work of the Zodiac spans an entire continent and twenty years in time, and the degree of audacity which characterizes his enterprise is measured by the fact that he has staked his life and freedom on it.

Like *The Divine Comedy*, the work of the Zodiac is divided into three parts: Riverside, Bay Area, and Boston. It was sheer coincidence that the victim in the first of these episodes should have a name (BATES) which is a digital synonym of DEATH. It is also coincidental, but no less appropriate, that the unintended victim in the third episode, in Boston, should have the same name as the

third part of Dante's work, the *Paradiso*. I suggest that the Zodiac's repeated references to his afterlife as "paradise" reflect his dependence on Dante for his metaphor.

So does the passage in the Los Angeles Times Letter in which Z. refers to the discovery of his authorship of the Riverside murder: "...they are only finding the easy ones, there are a hell of a lot more down there." Naturally, "the easy ones" was construed at the time as meaning murders, but of course that is not what the author says; he has purposely made the statement ambiguous, knowing how the news media will prefer to interpret it. It makes quite a bit more sense if "ones" is read as referring to cities.

The Zodiac was identified as the author of the Riverside murder by handwriting evidence. As I have attempted to show here, he had taken credit for that crime in cryptic fashion over and over in the documents written during 1969-1970. I would also suggest that in the sentence, "there are a hell of a lot more down there," "down there" does not mean Southern California. In fact, "down there" is not a bad translation for the Italian word *inferno*, whose original meaning was "place down there," but which is usually translated in English as "hell."

NORTH BY NORTHWEST

The Ten-Week Message had taken the form of a rectangle with ten lines and seven columns. It had been set apart from the rest of the telephone traffic by being made up of calls only on weekdays and during business hours. As soon as we got the two one-ring hangup calls at 11:29 p.m. on Saturday, 20 October, at home, I knew that something new had begun.

On that same day, Andrew Parker had dropped a letter in Seattle, from a Mike West -- a real Mike West, with a real Seattle return address. The letter was a photocopy of the *Encyclopedica Britannica* article on the Game of Goon, on the back of which I wrote Mike a note suggesting that he stop beating around the bush and just tell me where to find what I was looking for. I felt that his interests would be served by the finding of Joan Webster just as much as mine. To my knowledge, this letter was never accepted.

This time, too, the pattern was difficult to detect. Calls came at home and at the office, as well as on one weekend during this period. I suspected that the anniversary of Joan Webster's murder was too important not to be used as a form of punctuation, so as a working hypothesis, I assumed that the call or calls of 28 November, if any, would be very important.

In October-November 1984, there were three Zodiac anniversaries. 11 October was the fifteenth anniversary of the Stine murder. The Bates murder turned eighteen on the 20th. On 28 November, the Webster murder was three years old. All of them were multiples of three. I have already suggested that the Stine anniversary was the culmination of the Ten-Week Message. Riverside, at least, received considerable attention during the following period.

One preliminary observation deserves to be made before any discussion of the telephone calls themselves, and that is that for a period of ten days in November, there were no calls at all. The re-captorist at work did not record any, and none came to my home phone. It could be said that one-ring telephone calls occur spontaneously and randomly, being caused either by human error or glitches in the telephone company's switching system. Everyone has experienced them without attributing any ominous cause to them, such as cryptographic communications from mass murderers.

I think that by now it is apparent that at least the majority of the calls recorded and discussed here display intentional patterns, although some of them may be accidental. The absence of any such calls for a period of ten days seems to point in the same direction. During the week before that ten-day blank -- around the Thanksgiving holiday -- seventeen such calls were recorded, two of them nocturnal calls to my home phone (1:31 and 1:32 a.m. on 12 November). If random forces, such as Pacific Telephone's corps of geniuses, generated seventeen calls in one week, why did they generate none at all for the next ten days?

There are other indications of design. For instance, the last nocturnal call, at 2:38 p.m. on 22 November, falls on the 38th day following the beginning of this period. It is preceded by a call at 12:02 p.m. The interval between 12:02 and 2:38 is 456 minutes. Is it coincidence that 456 is the product of 12 x 38? On the 12th, there are two nocturnal calls at 1:31 and 1:32; then there is a call at the office on the same day at 2:32 p.m. The day following that, there are three calls spanning a

			18th Anniversary of the Riverside murder 28 October 1996			11:29 11:29
9:27 9:28	9:48 12:03	9:49		1:54		
12:12	11:43 2017, 2117 2124 4009 4112 4239		1:18 9:16	4:23 5:03	3:48	
	10:00 10:04	2:28	2:30	10:17	9:31	
	11:08 11:18 11:22	11:28 11:29 11:28	11:29 11:29 11:29	1:02 10:27	9:43 12:04 2:58, 2:57 9:30	
	1:51 2:48 3:17	12:02 2:28	11:29	1:58		

Thanksgiving Day
Julian Date 327

2nd Anniversary of Jane Webster's
disappearance and date of
publication of her story

Nocturnal calls shown in boldface

11:29

129 = Harry 11011 110, 29 7

Judas
Date
1997

1:00

1:01

**1:54 = 104118 18
09 20**

2:08

40°
117°

1:18

1:11

100 before 1019 =
10:27 minus 100 =
9:27

9:27 Oblique
Triangle

33-minute period (11:22 - 11:54). The middle call in that series is at 11:29, a time which is repeated on the Joan Webster anniversary. The first 11:29 call is the 33rd in the series. I don't want to make too much out of this number other than to point out that it is a power of two. Another three-call series, 1:51, 3:48, and 4:17, expresses intervals of 117 and 29 minutes. "117" appears in the Zodiac literature to refer consistently to Riverside, where the first crime was committed; "29" is consistently used to denote "the end." It occurs two days before the Webster anniversary. On the 14th, there are calls at 10:39, 12:00, 4:14, and 4:29. The first interval is 81 minutes, which number denotes the calendar year of the Webster murders. The next interval, 254, is the product of 81 x 3; it is also the double of MOON (127). Since the last call on that day (4:29) ends in 29 ("the end"), I will save that for the final chapter of this book. The next day, there is a call at 1:02, which may allude to the Area Code of Boston (102 = 6 x 17). The only other call that day is at 3:27. This falls on the square of the calendar grid directly above Thanksgiving Day, in 1984, Julian Date 327. I have no explanation for why it should, but it does not seem to be coincidental that it should work out that way. At the very least, it and similar patterns appear to confirm the element of design.

The largest number of calls was received on Tuesday, 30 October, the eighteenth anniversary of the Riverside murder. I have already mentioned that Z. decorated the mail cover of the Confession Letter, mailed on 29 November 1966, with seven circles, and I have suggested a reason for his doing so. Note that on the anniversary of the murder to which the Confession Letter relates, seven calls (seven rings = 0000000, Circle 7) were received, at 11:43, 2:17, 2:17, 2:24, 4:09, 4:12, and 4:39. The sum of these seven clock times is 3061 or binary 10111...110101 (my revision), 23 followed by 117. The first number, 1143, is one of those numbers beginning with BM in binary: 1000 11 BM 23. Mike O'Hase was 23 years of age at the time of the Riverside murder. 2:17 is interesting in this context. 117 gives the longitude of Riverside, but two seventeens gives its latitude: Riverside straddles the 34th Parallel. 224 is the double of 112, the Morse-to-binary spelling of OH. I suggest that the other numbers have been added just to bring the total up to 3061.

The calls of the 16th, 9:43, 12:04, 2:56, 2:57, and 3:31, seem to tell a story. 943 is binary 1110101 111 (my revision), or 117 followed by letter O. I suggest here as elsewhere that the O is meant to be read as a superscript letter, i.e. the degree-sign. 117^o is the longitude of Riverside. 1204 is rooted in the word TITAN, which appears in the misspelling TITWILLO (Evocist Letter). I have shown how TITWILLO can be redivided to spell TITAN 1 NINE O, which I choose to relate to Dante, specifically to a giant confined within the Ninth Circle of the Inferno, namely Nimrod, King of Babylon.

But there are three other titanic personalities in Circle Nine named by Dante. Two of them, Briareus and Ephialtes, are heaven-stormers like Nimrod. The fourth is Antaeus, who was slain by Hercules. There are two things that are remembered about Antaeus: his career and the manner of his death. He was an ogre of Libya whose pastime it was to challenge strangers to single combat. He always won, and he always killed his opponents to glorify himself. He constructed a palace for himself out of their skulls. He was, in other words, an architect who used the bones of his victims as construction material.

The other thing that is remembered about Antaeus is that he derived all of his strength from his mother, the earth. When Hercules did combat with Antaeus, he separated him from his mother by holding him up in the air while he strangled him. Three of the giants in the Ninth Circle have a trait in common: they were heaven-stormers. The fourth is Antaeus. Clock time 12:04 subdivides in Morse as 1 00 1 01 10 00, TITAN 4.

256 is the eighth power of two. Counting only California, the Zodiac took eight victims (including the two who survived being shot and killed). 257 is one more. 331 is a paraphrase of "the end" --

THE ZODIAC'S LETTER TO THE PRESS-ENTERPRISE
AND THE RIVERSIDE POLICE, 29 NOVEMBER 1966
(Diplomatic reproduction)

THE CONVERSATION

BY _____

SHE WAS YOUNG AND BEAUTIFUL, BUT NOW SHE IS BATTERED AND DEAD. SHE IS NOT THE FIRST AND SHE WILL NOT BE THE LAST. I LAY AWAKE NIGHTS THINKING ABOUT MY NEXT VICTIM. MAYBE SHE WILL BE THE SHAPED BLUE EYED BROWNSTEYED SAILOR WHO WHEN I KILLED HER FOR A DATE IN HIGH SCHOOL. BUT MAYBE IT WILL NOT BE EITHER. BUT I SHALL CUT OFF HER FEMALE PARTS AND DEPOSIT THEM FOR THE WHOLE CITY TO SEE. SO DON'T MAKE IT TO HARD FOR ME. KEEP YOUR NURSES DAUGHTER, AND WIVES OFF THE STREETS. AND ALIVE. MRS BATES WAS STUPID. SHE WENT TO THE GROCERIES LATE & I HAD THE DISHES OUT. SHE DIDN'T PUT UP A STRUGGLE, BUT I KNEW IT WAS A BAIL. I FIRST PULLED THE TELEPHONE WIRE FROM THE DISTRIBUTOR. THEN I WAITED FOR HER IN THE LIBRARY AND FOLLOWED HER OUT AFTER ABOUT TWO MINUTES. THE BATTERS MUST HAVE BEEN ABOUT DEAD BY THEN. I THEN OFFERED TO HELP. SHE WAS THEN VERY WILLING TO TALK WITH ME. I TOLD HER THAT MY CAR WAS DOWN THE STREET AND THAT I WOULD GIVE HER A LIFT HOME. WHEN WE WERE AWAY FROM THE LIBRARY WALKING, I HAD IT WAS ABOUT TIME. SHE ASKED ME "ABOUT TIME FOR WHAT?" I SAID IT WAS ABOUT TIME FOR HER TO DIE. I GRABBED HER AROUND THE NECK WITH MY HAND OVER HER MOUTH AND MY OTHER HAND WITH A SMALL KNIFE AT HER THROAT. SHE WENT VERY WILLINGLY. HER BREAST FELT VERY SOFT AND FIRM UNDER MY HANDS. BUT ONLY ONE THING WAS ON MY MIND. MAKING HER PAY FOR THE BRUTAL OPS THAT SHE HAD GIVEN ME DURING THE YEARS PAST. SHE DIED HARSH. SHE SQUAMMED AND SHRIEKED AS I CHOKED HER, AND HER LIPS TWITCHED. SHE LET OUT A SCREAM ONCE AND I ROLLED HER HEAD TO SHUT HER UP. I UNJACKETED THE KNIFE INTO HER AND IT BROKE. I THEN FINISHED THE JOB BY CUTTING HER THROAT. I AM NOT SICK. I AM INSANE. BUT THAT WILL NOT STOP THE GAME. THIS LETTER SHOULD BE PUBLISHED FOR ALL TO READ IT. IT JUST MIGHT SAVE THAT GIRL IN THE ALLEY. BUT THAT'S UP TO YOU. IT WILL BE ON YOUR CONSCIENCE. NOT MINE. YES I DID MAKE THAT CALL TO YOU ALSO. IT WAS JUST A WARNING. REWARD... I AM STALKING YOUR CHILDREN NOW.

CC. CHIEF OF POLICE
ENTERPRISE

This letter contains six misspellings. Three of the six yield Zodiak's nameplate when read as the sum of alphabetic positions: LAH (the 12th) is $12 + 1 + 15$, or 28. PO (the 19th) is $19 + 18$, or 37 (diagram 282). $TWELVE$ plus $TWELVE$ is $20 + 2 + 8 + 1 + 6 + 1 + 4 + 2$, or 33, or 28 (diagram 282). $SHREWD$ is $19 + 10 + 10 + 18 + 1$ (38), a reflected form of $SHREW$. PP (the 19th) is $19 + 18 + 18$ (55). The other two misspellings, $BROWNSTEYED$ and $CHOKED$, appear to make sense when read as acronyms. $BROWNSTEYED = 15 + 18 + 21 + 20$, where 15 = Major 1, 18 = a variation of Major 17, 20 = CHOKED = C (the hundred), B (the 18th), R (the 15th), O (the 12th), W (the 21st), N (the 14th), S (the 19th), T (the 20th), E (the 5th), Y (the 25th), D (the 4th). When the sum of one hundred and ten stands for the position ME (110), "I AM NOT SHREW" when read as an acronym describes the author as "ME." So does "I AM CHOKED." The letters S and N are located by "SHREW." What is A-S or S-A? A variation, an imaginary line running from north to south, can be the midline of Riverside. In the sentence, "SHREW ME WERE AWAY FROM THAT LIBERTY BOROARD," the word "WALLEDED" is out of its normal syntactic position. If the acronym is read as W = 1, all letters in it are following sequence in order: $\#A\#B\#C\#D\#E\#F\#G\#H\#I\#J\#K\#L\#M\#N\#O\#P\#Q\#R\#S\#T\#U\#V\#W\#X\#Y\#Z$, where $\#$ is the position 1, midpoint of the alphabet. And the entire last sentence $\#P\#Q\#R\#S\#T\#U\#V\#W\#X\#Y\#Z$ is $\#T\#U\#V\#W\#X\#Y\#Z\#A\#B\#C\#D\#E\#F\#G\#H\#I\#J\#K\#L\#M\#N\#O\#P\#Q\#R\#S\#T\#U\#V\#W\#X\#Y\#Z$, the invisible signature.

331" being the reflex-angle of 29°. In the series of calls of the 26th, there was a 117-minute interval followed by a 29-minute interval. Here we have two paraphrases for 117 and 29, '943 at the beginning, 331 at the end, with some story-elements in between. The story in Zodiacus: "943, 1204, 226, 257, 331." My translation into English: "Riverside was the scene of my debut as a murderer. I had eight visitors and then added another one. That was the end."

On 21 October, the first call is at 2:39 a.m. That the author went to the trouble of calling at this hour indicates that the call is important. It seems to set a theme that is repeated over the next two weeks. On 6 November, there is a call at 2:38, and on the following day, at 2:30. Finally, on the 12th, there is a call at 2:32. These two-thirty-X calls form a triangle on the calendar grid. One leg of this triangle covers a span of nine minutes (2:30 - 2:39), another two minutes (2:30 - 2:32), and the third seven minutes (2:32 - 2:39). The third leg passes through the square marked 2:38.

This triangle is a very interesting one. A three-sided figure with dimensions of two, seven, and nine is a triangle containing one 180° angle and two 0° angles. Trigonometric tables contain values for the functions relating to such angles, but a triangle which incorporates them cannot be drawn any way except as a straight line. In other words, this triangle exists only in theory, not in practice. The way it appears on the calendar grid, it would be a straight line joining 2:30 to 2:39. But assuming that we are measuring center to center and that the squares on the grid are quite square, if we construct a triangle joining 2:32, 2:39, and 2:30 on the calendar grid, we find that it contains angles of 45°, 18°, and 117°.

I believe that the first nocturnal call on 21 October at 9:27 p.m. refers to this 9-2-7 triangle. The 9:27 call is a challenge to the recipient to find the hidden structure, which has been marked in other ways. For instance, on the longest leg of the triangle, we find clock time 2:38. Diagonal to that, on the other side of 2:38, we find a 124. Here's 124 in binary, with my revision: 1000110 10, 38 followed by two. It's a bookend to 2:38. The other diagonal pair, 1:00 and 10:27, has an interesting relationship: the difference between 100 and 1027 is 927. The 1:00 call (remember that 100 is the digital value of the crossed circle) marks Julian Date 293. (The second call on 21 October, at 9:28, expresses a familiar theme: 928 = 11101000 00, 232 followed by Morse I - "I (zero) 232," 232 being a paraphrase for Beria Margoulies [4 x 58]. Note that 232 is an element in the construction of this triangle.)

Finally, we have the lone call on 28 November, the third anniversary of Joan Webster's disappearance, at 11:29. 1984 was a leap year, and so 28 November was Julian Date 333. In 1996, which was not a leap year, Day 333, on which the Zodiac had marked the Confession Letter in Riverside, was the 29th of November, 11:29. In any case, the Webster murder anniversary follows the Bates murder anniversary by 29 days.

11:29 also seems to have a bearing on the map problem, and here, the word "bearing" is meant in the sense of "compass bearing". In the Mount Diablo Letter, Z. suggests that the "buried bomb" can be found by tuning the "magnetic indicator" on Mount Diablo to north. I had read that as a hint relating to magnetic north. A compass needle points to astronomical north at only a few places on the earth's surface. For the most part, the needle follows what is called "magnetic declination," a deviation from true north which varies from place to place. At Concord, Massachusetts, magnetic declination is 15°17' west of north. If you picture the compass as a clock face with due north at twelve o'clock, the compass needle at Concord points to clock time 11:29. That is the azimuth that I had followed from Goose Pond to the spot in the little grove of trees near the C of CONCORD. The compass bearing is north of northwest.

About this same time, I heard from a Mensan named Lou Yates. Over the nearly three years that I had been speaking and publishing on this subject, Lou was the only person in San Francisco Regional Mensa who had been openly supportive or who had offered me any encouragement. From the other 2500 or so members I had received nothing but mensalistic silence. Better, from the 2699 other members, I had heard from Darrell Gross. I didn't know whether this was so because I was generally considered to be insane or because the others were afraid to become involved. Lou had been very outspoken since April 1982, when I first met him. Now he had some practical support to offer.

Lou had a relative who lived in northern New Jersey. She had been alerted to the situation and had kept a watch on the local newspapers. What Lou sent me now was a clipping from the *Morris Oliver Chronicle*, ("Serving Morris County's Fastest-Growing Municipality," according to the masthead), a little weekly which publishes on Thursdays. This issue was dated 11 October 1984, the fifteenth anniversary of the Paul Stine murder. There on the front page, three columns wide, was a story about Berta Margossian, illustrated with a photograph of her posing with a recent work of sculpture and the woman who had modeled for it.

The headline read, "Placid Flanders Glade Harbors An Artist's Severe Workplace." The story had been prompted by a party which BM had given at her studio the previous Sunday. It appeared that not many people in the area knew anything about this luminary living in their midst, and the author, Chronicle staff writer Ron Parko, was trying to make up for this deficiency. His rather lengthy article went into considerable detail about the subject, her late husband, Eugene, and her only child, Michael. Here's a sample:

Margossian was the wife of the late Eugene O'Hare, who published some books, worked for the federal government under President Roosevelt and for the Borden Company, and who invented "Lap-Ply," a layered kind of wood used for a variety of artistic purposes.

Eugene had not only turned his engineering skills to the service of art, he had "published some books." That brought something else to mind. In the July 1969 issue of *Architectural Record*, Mike had published (with co-author Richard Kronauer) an article titled "Fence designs to keep wind from being a nuisance." On page 153, there is a footnote referring to a book on wind drag by S. F. Haemer, published in 1969 by O'Hare Books of Flanders, New Jersey. This was obviously one of Eugene's publications. That reminded me of yet another thing.

Many of the Zodiac letters were written on nonstandard sizes of paper. The Encipher Letter, for instance, was cut to a format of 24 x 17cm. Its format, in metric units, replicates the line-and-column format of the Zodiac's cryptogram. I don't know the exact measurements of the other non-standard stationery, not having originals to measure, but I do know that they were not cut to the manufacturer's finished size. While the police were aware of this, they had always expressed the dimensions of these documents in English rather than metric units. If they had used metric units, they might have made some interesting observations.

They did, however, focus their microscopes on the edges of the paper, to see how they had been cut. Office-type paper cutters leave characteristic marks; these marks were not to be seen on the Zodiac's stationery. The edges of his letters had been cut with a commercial-type paper cutter, such as the kind used by bookbinders. Here was yet another connection linking Mike to the Zodiac. If Eugene had done his own bookbinding in connection with his little publishing enterprise, then Mike would have had access to the equipment he needed to trim his stationery to the desired dimensions. The Haemer book had been published in 1969, contemporaneous with the Zodiac's rampage in the Bay Area. The publishing activity (and the hypothetical paper cutter) were not just

in the right family but also in the right time frame.

There is also a short digression in the newspaper article on the subject of esthetics. Gestures can be a more important means of communication than expression:

[Margouleff] will, on occasion, be abstract. . . . In her "Mine Disaster," for example, several women are depicted in back of a water-high fence. They have learned their husbands are trapped in a mine, and Margouleff abstracted (simplified) their faces with their looks of horror so as not to draw attention from the drama in their postures.

Perhaps the most revealing point, however, comes two paragraphs later:

When questioned about time involved in a project, or how she markets her work, Margouleff fairly bristled. "How can you measure how much time you spend on a project?" she asked rhetorically. "How much time do you spend thinking about it, or getting up at night to do something you just thought of? Time isn't really that important."

She "fairly bristled" when Parko asked her about time. Her gesture -- her non-verbal response -- was so striking that the reporter had to make a note of it, not to mention writing down her verbal response verbatim. It is one of the few places in this article where she is directly quoted. She was making a point, and in so doing, she uttered the word "time" three times in rapid succession. She had given her studio party on the Sunday preceding the fifteenth anniversary of the Sine murder in San Francisco and had invited a reporter from the Chronicle to cover it. The resulting story was guaranteed by his paper's publication schedule to appear on that anniversary, and she had put on some kind of show during which she drammed the word "time" into his notebook. TMH is 38, and on that date fifteen years before, the Zodiac had murdered Paul Sine with a .38-caliber revolver after masking him bracket the 3800 block of Washington Street with two different destinations.

The Zodiac had identified himself repeatedly as BER (130), BER OTHARE (130n), and BM (25). I had been of the opinion that it was just a case of the son emulating his mother. Could Berta actually have been involved in Mike's conceptual art project all along? When he signed himself with her name, was he acting on his own or as her amanuensis? Had it been a joint project? He had also occasionally signed himself as GENE (108) and GENE PL. If his mother was in on it, could his father have been involved as well? The implications were staggering. My skin began to crawl with horror just as it had when I had discovered the secret of the nubian, nearly four years before.

ANCIENT LITERATURE AGAIN

I thought that at this point, I would give you a rest by going back to the ancient literature. What you have just been reading about, my correspondence with Mike O'Hare by telephone and clock, is modern literature. It has been my experience that as my author grows more familiar with his medium and his audience, he becomes increasingly sophisticated in the way he expresses himself. And so someone who is not steeped in the subject, a discussion of this modern literature tends to become very dry. I think that if you wait a while, then go back and read the previous chapter again, making frequent reference to the graphic presentation particularly, it will be easier to follow. In that instance, you might well find it refreshing to read about a few of the documents from ages past, which you will find, I suspect, much easier to digest.

On 29 December 1969, Z. mailed a letter to personal injury attorney Melvin Belli, who practices law in San Francisco. As pointed out earlier, Belli's address has an attractive feature, being an even multiple of 38 and 38½ (38 x 19 = 722). But there had to be some other reason besides the street address. The Zodiac mailed letters to only three individuals (besides Belli, Joseph Bates, the father of his first victim, and Paul Avery, then on the staff of the *Chronicle*). What was it about Belli himself that stood out from the rest of the human race?

Here's MELVIN BELLI in Morse Code:

11 0 0100 0001 00 10 1100 11 0100 0100 00

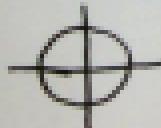
The underlined portions are binary one hundred (CIRCE) and 130 (HER). MELVIN begins with a redvision of CIRCE, and BELLI begins with a redvision of HER. I suggest that that is the principal reason that Z. chose Belli as a correspondent. A contributing factor may have been Belli's specialty. Personal injury is frequently abbreviated as "PI." All those years since 1968, Mr. Belli has been priding himself on receipt of this letter, because it made him out to be a big shot. It appears to be an appeal for help, an admission of helplessness on the part of a compulsive killer whose moral side has momentarily required control. Belli cut short a European vacation to fly back to California to proffer his good offices to the murderer. If the Zodiac would turn himself in to Belli, he would see to it that he received a fair trial. That was the last Z. was heard from on this subject -- or any other, for that matter, until four months later, when he returned unrepentantly to the literary scene with the *Flax Bonds Diagram*.

This letter is characterized by run-on sentences and egregious misspellings. "This is the Zodiac speaking I wish you a happy Christmas," it begins. From there, the grammar and orthography get progressively worse. So, incidentally, does the handwriting. It starts off being very neat and controlled, and by the foot of the page, the author is obviously tiring of trying to maintain his style. This is just another indication, to my mind, that this handwriting style is assumed -- not his normal style of writing.

Let's begin our analysis with a letter-count. The body of the letter is written in exactly 512 letters. 512 is the ninth power of two (2^9 , or binary 100000000). When you add in the ten letters of the salutation, "Dear Melvin," the sum is 522, binary 1000 0 010 11, or Morse HER 2. Besides the

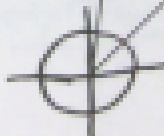
Dear Melvin

This is the Zodiac speaking I wish you a happy Christmass. The one thing I ask of you is this, please help me. I cannot reach out for help because of this thing in me wont let me. I am finding it extreamly difficult to hold it in check I am afraid I will loose control again and take my ninth & possibly tenth victim. Please help me I am drowning. At the moment the children are safe from the bomb because it is so massive to dig in & the trigger mech requires much work to get it adjusted just right. But if I hold back too long from no nine I will loose control all control of my self & set the bomb up. Please help me I can not remain in control for much longer.



Dear Melvin

This is the Zodiac speaking I wish you a happy Christmass. The one thing I ask of you is this, please help me. I cannot reach out for help because of this thing in me wont let me. I am finding it extremely difficult to hold it in ~~g~~ check I am afraid I will loose ⁷⁰ control again and take my nineth possibly tenth victim. Please help me I am drowning. At the moment the children are safe from the bomb because it is so massive to dig in & the trigger mech required much work to get it adjusted just right. But if I hold back too long from no nine I will loose ~~complet~~ all control of my self & set the bomb up. Please help me I can not remain in control for much longer.



run-on sentences, there are three types of spelling errors: 1) doubled letters ("Christmas," "lose," twice, for "lose," "control"); 2) simplified doubles ("difficult," "possibly," "triger"); and 3) wrong letters ("extramly," "mooth," "victor," "drownding").

Note that in the class of doubled-letter words, not one contains the letter I. In the second class, all those words contain an I. This leads me to suggest subdividing the third class into two sub-classes, 3a) wrong letters in words with I ("mooth," "victor," "drownding") and 3b) wrong letters in words without I ("extramly"). I believe that the following will prove these distinctions to be meaningful.

As in the Paul Sine Letter, Z. draws attention to the periods by use of the run-on sentence, not to mention placement of periods at long intervals following the ends of sentences. I connected all the periods to one another by straight lines, in order of appearance. The angles formed are 100°, 65°, 70°, 234°, 100°, and 224°. A few are obvious by inspection: 70 = BMx2, 100 = GENE. The rest are Zodiac commenplacess multiplied or divided by powers of two, which does not change the basic "spelling." 248 = 79 x 2°, 65 = 120 (BER) + 2, 234 = 117 x 2, and 224 = 112 (OH) x 2.

Incidentally, Z. uses the word "control" here three times, misspelling it only once. He obviously knows perfectly well how to write it correctly. I suggest that the one lapse is a put-on. The first spelling error of the doubled-letter type is "Chirstmas." All three subsequent errors of this type involve doubled letter O. Isn't it rather curious that in three tries out of three, the incorrectly doubled letter is always O? Here are the erroneously doubled letters, in order of appearance: SOOO. Could it be that the reason for this seeming inability to deal with English spelling has something to do with the fact that in Morse Code, the letter S is 000? On the theory that it does, I suggest reading this string of misspellings as a sentence, "S-(is) 000."

Now let's take the second class, simplified doubles. The dot over the first I of "difficult" joined to the dot over the I's of "possibly" and "triger" form a 110° angle. 110, again, in Morse ME.

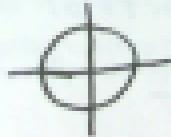
The third class, subtype a), consists of words containing the letter I and a wrong letter. Curiously, the three words fitting this description are all found in three consecutive lines, within two inches of one another. The dots over the I's of "mooth," "victor," and "drownding" form a 36° angle. Z is the twenty-sixth letter of the alphabet.

Finally, we have "extramly." It is the only misspelling of its type, and it does not appear near a period or contain an I-dot, either of which could be related to another dot somewhere in this composition. But it does have a letter X. The intersection of the two strokes of the X marks a point just as accurately as an I-dot would. And we happen to have other strokes to relate to it. At the foot of the letter, for instance, we have a crossed circle, the center of which is marked by two cross-strokes. Then we have ampersands, written as rough crosses ("mooth &," "myself &"). The figure "mooth &," "extramly," "crossed circle," "myself &" expresses a 70° and a 36° angle. 70, once again, is the Morse spelling of BMx2.

The apex of the 110° angle is on the left-hand side of the page. The apices of all the other angles discussed here are found on the right half of the page. Since we ordinarily read (in the non-Semitic languages) from left to right, perhaps I may be excused for reading 110 (ME) as the first part of a sentence, and all the other numbers expressed here as a compound predicate: "ME (I am) 70 [BM x2], 26 [Z], OH, GENE, BER, 79 [January 9-7], 117, and 36 [general purpose identifier for the author]. Now, who is out of control? Better, who is *in* control here? The author of this document, or the P. I. lawyer who is reading this as a cry for help from some illiterate moron who

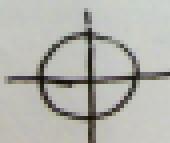
Dear Melvin

This is the Zodiac speaking I wish you a happy Christmass. The one thing I ask of you is this, please help me. I cannot reach out for help because of this thing in me want let me. I am finding it extremely difficult to hold it in check I am afraid I will loose control again and take my ninth & possibly tenth victim. Please help me I am drowning. At the moment the children are safe from the bomb because it is so massive to dig in & the trigger mech requires much work to get it adjusted just right. But if I hold back too long from no nine I will loose control all control of my self & set the bomb up. Please help me I can not remain in control for much longer.



Dear Melvin

This is the Zodiac speaking I
wish you a happy Christmass
The one thing I ask of you is
this, please help me ^{310°} I cannot
reach out for help because of
this thing in me ^{65°} want let me
I am finding it extremely difficult ^{70°}
to hold it in check I am
afraid I will loose control
again and take my nineth &
possibly tenth victim ^{234°} Please
help me I am drowning At
the moment the children are
safe from the bomb because
it is so massive to dig in & the
trigger mech requires ^{100°} much work
to get it adjusted just right But
if I held back too long from
no nine I will loose complet all
control ^{224°} of myself & set the
bomb up ^{224°} Please help me I can
not remain in control for much
longer



can't even spell English words correctly?

For that matter, he can't even decide which word he wants to use. "But if I hold back too long, from no nine I will know" — and here he writes "complet" and then crosses it out and substitutes "all" — "all control of my self & set the bomb up." NO NINE: N = 14, O = 15, NINE = 9. 14159. It's the fraction of π. What about "complet" crossed out? The C of "complet," had it been allowed to stand, would have been the 444th letter of the text. 444 is an interesting number, even more interesting than 666, which modern scholarship has shown to be the sum of the letters of the Greek spelling of "Nero." 444 in binary is 11011100, which I redivide as 110 111 100, GOD.

By 20 December 1969, the Zodiac had not even been identified, much less apprehended. He had committed the most reprehensible and audacious acts against humanity (albeit his quantitative production suffered by comparison with the competition, e.g. Adolf Hitler, among others), but whereas as his competition had by and large declined to publicize their misdeeds (the SS, obviously aware of their guilt and the possibility of retribution, went to some lengths to cover up their crimes), the Zodiac actually advertised on the front page of the *San Francisco Chronicle* (class of charge) and practically dared whoever was running the universe to blast him. As of the Melvin Belli Letter, no lightning bolts were forthcoming. This may seem rather impudent, but I read the crossing-out of "complet" as the equivalent of saying, "There is no God."

The Zodiac had pushed the system to its limits. He had committed several murders for no reason other than to aggrandize himself. If he had murdered for sex, that might have been mitigated by being subsumed under the rubric of lust. If he had murdered for money, he could have been, if not excused, at least trivialized, by being lumped together with everyone in the history of the human race who has killed for reasons of greed. And there are a lot of them. But this is someone whose lust, whose greed, has been for something other than sexual or material gain. His crimes were directed against the Deity Himself.

"If You're there, answer!" No response. "If You don't respond, I will kill someone else. Your non-response will be considered proof of Your non-existence." No response. "This time, I will not only kill another human being, I will use the *San Francisco Chronicle* to identify myself. If You don't act on Your own, You will have to appoint an agent to act on Your behalf." If I am never prosecuted in a court of law, it will be taken as incontrovertible proof of the fact that either the universe which You are created with creating does not work, or, seeing that it is *in* fact dead, that You did not create it and, by inference, do not exist. Take that!"

That, at any rate, is how I envision the Zodiac's monologue with God (*a la Raskolnikov*). And that is why the crossing-out of "complet" appears to me to make sense. One of my earliest consultants was Dr. Lisi Reynolds, a child psychiatrist whose charges included a ward full of sociopathic children at Napa State Hospital. She supposed to me, basing her opinion on nothing more than the discovery of the radian on the map of the San Francisco Bay Area, that the Zodiac was somebody who was rattling the universe to see if it worked. She also suggested to me that he would be very interested in hearing from me, and that he might even take me for God if he did.

On a less speculative note, there are features of the Melvin Belli Letter which match up, point for point, with the Missin Diablo Letter mailed six months later. Most of these points have already been discussed in a previous chapter, but they deserve repetition.

In both letters, we have a misspelling involving the doubling of the letter S ("Christmas," "base") followed by a period; in both cases, the following period figures in an invisible geometric scheme.

In both letters, we have misspellings involving the sequence ANI ("mech" for "mechanics," "agitating" for "annihilating"). Once again, Morse ANI, 01 10 00, is a revision of PI (0110 00), just as it is in DANGERTUE ANIMAL. I don't think it coincidental that these ANI-formulations (and -omissions) occur in the Melvin Belli Letter, in Line 16, and in the Mount Diablo Letter in Line 9. In both Roman and Greek, PI is spelled with the 16th and 9th letters of the alphabet, in that order.

There is even more evidence that the Melvin Belli Letter and the Mount Diablo Letter were composed as a unit. One of the central statements of the Melvin Belli Letter is "ME 26 (Z)." As already discussed, in a previous chapter, invisible geometry in the Mount Diablo Letter gives an angle of 108° joining the three crossed circles in the body of the text. 108 is binary 1101100, which I redivide as 110 (ME) 1100 (Morse Z). This reading is reinforced by the express writing of "12" joined to a large crossed circle in the center of the letter. The crossed circle is an expression of identity, hence equivalent to the pronoun ME. 108 and (crossed circle) 12 are thus two different ways of saying the same thing.

In both letters, we find the letter S as 000. In the Melvin Belli Letter, in misspellings characterized by erroneously doubled letters, "Christmases," "Toose," and "controll," the doubled letters appear in this order: S000. In the Mount Diablo Letter, the connection between the misspelling "bus" and the number 38 is established by setting the extra S-equivalent to Morse 000, which has the mathematical effect of multiplying BUS (THREE) by eight.

What I have just done above is to demonstrate that two letters from the Zodiac murderer, separated in time (by postmark) by six months, were in fact composed at the same time. To a large extent, the other documents resolve themselves into such pairs. We have the cryptogram, for instance, a crypto-looking document composed in a 17-column format. Then we have the 340-Character Cipher, which is composed in the same format as the cryptogram. Connecting the two, we have not only the format, but also the postmarks, 213 (= BM) and 214 (= 1000), which identify the parents of Michael O'Hare. The sequence of letters DANGERTUEANI in the cryptogram reduces to spell BMx2 ME 1K UE PI. In the 340-Character Cipher, the text opens with the fraction of π, then an approximation of the fraction of π made up of the same two-letter codes (1K 1K MII). In both documents, Z uses letters of the Roman alphabet as cipher symbols, both in normal orientation and reversed or inverted. Of the normal letters, he uses 29 in the cryptogram and 29 in the 340-Character Cipher. The letter omitted in the cryptogram is C; in the 340-Character Cipher, it is Q. C = 100, Q = 17. Their sum is 117. Obviously, these two ciphers have been composed in tandem. Then there are the 13- and 32-Character Ciphers, both of which give the value of the radius, the Pen and Dragon Cards, whose themes, taken together, suggest the name of Mike O'Hare's cryptographer, and the Death Machine and Bias Birth-Diagrams. Composing documents in pairs is what might be expected of an author whose chief metaphor is binary.

Here's the text of the car-door inscription which the Zodiac left on Brian Hartnell's automobile at Lake Berryessa. Even though it is not written on paper, it is every bit as much a document as any of the letters written to the *Chronicle*.

[crossed circle]
Vallejo
12-20-68
7-4-69
Sept-27-69-4:30
by knife

7 CP - 2

Mon, Oct 5, 1970

DEAR EDITOR:

You'll hate me, but I've got to tell you.

THE PAGE ISN'T ANY SLOWED IN
FACT IT'S JUST ONE BIG BURDEN

13 "Some of Them Fought
It Was Horrible"

the price tag now?
I'm crackproof, what is
desecrating us on me, we're
city police pig cops are

P.S. HERE ARE REPORTS

Zodiac 



The first two dates refer to the Zodiac murders committed at Lake Herman Road and Blue Rock Springs. The third date is that of the present crime. Note that Z. even gives the clock time. Note also that of the three entries, this is the only one in which he writes the (abbreviated) name of the month rather than the number of the month. The change in style appears to be significant. By alphabetic quantities, S = 19, E = 3 (Zodiac aliasancy), P = 16, T = 20. SEPT adds up to 58. It is found in the fourth line of the text; $4 \times 58 = 232$. The whole text, other than the crossed circle with which it begins, is written in 35 characters, or Morse-to-binary HM.

The scientific test of a theory is whether or not it is able to predict the outcome of data which the theorist has never seen before. To date, I have never seen a photographic copy of the letter postmarked in late July 1970, in which the Zodiac quotes at length -- and with egregious misspellings -- from the patter-song, "I've got a little list," taken from the Gilbert and Sullivan operetta, *The Mikado*. In this letter, as to whose exact text I have only Graysmith to go by, the Zodiac appears to claim thirteen victims (in number, not words), attributes a zero to the San Francisco Police Department, and immediately thereafter, launches into his -- bewilderized -- rendition of Ko-Ko's patter.

I suggest that the number "13" is written in such a way that either the crossed circle preceding it or the zero of "SFPD = 0" appears graphically between the one and the three of "13" in such a way as to make the whole expression read "one zero three (103) before MIKADO" -- i.e., MIKE.

More than two months after mailing the "Little List" Letter, in the first week of October 1970, Z. mailed to the *Chronicle* a postcard covered with snippets cut out of magazines and newspapers. In one end of the card, he punched thirteen holes with a paper punch. There was one row of ten holes followed by a row of three holes. This was interpreted as meaning that he was claiming thirteen victims. I believe that it refers back to the "Little List" Letter. Ten is written "one zero." "One zero" is followed here by three (holes). The total quantity expressed is thirteen, but the numbers expressed by each line read, in order, "one zero, three." These thirteen holes, in other words, can be read as expressing either the number 13 or 103. I wager that a photographic reproduction of the "Little List" Letter will show that the supposed box-score preceding the quotation from *The Mikado* is equally ambiguous.

The true test of a scientific theory is its ability to predict phenomena hitherto unseen by the theorist. I am predicting that the box-score in this letter can be read as expressing the number 103 -- before MIKADO. I am even willing to bet a substantial sum of money on it.

Any takers?

SOMEONELL FIND HER

The same day that the 11:29 call came, the *News* ran the story about its confrontation with the Massachusetts State Police over the spot in the pilot glove, publishing a copy of my map on its front page. The following day, there was one mystery call, at 1:20. I have already interpreted that as meaning "dig it up." The calls continued to come in. I am reproducing here a calendar grid showing those events.

As is the case with the cryptogram and the 340-Character Cipher, much of this material is filler. It is thematically appropriate but contributes no essential information. I have the impression that much of it is meant to be a vocabulary test, and the role of such filler in a situation like this is to obfuscate the issues, rather like radar chaff.

For instance, there is the series of calls on 3 December, at 11:59, 12:38, and 2:41 (NB: This 12:38 call is the third at this clock time in the space of less than five months; in fact, this one is found on the 117th day following the first of the three on 10 August 1984). The device being used here has been seen before. The interval between the first two calls is 39 minutes, the second interval 123. The missing number is n (39n = 123). 123 may allude to a vertical structure occurring in the Monday column later in January, or it may be an exhortation: "1-2-3" is the numerical way of saying "count." On 14 December, there is a series at 11:26, 12:00, and 4:47. Again, the intervals express commonplaces. The first is 34 minutes (2 times 17); the second is 287 (Morse 1000-11-111: IBM O, as in "Berta Marguerite O'Hase").

There is an even more interesting series of calls on 18 December. There were two one-ring hang-ups at 10:00, one at 10:03, one at 10:16, one at 11:17, and a final one at 3:04. This appears to be a receipt for a mailing from El Paso of the previous March. On the 17th, my counter dropped an explication of the cryptogram and the 340-Character Cipher, which I had photocopied onto ledger-size paper, (11" x 17"). The very paper size — in English units — expresses the phrase TIMES 17. This mailing had been acknowledged originally with a one-ring hanging call a few days later at 2:10 p.m. (Julian Date 213, 1 August, had been the publication date of the cryptogram.)

This series of calls opens with two rings, 00, Morse L subject of sentence. The interval expressed by the next call is two minutes; the next interval is thirteen minutes. There we have 211. 11:17 gives the dimensions of the El Paso Letter, and 304 is binary 1 00 11 0 000. TIMES. 213 and 11 x 17 is the message.

There is a similar structure in the cryptogram. About three-fourths of the way through the composition, we find the misspelling WILE for "will." The 'W' is character #304 (Morse TIMES). Digriftly, WILE is 011 00 0000 0; with the following N (of "not") we have the sequence 0_11000_10001_0. The underlined groups are, respectively, 24 and 17. 24 x 17 is the format of the cryptogram. Z would have got the same effect by spelling "will" correctly. But then, there would have been no reason to examine it. By tagging it with an error (misspelling), he proves that it is not coincidental and challenges the reader to examine it more closely.

I was struck by the fact that in the third through fifth weeks of this period, there were pairs of calls beginning with eleven (11:00 and 11:16; 11:42 and 11:43; two calls at 11:46) and that these pairs

Post Item, 2 December 1984 - 9 February 1985

			11:53 12:30 2:41			9:11	
		4:29				11:26 12:30 4:47	
		10:01, 10:01 10:01 00:16 11:17 2:04	11:01 11:01			8:36 8:36	
					11:02 11:03	9:36 11:20 1:57	1:58
		10:07 10:15, 10:16 11:01 11:28 3:04 3:21	9:12 10:19 are bracketed since spanning 300 minutes. Half of 300 is 150.5.		9:12 1:58	11:46 11:46	
		12:00	9:16 10:03	9:28 10:08 11:46	1:51	10:34 10:45	
		11:26 12:26 2:13	2:00 2:09	10:17	2:00 4:12	3:49	
		9:21 1:08 2:13	2:03	10:18	11:49 4:36	10:39 12:01	1:00
		1:23	3:43	2:24			
				2:23 = 2:23			

Nocturnal calls shown in
boldface

were arranged diagonally on the calendar grid. He had organized his information in the Ten-Week Message in vertical columns. There was nothing to prevent him doing the same thing along diagonals if he felt like doing it that way. The sum of 1101 and 1116 is 2217; 1142 and 1163 add up to 2295. Two times 1148 is 2292. The intervals between 2217 and 2295, and between 2295 and 2292 are, respectively, 68 and 7. 68 is Morse 00-00-00-0, NINE. Binary 7 is 111, Morse O. The last three numbers have intervals expressing NINE O, which I suggest is a shorthand for NINE O_{x2} (B&M 130).

Intersecting with this diagonal is a vertical line of information. About this time, my caller discovered that Litigation Support Corporation had an answering service. Starting in mid-December 1984, they began reporting one-ring hangup calls. This was the first one. 836 is binary 11 0 10 00 10 0, ME NINE. The following Friday, there were one-ring hangup calls at the office at 9:36, 11:20, and 1:27. 1120 is a B&M-number, that is, it begins in binary with the Morse group spelling BM; the rest of the number is just five zeros (0000 11 00000).

The first interval, 9:36 to 11:20, is 164 minutes. The second interval, ending at 1:27, is (not coincidentally) 157 minutes. 164 is binary 1001000; 157 is 10011101. I read the two numbers as a composite, 11 0 00 00 10 0 111 0 1, ME NINE O_{x2} #1. The last digit (1) is, I suggest, meant to be read as "#1." The zero following 0 (111) is a two-multiplier. These are two NINE O_{x2}'s, or B&M 130's, on the map (B&M 130 = 1000 11 10000000 = 9096). Reading from left to right, B&M 130 in downtown Concord is number one. This series came on 28 December. The following day, the 29th, we got a one-ring hangup call at 1:20. The last time there had been a 1:20 call ("dig it up") was also on the 29th - of the previous month. Obviously, there was an analogy between the two.

On 28 November, the *News* had published a copy of my map showing an X where the two hour-hands (12:38 and 8:22) intersected in the pine grove, at what you might call "Point 127" (for the 127° angle formed by this point and the two B&M 130's). Now, on 28 December, there was a series of calls that seemed to spell NINE O_{x2} #1 (the center of the clock face reading 12:38), followed the next day by the same signal I had received following the fire story. The date was 12-28. It was too close to 12:38 not to be significant. I went back to my Concord map, set up my clock face centered on B&M 130 in downtown Concord, and read off an azimuth corresponding to the position of the hour-hand at 12:28. 12:28 intersected with the magnetic-north azimuth brought forward from Goose Pond on the other side of the Concord River, near Penn School. The map indicated that the area was wooded.

I had constructed a diagonal from NINE O_{x2} which had intersected with another line on the map, just as the diagonal structure on the calendar grid had intersected with the vertical ME NINE, ME NINE O_{x2} #1. It was very ironic. One of my most stalwart couriers, Mark Fene, had seen the Concord map and remarked that it was very considerate of our author to construct a pointer directed at a school bearing his name. What if there was not one site in Concord, but two? There were two things still missing: Joan Webster's note bag and Joan Webster herself.

On Monday, 7 January, there was a series of seven one-ring hangup calls, at 10:03, 10:15, 10:18, 11:03, 11:58, 3:06, and 3:21. Here are these calls in tabular form, showing not only the quantity, but also order:

TIME	10:00	10:15	10:16	11:03	11:30	3:06	3:20
INTERVAL	12	1	47	47	196	15	
ORDER	#1		#2		#3	#4	
QUANTITY	12		X		14 ²	15	

The first thing that is striking about this series is the repetition of the number 47 in two consecutive intervals. The sum of 1, 47, and 47 is 95, Morse TWO — which is why I have assigned this group the number two in order. 196 is the square of fourteen and thus fits into a progression of twelve to fifteen — if the second member is the square of thirteen. $12^2 = 144$, 16 = P, 9 = L. The missing number is 8.

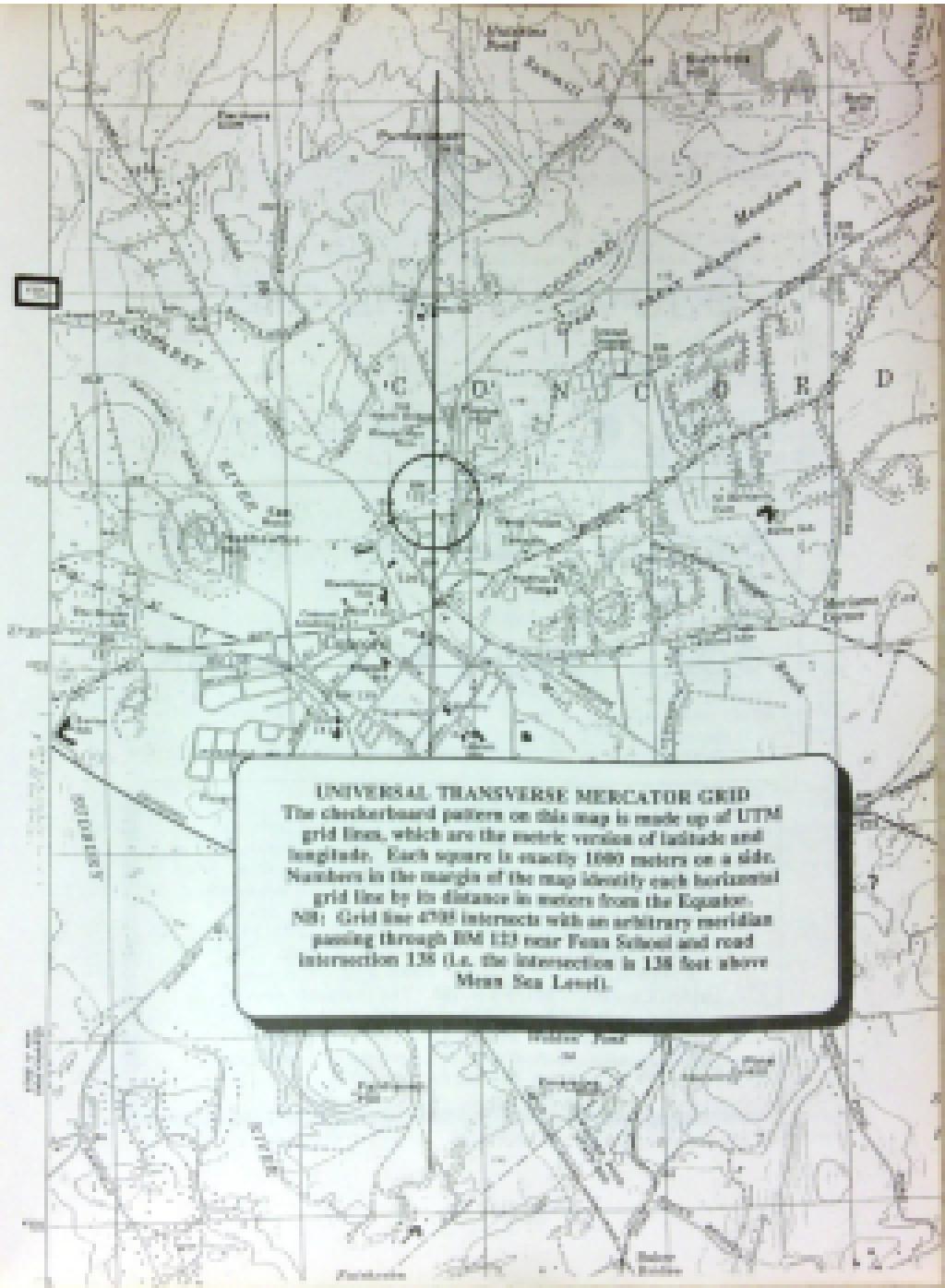
It took five calls (five rings) to get to the end of the 47s. If you look at the left-hand margin of the Concord quadrangle, you will see a series of numbers marking Universal Transverse Mercator (UTM) grid lines. Each of them is preceded by a superscript 47. One UTM grid line just north of town is marked superscript 47, 05 ("ring five"). It passes from east to west just north of Fess School.

The following Monday, the 14th, there was just one call, at 12:50. It seems to be a subset: 12 before 50 = 20 minus 12 = 8. I'll discuss that call in another context in a bit. The Monday following that, there were three calls, at 11:36, 12:26, and 2:12. The first interval is fifty minutes, the second 106. $50/106 = 0.47$ ("ring 47"). The Monday following that, there were three calls again, at 9:51, 1:56, and 2:13. The interval between the first two calls is 225 minutes, the second interval is 37. $225/37 = 6.08$. Six is ME, 0 is O, 8 is H. ME OH, then. The third call is at a familiar (or familiar) number, 213 (2 = H, 13 = M). The next call, the fifth Monday of this series, came at 1:23 a.m.

I had no overview of what was going on. I couldn't see the pattern. When this nocturnal call came in the wee hours of the morning, rousing me from a sound sleep, I got mad. I lay awake fuming for 30 minutes, then gave Mike a one-ring hangup call of my own. It was 4:36 this time. I thought that "4-5-6" was an appropriate response to "1-2-3."

For that matter, it still does. But the passage of time enabled me to see how this call fit in. The first in this series of calls came on a Monday, and Mondays had been clear of mystery calls for months. This was obviously special. First, on the 7th, five calls seemed to spell out "1205" (the UTM grid line). Two more calls were added to bring the total up to seven (seven rings = Circle Seven, "morder"), as well as to complete the "guess the missing number" exercise. Then, to conclude, the author had called at 3:21 — the mirror-image of the nocturnal call at 1:23 a mafat had got my goat. 3:21 and 1:23 were a pair of bookends, defining a structure. Ordinarily, bookend-pairs had been arranged horizontally on the calendar grid; this time, the pair was arranged vertically. In between there was some filler material, paraphrases of ME OH and 38. 0.47 alluded to the "105 series" on the 7th. The last call on the 28th had been at 2:13, BM. The very next one in that column came at 1:23.

I went back to the Concord map again. On the old railroad grade, just off Monument Street, is a benchmark noted on the map as BM 123. A meridian passing through BM 123 intersects with UTM grid line "105 eight west to Fess School. Something else struck me. If 123 is the southern end of this structure, 321 is the northern end. The number 321, in this context, may denote a geo-

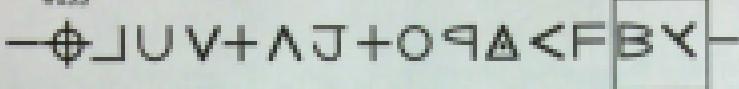


UNIVERSAL TRANSVERSE MERCATOR GRID

The checkerboard pattern on this map is made up of UTM grid lines, which are the metric version of latitude and longitude. Each square is exactly 1000 meters on a side. Numbers in the margin of the map identify each horizontal grid line by its distance in meters from the Equator.

Note: Grid line 4700 intersects with an arbitrary meridian passing through RM 123 near Penn School and road intersection 128 (i.e. the intersection is 128 feet above Mean Sea Level).

#155

—Φ—LUV+ΛV+J+OΨΔ<FBX—


#8174, 175

U+R/LE | DYBRABTMKO


●<CJ RJ | T●M · + PBF

#205

Φ@ΔSK■+N | ●FB CΦI▲R

BOOKENDS

Just as the BM-MB bookends enclose Crossed Circle #3, #117 (= Riverside), this pair of alphabetic bookends,

BY-VH, appears to enclose information relating to a mirror-image crime. Halfway between these two bookends are Characters #8174 and 175. $174 + 175 = 349$. 349 is itself the mirror-image or bookend of 943, digital "117 0" – 117° being the longitude of Riverside, California. This BY-VH structure is contained within a pair of crossed circles, Characters #155 and 385. The character numbers adding up to 349 begin 1950 of the distance between the two crossed circles, $1950 - 0.38$, NB; The entry for 38 Kirkland in Michael O'Hare's dissertation is given the arbitrary building number of 349.

graphic location, but it also alludes specifically to Leon Webster. BUS is a digital synecope for THREE, and Leon's suitcase was left by her murderer at the bus terminal. He left her purse next to the southbound lane of Highway 107. 321 = 3 x 107.

On 22 February, there were three one-ring hangup calls at 1:01, 1:38, and 2:05 p.m. The central number not only ends in :38, but it alludes to a landmark next to Fern School, a road intersection 138 feet above Mean Sea Level. The intervals expressed by this series of three calls are 37 and 23 minutes, respectively. By what I suspect is not a coincidence, the quotient of 3027 is 138.

There is another pair of vertical bookends in this period. On 3 January 1985, there are two calls, at 9:12 and 1:53. One week later — next entry in the same column — there is a solitary call at 2:19. 9:12 and 2:19 are minor-image numbers. The interval between 9:12 and 2:19 is 307 minutes. Half of 307 is 153.7. Is it coincidental that the second of these three calls came at 1:53?

On 7 January, two things happened. One was the series of seven calls discussed above. The other was that another "Mike West" letter was dropped in San Diego. This one contained an aerial photograph of the O'Hare property in Vernon, kindly provided by George and Terry Webster, and a photocopy of part of the *Mount Olive Chronicle* interview with Elena Margoulies. The passage was the one in which she kept harping on the word "time."

On 11 January, four days after this mailing, we got a call at 10:45. BERTA in Morse, 1000 0 010 1. It is binary 1045. This was the first signal expressing BM's full given name. Another one came four days after that, on the 15th. Please note that both of these 10:45 calls are adjacent to squares on the grid showing calls at 11:46. 11:46 seems to be important. I will save it for a later chapter — in fact, the very last one.

In the four-day period beginning on the 14th, we got one-ring hangup calls on Monday at 12:50, on Tuesday at 9:36 and 10:45; on Wednesday at 9:38, 10:08, and 11:46; and on Thursday at 2:52. 12:50 is twelve before fifty, or fifty minus twelve, i.e. 38. 38 is three before eight. On the last day of the four, the call came at 2:52, eight before three (o'clock). It's yet another pair of bookends: 38 . 83 (eight before three). What kind of information was contained within them?

All the calls on Tuesday and Wednesday of that week except the 9:38 call are repeats. In fact, 11:46 was a repeat from only two weeks before. He was recycling old material. The two 10:45 (BERTA) calls were separated by only four days. But it was the way the material was put together that conveyed new insights. The interval between 9:36 and 10:45 is 49 minutes. Between 10:08 and 11:46, the interval is 98 minutes, or 2 x 49. These two intervals expressed, altogether, three forty-nines (note the solitary call at 2:49 on 23 January 1985).

Sunday calls were very few and far between. But Sunday the 20th of January was an exception to the rule. I believe that it is only coincidence that it was on that day that the San Francisco Forty-Niners beat the Miami Dolphins in the Super Bowl by 38 to 16 (point spread: 22). In a moment, I will try to demonstrate why I think that it was coincidental that on that evening, I got a mystery call at 8:21 p.m. There had been a break of two days before it. The week concluded with a call at 3:49 on Friday. Then there were two days of silence.

Let me jump ahead in time here. In the week of 14-20 April 1985, there was another mystery call on a Sunday, the first one since the 8:21 call on 20 January. It came at 2:50 a.m. The next Friday, there was a call at 3:49. There was an obvious parallel between the two: both (anomalous) Sunday calls were followed by a 3:49 call the next Friday. And on 16 January, there was something else: the two intervals had been 30 and 98 minutes. The second one was the last installment of the three

7 April - 4 May 1985

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	00:08 00:32 0:48		1:50	2:02		
2:39	00:45 2:37	01:18 4:14 4:33	8:04, 8:25 8:27 a.m. 11:18 11:23	8:38	2:49 3:49	
	1945 10000010101 MORSE BERTA		8:58 a.m. 10:18 11:53			8:28 + 12 before 3
	10:58 10:45 12:02	9:57 11:00 2:01			9:26 11:00	

Week of 20 - 26 January 1985

8:31	11:36 12:26 2:12	2:39 2:39	10:37	1:04 4:13	3:49	
						8:28 MIRROR IMAGE MORSE DAVE 2:58

943 = 1100101111, 1100001 111, 117 O (degrees)

943. . 033 = 117 O. . 33

943. . 128 = 117 O. . 128

117-32-2128 = Mike O'Hare's Social Security number

49). But together, 30 and 98 added up to 128. 128 and 349 had something to do with one another (128 is also a power of two, 2^7 or 10000000 in binary).

Now let's skip forward to April again. Twelve weeks after the sole Sunday call at 8:21, we have another one, at 2:30. The following Friday, just as we had after the last Sunday call, there is a one-ring hangup at 3:49. Read 330 backwards. 632 is another power of two (2^8 , 1000000). These powers of two appear on the calendar grid in reverse order from the way they appear in another (by now) familiar number: Mike O'Hare's Social Security number: 117-32-2128.

The only constant thing in this guessing game is the first group: 117. I have suggested before that the reason he chose Riverside as the site of his first crime was because his Social Security number expressed its longitude. It seems to be referred to, especially in the Bus Bomb Diagrams, the 32-Character Cipher, and the 340-Character Cipher, by the number 117.

Let me try a thought experiment. I'll write 117 in binary notation, followed by the letter O, to simulate the superscript degree sign (^). 117 is 1110001, letter O is 111. The two of them together, 1110001 111, form base-ten 943. It's the mirror-image of 349. They are bookends. "349" is the way someone stated across the table from you would read "943" written in normal order from your perspective. And from his perspective, the (backwards) "32" and "128" appear after "943" (117) the same way that they appear after "117" in Mike O'Hare's Social Security number.

Cheri Bates was the first, and Joan Webster was the last. Both were lone women. Both had been offered a ride by their killers. Bookends are exactly alike in some respects, exact opposites in others. One was on the East Coast, the other on the West coast — they bracketed the entire continent. In Riverside, the point had been to highlight a particular meridian, which is a straight line on the map. In the San Francisco Bay Area, the Zodiac had created an angle, a geometric figure of two straight lines. And in Boston, the figure delineated by the three Joan Webster sites was a triangle, a figure of three straight lines, demarcating angles expressing the date (1-22) and the number (38) of Michael O'Hare's latest birthday.

Now I am going to skip over to Friday the 13th of February 1985. On that day, we received five one-ring hangup calls in the wee hours of the morning, at 1:28, 1:26, 1:27, 1:28, and 1:28 a.m. Let's go back to the map of Concord. Our journey began with the point at Goose Pond, which was marked by the little circular picket fence. The second stop appeared to be the spot in the little pine grove, which I saw as the apex of a 127° angle, next to the first O of the word CONCORD as printed on the map by the USGS.

Please note that right next to the Goose Pond location is a notation giving the state highway number of the nearest public road, Highway 126. The site at Goose Pond was the two O's (000) of the word GOOSE, hence two rings. The second site was the apex of the 127° angle near the O of CONCORD, hence one ring at 1:27. 1:26, 1:26, 1:27, 1:28, 1:28: there were two 128's, 117-32-2128; two 128's are 256. I wrote out 256 in binary: 100000000. A realization is of course purely hypothetical. But it does have the same form as 1-0000-0-000, THE S. My 12:28 hour-hand azimuth carried forward from BM 130 in downtown Concord had intersected with the magnetic-north azimuth carried forward from Goose Pond right next to the letter S in PENN SCHOOL, as printed by the USGS ("Farn Sch").

On 3 April 1985, there was one call at 1:49. It was the only one in ten days. On the 11th, there was another at 2:49. On the 15th, there were two, at 2:49 and 3:49. Viewed on the calendar grid, they form an obvious progression, following a diagonal scheme. Sandwiched in between the 1:49

and 2:49 calls is 2:02. 200 is the Morse writing of MIKE.

On the 8th, a confederate in Springfield, Massachusetts, dropped another Christo postcard to Mike O'Hare. I had found that the location near Penn School which appeared to be indicated in the previous telephone traffic was 10mm in the microcosm of the map from Intersection 128 and 68mm (68 = Morse NINE) from BM 130 in downtown Concord. The postcard's message side said, "x + 10 = 138. x + 9 = 130. Solve for x." I added a postscript: "What did you think of the Super Bowl? That was some point spread! They don't call the San Francisco quarterback 'Mentor' for nothing."

It has seemed to me for a long time that since Oklahoma license plates, borrowing from Rodgers and Hammerstein, bear the legend, "Oklahoma is OK," Montana ought to reciprocate with "Montana is MT." It suggests wide open spaces. It might even attract immigrants. At all events, in Zodiac parlance, MT means zero. And zero is nothing. On the 10th, two days after this postcard was mailed, there was a one-ring hangup call at 1:50. *Dg 7 ap.*

The series on 15 April is just filler. 10:05 is BERTA. The next call, at 2:27, expresses an interval of 230 minutes, 230 being a paraphrase for BERTA (4 x 58; the next 10:45 call came on 20 August 1985, Julian Date 232). On the following Wednesday, LSC's answering service took a total of one-ring hangup calls (which get them upset) at 8:24, 8:25, and 8:27 a.m. Two more calls came on that day at 11:18 and 11:25 a.m.

On 17 April, a letter in New Orleans to Mike was dropped in New Orleans. It asked only, "Is the S the end?" — referring to the S of Penn School as printed on the USGS map. The return address on the envelope was "110 Division Street, New Orleans LA 70130." 110 is MI, 70 is BM 12, 130 is BERTA. It's a real address, with a real ZIP Code. The three early-morning calls to the answering service add up to 2476, the double of 1238.

The return address on the New Orleans Letter expressed a mathematical term: division. I had had to choose between a return address on Division Street and one on Triangle, and Division had won out. The recipient took a familiar number, 1238, doubled it, and divided it -- into three parts. I gathered that the double of 1238 was divided into three parts, expressed as three rings on the phone, because three rings is the same thing as three O's, 000, Morse letter S. It was another re-crypt.

On Sunday, there had been the call at 2:30 a.m. The next day, there was another at 10:45 (BERTA). What did 230 mean? I hadn't yet figured out that it was 12 written backwards. It was the sum of 130 and 130. Was it the wedding anniversary of GEHE and BERTA? Subsequent research proved that it wasn't. It was 230 less 130. Perhaps it meant that 130 was missing; then there was the call at 10:05 the following morning. Had Berta died? She was 73. Early Wednesday morning, I called her at home.

When she answered, I asked, "Is Jim there?"

She paused a moment, then asked me, with what I thought was obvious nervousness, "Jim who?" The question was pointless. There was nobody named "Jim" at her number, no way for her to be confused as to who it was I wanted. She was just trying to draw me out. "Jim Smith," I lied. "There's nobody here by that name," she said.

"I must have the wrong number," I replied. "I'm sorry to have bothered you." Then I hung up. I felt baffled.

That evening, my father called. The afternoon before, he had received a phone call from somebody with a Japanese name (he couldn't remember what it was) at the California Attorney General's Office, where he had worked prior to his retirement. This person said that he had just received a phone call from one Michael O'Hare, a resident of Massachusetts. Mr. O'Hare had told him that he was being harassed by one Gareth Penn, a resident of California, and if he (Gareth Penn) didn't stop it, he (Michael O'Hare) would sue his pants off. He (Michael O'Hare) asked him (the AG employee with the Japanese name) to pass this news on to him (Hugh Penn) so that he (Hugh Penn again) could tell him (Gareth Penn) to leave him (Michael O'Hare) alone. Otherwise, there was going to be a whopping civil action.

Once again, Mike was using a law-enforcement agency as his errand-boy, to pass along what appeared to be information of a private nature, which was none of the law-enforcement agency's business. After all, if Mike wanted to sue me, all he had to do was retain a lawyer. That's what lawyers are for. And for \$25, the lawyer would have written me a nasty letter saying I should cease and desist or else. I think he was just showing off. I had just called his mother and asked her a question that I had last heard from the mystery voice on the day of the big fire in Napa. I had repeated the question when I checked up on Lucy Johns. She knew that an anonymous caller asking "Is Jim there?" would have to be me, and she had immediately contacted Mike to tell him that I had called her. To reciprocate, he had called my father's former employer to have them call him. He had done his homework and wanted me to know it. I imagine that he also did not want me calling IBM.

Not long after that, I got my second Friday call at 3:49. As I have pointed out before, 349 is the mirror-image of 943, the base-ten writing of binary "117° O" (where the O is used as a degree-sign). Looking at the calendar grid as if it were laid out on a table, I was at the bottom. Mike was at the top — seated on the opposite side of the table. From his perspective, 349 was 943. I had found two structures in the Bay Beard Diagram which referred to the murders committed outside of the Bay Area, one in the past (Riverside) and one in the future (Boston). One of them was the 117° angle centered on the car battery. The other was the 38° angle connected to the two bases. Were there instances in other documents where these two crimes were referred to simultaneously?

In the 140-Character Cipher, as discussed previously, Crossed Circles #1, 2, and 4 form a pair of bookends (#M1...MB) surrounding Crossed Circle #3, which maps Character #117. Was there a similar structure surrounding a reference to Boston? I went back to the cipher, looking for book-ends. I found one in Lines 10-11. Here they are: BY-U+R/OTEIDXB. The first character is #168; the second B is #181. They bracket an even number of cipher symbols. If you were looking for something in the exact center of this bookend-pair, you would have to take the two middle members, #174 and 175. $174 + 175 = 349$.

The BY-YB structure is enclosed between Crossed Circles #5 and 6. The first part of 349, Character #174, is 1820 of the interval between them, or 0.38. Here is another page from the tables of classroom-data in Mike O'Hare's dissertation. Note that Item #349 is 38 Kiddland. The entry is missigned; in fact, it is the only entry in fourteen pages of tables that is. It is marked, in other words, with a typographical error. Note also that the last entry of all is number 314 (100%).

My mind went back to the very first Zodiac document, the Confession Letter. Here is how it opens:

226	COOK, J.	00007-	0024	10000
227	COOK, J.	00008-	0025	00010
228	COOK, J.	00009-	0026	00010
229	COOK, J.	00010-	0027	00010
230	COOK, J.	00011-	0028	00010
231	COOK, J.	00012-	0029	00010
232	COOK, J.	00013-	0030	00010
233	COOK, J.	00014-	0031	00010
234	COOK, J.	00015-	0032	00010
235	COOK, J.	00016-	0033	00010
236	COOK, J.	00017-	0034	00010
237	COOK, J.	00018-	0035	00010
238	COOK, J.	00019-	0036	00010
239	COOK, J.	00020-	0037	00010
240	COOK, J.	00021-	0038	00010
241	COOK, J.	00022-	0039	00010
242	COOK, J.	00023-	0040	00010
243	COOK, J.	00024-	0041	00010
244	COOK, J.	00025-	0042	00010
245	COOK, J.	00026-	0043	00010
246	COOK, J.	00027-	0044	00010
247	COOK, J.	00028-	0045	00010
248	COOK, J.	00029-	0046	00010
249	COOK, J.	00030-	0047	00010
250	COOK, J.	00031-	0048	00010
251	COOK, J.	00032-	0049	00010
252	COOK, J.	00033-	0050	00010
253	COOK, J.	00034-	0051	00010
254	COOK, J.	00035-	0052	00010
255	COOK, J.	00036-	0053	00010
256	COOK, J.	00037-	0054	00010
257	COOK, J.	00038-	0055	00010
258	COOK, J.	00039-	0056	00010
259	COOK, J.	00040-	0057	00010
260	COOK, J.	00041-	0058	00010
261	COOK, J.	00042-	0059	00010
262	COOK, J.	00043-	0060	00010
263	COOK, J.	00044-	0061	00010
264	COOK, J.	00045-	0062	00010
265	COOK, J.	00046-	0063	00010
266	COOK, J.	00047-	0064	00010
267	COOK, J.	00048-	0065	00010
268	COOK, J.	00049-	0066	00010
269	COOK, J.	00050-	0067	00010
270	COOK, J.	00051-	0068	00010
271	COOK, J.	00052-	0069	00010
272	COOK, J.	00053-	0070	00010
273	COOK, J.	00054-	0071	00010
274	COOK, J.	00055-	0072	00010
275	COOK, J.	00056-	0073	00010
276	COOK, J.	00057-	0074	00010
277	COOK, J.	00058-	0075	00010
278	COOK, J.	00059-	0076	00010
279	COOK, J.	00060-	0077	00010
280	COOK, J.	00061-	0078	00010
281	COOK, J.	00062-	0079	00010
282	COOK, J.	00063-	0080	00010
283	COOK, J.	00064-	0081	00010
284	COOK, J.	00065-	0082	00010
285	COOK, J.	00066-	0083	00010
286	COOK, J.	00067-	0084	00010
287	COOK, J.	00068-	0085	00010
288	COOK, J.	00069-	0086	00010
289	COOK, J.	00070-	0087	00010
290	COOK, J.	00071-	0088	00010
291	COOK, J.	00072-	0089	00010
292	COOK, J.	00073-	0090	00010
293	COOK, J.	00074-	0091	00010
294	COOK, J.	00075-	0092	00010
295	COOK, J.	00076-	0093	00010
296	COOK, J.	00077-	0094	00010
297	COOK, J.	00078-	0095	00010
298	COOK, J.	00079-	0096	00010
299	COOK, J.	00080-	0097	00010
300	COOK, J.	00081-	0098	00010
301	COOK, J.	00082-	0099	00010
302	COOK, J.	00083-	0100	00010

Table 5-1 (p.4 of 4)

Building 500 cannot be identified; it may be Eyster Hall.

THE CONFESSION

BY _____

SHE WAS YOUNG AND BEAUTIFUL. BUT NOW SHE IS BATTERED AND DEAD. SHE IS NOT THE FIRST AND SHE WILL NOT BE THE LAST....

His by-line said, "BY _____." The next thing you read is, "SHE WAS YOUNG AND BEAUTIFUL." B is not the first letter of the alphabet, but the second; Y is not the last, but the next to last. BY _____ Y...B. Between the first B and the second B, fifteen letters. Joan Webster was abducted and murdered exactly fifteen years following the postmark on this letter. The postmark was 29 November 1986; Joan disappeared on 28 November 1991. If she had been abducted on the 29th, it would have been one day over fifteen years. He prefers to count time in days, not years. How many days are there in fifteen years? $365 \times 15 = 5475$. 1968, 1972, 1976, and 1980 were leap years. Add four days. $5475 + 4 = 5479$. Now read it backwards. It's the mirror-image of 9745, the date of Berta Margouleff's 38th birthday, TIMES 17.

I have already mentioned the fact that the distorted address on the mail cover of the copy of the Confession Letter sent to the *Pinear-Enterprise* is written in 18 characters. The copy of that letter which was sent to the Riverside police was also distorted. Here it is, in note:

Homicide Detail
Riverside

This time, the peculiar address is composed in 23 letters. Mike O'Brien was 23 at the time of the Bates murder; he was 38 at the time of the Webster murder. This appears to be another way in which the two crimes are linked literally.

If he was thinking this far ahead about the 1981 crime already in 1986, then there must be something else somewhere in the Riverside documents. The documents connected with the first crime had to look forward to the last one. Symmetry demanded it. Suddenly, I thought of the last lines of the Riverside poem:

she won't
die
this time
someone'll find her
just wait till
next time

"Next time" is "next 38," his 38th birthday. The "she" who "won't die this time" is not Cheri Bates, who was long dead when the poem was written. "She" is the victim-to-be of 1981. It was not that "she" would not die either -- that "she" would die next time, next 38. But someone would find her. If she was to be found, she would first have to be concealed. His intention all along had been to hide his last victim.

When I made the presentation in Mill Valley in May 1994, one of my auditors, looking at the poem, asked me to explain the spelling of "someonell." I told him that I just did not have what I considered to be even a near-adequate explanation for it. Now it became obvious. I counted the letters just to make sure. Someonell is 9, Find is 4, Her is 3, 943. Now all I had to do was find "349." Was it Penn School?

ZODIAC IDENTIFICATION KIT

So far in the story, I have ticked any number of people (i.e. sent them a Zodiac Identification Kit), but I have yet to tick you. I have shown how literary evidence and behavior responses to stimuli in my correspondence with Michael O'Hare identify the Zodiac. This identification is, however, backed up by conventional evidence, and it should be put on some time. Since I have just spent a great deal of time confusing you with may seem like unnecessarily esoteric matters, this seems like a good time for it. I am going to repeat myself. I apologize, but I think it necessary to do so.

The first exhibit in the ZIK is a side-by-side comparison of a 1964 photograph of Mike O'Hare and the SFPD composite sketch of the Zodiac. The eyeglasses on the O'Hare photograph were added by my crime laboratory. The photograph is from the 1964 Harvard year book. The composite is based on the testimony of five eyewitnesses, one of whom was a Zodiac victim himself, and two of whom were San Francisco police officers.

Teenage witnesses called the police to report the shooting of Paul Stine in Presidio Heights on 11 October 1969. A police dispatcher then alerted units in the area to the crime. The dispatcher was apparently so accustomed to saying the adjective "black" in front of the noun "suspect" that she blurted out the phrase "black suspect" in her message. Accordingly, when the first two officers to reach the scene spotted a white man walking down the street away from the scene of the crime, they did not approach him as a suspect.

He was of medium height, with close-cropped blond hair, horn-rimmed glasses, a blue windbreaker, and gray trousers. They asked him if he had seen a suspicious-looking black man running past waving a gun. The white man said something like, "He went thataway," and the two policemen took off in a cloud of burning rubber. They carreered around the neighborhood, looking for the fleeing Negro, finding nothing, which is not surprising, since Presidio Heights was and is a very white neighborhood.

When they finally stopped back at the scene of the crime, they interviewed the witness who had called them in the first place. They described the man they had seen getting out of Stine's cub as white, of medium height, with blond hair, wearing horn-rimmed glasses, a blue windbreaker, and gray trousers. A few days later, after Z. had written to the Chronicle to (among other things) rub SFPD's nose in its blunder, the police responded by holding a press conference at which they denied that the encounter had ever taken place. They publicly branded him a liar.

Nonetheless, this is yet another instance of the Zodiac's fundamental truthfulness. My father had read the original police report, and the dispatcher's error was mentioned there. He also interviewed the captain in charge of SFPD's homicide investigations, and he bore out the Zodiac's version as well. For his part, Bob Graysmith told me in our one telephone conversation in December 1980 that he had interviewed both of the officers in question, and they also said that the Zodiac's version was truthful.

At all events, it was the testimony of these two officers that put the finishing touches on the Zodiac portrait. They actually talked with the suspect face to face, and he wasn't pointing a gun at them at the time. They were not under the same kind of psychological stress as another witness, Michael

Maginn, who had seen the Zodiac face to face while being shot at (and very nearly killed). Moreover, they were professionals trained to pay attention to details such as facial features.

The composite sketch received a validation practically under laboratory conditions in March 1970. About the middle of the month, a young woman named Kathleen Johns was driving along a rural highway in the Central Valley about 100 miles east of San Francisco. A man who was following her signaled her to pull over. He pulled up to a stop behind her car, got out, and approached her. He told her that he had observed her left rear wheel wobbling and surmised that the lug nuts were loose. He offered to fix the wheel for her.

She remained in the car until he had finished working on the wheel and drove off when he informed her that the repair was complete. A short distance down the road, the wheel fell completely off the car. As it turned out, the man had actually removed the lug nuts instead of tightening them. He stopped again and offered her and her infant child a ride to a service station, so that she could call for a tow truck. She accepted the offer.

It didn't take her long to realize that he was not driving toward the main highway, where service stations were to be found, but deeper into the backwoods. She asked the man if this was the way he helped people -- she anticipated that he was going to make a pass at her. He responded to the effect that people he had helped before had never complained. When she asked why, he said that when he got through helping people, they were dead. As the conversation went on, it turned out that he intended to murder both her and her baby. She said later that his demeanor was that of someone who is discussing the weather.

The driver came to a freeway off-ramp and turned up it, going in the wrong direction. He made a panic stop, and Johns took advantage of the momentary confusion to scoop up her child, open the door, and ran for it. When she finally got back to her car, she found that it had been set on fire. In the interim, however, she made her way to the Madera County Sheriff's Department to report her abduction. On a bulletin board, she saw a wanted poster for the Zodiac with the SFPD composite sketch. Without anyone prompting her to do so, she positively identified the Zodiac as her abductor.

Of course, she might have been mistaken. But four months after this incident, the Zodiac sent the *Chronicle* a letter in which he said that he was the one who had set fire to a woman's car after giving her and her baby a ride. He had not read about the Johns incident in the newspapers, because the first time it appeared in print was four months after receipt of his letter -- it came up in Paul Avery's story in which the Riverside murder was first attributed to the Zodiac. It seems extremely unlikely that both Johns and the Zodiac could independently have come up with mutually corroborating stories in the absence of any publicity.

I suggest that the Zodiac in fact had no intention of doing Kathleen Johns any harm. His purpose was to have her do exactly what she did: validate the composite sketch. He gave her a good look at himself -- they were together for about an hour. He made a powerful emotional impression on her by telling her very matter-of-factly that he was going to murder her and her infant child. He contrived a situation in which she could easily make good her escape. And then he set fire to her car, so that he would have a corroborative detail to add to a letter to the *Chronicle*. The objective was to confirm that the police-artist sketch was a very good likeness indeed. What better way to thumb your nose at the world than to prove that the evidence against you is good -- and that you still can't be caught?



Michael O'Hare, 1964



The Zodiac, 1969

Even so, a police-artist composite sketch is not definitive evidence. But it does put Mike O'Hare in the class of people who bear a strong resemblance to the Zodiac. Note the hairstyle which both subjects have in common. Hair color and length are the same. Then there are the wide eyes and slightly cleft chin. There are more similarities than dissimilarities.

The next exhibit consists of handwriting comparisons. Each page highlights a particular letter, shown in context with other letters. O'Hare handwriting samples are on the left; Zodiac samples are on the right. I think the exhibits are self-explanatory. But I would like to add something about the exhibit showing the letter G. The two O'Hare samples here are the names of his mother and father, and they are taken from the same document, the marriage license application of 16 April 1968.

This whole document is written in upper-case block letters, with one exception, the G of "Margie." As you can see from the exhibit, the author suddenly lapses into lower-case writing, forming a small G exactly the same way the Zodiac does. As the enlargement shows, he lifted his pen from paper, then went back to add two horizontal strokes, one to the end of the tail of the G, and another to close off the top of the open loop at the top. The ends of the lines don't quite match up, which indicates that these strokes were added after the letter was completed. In other words, he suddenly switched from one style of writing to another, then tried to cover up his lapse.

As I mentioned above, this application is dated 16 April 1968. As yet, while the Zodiac had committed one double murder (at Lake Herman Road, on 20 December 1968), there had been as yet no letters to the *Chronicle* -- or anyone else, for that matter. Z.'s literary debut took place three months after Michael O'Hare applied for his license to marry Carol Ann Blanchard. I think it is obvious, from a perusal of a number of Zodiac letters, that the murderer's handwriting style is assumed, not his natural style. It changes from document to document; it changes even within documents -- the handwriting at the end of some letters is different from the handwriting with which the letter starts. The author is not capable of maintaining his assumed style for very long. And all along, his idiosyncrasies of letter-formation will shine through.

I suggest that Michael O'Hare was intensively practicing his assumed handwriting style in April 1968, in preparation for his debut on the literary scene the following summer. He probably spent a couple of hours a day working on it. It is only natural that he would occasionally lapse into it inadvertently, as he does here. Of course, he instantly saw his error and moved to cover it up. He could not simply wad up the application and throw it away. There was a county employee on the other side of the counter watching him fiddle it out. So he just added two cosmetic touches and trusted that nobody who was familiar with Zodiac handwriting would ever be likely to go through the files in the Suffolk County Courthouse in Massachusetts with a fine-tooth comb, as Whit Caldwell did in the spring of 1962.

BERTA

Ford

BURCHARD

Bombs

BURCHARD

BURETE



B Fat

ROBERT

Brown

By Bay

B Bloomberg

B Bombs
maths B site

Hunter

Meannies

MAGGIE

MARTHA

M O N A M

North



My

myself

Mirror

COTTERVILLE

New York, N.Y.

+ m a t e r y

for

Y

by say

glo-y

Box

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Zodiac a

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Car
Bat

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Tiger

Watson

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cons

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day of October 13, 1971.

cipher early

Masonry

another

Trust

same

R

Editor view

Cambridge

children

parked car

rain groce

Cards

doing

ladder

Zodiac

wed

water

radio

Editor

newspaper

titled

aid

MAGGOULIES

doing

light

killing

something

G

EUGENE

finding

CATHERINE

something

HOGGULEY

wore

FIRST

poop

STUDENT

fing + prints

SEARS

S

Western

Watson

Bombs

wife

wore

WHITE

wiped

WALTER

W

switches

NOW

will

tell all

16 APRIL 1969

Aug 1-69

6

6'

26

X 92386N

6

L 90115C

6381N

547-6266

MICHAEL

crooked

Christmas

CAROL

electric

PLACE

aid

CATHERINE

code

lock

capable

contagious



The next exhibit in your ZIK has to do with employment history. On 22 March 1971, the Zodiac mailed to the Chronicle a postcard on which he had posted a drawing of a housing project that was proposed to be built by Boise Cascade Corporation at Incline, Nevada. The identification was made publicly by the then-chief of police of South Lake Tahoe, California. The drawing was executed in a format of 18 x 24 inches by a graphics firm in Los Angeles called Carlos Diaz Associates. The version used by the Zodiac is cropped out of a photoreduction of the original of about 5 x 7 inches. As far as I know, no one has ever identified the source of the 5 x 7-inch reduction. It might be interesting to know where it appeared in print.

In any case, Boise Cascade's consultant on the project was Arthur D. Little, Inc., and ADL had dispatched Mike O'Hare to its San Francisco office for four months in 1967-1968 to design this project. My research at the Tahoe Regional Planning Agency in South Lake Tahoe in the summer of 1982 had shown that the project in question, Incline Village Unit 6, was up and down before the Regional Planning Commission in Reno three times in the period July 1969-November 1970. And every time there was major administrative activity relating to this project, it was preceded by three to four weeks of intensive Zodiac activity. There is a very clear synchronicity between Incline Village Unit 6 and the Zodiac episode of 1969-1970. It suggests that the Zodiac was connected with the project, and further, that he was commuting into the San Francisco Bay Area from elsewhere in conjunction with work on that project.

The next exhibit is a Mike O'Hare résumé from late 1981. He had become aware of the fact that I suspected him of being the Zodiac in January of that year. Note that he admits here to working for ADL only in the years 1967-1968. There are five more pages to this résumé, but nowhere in the document does he admit to working for ADL at any other time. Following the résumé, there is the first page of the article, "Pence designs to keep wind from being a nuisance," co-authored by O'Hare and Richard Kretzner. The article appeared in the July 1982 issue of *Architectural Record*, and both authors admit to being employees of ADL at this time. The exhibit following that is a passage from the O'Hare dissertation (1973) in which he admits to working for ADL in 1969-1970. In other words, as late as 1973, Mike O'Hare remembered working for ADL in 1969-1970 as well as 1963-1968, but in 1981, after becoming aware of being suspected as the Zodiac, he forgets these two years of employment. I don't think it coincidental that 1969-1970 coincides with the two main years of Zodiac activity — and Boise Cascade's Incline Village mishaps.

According to the résumé, the subject was employed by Skidmore, Owings and Merrill in 1967. He does not admit to working for SOM at any other time. For that matter, he does not admit to employment anywhere in the years 1963 and 1966. Alan's first research assignment in the spring of 1982 was to make use of a personal connection to go through the New England Bell white pages for the period beginning in 1960. He came up with a list of addresses and telephone numbers extending up to the present, excepting three years, in which Mike O'Hare did not have a listing: 1965, 1966, and 1967. In the résumé, he indicates that the SOM office in question was in New York. That, obviously, accounts for the missing telephone listing in the Boston telephone directory in 1967. But what about 1965 and 1966? He was apparently not living in the Boston area. What was he doing, and where?

Then there is the indication that he was working as a consultant to the Museum of fine Arts in 1974. The next exhibit is a page from the tenth anniversary report of the Harvard class of 1964. The Michael O'Hare entry indicates, among other things, that while he was teaching at MIT at this time, he was also working as a consultant on the side, "principally" for the Museum of fine Arts. I think we may construe that *adverb* as meaning that MFA was not his only client. He had at least one other. Who was it? And did that unnamed client require of its consultant that he travel to California?

Michael O'Hare
12 Whittier Road
Brookline, MA 02146
(617) 277-7880

September, 1981
Kennedy School of Government
Harvard University
Cambridge, MA 02138
(617) 495-1431

Education:

Ph.D.	Harvard University, Division of Engineering and Applied Physics	1973
M. Arch*	Harvard University, Graduate School of Design (Architectural)	1968
S.B.*	Harvard College (Structural Engineering)	1968
A.R.	Harvard College (Architectural Science)	1964

*Professional degrees

Honors and Awards:

Junior Fellow of the Society of Fellows, Harvard University	1968-1971
Alpha Phi Chi medal, Harvard Graduate School of Design	1968
S.B. Cum Laude	1968
A.R. Magna Cum Laude	1964
Harvard National, Graduate National, National Merit, Harvard Graduate School of Design Scholarships	1968-1969

Employment:

1981-	Lecturer in Public Policy, Kennedy School of Government, Harvard University
1980	Assistant Secretary of Environmental Affairs for Policy, Commonwealth of Massachusetts
1979-1981	Director of Policy and Management Analysis, Executive Office of Environmental Affairs, Commonwealth of Massachusetts
1974-1979	Associate Professor, Department of Urban Studies and Planning, Massachusetts Institute of Technology, Cambridge, MA
1971-1974	Assistant Professor, Department of Urban Studies and Planning, Massachusetts Institute of Technology, Cambridge, MA
1971-1974	Consultant; spatial planning and related visitor behavior, Israels, Museum of Fine Arts, Boston, MA (about half-time)
1968-1971	Junior Fellow, Society of Fellows, Harvard University, Cambridge, MA
1967-1968	Staff Member; Arthur D. Little, Cambridge, MA
1967	Designer; Baltimore, Delego and Merrill, Inc., New York, NY

RÉSUMÉ OF 1981

NB: admitted employment by A.D.L.
in 1967-1968 only

Fence designs to keep wind from being a nuisance

by Michael O'Hare and Richard E. Krosnauer

As the relationship of local wind to overall building performance becomes better understood, a growing consciousness of its importance has caused engineers to look for methods of wind control that can be applied to existing buildings or integrated in structures without a major reengineering.

For example, it is conceivable to provide a channel between buildings, or an open area behind a fence system, based on preliminary studies, and without involving the space or a major disruption. Areas of trees have historically been used as windbreaks, and they

have positions, local drifts can sometimes greatly facilitate the use of local resources.

At this writing, the authors, working with a team headed by Robert A. Galbraith et al., from D. Little Inc., have completed a study of the census of the new houses at the Tampa International Airport. The findings

were submitted to the city of Tampa.

The authors' suggested design of fences uses open air baffle levels, 1/4 m made up of segmented panels and spanning the census site along one side placed at varying angles to the flow to reduce as well as redirect the fluid movement.

After an experimental test series on eight houses, enforcement measures to prevent a second set of changes. The resulting velocity profiles suggest it is necessary that the census be a continuous and unbroken permeable. Among the "people" houses, the lowest velocities at stations 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 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received successively at the Chancellor (Urbana Campus), President (Urbana and Chicago Circle campuses), Board of Higher Education (University of Illinois, Southern Illinois University, Illinois Junior College Board, and two other Boards covering eight institutions), and State Governor levels (30 pp. 581-782). Illinois does not have a program budgeting system, so every expenditure represents a line item to be justified, or justifiable, by educational "necessity." The decision-making process is internally contradictory, since each year the proposed departmental budgets, presented as "bare minimum," are halved and quartered before enactment by the legislature and, of course, the institutions endure. In this environment, an appeal to what has been historically acceptable (preservation of a given level of facilities per student during rising enrollments) rather than a serious argument from necessity is easier to defend through the various review paths.²

*The author's familiarity with the Illinois higher education system is derived from consulting work through Arthur D. Little,

Inc., during 1970, which involved site visits and interviews with staff members of the five Governing Boards, officials of the Bureau of the Budget, other state government staff members, and with University of Illinois administrators at Urbana-Champaign and Chicago Circle.

The New York State model, on the other hand, was developed in order to provide

DISSERTATION OF 1973

Bareither
Author admits to working for ABL in 1970 after all
institution expect

rements from the number of students the institution is expected to serve,
and as might be expected, the detailed regard for educational policy
typical of campus-level planning is absent.

It is immediately apparent that space utilization standards derived from average performance of many institutions are likely to preserve and homogenize a status quo in a costly way. In Bareither's own University

narrowly avoided a callup in the Pacific so-called over.

Since 1969, went to work for Interstate Commerce Commission right after law school, first in a staff job writing agency opinions, since January, 1970, with the General Counsel defending the agency's decisions in the federal courts. To some surprise, it has been a very interesting and satisfying three and one half years. A good mix of both the courts and the bureaucracy. Manage my own litigation pretty much as I see fit. The subject matter - transportation, administrative law, with environmental law and other things thrown in - is dynamic and fluid. Altogether an enjoyable and profitable experience.

Operations (1) Very low; (2) the bureaucracy will survive Watergate quite nicely, as it would survive a nuclear attack; (3) Washington has been a nice place for me to live, no effect on the rest of the country is less sure; (4) the constant hammering of inflation and the press makes it essential to get away periodically; (5) many people take the whole scene much too seriously.

MICHAEL HENRY CYRANE, Home Address, 172 Magazine St., Cambridge, Mass. 02139 (Tel. 617 524-1371). Occupation, Assistant Professor, Urban Studies and Planning, Massachusetts Institute of Technology, Cambridge, Mass. 02139 (Tel. 617 253-1745); Graduate Work, Harvard, M.Arch. '68; Ph.D. '73. Married, Carol Burkard, May 1, 1969 (Postdoctoral '70).

Professionally, the last ten years have been a meandering path. I still have no short name for my occupation. I went across the Yard from the College to the Graduate School of Design and the engineering department for degrees in architecture and structural engineering, but soon found out that the "low-cost housing problem" wasn't likely to respond to any engineering solution, and that the important issues in architecture were often dealt with before design began. I was consequently easy to seduce into a postdoc fellowship, during which I studied decision theory and applied mathematics with Myron Fiering at the D.B.A.P., and finally formalized my official relationship with Harvard in June, 1972, when I submitted my dissertation. Since 1971, I have been teaching statistics and decision theory at Massachusetts Institute of Technology in the urban studies and planning department and consulting, principally at the Museum of Fine Arts, on space planning. My current research interests are in institutional space planning, building codes and zoning, especially as regards safety and costs, and government and institutional arts policy.

In 1969, I married Carol Burkard, a teacher of four children in suburban public schools. We have managed to build a little house in Vermont, remodeled a larger one in Cambridge, and do some traveling. Carol is an amateur mycologist and finds gourmet treats in unlikely places - but no truffles yet. I grew the biggest, roundest mushrooms and the smallest, roundest cabbages in the world last summer. In the years gone by when it snowed in New England, we used to ski, downhill and touring.

Carol is now a second year law student at Boston University. I find this very exciting even though much of what seems to be important to lawyers confuses me greatly, and even though I seem to be spending a lot of time in the kitchen.

CHRISTIAN LUDGER OBIKI Died November 7, 1986, at Owerri, East Nigeria.

JOHN THEODORE OLSON, Home Address, 130 Newbury St., Boston, Mass. (Tel. 617 526-3579). Occupation, Architect-Design Director, Small Associates, Inc., 431 Marlborough St., Boston, Mass. (Tel. 617 527-9383). Graduate Work,

TENTH ANNIVERSARY REPORT Points of interest:

- 1) Work telephone
- 2) Consulting work
- 3) Gardening



ON

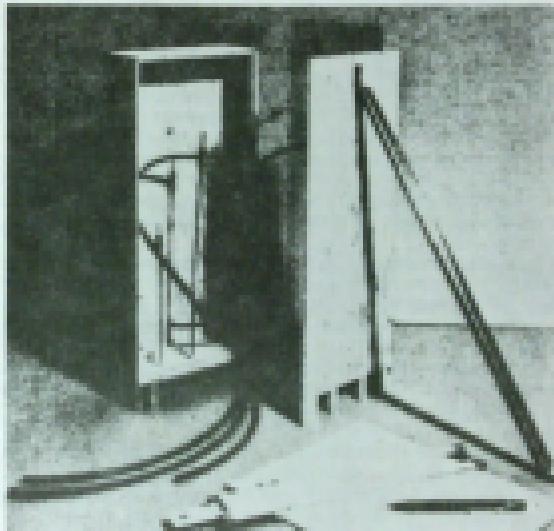
PLAN SEC. AT-B

4

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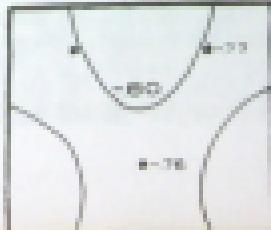
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sumers.



6

B-B = PLAN SEC. AT
PROJECTION TUBE B
C-C = LOBEANTS



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Like the photograph and the handwriting samples, this employment information does not conclusively prove that Michael O'Hare is the Zodiac. But the probability of coincidence is approaching the infinitesimal. The two simply have too many characteristics in common. First, the Boise Cascade project depicted on the Zodiac's postcard is a Michael O'Hare project. Second, its chronology matches in lockstep with the Zodiac's chronology. Third, Mike O'Hare is peculiarly forgetful when it comes to his employment with ADL. And fourth, all of the omissions shown in this resume, the missing year 1966, the forgotten ADL years 1967-1968, and 1974, with its unspecified consulting job or jobs, cover periods of time in which all but four Zodiac events took place.

One of those events, the double murder at Lake Herman Road, was in December 1968. That does not coincide with the Incline Village Unit 6 chronology. But when Carol Burchard O'Hare was interviewed by Whit Caldwell in the spring of 1982, she told him that she recalled Mike's commuting intensively to California in the employ of ADL in the latter part of 1968 and the first part of 1969. That time, the client was not Boise Cascade, but San Diego International Airport. Her testimony therefore contradicts the resume, at least where 1969 is concerned.

In the 1964 Harvard year book entry, two of Mike O'Hare's extracurricular activities are named. He was the editor of *Cambridge 58*, and he was on the Harvard rifle team in his freshman year. Obviously, he has both familiarity and proficiency with firearms. In 1962, Whit Caldwell came up with a Massachusetts permit for a .22-caliber rifle issued to Mike O'Hare in 1960. He owned a Zodiac-type firearm prior to the time that such a firearm was used by the murderer (Lake Herman Road, December 1968). The male victim of that attack, David Faraday, was shot once in the head at close range as he was trying to get out of his car on the passenger side. The female victim, Bettie-Jean Jensen, was already out of the car and was trying to flee on foot when she was gunned down.

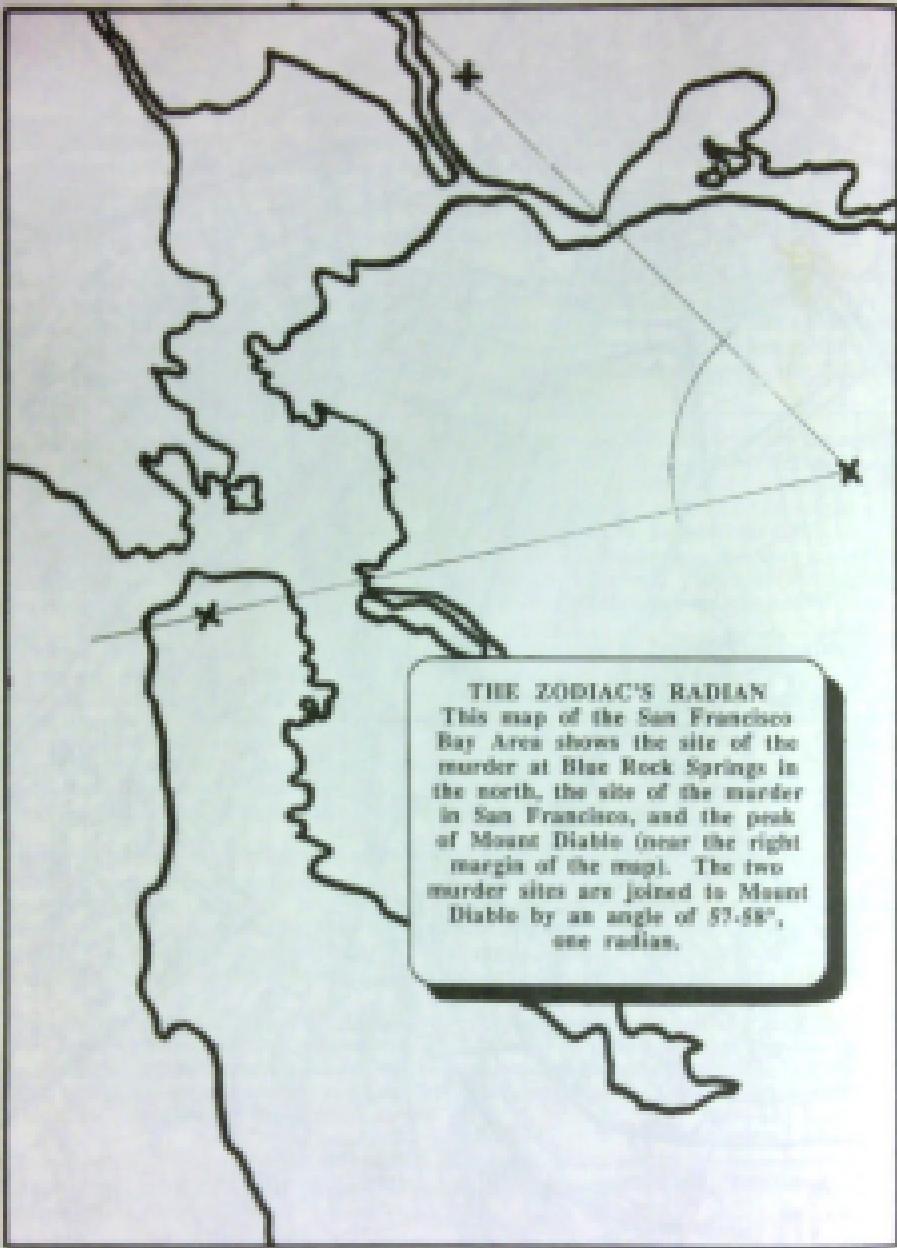
Bettie-Jean's body was found about thirty feet from the car, sprawled on its face. There were five entry wounds in her back, forming a shot group about the size of a half-dollar. Whoever shot her was a marksman. She was a running target, at medium range, and it was the dark of night. Her killer was practiced with his weapon. There is no other way that he could have gotten a shot group that tight. For whatever it is worth, Marshall McLuhan cites a study done by the U. S. Marine Corps showing a correlation between marksmanship and literacy. The higher your reading scores, the more accurately you shoot. That would seem to argue against the Zodiac's being an unlettered moron, which is what he is according to the conventional police theory.

Finally, there is the Progressive Architects photograph. As already demonstrated, the author has fabricated a shadow of angular form, which expresses an angular measurement of 117°, the long-axis of Riverside, California. Let's look at this photograph in map-perspective. Assume that you have a rug laid out on a table in front of you. South is toward you, east is on the right, west is on the left. Seen in that perspective, the apex of the angular shadow is at the northeast corner of the building. The building-model itself is set so that its long axis runs from northeast to southwest.

Now let's look at the USGS map "Boston South," which includes the part of Cambridge where MIT is found. The building of which the photograph shows a model is the Earth Sciences Building on the MIT campus. If you look at the MIT campus, you will see a building whose long axis runs from northeast to southwest, and at whose northeast corner there is a USGS benchmark, BM 12. That is the Earth Sciences Building.

Before leaving "Boston South," take a look downtown, just a few blocks from the Commons. There is another USGS benchmark, BM 9. BM 9 is right at the Greyhound bus terminal. I'll come back to that later.







SCALE 1:250,000



ROAD CLASSIFICATION

Heavy-duty	—	Light-duty
Medium-duty	—	Medium-duty



The next exhibit is a map of the San Francisco Bay Area, showing the relationship of the murder sites at Blue Rock Springs and Presidio Heights to the peak of Mount Diablo. The three points form a radius on the map. Now in the next exhibit, a portion of the USGS quadrangle "Clayton, California," which shows Mount Diablo. As you can see, the peak of Mount Diablo is marked by Vertical Angle Benchmark 38-49, which is the crossing point of the arbitrary coordinates called the Mount Diablo Meridian and the Mount Diablo Baseline.

The last exhibit is a map of the Boston area compiled from the USGS quadrangles "Boston North," "Boston South," and "Lynn, Massachusetts." The three Joan Webster-sites are joined here by straight lines. The figure formed is a 36° angle.

All three of these figures are artifacts. Mike O'Hare made the photograph in *Progressive Architecture*. The Zodiac made the radius on the map of the Bay Area. Joan Webster's murderer left her suitcase at the Greyhound bus terminal and her purse out on Highway 101. In the particular case of the photograph, the shadow is obviously not a natural phenomenon but an artifact, as is demonstrated by the artificial extensions which project out beyond the end of the stick.

In all three cases, the author had to go to some trouble to get the present result. Mike O'Hare had to doctor his photograph. The Zodiac not only had to travel all over the Bay Area, but he also ran the risk of going to the gas chamber for what he was doing. Joan Webster's murderer had to drive most of the way up to Lynn, turn around, then deposit the purse out in the marsh. He had to drive into downtown Boston — or take public transportation, carrying her suitcase — and go into the bus station in order to deposit it in a storage locker. These things didn't happen by accident or because the author's hand slipped. They were intentional and deliberate acts requiring him to go out of his way.

In all three cases, Zodiac vocabulary is expressed. The first angular artifact subtends an arc of 117°, which the Zodiac apparently uses to refer to Riverside (e.g. the third crossed circle in the 240-Character Cipher). The second artifact is a radius, and the Zodiac explicitly connects the radius with Mount Diablo in his two letters from the summer of 1970. And 36 is a Zodiac commonplace.

Last but not least, each of these three angular artifacts has at its apex a USGS benchmark. If you go back to any one of the Geological Survey maps reproduced in this book, you will see that benchmarks are fairly few and far between. There are five in the entire city of Cambridge, Massachusetts. In central Boston, there are just a handful. But each one of these angular artifacts constructed at the cost of some effort by its author and expressing Zodiac vocabulary has a benchmark (BM) at the convergence of its legs.

These three artifacts share five descriptive characteristics. One of them is from the hand of Michael O'Hare, one is from the hand of the Zodiac, and the third is from the hand of the murderer of Joan Webster. I suggest that this constitutes the behavioral equivalent of a fingerprint. This type of behavior is just too peculiar, too idiosyncratic, to belong to two or more individuals. It is the signature that ties all three works to the same author.

Michael O'Hare looks like the Zodiac. He shares many handwriting traits with the Zodiac. Both of them have some connection with the Boise Cascade project at Incline, Nevada, whose chronology just happens to coincide with the Zodiac chronology. Michael O'Hare has covered up his lapses in handwriting and the years of his work history that coincide with the Zodiac years. He has owned, and has proficiency in the use of, Zodiac-type firearms. Finally, he indulges himself in a peculiar form of behavior that is also found in the work of the Zodiac (and Joan Webster's murderer).

It isn't just what I see as self-identification in the Zodiac literature, linguistic patterns that identify Mike by reference to himself, his mother, and his father (among other things), nor is it the same patterns appearing in writings published under the name of Michael O'Hare. That evidence is punctuated by hard, conventional, documented evidence such as the above. In the face of such evidence, I don't think that arguing for coincidence is very persuasive. Leonard Pataiso was sentenced to 35 years in prison without possibility of parole on much less than this.

END GAME

At the beginning of May 1985, time ran out for Litigation Support Corporation, and the company was officially dissolved. I kept on working there part time to help wrap things up during the transition process, but a lot of the time, I wasn't there to record incoming telephone calls from Mike, and the new temporary receptionist told me that she had received a number of calls but refused to write down the time, as she found the whole thing too "icky" to suit her.

I believe that my records are complete through the first week of May, but after that, I was dependent on what came to my home phone. The calls became very sporadic. I didn't know whether Mike had lost interest, was played out after his gargantuan efforts over the last two years, or just hadn't realized that LSC was no longer answering the phone. When you always hang up after the first ring, you may not get the intercept recording with the information about the number not being in service.

There were few calls of any particular interest that came during the summer. One was a collect call for Diane from someone calling himself "Mike" on the Fourth of July at 12:30 a.m. I accepted the call, and a flustered operator wanted to know why I was taking a personal call for Diane. I told her that I was Diane -- I had just had a course of hormone shots. When she said, "Go ahead," I started talking. "Hi, Mike," I said. "How's every little thing, starting with your IQ?" I went on in that vein for about a minute, and finally the caller hung up without speaking. Of course, he placed the collect call so that the number of the phone from which he was calling would appear on my bill. When it did, I called and got an innocent bystander, a transit passenger at San Francisco's West Portal bus station. It was the first such call since March 1984, when someone purporting to be a male operator had asked me if I would accept a collect call from "Michael Henry O'Hare."

There was a repeat performance -- another collect call from "Michael O'Hare" -- on 20 December 1985; but this time, the caller hung up before the operator could facilitate the conversation. He obviously didn't want his number appearing on my bill that time. These two dates, 4 July and 20 December, were the anniversaries of the Blue Rock Springs and Lake Herman Road shootings, respectively, and the caller had found a special way of marking them. Besides these calls, the only one of any interest between the spring of 1985 and the end of the year was a one-ring hangup at 11:45 a.m. (BETTA) on 20 August, Julian Date 232.

Since I now had quite a bit of enforced leisure, I spent some time going back over the material and trying to make some sense of it. I had found through a lot of experience that it didn't do much good to analyze the daylights out of a call or series of calls without having everything assembled on a large calendar grid, so that interrelationships spanning weeks (in some cases) could be sighted. While I was doing this, I came across a very intriguing pattern that had concluded just a couple of weeks before LSC had gone out of business. I was glad that the company had made it that far. This was the best one yet.

The first week of this pattern was the 3rd through the 9th of February, 1985. I will reproduce it here.

CHESS GAME

	10:49 10:51	1:31	12:18	10:17	10:56, 1:26 1:27 1:28 1:29	
	11:28*	12:38	9:25 9:30 11:22		10:01 10:08 2:09	
		11:23	12:03 12:12			
	11:46 12:40		1:40			
	1:29		9:27 9:31			
			2:04	10:37		
				12:07 4:11		
			1:49			
	10:36 10:32 1:43		1:50	2:02		
2:39	10:45 2:10	11:20 4:14 4:10	8:28* 8:25* 8:27* 11:18, 11:23	8:38*	2:49 3:27	

10:37 Nocturnal calls to home phone in **boldface**

8:38* Calls taken by answering service marked with *

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	10:49	9:31	12:18	10:17	1:26 a.m.	
	10:51				1:26 a.m.	

Except for the wee-hours calls on Friday, everything had come to the office during business hours.

The spot in the pine grove had appeared to be important. It was on the 130-foot contour; had it been a benchmark, it would have been designated "BM 130." When it was connected to the two BM 130's shown on the Conestoga map, it was the apex of a 127° angle. 127 is Morse Code for MCM. The cluster of calls on Friday morning had centered on clock time 1:27. Glancing down the calendar grid, I saw another 1:27 call about four weeks later, but two columns over, on a Wednesday. I had gotten into the habit of looking for pairs of bookends. Was this a new kind?

I analyzed the second 127's position as being two knight's moves from the 1:27 call on Friday the 8th. Then I looked back at the entries for that week. The one on Thursday was 10:17. There were two entries beginning with 10, on Monday, at 10:49 and 10:51. The ten-o'clock calls were a pair flanking Tuesday and Wednesday, and then there were the five calls on Friday that were the only ones in that week that came at night.

Ten o'clock is written 10:00. 1000 is the Morse letter B. B is the conventional notation for Bishop. Diane had jokingly suggested that one day, Mike would start playing chess with me over the telephone. Could she be right? I hated to admit it, but she might be.

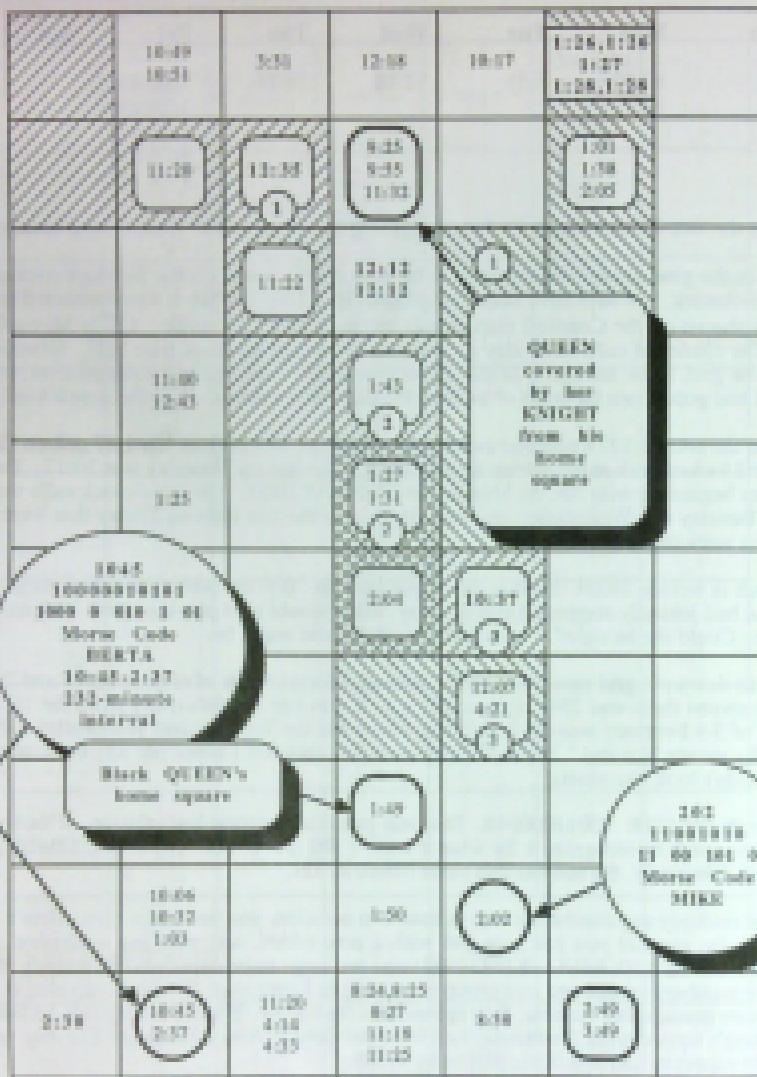
Two weeks down the grid past the second 1:27 call, I found a pair of calls at 12:07 and 2:41. The interval between them was 254 minutes, 127 x 2. It was one knight's move from the 1:27 call. If the week of 3-9 February was the home row, where did the Tuesday and Wednesday calls fit in? 231 usually means "the end." What did it mean in this context? I wrote out 331 in binary: 10100-1011. It didn't look like much.

Then I wrote out 1218: 1001000010. That was practically a long-lost relative. It took me about three manuscripts to recognize it for what it was: 1 00 11 0 00 10, Morse TIMES 2. What times two? Obviously, the number that came before it, 331.

When you multiply any number by two in base-two notation, you just add a zero. Here's 662 (331 TIMES 2), the number you just saw, but with a zero added, and with my redivision in Morse Code: 100 00 10 110, KING. KING (662) was too large to be expressed on a clock face, since clock-face numbers cannot end in a group of two digits larger than 59. So he divided it in two to make a more manageable number, then appended a multiplier. If the Tuesday slot on the calendar was the king's square, then Wednesday had to be the queen. And the king on Tuesday was where you would expect to find him being played by White.

The artist did not have to fill in every detail in order to orient his chessboard. But it required some directional hints. Take the bishops, for instance. The number of minutes in each entry forms a progression, 17, 48, 31. The intervals are 32 and 2 minutes, reading from right to left — the way they would be seen by a chess player seated on that side of the board. 32 and 2 are both powers of two, and the same ones that appear in Mike O'Hare's Social Security number, in the same order.

KNIGHTS' MOVES



QUEEN'S AND BISHOP'S MOVES

		10:49 10:31		11:18		11:26, 11:28 11:27 11:28, 11:29	
		11:20*		11:29 11:30 11:32		11:24 11:25 11:26	
		11:22 + 11: TIMES 12		11:31 11:33 11:34		11:21-11:28 = 19 11:29 - 11:30 = 19 11:27 = 11:28	
		11:48 12:40		11:42			
		12:5		11:27 11:30			
				11:34	11:37		
					11:47 11:50		
				11:49			
		10:55 10:32 11:03		11:52	11:53		
	11:34	10:45 10:37	11:28 11:31 11:33	11:24, 11:23 11:27 11:18 11:25	11:28	11:49 11:49	



Queen



Bishop

Normal calls in
boldface

The series begins with a 17 and ends with 3 x 17 (51), with a 49 marked in between them. 117, the first part of the Social Security number, lay behind him. 128, the last part, lay ahead.

The central member of this progression was a 49, the number which, with 128, appeared to be intimately connected with the mystery of Joan Webster. Here, it was associated with a Bishop, a piece which moves only on diagonals. I looked down the calendar grid to the eighth row of the chessboard, my home row. On the queen's square was 1:49. Sixteen days later, there were entries at 2:49 and 3:49. They formed a diagonal to the solitary 1:49.

I have already gone through all the moves of the queen's knight. Each of them is marked by the number 127 or a binary multiple of it (254). King's knight has an even more interesting pattern. His first move is to the square marked with clock time 12:35 a.m. When this call came, it roused me from a very pleasant dream, and I felt annoyed. All I could see then was the beginning of the Fibonacci series of numbers. The Fibonacci series consists of numbers which are the sum of the two preceding numbers: $1 + 2 = 3$, $2 + 3 = 5$, $3 + 5 = 8$, $5 + 8 = 13$, and so forth. I lay awake scheming for 22 minutes, then returned the call at 1:28 Eastern Time. I still think it was an appropriate receipt. But now I saw something else in it.

1235 in binary has the same form as the Morse expression TIMEX 1 (1 00 11 0 1001 1). The Zodiac left a Times watch beside the corpse of Cheri Jo Bates. Other than her remains, it was the only physical evidence at the scene. The numeral 1 following TIMEX is appropriate, since this was his first crime. As I have pointed out elsewhere, the word TIMEX in Morse Code is the binary number 617, the Area Code of Boston and environs.

The next king's knight's move is to the square marked with 1:43. The difference in clock time between 12:35 and 1:43 is 68 minutes. 68 is Morse 10 00 10 0, NINE, which is interesting in itself. But it is also the product of the operation 4 TIMES 17. It is also the calendar year — 1968 — in which the Zodiac first killed in the second episode, in the Bay Area, with the double murder at Lake Herman Road. 617, 4 TIMES 17 — the pattern is emerging.

The last move is to the square marked 10:37 p.m. The pivot of the move is on the preceding day, where one call is recorded at 2:04, 204 is 12 TIMES 17, and 1037 is 61 TIMES 17. Not only do these two numbers repeat the TIMES 17-theme, but they form a rebus as well. Twelve before 61 is 61 minus twelve, or 49. 49 is the number that seems to dominate this phase of the search for Joan Webster. At the end of the king's knight's third move, he holds my queen in peril (1:49). His coronation recapitulates the history of the Zodiac murders: TIMEX 1 for Riverside, 68 for Lake Herman Road, 49 for Joan Webster.

King's bishop is also a player. His first move is to the two nocturnal calls at 12:12 a.m. The interval between 10:31 (home square) and 12:12 is 81 minutes. 81 is the square of nine. This move takes him the length of the diagonal of nine squares (Monday-Wednesday, weeks 1-3). His second move takes him to 1:25. 125 is the cube of five (5^3). This square is in the fifth row, third column.

That sounds like a mistake. Monday cannot be the third column, since Sunday is the first day of the week. But it isn't a mistake. This grid has eight columns, not seven. Before Sunday, there is an imaginary rook's column which I will call "Nonesday," since it doesn't actually exist. Its counterpart, the opposite rook's column, is made up of completely blank Saturdays. I believe that the Saturdays were left open to counterbalance the imaginary Nonesday column, where movement is impossible. Again, symmetry prevails. Be that as it may, this second and last move of the king's Bishop is marked by the cube of five because it is in the fifth row, third column.

The queen moves in squares where numbers in the range 1120-1131 are found. I suggest that this is so because every number in that range begins with the Morse group BM (100011-). I don't think that there can be too much doubt as to the queen's identity. If there is any lingering doubt in your mind, look at the series of calls at the end of her first move: 9:29, 9:35, and 11:32. The intervals are 30 and 97 minutes, respectively. 9:29, Beta Margoules' birthday, is an attribute that dogs the queen. And the total span of time covered by these three calls is 127 minutes (MOM).

This first square of the queen's career is marked by a 127-minute interval, I suggest, because it is covered by her knight from his home square, and 127 is his characteristic number. From this as from other evidence, it may be possible to reconstruct the sequence of moves in the game. In this case, the White queen had to move before her knight.

Her next move, again just one square, is to 11:22. The second pair of numbers is the double of the first (and $1122 = 66 \cdot \text{TIMES } 17$). Then she moves one more square, to a pair of calls at 11:40 and 12:43. The interval is 63 minutes, the product of 9 x 7. I don't think it coincidental that this is Julian Date 63 ($63 = 9 \times 7$), the 63rd day of the year. Two weeks before that, on Julian Date 49, there is an entry at 11:20. This is not a move; it is an algorithm set up to prove the queen's move.

Look at the entries for 11:20, 11:32, and 11:40 geometrically. On the calendar grid, they form a right triangle. The horizontal leg runs from 11:20 to 11:32, expressing an interval of twelve minutes. The vertical leg runs from 11:20 to 11:40, an interval of twenty minutes. The queen has moved along the hypotenuse of this right triangle. According to Pythagoras, the hypotenuse is equal to the square root of the sum of the squares of those two legs. The square of twenty is 400; the square of twelve is 144. The hypotenuse is the square root of 544 ($400 + 144$).

Remember the bishop's diagonal move across the square of nine? It crossed the queen's diagonal move, which runs in the opposite direction. 244 in binary has the same form as Morse 10 (0) 10 (1) 000, NINE2S. Her course takes her along the square root of NINE2S, or three squares. Three is the square root of nine. Since the direction taken by the queen is the opposite of the bishop's, a reverse operation appears to be in order. (It beggars the mind to think about all the scratch paper Mike must have gone through.)

The four entries showing eleven-o'clock times form a letter Y on the grid; the central member, 11:22, is made up of eleven and its double. This should not be surprising, since Morse Y is 1011, binary eleven. The next-to-last entries, at 12:07 and 2:41, express (as already mentioned) a 254-minute (127 x 2) interval, but they could have begun at almost any time and done the same thing. As it is, 12:07 is 90 minutes on the clock after the entry on the previous Thursday, at 10:37. (I see this as a subtle reference to BM 130, Morse NINE (0 x 2).)

Now that I have walked you through the game piece by piece, let me go back and try to recapitulate the game move by move. I am Black, and not only do I not get to go first, I don't get to move at all. All moves are White's. There are no pawns on the board. The big rule for White appears to be extreme solicitude for the queen's safety. She does not move without being covered. Her squares are marked with BM-numbers and combinations of nine and seven; this loving attention to her seems to be in character. Here's the game:

1) Q-Q3	8) KN-K2	15) KB-Q3
2) QN-QB3	9) QN-QB7 (check)	16) KN-QB6
3) QN-Q9	10) KN-QP4	17) KB-KB5
4) Q-KB4		

Black to-escape checkmate in one. White to take Black queen -- to 3:49, wherever that is.

Anyone who has played any chess at all will readily see that move #10 blocks the White queen in such a way that the Black king has a way out. It would be stupid move if this were actually chess. It isn't. It's a story written in the idiom of chess, using clock times marked by one-ring hangup calls over a period of eight weeks.

In moves #9 and 5, the White queen is covered by her knight, the one whose theme number is 127, Morse MOME. The other knight, the king's, winds up holding the Black queen in peril. I don't think there is any doubt but that the White queen is Berta Margouleff. She has the attributes of BM-numbers and 9-7 combinations, and she is accompanied by a devoted masculine companion who is always looking out for her. His numerical attribute spells MOME in Morse Code. It's obvious that he is her son.

The king's knight's career outlines the highlights of the Zodiac's. TIMEX, 68, and 48. His theme number is TIMES 17, the date of Berta Margouleff's 38th birthday. This concern is an obsession, a secret motive which he cannot share with others. Unlike the queen's knight, who openly expresses the 127-theme, the king's knight's theme is implied and disguised'. Filial devotion is a perfectly respectable attribute in a son; it can be expressed openly, as the number 127 is expressed by the queen's knight. And on the White queen's first move, she is explicitly covered by her knight (127-minute interval). The plays on TIMES 17, 4 x 17, 617, etc., which characterize the moves of the king's knight, are the products of invisible operations. And while his counterpart is protective toward his queen, his object is to impell the Black queen. I propose to you that the two knights represent the two sides of Michael O'Han's personality. The queen's knight is the public personality which goes by that name, the Dr. Jekyll side. The king's knight, the Mr. Hyde side, is the aspect which cannot be displayed publicly.

For my part, I am blocked on two sides by my own pieces. White queen's knight has me in check, and the king's knight covers K2. White king's bishop covers Q2. Because the bishop blocks the White queen, KB2 is open to me. In order to avoid checkmate, I must move to that square. White's next move, obviously, is to take my queen.

There are two viewpoints in this game. White sees everything as a mirror-image of what I see. What does the White Knight himself have to say about this? "What does it matter where my body happens to be?" he asks. "My mind goes on working all the same. In fact, the more broad-minded I am, the more I keep inventing new things." (*Through the Looking-Glass*, Chapt. 8)

The White Knight sees the world upside-down, and that means that he sees things backwards as well. It's what you would expect of a denizen of Looking-Glass Land. The White king's knight's third move ends at 49 (61 minus 12); his next move is to 1:49, which falls on the Black Queen's home square. He will take her from there along a diagonal path off the chessboard to a location marked 3:49, which cannot be found using the normal system of chessboard references. He is the only piece who can operate off the chessboard. The way to 3:49 leads through 2:02. 202 is the Morse-to-binary writing of MIKE. MIKE is the king's knight. And 349, viewed from the upside-down perspective of White, is 943, 117^o. 349 is the matching bookend to Reverside.

NOT WITHOUT HONOR

About mid-May 1985, I got a phone call from Beverly Reams, a Mensan in Portland, who had just taken the job of associate editor of *Mensa Bulletin*, the national publication of American Mensa. I had published several short pieces on the Zodiac in *The Explorer* which had caught the attention of *Mensa Bulletin*'s new editor, Kent Van Cleve, who lives in Phoenix. Beverly had called to solicit submission of a comprehensive article on the subject. We had a very pleasant conversation, which was made all the more so by the praise I got. Apparently, the *Explorer* articles had caught quite a bit of notice outside the Bay Area. I had gotten virtually no feedback from local Mensans, and what little I got was mostly all-concealed contempt, e.g. from Darrell Bross.

Editors of local newsletters in other states had reprinted several of the *Explorer* pieces as well as some original material that local editors had considered too esoteric, such as a discussion of the Pen-gonster Archetypes photograph. They had always been very supportive and had even editorialized on my behalf. I had been in this for nearly five years now and had little to show for it other than a cardboard carton full of papers and a phone that rang conspicuously in the middle of the night. It was the kind words of a handful of people from sundry parts of the United States that kept me going. *A prophet is not without honor, save in his own country, and in his own house.* (I was doing all right in my own house, though. Diane propped me up whenever my spirits started to sag.)

I threw myself into the writing of the article and had a draft off to Beverly within a few days of her call. Soon I was getting calls from Kent, to discuss the rewriting of the text. I had sent along material about the 340-Character Cipher and Joan Webster as well, just for background. He wanted to incorporate it into the article. Besides that, he wanted to discuss the legal ramifications. Mensa's counsel had seen the supporting evidence — I had zipped my editor — and felt that while they could easily defend a libel suit, just doing that much would bankrupt the piggy-bank that passes for a Mensa treasury.

The article therefore became even more oblique than the way I had written it, which was not to name names. But Kent wanted to go further. TIMES 17 would not be identified as anybody's 38th birthday, even if the anybody involved remained anonymous — it was too specific. One hundred would not be identified as a man's name; 150 would not be a woman's name; and 35 would not be a monogram. The three numbers would be identified simply as two names and a monogram belonging to a married couple. You guess which is which. The fraction of it would not be identified as a surname; a roundabout way of hinting at it would be devised.

I had had such bad experiences with editors before, especially at California, that I was biting my nails until my copy came in the mail. I couldn't even read it when it did. I let Diane read it for me. I didn't want to get too close to her while she was reading it in the bedroom. I stayed in the living room and shouted questions at her. Had Kent left the word "stars" at the end? That was an important point. Mike just might read this. Each section of the *Divine Comedy* ends with the word *uelle* — "stars" — and I wanted to stick to that theme. Yes, he had. I was relieved. This was not the work of a butcher or a boxelder. I almost had the nerve to read it. When I was up to it (about two weeks later), I started at the end and worked my way forward. I thought the concluding paragraph was quite effective.

What shields the Zeta from anger and prosecution is not that he is clever, although he is that. His first, and most powerful, line of defense is the enormous educational and cultural gap that separates one part of our society from another, one mind from another, as wide as the gulf that separates the stars.

Speaking of stars, I had referred in the article to the 1974 radio message composed by Frank Drake, which employed a mathematical device (multiplication) to suggest a rectangular format, as the rectangular format of the cryptogram suggests multiplication (TIMES 17). I had written to Drake a couple of years before requesting bibliographical citations of publications on the Arecibo message, and he had been gracious enough to send me offprints of the original article in *Astronomy* and an article in *Scientific American*, which he had co-authored with Carl Sagan. I reciprocated now by sending him an offprint of "The calculus of evil" together with a cover letter in which I restored some of the cuts that Kent had made for legally defensive reasons. I thought that Drake would be amused to know that he had been anticipated by a serial murderer who had employed the same device five years before he had.

Kent had done an excellent job with the article, given the constraints under which he was working. I was particularly pleased by the exhibits. "Calculus" was the first publication in which the cryptogram was reproduced in its original rectangular format. The passages in the 340-Character Cipher discussed in the article had been very handsonly highlighted, and there were details of the Exorcist Letter that were printed right next to the copy of the letter itself. Kent had suggested that to make up for the cuts, he would print an offer saying that I would fill in the gaps for readers who couldn't contain their curiosity, in return for a self-addressed stamped envelope.

My next project was to write up sixteen pages of supplement to the article, in which I did everything but give the names of the persons involved. I reduced the script to half-size, then by printing two pages to a side and two sides per sheet, I was able to get the whole sixteen pages of typescript onto four sheets of paper, which would go in the mail for 22 cents' postage. I had about fifty copies printed and then waited for a few letters to trickle in. The *Exorcister* articles had elicited next to no response at all, other than the invitation to speak at Santa Rosa and the solicitation from Beverly Beans. Kent had anticipated to me that I might get a couple of dozen queries from Mensa's 46,000 members.

Within two weeks, whenever I waved at the postman, he flushed. The mail was pouring in from all over the United States — and overseas, too. And with a handful of exceptions, it was supportive, or at worst neutral. Six people in all expressed skepticism, but it was couched in very vague terms, such as "You remind me of Erich von Däniken" — without saying how I had accomplished this feat. I answered these six letters with a sixteen-page supplement and a letter in which I tried to respond to the writers' expressions of skepticism. I never heard from any of them again. The rest of the mail was not only heartening, it was voluminous. In all, I received almost 500 letters and quite a few telephone calls as well, from every state of the Union except Montana and Vermont. Letters also came from West Germany, Spain, Canada, Japan, and Indonesia. The article had obviously struck a nerve. There were even effusive and complimentary letters from a number of people in the Bay Area, mostly closet Mensans I had never run into before.

Just as the mail was reaching avalanche proportions, Newsweek ran an item in its Periscope section about the *New York Times*. The Javies had dropped Sidney Schanberg's popular column from its Op-Ed page, and the loss had elicited a storm of protest from readers. The mail on this subject, the magazine reported, was equal in volume to reader response to only two other stories in 1982: Reagan's visit to the war cemetery in Bitburg and the subway vigilante story. In each of the

three cases, the *Times* had received about 200 letters. The *New York Times* considered itself outraged by that much mail.

I had received two-and-a-half times that much mail in response to "Calculus." I checked Ayer's for the *Times'* circulation figures. The past year, it had been 934,000. *Mensa Bulletin* had a paid circulation of 46,000. Not only was the response to my article much larger in terms of absolute number, but measured as a percentage of readership, it was fifty times as large as the *New York Times'* biggest muckrake. No wonder my mailman was mad at me.

The article had struck a nerve, and that nerve was rooted in the imagination. No fewer than two readers started writing novels based on it. Kent Van Cleave himself sent me an outline of a novel in which the villain had a surname spelled in Morse Code by the natural number e written to the base two. I wrote back to say that the only conceivable title for a detective novel with that premise was *Hixer E*. He apparently didn't find that as funny as I did, because he didn't respond.

I got responses from non-Mensans as well. The article was going to the office and being photocopied in abundance. In late August, I got a phone call from one non-Mensan who was about the last person in the world I had expected to hear from: Frank Drake. He was no longer at Cornell but had just taken an administrative job at the University of California at Santa Cruz. He was quite interested in the subject, and we spent about an hour on the phone talking about the article.

In the course of our conversation, I gave him Mike O'Hare's name and his current whereabouts, the Kennedy School of Government at Harvard. Drake said that he knew of a case back east of a woman with a Ph.D. who had, in his opinion, obviously been the author of the murder of nine people by arson. It had been the prevailing conviction in the community that the crimes in question could not have been committed by anybody else. Yet she was never prosecuted, or, for that matter, even investigated. The police refused to question her. Apparently, they felt that people with advanced degrees don't do things like that. I told him about my encounters with the FBI, who had said, basing their opinions on their psychological profiles, essentially the same thing. Having this real-life experience to compare with the present situation, he was quite sympathetic.

About three weeks later, he called again. This time, he had some information for me. In the interim, he had called an old friend of his who is on the psychiatric faculty at Harvard Medical School to ask if anything unusual had been heard in those parts about one Michael O'Hare. The psychiatrist was flabbergasted by the query, since just a few weeks before, he and some of his colleagues had been approached by the JFK administration for a confidential psychiatric consultation about what was termed "troublesome and peculiar" behavior on the part of a junior faculty member named Michael O'Hare. The consultation had been undertaken with the object of making a legally valid case for terminating O'Hare's contract.

I never found out what the behavior in question was. But I have spent, perhaps even misspent, a number of years around major universities. My experience is that in that kind of setting, "peculiar" is the norm when behavior is concerned. In communities like Berkeley, Cambridge, and Ann Arbor, you can roll an egg down the street with your nose and you won't get a second glance from anybody. Your behavior has to be very peculiar indeed to move the university administration to try to find grounds to terminate your contract in mid-term. I wondered if, for instance, there were a lot of non-hours long distance calls to California showing up on Harvard's phone bill. But even that doesn't seem peculiar enough.

The psychiatrist had never heard any allegations of criminal activity attributed to Mike, but apparently the seed fell on fertile soil when Drake suggested it. The psychiatrist put him in contact with

the JFK administration, and they were disturbed, but apparently not awfully surprised, by the suggestion that Mike might have murdered a Harvard graduate student in 1981. They asked Drake for evidence, and he turned to me to request a ZIK.

I accordingly put together a ZIK for Harvard University, compared to which previous editions had been the *Kreiser's Digest* condensed version. I included things like deeds of trust and diagrams from the doctoral dissertation. I threw in every example I could find of Zadiacisms showing up in the O'Flahoe literature. For instance, I pointed out that in the autobiographical entry for the tenth anniversary report of the Harvard class of 1964, Mike had suddenly switched from discussing his professional career to his lack of prowess as a gardener:

I grew the biggest, sweetest carrots and the smallest, poorest carrots in the world last summer.

The acrostic contains all the elements of a "Family portrait": Biggest Melon is BM, Z is represented by Zucchini, SS (Smallest Sourest) is two nineteens, or 38 (S = 19). And the C of Carrotsoupe is Roman one hundred, or the Morse-to-binary writing of GENIE. I sent along, for comparison, a copy of the *Los Angeles Times* Letter, in which Z capitalizes the common noun "Blue Meanies" but writes the proper noun "Universi" lower case. I pointed out the statistical probability that Mike had requested the 4206 phone number and that his phone number at MIT in 1974 had been 7945, a lightly disguised form of his mother's 58th birthday. I also sent the diagrams from the doctoral dissertation showing the right triangle with legs of 35mm and 38mm, whose area, in square millimeters, spells BERTA in Morse Code.

Whatever it was that Mike had been doing had made Harvard very receptive. I had to lay it on thick now or never. I would never have a better audience. The California publication had led to my association with Alan, which had led in turn to the production of the evidence which I was now sending back to Massachusetts, whence it had come in the first place, via the Drake conduit. But other than that, I didn't have much to show for the intervening four years. It was just four months since Beverly Roane had called me up from Portland, and it seemed that bombshells were going off all around me.

In late September, Drake wrote to say that he had found the evidence impressive, even the handwriting comparisons, which he had anticipated would be "problematical." He said that the current plan was to try to persuade the Harvard police to dust Mike's office for fingerprints. I don't believe that he was making it up. This was a respected scientist speaking. He wouldn't have said it unless Harvard had said it was so. What a change in things! If I had walked into the dean's office at JFK just two years before and told them that they had a serial murderer on the payroll, they would have tried to persuade the campus police to arrest me.

In our second telephone conversation, Drake had told me that the administration was planning to have a sit-down with Mike in about two weeks. That would put it in the first week of October. They intended to lay it all out for him; in addition to being "troublesome and peculiar" at work, he was inspiring articles in national publications hinting at his being a particularly loathsome type of criminal. It appeared obvious that the bottom line was going to be the walking papers. If they had a good enough case to terminate his contract, he would get the axe then and there. If they didn't, they would probably indicate that his contract was destined not to be renewed.

The phone traffic had become very sporadic. In fact, it had gotten down to the level of frequency where I wondered how much of it was just randomly-caused events. It had been a long time since a one-ring call had come in the middle of the night. Then there was a sudden outpouring around the end of the first week of October. On the 6th, the phone rang once and then fell silent at 3:45

a.m. Three days later, on the 9th, there were two separate rings at 12:04 a.m.

I lay awake the first time for about twenty minutes, thinking about 345, before it all came to me in a flash. In most cases, the proportions between the parts of right triangles are such that at least one of the three is an irrational number -- the Pythagorean Theorem entails a lot of square roots, which tend to have very long fractions. There is just one instance of a right triangle whose three sides are proportional to one another as whole numbers. A right triangle with legs of three and four has a hypotenuse of five. This special case is called the "3-4-5 right triangle." 345 is a mathematical way of saying, "right triangle." But that wasn't all. As usual, he was milking everything out of this number that he could.

Greenwich Mean Time is seven hours ahead of California time. GMT is known to navigators the world over as "Z-Time." TITAN is 28. 2:45 Pacific Daylight Time is 10:45 (BERTA) in Z-Time. One of the diagrams that had gone to Harvard with my ZIK was annotated to show that it contained the letter Z, a Minos leg, and an area that gave the Morse spelling of BERTA, the author's mother's name. And it was a right triangle. This was my receipt for the Harvard ZIK.

On the 9th, he called one more time. He rang twice. Two rings is 00, Morse letter L, subject of the sentence. The predicate is 1204. 1204 is TITAN 4, referring to Anteus, the fourth giant of the Ninth Circle. The other three, Nisus, Briareus, and Ephialtes, are heaven-stealers. Anteus is known for two things. He made his living by murdering strangers and building a palace with their skulls. The other thing that we remember him for is the way in which his career was terminated. Hercules held him up in the air, to keep him from drawing strength from his mother, the earth, his abas mater, while he strangled him. We remember him for his murders, and we remember him for having been defeated in single combat.

I didn't think that this call commemorated the murders. He was calling to admit defeat.

Check -- and mate?

NO NEWS IS S.O.M. NEWS

The *Mosur Beliefs* article was not just good for my vanity. By being forced to go back to the literature for material to use in writing the article, I had the opportunity and the incentive to solve problems that had escaped me before. The telephone correspondence with Mike had been very educational, but also preoccupying. I had been so wrapped up in it and the problem of Joan Webster for two years that I had neglected ancient documents like the cryptogram. Now new solutions appeared wherever I looked, and I found that I was able to marshal my arguments more effectively. That in turn made it possible for me to return to some of the problems of the telephone literature as well with new insights.

One of the things that I had forgotten about was a puzzling series of calls that had come between what I perceived to be the Goose Fund period and the beginning of the Ten-Week Message, over three weeks' time. The series begins with three nocturnal calls on 24 July 1984, and the last, on 10 August, is linked to the Ten-Week Message.

There is, as usual, a certain amount of playing with numbers just for the fun of it. The first call on the 24th is at twelve before one (12:48 a.m.). The third call of that series, at 1:21 a.m., is also twelve before one (12: 1). 1, 2, 4, 8 is a series of consecutive powers of two ($1 = 2^0$, $2 = 2^1$, $4 = 2^2$, $8 = 2^3$). Following the third power, eight, is the square of ten (100) and the square of eleven (121). What appears to be missing between eight and the square of ten is either nine or the square of nine. I believe that the expression "square of nine" is what is implied and that it is, in effect, the title for the composition which follows.

On the third of August, there was a series of five calls. I believe that the author chose five rings as a response to my Los Angeles Card, which bore an Olympic symbol (five rings), mailed in Los Angeles exactly one week before. The contents, however, have no relation to the message on the card, which has been discussed already. On 8 August, there was one ring at 10:37, which, thanks to having done the chess game, I now recognized as 61 TIMES 17. In the chess game, a clock time on the day before was meant to be subtracted from 1037. There was a 3:30 call on the seventh, so I subtracted it from 1037, getting a remainder of 717, which continued the theme of seven-tens.

The five calls on 2 August add up to 3744, which a little experimentation proved to be the product of 117 x 32, or 117 followed by five zeros (triangle: 1110101 00000). Once again, Mike's Social Security number begins with 117-32. . . . In the upper right-hand corner of this configuration, I had five calls ending in one at 4:17; diagonally to the left and down, there were another five calls expressing 117 x 2², and another square to the left and down, 61 TIMES 17 and 717 both. Let's read 417 as "four seventeens," 117 as "one seventeens," and 717 as "seven seventeens." The number we find leading seventeens in each of these expressions, in chronological order, first, one, and seven, 417 was what we started with on 23 July. Four seventeens is 68, Morse NINE. And this 4-1-7 pattern takes us along the diagonal of a square of nine squares. The square of nine is 81, and that is the calendar year in which Joan Webster was murdered.

I have already discussed the series of five calls on 27 July. Let me try to do justice to the five of 2

THE SQUARE OF NINES, 22 July - 12 August 1984

		12:48 1:00 1:21	11:48		10:48 11:09 2:14 4:08, 4:17		
				9:48 11:00 11:21 2:22, 2:24			
		220 before 1837 1837 = 220 = 777	3:28	10:33		12:38 9:22	13:29

224 = 188pl
(GENE O'HARE)
488 = 138pl
(GENE O'HARE)

1, 2, 4, 8 = series of consecutive powers of two
100 = second power of ten
121 = second power of eleven
1, 2, 4, 8, . 100, 121 implies second power of nine
("the square of nine")



August, 1940 is binary 1000-11-10100, BM 20. I suggest that the BM-prefix is meant to identify this as a location connected with the number 20. BM is the conventional abbreviation for "benchmark." The interval 11:40-12:51 is 71 minutes, 12:51-1:22 is 91 minutes, 2:22-2:26 is four minutes. The last pair added together, are 95 (Morse TWO). Below is part of the USGS map showing Lynn, Massachusetts. The left-hand margin of the map is the 71st Meridian. This vertical line is exactly 21° west of Greenwich, England. (At the risk of boring you, I am repeating a presentation made earlier having to do with the roots of "whatisit" on the theory that much of this material bears repetition.) Reading from left to right, the next thing we see, other than featureless marshland, is Interstate 95, which was under construction at the time this map was published (1970). The next feature over, continuing in the same direction, is Highway 107, at the side of which Jean Webster's purse was found. That site, joined to BM 9 at the bus terminal and Eastern Airlines, is the apex of a 20° angle. That point, I believe, is "BM 20".

The next exhibit is also something you have seen before, i.e. the Death Machine Diagram. It shows a bag left by the side of the road. A mirror reflects incident light at an angle of twenty degrees. Jean Webster's bag was left by the side of the road at the apex of a 20° angle.

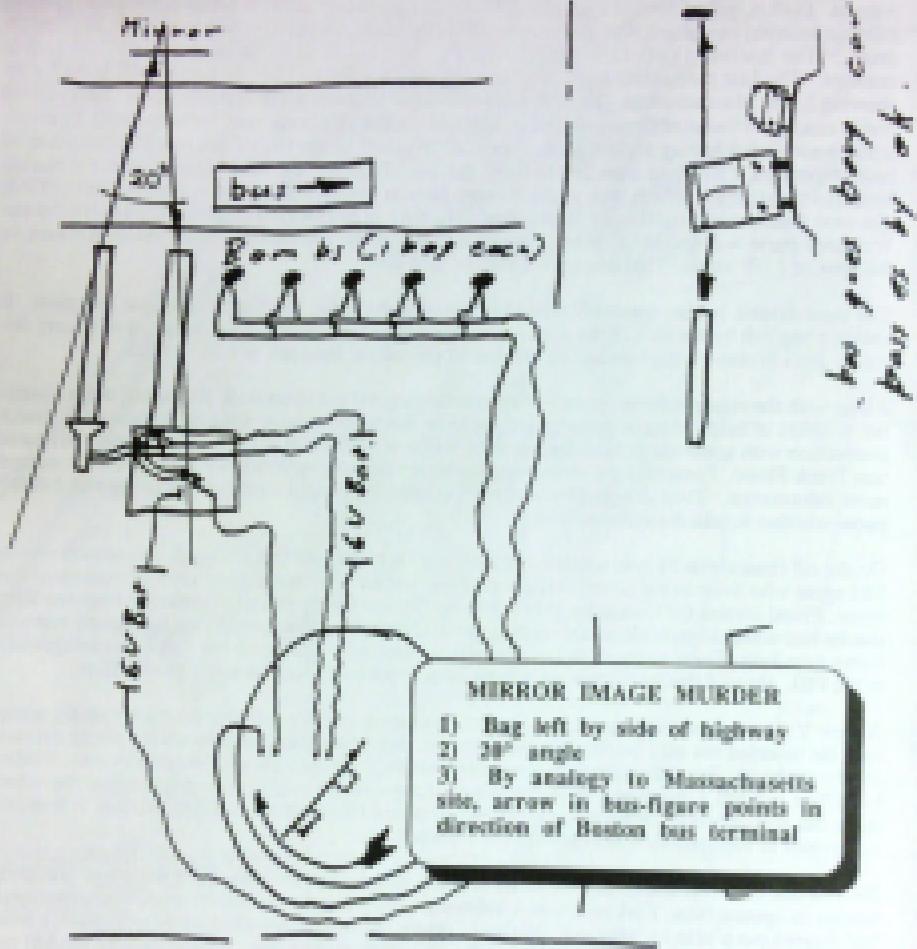
Along with the requests for more information following the publication of "Calculus" came a number of offers of help. Most of them turned out to be lukewarm at best. One party claimed to have a connection with someone in Washington who was in a position to get something done. His name was Frank Flood. I sent him the sixteen-page supplement, asking him to let me know if he wanted more information. Time dragged by, and having heard nothing, I wrote to him to say that I didn't know whether to take his offer seriously.

On the off chance that he was serious, I picked him. It turned out that his likely connection was an FBI agent who lived in the house next door. Two months after the original offer of assistance was made, Flood invited his G-man neighbor over for Thanksgiving dinner. I gathered from his letter that he had withheld seconds on the stuffing until the neighbor had promised to look at my material. Some time later, Flood wrote to say that he was backing out because he felt that I was antagonistic to the FBI. He said that he did not want to be even "peripherally" connected with the effort.

A New York entrepreneur named Jim Note called me up to offer assistance, which I gladly accepted. He sounded not only intelligent, but also rich. We spent about an hour on the phone discussing the problem. But following that, about two months went by without a word from him. I called his office and left a message. When he returned my call, he said that he had worked the whole thing out with a couple of his employees who were ex-FBI agents. (I didn't ask him if they had had to turn in their snakes when they left the Bureau.)

He said that they considered my life to be in grave danger, and he offered me the use of one of his houses in upstate New York to use as a hideaway. For his part, he and his ex-G-men employees had figured out a plan to "take out" Michael O'Hare. Trying to sound as naive as I could, I asked him if "take out" meant "to take out for a walk" or something like that. He was making me feel nervous. He replied that they had something far more sinister in mind. Suddenly, I realized that I didn't want his help after all.

One person with whom I had had a rather extensive correspondence since August was a Los Angeles named Charles Zinck, who has been active in the movie industry for a number of years. He made intelligent and insightful comments, and I felt quite comfortable talking with him about the matter. He had wanted to see a full presentation of the literary evidence and said that he was willing to come up to the Bay Area to do so, and I invited him to come and stay with us for a few days.



It was during his visit that I had the conversation just described. One thing that Mose had proposed to do was to go look for Jean Webster's grave.

When I hung up, I told Charlie about the problem with Mose. I was astonished to hear Charlie offer to pick up the slack. He had some free time coming up, and he had relatives in Massachusetts. He could combine two or three errands and go look over the Concord landscape at the same time. I certainly didn't turn him down. Instead, I gave him a short course in Concordology. His trip was scheduled for the first part of December.

In the meantime, other things were happening — or not happening. On 30 October, the nineteenth anniversary of the Riverside murder, I got a call from a Judy Mathewson, a reporter on the Santa Cruz Sentinel. Somehow, she had gotten hold of a copy of the Harvard ZIK. I got the impression that one of Frank Drake's subordinates at UC Santa Cruz had given it to her. The copy in her possession had been annotated by someone; she read me these handwritten marginalia, and I guessed that they were Drake's.

She said that the *Sentinel* was going to do a story on the Zodiac based on the material in hand and that she and her editor had already agreed on what was going into the story and what was not, for legal reasons. We talked quite a long time; my part in the conversation was mainly to give her some instruction in reading binary numbers and the history of Masonic Code. She made a rather original contribution. She said that she was reminded of Fulton and Roosevelt. They studied one another intensively. They acted on one another through intermediaries. Each one had his own army. Neither ever laid eyes on the other.

Toward the end, she asked me if there was somebody else she ought to talk to. I suggested Howard Burman, for one, since he was not only my partner but also a Santa Cruz resident and therefore a source of local color. I also suggested talking to Frank Drake, since he was at UC Santa Cruz. She thanked me and said that she was going to call Drake something.

The following day, I called her back. I had neglected to ask her to send me a clipping if she did the story. She indicated that the *Sentinel* had now decided that it was not going to run the story after all. I didn't press her for details. But from that point on, I realized that I was getting the cold shoulder. The calls in the wee hours of the morning in the first week of October seemed to indicate that the confrontation which Drake had predicted between Harvard and O'Hare had actually taken place. I wrote to Drake to ask if it had, and if so, on what date. I wrote to him a number of times, often asking for answers to specific questions. But I couldn't get a syllable out of him now. By mid-November, I began to wonder if I had been imagining things. Judy Mathewson had seemed quite eager to do her Zodiac story. Then she had talked to Frank Drake, and now she wasn't going to do the story after all. Had Drake been pulling my leg? Had I imagined things that weren't really there?

I got out his letter of 30 September, my last communication from him. It was two pages long. It was on his letterhead, over his signature. He expressed his conviction that Mike O'Hare was the Zodiac. He said that Harvard was planning to dust Mike's office for fingerprints. He said that he was quite impressed by the evidence, even by the handwriting comparisons, which he had thought would be inconclusive. He was going out on the end of a long skinny branch. And he was living it on paper. Here he was, telling a near-stranger like me how convinced he was that a Harvard instructor was a serial murderer. This letter could get him a huge lawsuit. He must have been confident of my evidence, or else he would never have committed statements like this to paper. Something had to be going on. And whatever was going on must have something to do with Drake's silence.

Even so, I began to lose heart. At the end of September, it had looked as if everything would be in the bag in no time at all. Now I remembered back to early 1981, when I had thought that it would be all over in a matter of weeks. That was nearly five years ago now. I decided to push some buttons. I couldn't let up now. The police had flatly it every year since 1970. Left to their own devices, they would continue to do so. I sent copies of "Calculus" with cover letters to the district attorneys of Solano, Napa, and San Francisco Counties, as well as to the Attorney General of the State of California and to the Director of the FBI. I said in my cover letter that I would be happy to discuss the matter further if they wanted to call or write. The only one I ever heard from again was the FBI. The letter I had sent to William Webster had been forwarded to the director of the FBI's Laboratory Division for reply. His name was Robert S. Gates II. His letter was terse, essentially, don't call us, we'll call you. I responded by kicking him. In my letter, I named the FBI employees who had been in possession of this same information and gave the dates on which they had had it (Terence Ettridge, April 1982; Roger Depue, February 1984; Donald Hubbard, July, 1984).

I had been able to link Mike with the Zodiac period of 1968-1971 by way of Arthur D. Little and his involvement in the Boise Cascade project. But I had no idea why he would have been in Southern California in late 1966. Then I belatedly remembered something from early 1982. In his 1981 résumé, he "forgot" having worked for ADL in 1969-1970, the two big Zodiac years. In the same résumé, he claims to have worked for the architectural firm of Skidmore, Owings and Merrill in 1967. I remembered that Alan had compiled a list of telephone-book entries going back to 1960, and that there were no entries for Mike in the Boston area for the years 1963-1967.

Obviously, his employment by SOM in New York in 1967 accounted for the missing telephone listing for that year. But what about 1963 and 1966? There was nothing in the résumé that accounted for those years. I called the personnel director at the SOM office in San Francisco. I told her that I was a freelance writer with an assignment from a regional magazine to do an appreciation of the architectural contribution to California of the late Michael O'Hare, and I was looking for biographical material. (I assumed that they would be less reluctant to release personal information to me if they thought the subject was deceased.) Had he worked for SOM in San Francisco, and if so, on what dates? And did she have any information about what projects he might have been involved in at the time? She took my number and said that she would call me right back. She was as good as her word. About a half-hour later, she called to say that she didn't have any record of a Michael O'Hare having worked for the firm — ever.

But that wasn't the end of the trail. She said that SOM was in the habit of sending its employees on a loan basis from one office to another for periods of time, just like ADL. During these loan periods, the employee continues to receive a paycheck issued by his office of origin. The host office keeps no records of such loan transactions; any records that are maintained are kept by the lending office. In other words, it was quite possible that he had worked at SOM San Francisco, but if he had done so on a loan basis, San Francisco would not have any record of the transaction. I asked her which SOM offices would come into consideration for 1967. She said that the offices in Boston, Los Angeles, Houston, and Denver had been opened since that year.

In 1967, the active offices were New York, Chicago, Washington, Portland, and San Francisco. I thanked her for the information and then got to work writing letters. I used the same pretext I had used with her. I needed information about the late Michael O'Hare's work in California for my magazine article and I thanked the recipients profusely in advance for their cooperation. I sent one to each of the SOM offices that had been open in 1967 except San Francisco, having already talked to them on the phone. Within two weeks, I had replies from Washington, Chicago, and Portland. All were cooperative and forthcoming, and all wished me luck on the completion of my project.

But otherwise, they were negative. None of them had any record of Michael O'Hare ever having worked there. The only office which did not reply was New York.

I waited six weeks and then tried New York again. This time, I repeated my cover story, but added that I was now under deadline and would greatly appreciate any help they might be able to give me. They never responded. Obviously, SOM does not have a corporate policy against answering queries of this kind (witness the cooperation I got from every other SOM office). Either SOM New York was radically different in this regard from every other SOM office in the country, or else there was some extraneous reason for their silence. If they simply didn't want to answer, as might well have been the case, I expected a letter saying that it was not their policy to divulge personnel information.

About Thanksgiving time, I was visited by Kevin Hess, the Local Secretary of the Mensa regional group in Boise, Idaho. He had relatives in the Bay Area whom he was visiting for the holiday, and he wanted to drop by and have a chat with me. He had given a *Zodiac seminar* in Boise following the publication of "Calculus," which he said was both well attended and well received. (A similar seminar was put on in Salt Lake City.) I found him to be very fast at grasping things. It was small wonder, too. He designs disk drives for Hewlett Packard, and he uses binary arithmetic at work every day.

Kevin offered me a research angle. His prospective mother-in-law, he said, was the custodian of Boise Cascade's corporate records. He could use this in with BCI to get a look at everything they had in their files on the Incline Village project. I said that it might well turn out to be a dry hole, but there was no telling what those documents might contain. I didn't hear from him again for the longest time — until the beginning of February, in fact — but when he wrote, he said that the reason it had taken so long was that he had rechecked his work several times to make sure that what he had to say was correct.

He was able to identify all of the documents pertaining to Incline Village Unit 6 by computer. But when he went to where the documents were supposed to be, every one of them was missing. Moreover, while signout cards are provided for every document, nobody had signed these papers out. They had simply vanished. And he couldn't think of any reason why anybody would want to steal them. They had no intrinsic value.

In the meantime, I was thinking of every button I could push. It occurred to me that it was time to approach Mike's ex-wife, Carol Bachard O'Hare. (Don Goldfarb had ruled out that tactic years before — he said that ex-wives are usually fiercely loyal to their former mates when either the police or television reporters come snooping around.) She couldn't have lived with him for ten years without some of this having rubbed off on her. She would certainly be aware of commutation to California for ADL. She would also be familiar with his handwriting traits. But most of all, she had to be aware of his preoccupation with numbers, and certain numbers in particular. (Appended to this chapter is a sample taken from the published Michael O'Hare literature showing the propensity of certain numbers to crop up in his writings.)

I sent her a copy of the article along with a ZIK. I was throwing caution to the wind. She was an attorney. In fact, she was the general counsel of Boston University. For all I knew, the response would take the form of a process server appearing on my doorstep. When Whit Caldwell had called her to talk about Mike in the spring of 1982, she had immediately reported to her ex-husband. I zinged her about the beginning of December. I never heard anything from her. At the beginning of January 1986, I did the same thing with Lucy Johns. Again, there was no response.

On 17 December, my phone rang at 11:32 p.m. I picked up. My caller said, "Call 212/233-2748. There are statements about you on the tape which you may want to correct. Call 212/233-2748. Call now." Since it was after eleven o'clock, I dialed the New York number; rates were bargain-baseband at this time of night. The number belonged to a hotline called "Apology," whose professed purpose is to provide a forum for criminals and other wrongdoers to confess their sins and so turn over a new leaf. I listened for ten minutes to a litany of mostly sexual peccadilloes from people who didn't sound in the least bit contrite. In fact, they sounded as if they enjoyed their sins more in the telling than in the doing.

At the end, the operator came on with a response to calls which he had gotten from "the Zodiacologist," who had provided him with a list of literature on the Zodiac murders. One item that he mentioned was a *New West* article by Gareth Penn. *New West* had changed its name the issue before my Zodiac article, which had appeared in *California*. And the author was not "Gareth Penn," but "George Oakes." Whoever "the Zodiacologist" was, he knew a bit more than just any old crime aficionado in New York ought to.

I wrote to Apology, requesting any information that they might have about the previous Zodiacologist calls. I wondered if "the Zodiacologist" was not in fact Mike O'Hare, doing the same kind of thing that he had done before with Golden Gate BBS. Apology changes its program every few weeks. I thought that I might get a written response. If not, there might be a reply on the hotline recording. But that would not be until after New Year's Day.

On 5 January 1986, my phone rang at 1:25 a.m. I picked up. It was the same person who had alerted me to Apology in the first place. He said, "I am someone you want to meet. Meet me at the Hilton within the hour." I asked him to identify himself. He just repeated, "Meet me at the Hilton within the hour." Since I was wide awake by now, and since long-distance rates were at their lowest, I dialed the Apology number again.

This time, the operator came on and said that he had received my letter and that he was going to play four recorded calls from "the Zodiacologist" as well as from someone who called himself "the Zodiac." The three Zodiacologist calls were mainly ranting and raving by someone who was obviously mentally disturbed. He went on and on at great length about his contempt and scorn for Gareth Penn, whom he described as a "raving lunatic" who wrote "insolent rubbish." Whoever he was, he obviously had it in for me. The "Zodiac" call was much more restrained. It began with the standard salutation, "This is the Zodiac speaking." He thanked the operator for playing his call. Then he went on to say, "Next month I will be going to Massachusetts to murder a professor of applied mathematics and public policy named Michael Henry O'Hare. Then I will be going to Northern California to murder Gareth Penn, a hippie." Then he politely added a "thank you" and hung up.

An independent researcher looks at the reasons for fierce winds that prohibit full use of an open lobby in Cambridge.

By Michael O'Hearn, who is completing degrees in both architecture and engineering at Harvard.

Wind forces are automatically allowed for by structures, and often exceed the severity levels at the MIT tower, in Building 10, which is just 8 high and cylindrical. At the ambient winds, and even as calm days a constant air flow blows through it.

The lower winds in the center of one of MIT's larger spaces, surrounded by a ring of buildings open to the south, toward the Charles River, and to the north, at the end of a long, asymmetrical building (10). With air within the tower, the northeast would experience higher air velocities than the smaller spaces to the west of the complex.

In winter, the localized wind increases in the exterior of the seven-story atrium (the part of the building open to the north) as it did for publications to walk or open entry doors, and repeatedly damaged the sheet hardware. To solve this, MIT revised a temporary physical wall to completely close off one end of the 100-foot by 100-foot opening. Although it solved the problem, the wall violated the point of the building to each extent that it seems remarkable to examine the reasons that made it necessary.

With the advice of Professor Richard Kramer, James Mitchell, and George Woodsford, and in collaboration with Paul McHarg, the writers studied a model of the tower in the Harvard University wind tunnel to determine the cause of the unexpected local winds in the atrium.

Why Air Flows Faster

Basically, wind speeds up around a building because the flow of air interrupted by the building has to join the air flowing in each side of it. These larger streams must move faster to meet a larger volume

of air through a smaller area in a given time (1).

At the MIT tower, some of the air obstructed by the lower part of the building is deflected around the building, and moves through the atrium. The increased velocity through the atrium occurs at the top and at the two sides of the opening, where it temporarily reaches twice the velocity of the surrounding air. If the building were deep in the direction of wind flow, it would create sufficient friction to slow down the increased wind in the atrium; the increased

dimensionless number called a Reynolds number, R . For these experiments, a Reynolds number larger than 1000 indicates the flow is certain to be turbulent, and, if R is less than 200, the flow is laminar.

R is defined as $\frac{vD}{\nu}$, where v is the velocity of the fluid, D is a characteristic dimension such as the width of the building or model, and ν is a property of the fluid called the kinematic viscosity. Putting in values for the MIT tower, Reynolds 200000, clearly, means the flow

is turbulent. The pressure is determined by the density of the air, and the fluid flow is determined by the shape of the object, resulting in a curved streamlines around the surface.

On a simple model, the fluid path leaves the surface and forms a "deadlift" zone with circular currents, called vortices, between the moving fluid and the surface (2).

The streamlined objects, otherwise will occur at the same place on the model as on the prototype only if the Reynolds numbers of the two are the same. But with a constant, since air is used in both cases, and it reduced for the scale model, v has to be increased to maintain a given R . Thus a model built at 1/30 scale requires a wind speed of 1000 mph (36×100) to make the model correspond to a 30 mph wind on the tower.

Obviously this is impossible, but fortunately, on a rectangular body, there is no separation from the surfaces, and separation always occurs at the corners. The separation will occur only at the corners, then, if the model and prototype are built in identical flow, and if the model receives a 100mph wind, it'll be

WIND WHISTLES THROUGH MIT TOWER

This is the first page of Michael O'Hearn's maiden journal article. Somewhere on this page, he presents a mathematical example of the effect of scale on wind speed in wind tunnel tests. Needing a number for a hypothetical scale, he scratches one out of the air.

What number is the first one to come to mind?

in the same problem, the two building walls were shown showing indoor flow of equal pressure. However, before discussing them, the relationship between the model and the real building requires some explanation.

Two Types of Flow

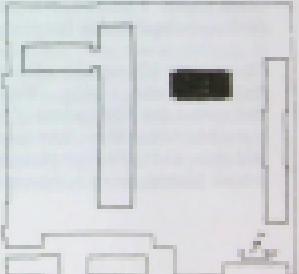
Just as we cannot expect a model house to match the size of its original to fit in one tenth the land that the original will have, we cannot expect to blow air past a scale model of a building and reproduce the velocities found around the original. For the tunnel tests, however, the absolute wind velocities are not important. The main effects are the directional wind flow and the relative speeds in the vicinity of the building.

Since it is not difficult to measure wind speed and direction at enough places to be useful, pressures are usually measured instead, and the corresponding velocities are derived from them.

The most important single factor in attaining world similarity between model and field conditions is to insure either that both represent flows that are laminar, where fluid around a given point moves ensemble in the same direction, or that both are turbulent, with small random movements of the fluid superimposed on the overall flow.

What Affects the Flow

Every situation of moving fluid in a defined space can be characterized by a



NOTHING HAPPENED

When Charlie Zuker left for Massachusetts, he went essentially loaded for bear. We had a good idea of where to look but no inkling of what he should look for. He had with him a compass and a suggestion from me to take along a metal detector. The objective of the game was to find the "buried boards," and we had to have something more than a geographic fix. The precise location had to be marked somehow.

Just to give you an idea of the nature of the problem, let us suppose that we had directions to a particular site expressed in latitude and longitude to the nearest second. One second of arc on the earth's surface is about one hundred feet. Even the best instrument is accurate only to half of the smallest division of which it is capable. In other words, even with information this precise — which we didn't have — and the ability to find it on the ground (which would require the talents of a professional surveyor), we could miss the spot by as much as fifty feet. If my friend wanted Jean Webster found and exhumed, as I believed he did, he would have to place some kind of sign on the spot to let us know where to start digging.

Charlie called from Massachusetts to say that he could report a sort of qualified failure. He hadn't found what we were looking for, but he had found something very interesting. All right, Columbus wasn't looking for America, and Saul was not looking for a stayed ass when he found a kingdom. What had Charlie found? In the patch of woods to the east of Penn School, about halfway between the road and the marsh bordering the Concord River, he had found a clearing in which someone had tied a number of fallen saplings about several trees, forming a sort of wandering fence. There was a square platform standing a couple of feet above ground on 4 x 4 posts, which were buried deep in the ground (Charlie had taken along a garden trowel in addition to the other paraphernalia); a lone balsam tree, about three or four years of age; and a boat.

The whole panorama occupied a fairly small area. The boat seemed particularly odd in the middle of the woods. Even odder, Charlie found a manila envelope lying under the boat. It was filled with little squares of paper. When he was back in California, he asked me if I would like him to count the little squares of paper. I was feeling bleak and bewildered by the information he had to offer. I didn't know what to make of it, or even if there was anything to be made of it. It would have been so much easier to find another little picket fence, or a magnetic anomaly (using the metal detector), a cairn, or a crossed circle laid out in stones.

What I had was a young balsam tree, a boat, and a manila envelope stuffed with little squares of blank paper. I asked him to go ahead and count them while I stared into the fire and brooded, pretending to be thinking but really just wallowing in melancholy.

There were 329 squares of paper in the envelope. I would have preferred 349. I could have read that as a marker saying, "This is the place." I wrote out 329 in binary and got garbage. Maybe that's what the 329 squares of paper were — garbage. Somebody had cut up a lot of paper into little squares, stuffed them into an envelope, sealed it, taken it out into the woods behind Penn School and then slid the envelope under this boat sitting out in this clearing next to a young balsam tree whose parents were nowhere to be seen. That scenario didn't make much sense, but 329 didn't

say anything at all; it didn't make much sense, either.

There are times when life in general seems to make no sense. About this time, I received a letter from Leonard Paradise, who had been convicted of the murder of Marie Lanza in court and of the murder of Joan Webster in the press.

Paradise had written me a few times before. I had corresponded briefly with his first attorney, James Cipolla, then tried to carry on a correspondence with his trial attorney, Steven Rappaport. Rappaport had simply never responded at all, but he did pass on some information to Paradise's third attorney, Frank Bruno, who had been appointed by the court to represent the indigent convict in his appeal of the Lanza conviction. Bruno had called me up in March 1985 to discuss the matter, and I had followed up with a mass of information about the Zodiac murders in California and the evidence connecting Michael O'Hare with these crimes. I also informed him of what evidence there was that suggested that Mike had also murdered Joan Webster.

I eventually got an enthusiastic letter from Bruno saying that he intended to make an issue of Mike in court if Paradise ever went to trial for the Webster murders. He also told me that he had taken his ZIK into the FBI's field office in Boston, laid it out for them, and suggested that there was a serial killer at large in Eastern Massachusetts and that if he ever killed anybody again, the moral responsibility would be theirs. I gathered from that that he felt the evidence was quite good. I used to make a case for the Penn School site with Bruno, but nothing I said could move him to go look at the spot. I was glad, in the event, that I had been unsuccessful. Charles Zarko had come back with detailed sketches, photographs, verbal descriptions, and the 329 little squares of paper.

Paradise brought me up to date about what had been happening with his case. Timothy Burke, the prosecutor who had gotten him convicted of the murder of Marie Lanza, was the main source of the news stories linking Paradise with Joan Webster. In the past few months, Burke had been leading quite a bit of it in the press, all of intended to make Paradise look guilty. Paradise had responded by suing *Boston magazine* and Burke both for defamation, demanding a trial in court rather than in the press. Apparently he felt that the only way he could get his day in court was by prosecuting the prosecutor. (Fran Kafka, please copy.)

Among the exciting new evidence revealed by Burke through his press outlets was the discovery that Joan Webster and Leonard Paradise had both been in the state of Maine in October 1981. It was obviously a major breakthrough, at least as good as Alan's revelation that Mike O'Hare had bought his wheelchair at Sears Roebuck. A waiter at the hotel where Joan had spent a weekend with her boyfriend in that month recalled that he had seen Paradise peddling fish in a town only about twenty miles away. Reading between the lines, it looked as if Paradise, having sold off all of his fish, drove twenty miles to where Joan was staying, and, waiting until her boyfriend had his back turned, made a date to meet her at the Eastern terminal at Logan on 28 November.

A search of a safe deposit box which Paradise shared with his girlfriend turned up a woman's purse which looked very much like one that Joan Webster had once owned. There was nothing in the purse to connect it with Joan Webster. The purse she had had with her on the night she was abducted had been found by the side of Highway 107. Assuming that Paradise had murdered her, why would he have gotten this second purse? Had he broken into her dormitory room to get it? Had he begged it from her as a keepsake during their stay in Maine in October 1981? And having disposed of all of the other evidence, why would he have kept her purse? Did he have a purse fetish? And of all places, why keep it in a safe deposit box in which someone else had access?

Two other things were held against Paradiso in the press. Burke had searched his house with a warrant and found among his books a work on Mayan architecture. This was obviously important evidence; after all, Joan Webster was an architecture student. The book, Burke said, was available only through the MIT student book store, and Joan Webster had been known to purchase books there. Of course, there were thousands of other people in the Boston area who also purchased books at the MIT co-op, just as thousands of people travel to Maine from out of state.

Perhaps the most damning thing was that Paradiso had been deposed by Burke and had refused to answer any questions about the Mayan architecture book. The deposition had been taken as part of the defamation suit, not the criminal proceedings (such as they were). The press, which is not bound by the code of criminal procedure, naturally construed his refusal as an admission of guilt. They failed to note that Paradiso was not represented by counsel in this proceeding and that Burke had refused to be deposed at all. The rules of evidence in Massachusetts preclude the admission of Burke's deposition of Paradiso, since Burke had refused to give evidence himself. The whole thing did not have the legal standing of evidence, but the press used it as such anyway.

About mid-September 1985, Burke had announced that he was leaving criminal prosecution, a field in which he had made quite a mark with a string of convictions to his credit, to go into private practice with a partner. As of the date of his resignation from the prosecutor's office, he still had no idea who his prospective partner would be. It had the appearance of a forced resignation. I gathered that he had gone far overboard in his persecution of Paradiso -- where Joan Webster was concerned, the word "persecution" would be inappropriate -- that his superiors had decided to put some distance between themselves and him. They had enough problems with liability insurance premiums; they didn't need a big libel judgment as well.

The Websters responded to Burke's resignation by announcing that they were going to hire a private investigator to make the case against Paradiso. These were the same people who had hired an airplane so that they could fly over Mike O'Hare's Vietnamese property and make photographs of his house and vegetable garden (where he grew his Big Meaty Zucchini and Small Sour Cantaloupes, no doubt). They didn't seem to be able to see what was important. And not having that vision, they had been taken in by Burke to the point that they had willingly participated in a railroad. Basically, they were stuck. The only possible way out for them was straight ahead. What they were now seeking was not only retribution for their daughter's murder, but also vindication for themselves. They had been confident that extortion would produce the results that investigation had not. Paradiso had been offered his deal, soft treatment in prison in exchange for a confession, and, hopeless as his situation was, he had refused to go along.

I could prove them wrong by vindicating Paradiso, and finding Joan buried out behind Penn School (or in the little patch of trees across the river) ought to do the trick. Paradiso had supposedly murdered her aboard his fishing boat and dumped her corpse in the water. If she turned up twenty miles inland, the police theory, and the second-hand confession on which it was based, was worthless. Since that confession was also the major piece of evidence linking him to the murder of Marie Lannuzzi, finding Joan Webster would guarantee him a new trial.

I also believed that this would play right into Mike's hand. I supposed that he would be utterly revolted by the idea that Paradiso was getting the credit for what he had done. Vindicating Paradiso would at least leave the authorship of Joan Webster's murder open. The way things were going, his project was being taken over by an involuntary claim jumper, with a little help from Tim Burke and the Boston newspapers.

It was in the middle of all this that the nocturnal call came bringing the Apology hotline to my attention. The same person had called back about three weeks later, in the wee hours of the morning, to suggest a meeting at the Hilton. In the meantime, the hotline had started playing the recording of "the Zodiac" saying that he was going to murder both Mike O'Hare and me.

I called the phone company to report the murder threat. They said that there was virtually nothing they could do about it, and that I should report it to the police. I pointed out that since the threat had been uttered in New York, the police in Marin County, California, hardly had any jurisdiction or interest, for that matter. They replied that use of the telephone to transmit homicidal threats is a violation of the Federal Communications Act. I should therefore report the matter to the FBI.

I called the FBI office in San Rafael and said that I had received a death threat on the telephone. The person with whom I was talking said that that sort of thing was handled by someone else. He put him on the line, and I told him what I knew, which wasn't much. When I said that the death threat was directed against both me and Michael O'Hare, he said that he was familiar with the connection between the two of us. He said that the phone company in New York would be apprised of the matter, but he did not anticipate that anything would come of it.

In the meantime, I heard from John Middleman, a correspondent in Illinois. He told me that he had just become friends with an individual who had recently moved to the Midwest from the East Coast. This person's last stop was Harvard University. This being a small world, the friend had had some dealings with Mike O'Hare. Here is what John had to say about his friend's experience:

My friend [explained] his contact with O'Hare and how strange he seemed to him.

My friend mentioned O'Hare's watch specifically as being especially fascinating to him. Apparently, Mr. O'Hare likes to keep rather accurate time in other zones as well. Also, it was an unusual watch to my friend.

My friend also mentioned that O'Hare had a strange feeling about him, almost as if he were a coldly calculating individual. He implied derision, but didn't say that. He got the feeling that O'Hare was holding back and not being totally open.

At the time this conversation took place, John's friend had had no inkling as to the information presented in this book. Every time I heard anything about Mike from anyone, it fit the picture. I, too, was quite intrigued by the detail about the watch showing time in other time zones.

Over the next couple of weeks, my mind kept turning back to "the Zodiologist" and "Zodiac" calls recorded on Apology. We had received a collect call for Diane on 20 December, the anniversary of Lake Hemmen Road. We had received a similar call on 4 July, the anniversary of Blue Rock Springs. But other than that, we had had nothing even remotely resembling the telephone traffic of the previous two years. And I now had to discount the collect calls. I listened to my tape recording of "the Zodiologist" over and over. His voice sounded just like the male operator who had placed the first collect call in March 1984 and the last one in December 1985.

Whoever this person was, he was an imposter. He didn't sound Delphic, but damaged. He didn't refer to me obliquely, as the real article would have done, but directly, and abrasively. He obviously lied it in for me. He was someone with a big grudge. I didn't see how he would have known about the existence of the hotline unless he lived in New York or environs. That didn't ring a bell.

There were a few other households. He knew that the California article was written by Gareth Penn, not George Oakes, the pseudonym that I had used. There weren't a lot of people who knew that George Oakes and I were one and the same. And it was odd that anybody living in New York would even be aware of an article in California, which is a regional magazine. It isn't indexed anywhere. And this person also knew Mike O'Hearn's middle name. He doesn't use it at all in publications or even in signing documents.

Putting all of these things together, I came up with the following portrait of my mystery caller. He was someone who lived or had lived in New York. He had some kind of ties to California. He was one of the few people who knew the secret identity of George Oakes. He knew my telephone number, which is not listed to my name, but to Diane Merrill. He harbored some sort of resentment against me. He did not have both ears in the water. He connected both Mike and me in a death threat issued by "the Zodine," a title which he wrongfully appropriated to himself. And he had suggested meeting me at a hotel in San Francisco.

It appeared to me that my portrait narrowed down the field of suspects to just one person. There was no doubt in my mind as to who it was. Anyone who has read this far will, I believe, come to the same conclusion that I did. I called the FBI to give them the benefit of this additional information.

The person who answered listened to my preface and then told me that I should talk to the same individual who had taken the original complaint. Did I know his name? I responded that since nobody at the FBI identifies himself by name when answering the telephone, there was no way that I could know that. He put his hand over the mouthpiece and talked to somebody else in the office; I could hear muffled speech from the other end. Then he came back on and said that it must have been Robert Tucker. Was Mr. Tucker available for me to talk to? No, he was out of the office just now. I left a message for Mr. Tucker and waited for him to call.

I waited a week. I called the FBI office again. Mr. Tucker had just flown out of town "on an airplane." I didn't say it, but I was glad that he had used an airplane on his flying excursions, because if he had done his flying under his own power, I wouldn't have felt very comfortable talking to him. I left another message.

Another two weeks went by without a response. I called again and asked if I could talk to anybody else. The person I spoke to said that he would be "extremely reluctant" to interfere in somebody else's business. He took another message for Mr. Tucker. I waited another week. Nothing happened.

I had recorded the death threat off my telephone line. I took the cassette and my tape recorder into downtown San Rafael, where Congresswoman Barbara Boxer has a field office. At the front desk was a woman named Terry Chleyer, to whom I told my story. I played the death threat and said that I had reason to believe that I knew the identity of the person issuing it. I wanted to give this information to the FBI, but I had been getting the runaround for several weeks now. When I saw my neighbor's house in flames, I didn't feel that I should have to call the President of the United States to ask him to get me an appointment with the fire department, but here I was. Could she do anything about it?

She was quite concerned about the possibility of arson, and she was astonished that the FBI was closing its ears to me. I said that was nothing new. I would be satisfied with about fifteen minutes

at their time. I did not expect miracles, but I did have information which had a bearing on a violation of Federal law, enforcement of which, I had been led to believe, was the FBI's responsibility.

I didn't volunteer the fact that whenever Mike O'Hare had complained about my ordering unwanted Atari videogame software for him from Sears Roebuck, he had found the FBI ready and willing to act as his errand boy. But I did think the contrast was a little stark. They would do anything for him, even if there was no legitimate government interest. But when I had information to report concerning a clearcut violation of Federal law — including a threat against his life — I couldn't get two minutes of their time.

A few days later, she had good news for me. She had reached an FBI agent named Gary Joseph, who had said that he was willing to listen, as long as it didn't take up too much time. She asked me to call Joseph right away, then call her back to report. I did so. Joseph heard me out, then said that he didn't think there was any violation of Federal law involved in making death threats over the telephone. I referred him to the appropriate page of the Marin County telephone directory, in which the telephone company contradicted him.

In any conflict between the FBI and the phone company, I will always put my money on the phone company. As soon as I uttered that dread name, Joseph's opposition wilted. He leafed around in some reference work, and allowed as to how I might be right, after all. He told me that I would soon be receiving a call from someone else, who would take down all the details. I reported on this to Terry O'Dwyer.

That call came about ten days later. This time, it was the elusive Mr. Tucker. We made an appointment for me to see him at the FBI office in San Rafael a couple of days later. He asked me to bring along my supporting materials. At the appointed time, I showed up at the Bank of America Building, where the San Rafael G-men held forth. I waited in the anteroom for Mr. Tucker, amusing myself by reading wanted posters. When he came out to greet me, he was all smiles. It was the usual FBI-issue smile, unconstrained and unctuous. I think it was Ralph Burton who said that Teddy Roosevelt had had 40 teeth, one for each smile of the union, and that he was trying to show them all off at once. That was the kind of smile I saw on Tucker's face. He was probably at the top of his class at the FBI Smiling School.

We went into a little room with a desk and some chairs. Tucker went to a side door and invited somebody else to sit in. It was Donald Hubbard. He wasn't an imposter after all. He and I exchanged handshakes and greetings, sat down, and waited for Tucker to get his notepad out and sharpen his pencil. In the meantime, I set up my tape recorder and rummaged around in the manila folders in which I had brought my letter from Apology and an offprint of the *Memo Bullets* article, just in case an opportunity to peddle it should present itself.

By this time, the FBI must have written down my birthdate so many times that they had to rent storage space to keep it in. But Tucker wrote it down again. When I said that I was married to Diane Merrill, he wanted to know if I was legally married. I didn't know how I could be illegally married to her, but I just said that we were very legally married. We went through the whole story detail by detail, starting at the beginning, and he painstakingly wrote down everything that I said on his notepad. Every time I said something humorous, he would turn to Hubbard and ask, "Did you hear what he just said? He said . . ." Then Hubbard would laugh, too.

When I got to the "Zodiac"'s threat to murder Mike and me, he asked me if this "Michael O'Hare" was a real person. He didn't even look as if he was trying to keep a straight face. I gathered that

the main rule of the game that we were playing was that nobody was supposed to admit knowledge of what was really going on. Did I know O'Hearn's telephone number? At the moment, it slipped my mind. I did offer no recite his Social Security number instead, but that wasn't wanted. Every time I got through recounting something that I had done, he asked, "And what did you do then?"

I had just told him that I had deduced the identity of the person uttering the murder threat when he asked me, for what must have been the two-dozenth time, "And what did you do then?" I answered, "And then I spent the next six weeks trying to get this interview with you so that I could tell you about it." It didn't faze him. He just kept coming, smile and all. The smile was probably bulletproof. In my mind's eye, I could see wave upon wave of Robert Tuckers wading ashore at Omaha Beach, wounding off Jerry's bullets with their teeth.

I went into some detail about my reasons for suspecting a certain individual of having uttered the homicide threat. I played him my recording and even gave him the cassette. I also managed to unload a copy of my article on him. The interview came to an end exactly one hour after it had started. I believe that the purpose of all the superfluous questions was to stretch out the time to a full hour. What I had to say should not have taken more than fifteen minutes' worth of one agent's time. As it was, I got two man-hours at the taxpayers' expense. As I was fixing to leave, Tucker pumped my hand and said that he didn't want me to leave with the impression that I was being ignored or overlooked. The FBI had a lot of pressing matters on its hands, including cases where lives were at risk. Everything had to be prioritized.

I said that I understood that. I knew that I could not expect results. But if I found out that Mike O'Hearn had been murdered, and if I had not done everything in my power to prevent it, then I would be morally responsible. It was my civic duty to tell the authorities everything that I knew about it. What they managed to do about it was another matter. I had discharged my duty as best I could, and I expected that they would do the same.

When I got home, I called Tony Ohleyer to report on my meeting with Tucker. I said that I felt that they had pulled out all the stops for her benefit, not mine. She asked me if I was satisfied, and I said that I had done what I intended to and gotten more than enough responsiveness this time. She said that she wasn't particularly surprised by the FBI's behavior. I gathered that this sort of thing had happened to her before.

ANTIC DISPOSITION

I hadn't heard anything from Bob Graysmith in five years. He had called me on 28 December 1980 to discuss the *zodiac* matter after I had called the *Chronicle*, and he had stayed on the phone for a long time. But he never called back. I had tried to keep him abreast of what was going on. When we got Mike's handwriting samples from Whit Caldwell, I sent him photocopies. He never responded in any way. When I gave the talk in Mill Valley attended by Paul Avery, Avery had invited Graysmith to come. But he had had something more important to do that evening. Now, in January 1986, Graysmith was suddenly all over the Bay Area news media. His book, which he had told me was coming out at Norton in mid-1981, had then been announced through an item which he had planted in Herb Caen's column in the spring of 1983 for publication in the fall of that year. It was five years overdue. It had changed its title and publisher at least once each in the interim.

Graysmith practically knew what the Zodiac had had for breakfast on any date you would care to mention. Z. was a sexual psychopath, he said. He was motivated by astrological considerations. He had murdered several dozen people in Northern California and was now alive and well and living in Santa Rosa. Graysmith and his editors had given this individual a pseudonym to protect themselves from action for libel. I felt that if his evidence was so good as to make him this sure of the Zodiac's identity, he could have easily defended a libel suit.

When I bought my copy of *Zodiac*, it appeared to me that Graysmith was in trouble no further into the book than the flyleaf, where he quotes Henry Lee Lucas and identifies him as a "serial killer." Just a few months before the book appeared, Shelly Blasawa had done a piece on Lucas titled "Tales of the Texas Rangers," from which it appeared that Lucas knew as much about serial murder as he does about nuclear physics. Far from being a serial killer, he was nothing more than a compulsive confessor who was being used by the Texas authorities to clear up every unsolved murder in North America.

There was more trouble in store in the introduction, where Graysmith claims that he is reproducing "every word Zodiac [sic] wrote the police." In the first place, most of the words Z. wrote were addressed to the newspapers, not the police. Secondly, Graysmith's claim does not live up to reality. He reproduces only a few of the mail covers, on which some of the more interesting material is found. He alters spellings in some supposedly diplomatic reproductions of documents. He omits parts of these documents, and one is entirely. It's understandable that he does not reproduce "every word," but it is not so understandable that, not being able to do so, he makes this claim. And in one case, the nature of the omission might lead one to suspect that he is not being completely honest.

On page 155, Graysmith ends his discussion of the Zodiac's letter of late July 1970 with these remarks:

He concluded the Lord High Executioner's aria with another Zodiac symbol, which took up three-quarters of the last page. Below this he wrote a hint about the Mount Diablo map and cipher of exactly one month earlier:

*PS. The Mt. Diablo Code concerns
Radians & # inches along the radiants*

On Sunday morning, the steady man printed "S.F. Chronicle" on the envelope, pushed his chair back, put one eleven-cent Roosevelt stamp tilted jauntily to the right on the letter, and went out into the sunny morning to mail it.

I don't want to be picayune about the misnomer "aria" (for "patter-song"), or even the pretense that he knows things he could not possibly know (stockiness, pushing back of chair, mailing the letter on Sunday morning, etc., after all these years, whether that Sunday was sunny or not -- summer morning weather in the Bay Area is usually overcast). Never mind that. Here he has quoted his author as using the word "radian" twice, and he doesn't even let his readers know what a "radian" is. Most people don't know what a radian is. I consider it to be the duty of a writer in a situation like this to give his reader the benefit of his knowledge. But Graysmith just drops the subject without another syllable. He speculates endlessly about everything else, but he does not speculate about this. Surely Z.'s use of a rather esoteric piece of mathematical terminology ought to tempt him into some surmise about what this tells us about the person using it. I knew for certain that Graysmith knew what a radian is, because I told him on 28 December 1980.

Incidentally, one of the documents which is partially omitted by Graysmith is the second page of the Mount Diablo Letter, in which Z. specifies the number of inches along the radians one is supposed to go in order to find the buried bomb. It's four inches. He usually expresses significant numbers in metric, not English, measurements. Four inches is 101.595mm. That number, written to the base two, is 1100101.1001000001... which I divide as 11 .00 101. 1 .00 11 0 .000 00. MIKE TIMES2. When you multiply a binary number times two, you add a zero. Zero in Morse Code is the letter E. Here's another way of expressing it: MIKE x 2 = MIKE.

Graysmith follows two main themes above all in his book. One is psychology, and the other is astrology. Somewhere along the line, he got hold of a psychological profile commissioned by the San Francisco police. Here is what he has to say about it:

The top pseudopsychiatric expert in the country, Dr. Murray S. Hirson, working from analysis of the killer's letters, came to these conclusions about Zodiac: [sic] is a secret Syracuse Research Institute report: Zodiac: [sic] "has some exposure to our training in elementary cryptanalysis" and "is a Conservation committed male in his twenties. He is no more than high school educated, ready hide, is dexterous, calculating, and worked in his father's quiet and unprepossessing living disposition." Hirson felt the killer had good eyesight (despite the fact that he had been observed on three occasions wearing eyeglasses) and was a "discretionary iliterate," someone who prefers "the passiveness of pictures, TV, and the movies" and does not even have a library of "cheap popular books." Zodiac: [sic] in Hirson's opinion, "would have spent much of his time in movie houses specializing in auto-masturbatic and sexual erotica" and was a borderline psychotic... His communications display the characteristic signs of magical thinking, and narcissistic inflation typical of the achievement-

"Zodiac: [sic] rather well fits the pattern of what might be called pseudopsychiatric schizophrenia... Such individuals engage in their bizarre behavior as a sort of cover-up for their underlying and

more hidden psychoses. They can be expected to display wide swings of emotion from intense euphoria to deepest depression.

"He lives the secret life of seclusion and presents to the world a mask of contentment, pleasantness and ordinariness."

Miron thought that the December 1969 letter to Dell contained hints of the depression that "frequently overtakes him It is not entirely unlikely that in one of these violent depressions such individuals could commit suicide." Because of Zodiac's [sic] concern with control, Miron felt he would thus the "dissolubilizing effects of alcohol," and would avoid "normal sexual contacts with women."

The "monologue" expressed in Zodiac's [sic] letter of 1974 [which one of four?] contained "no explicit threat," no "haggadahs," and was *none* of his identifying symbolism. The motivation expressed in that communication is consistent [sic] with motivation which could precede a suicide. There is an alternative interpretation of this progressive change in Zodiac [sic]. It is possible that the suicide by references [sic] in the symbolic death of Zodiac [sic]. . . . The sociopathic personality eventually "burns out" . . . as he ages."

During the first few days of my acquaintanceship with Ken Narlow, he had read me several Zodiac letters to see whether or not he could get a rise out of me. One of them was a letter postmarked 14 February 1974, about ten days after the Symbionese Liberation Army had kidnapped Patty Hearst, and like the other three 1971 letters, it was addressed to the *Chronicle*. It was short and sweet:

Dear Mr. Editor: Did you know that the initials SLA spell 'slia,' an Old Norse word meaning 'slay'?

The signature: "a friend." I had told Narlow that I had taken every unit of instruction in Old Norse offered at a couple of universities, which probably heightened his suspicion of me. Of course, I added, while there is such a verb, it does not mean what the Zodiac says it means. *Slia* means "to beat," "to strike," not "to kill." But it is cognate with our verb "slay" -- which does mean "kill." (This letter was reproduced in its entirety in the *Chronicle* on 26 August 1976 in a story titled "Tips still pursue multiple slayer"; somehow, it escaped the notice of Graysmith, according to whom it does not exist.)

It appeared obvious to me that the source of this curious blend of information and misinformation was an English-language dictionary entry under "slay," one in which foreign-language cognates were given, specifically medieval Scandinavian forms. Usually, these forms are not defined. If someone who does not have access to an Old Norse dictionary looks up "slay" in an English-language dictionary and finds that it is cognate to Old Norse *slia*, he might logically conclude that because the two words are related, they must mean the same thing. There's one other wrinkle to this idea. In about half the dictionaries where this sort of information is given, what Z. calls "Old Norse" is called "Old Icelandic." There's no practical difference between the two, but some editors incline to the one term rather than the other. It has the advantage here of narrowing down the field considerably.

The Zodiac committed crimes in three Bay Area counties: San Francisco, Napa, and Solano. I went through the reference collections of the public libraries in all three, looking up "slay" in every dictionary on the shelf. I listed every title in which I found *slia* identified as "Old Norse." Just to be on the safe side, I went through the same procedure with the collection of the Reference and Bibliography Room at the University of California Library in Berkeley. The library of the

University of California has one of the largest collections in the Western Hemisphere. I don't think that I missed anything. My list contained five items. Here they are.

- 1) *Third International* (G. & C. Merriam Webster)
- 2) *Chambers' Dictionary*
- 3) *Oxford English Dictionary*
- 4) *Oxford Dictionary of English Etymology*
- 5) *Origins* (by Eric Partridge)

He had obtained his main information from one of these five works. All are scholarly, not popular. Three of the five are publications of the Oxford University Press. Strangely, I could not reconcile Dr. Miron's picture of the Zodiac as a "dictionnaire littéraire" with my mental image of someone who whiled away his idle hours by leafing around in Eric Partridge, looking for medieval Scandinavian cognates of English verbs. Add to this, if nothing else, his knowledge of the word "radias" (which is generally known only to mathematicians and engineers), and the two pictures just don't fit together.

I wrote to Miron to ask him how he would reconcile these two widely-divergent images. He never responded. I do agree with him on one point, the one about the murderer hiding behind a mask. But the mask is what Hander calls "an anti-disposition" -- fatigued crudeness.

Graysmith's other big theme is astrology. I suppose that what set him off on this tangent was the murderer's use of the sobriquet "the Zodiac." Of course, the Zodiac is something that scientific astronomers are just as familiar with as astrologers. The word denotes a band in the sky bound between eight degrees north and eight degrees south of the Plane of the Ecliptic. Other than that, Graysmith finds that the author uses cipher symbols borrowed from astrology and that all of his murders were committed "close to" or "near" certain "astrological" junctures, i.e. solstices, equinoxes, and new and full moons.

I reproduce here a table showing the cipher symbols which Graysmith says are astrological, together with a table of my own showing other Zodiac cipher symbols and explanations which he does not mention. In the first line, we have seven geometric forms, some dotted or shaded, which Graysmith says he has found in one astrology book or another. On the right, we have nine other symbols of the same typology, which do not occur in Graysmith's sources. How do we know that the selected seven are meant to be astrological and not just symbols of the geometric type (and the minority of them, at that)?

The second line shows five Roman letters, which have the same form as symbols found in Graysmith's astrological sources. On the right are twenty-one other letters of the Roman alphabet, which the Zodiac also uses as cipher symbols, but which cannot be interpreted as being astrological. How does Graysmith know that Z. singles out these five to be read as astrological symbols and not Roman letters? Or, conversely, how do we account for the other twenty-one symbols that also have the form of Roman letters without including his five as well?

The next line shows seven cipher symbols having the same form as reversed or inverted Roman letters. One of the forms cited by Graysmith is not found in any Zodiac ciphers. On the right, there are ten other cipher symbols of this type which do not have any astrological meaning. So far, out of a total of 59 cipher symbols of three different typologies, Graysmith has selected nineteen, or about one-third, to support his argument. He leaves out of the discussion the two-thirds which do not support his argument. In Greek mythology, there is a robber named Procrustes who invites travelers to spend the night, offering them a bed which is too small for them to sleep in. He solves

GRAYSMITH'S ASTROLOGICAL SYMBOLS

On the left, Zodiac cipher symbols which have astrological significance (one cited by BG is not used by Z.) On the right, Zodiac cipher symbols which are not astrological.

Geometric forms



Roman letters

L O P Q V

A B C D E F G
H I J K M N R
S T U W X Y Z

Inverted or reversed Roman letters

> < ^ & ~
T Q

B D K P L
U Y Q

Greek letters

Λ Δ Φ ψ

(lambda, delta, phi, upsilon, . . . pi, omega)

Other symbols (other explanations)

⊕ (plus)

Π Ο

⊕ (light-ball)

According to Graysmith,
the sign is a
lithograph and the sign
is a Turner
symbol



(benchmark, Catholic signs of consecration, Scandinavian sun-symbols, Strategic Air Command "reference point," compass rose, circle with two diameters, etc.)

the problem by lopping off the limbs that stick out over the edge of the bed before helping himself to the victim's pants. Graysmith's presentation contending that these cipher symbols are astrological is a textbook example of the *Precocerian Bed* in action.

Another way of dealing with the data is to ignore all alternative explanations. The next two groups of symbols illustrate this technique. Six cipher symbols used by the Zodiac have the same form as Greek letters. Of these, one can be interpreted as an Aries-symbol only if it is turned upside down. I have already shown how this can be read, in the 13-Character Cipher, as an (also inverted) lower-case letter R, and in the context of that cipher, that reading produces results that are consistent with something we know the author is interested in (the radius), because he explicitly says so. At no place in the Zodiac literature does our author explicitly mention any interest in astrology.

At all events, an alternative explanation for these six cipher symbols is that they are Greek letters. One of them, the supposed Aries-symbol, has to be inverted to make it so; and Graysmith is able to read the letter omega (Ω) as an astrological sign (Libra) by adding a bar which isn't there. One symbol in this group is unequivocally the letter R, but since reading it that way would not bear out the astrological interpretation, it isn't mentioned.

Three miscellaneous symbols are shown here. The cross is used as an astrological symbol, but it is a number of other things as well, including the plus-sign in mathematics. The eight-ball, used three times in the 13-Character Cipher and nowhere else, becomes a Taurus symbol because Graysmith finds, on examining it with a magnifying glass, that the top of the eight is not quite closed off. How this supposed Taurus sign was inscribed within a circle does not concern Graysmith. And finally, we have the Zodiac's signature (also used as a cipher symbol), the crossed circle. In standard astrological notation, it is used as the symbol for the earth. Scientific astronomers use it the same way, to signify the same thing. But there are numerous other explanations for it, none of them having to do with astrology.

In his book, Graysmith recounts a trip that he made to the peak of Mount Diablo. He wonders if the Zodiac was ever employed at the Navy's microwave relay at the peak of the mountain. There is something else up there that is even more important than the microwave relay, namely Vertical Angle Benchmark 3849, which is prominently displayed on topographic maps of the area. The monument marking VABM 3849 is five feet from the edge of the parking lot adjoining the microwave relay.

The crossed circle is as well known as the sign of the benchmark that it is even used as a trademark by the Benchmark Paper Products Company. Then we have the Strategic Air Command using the same sign to mark Soviet targets. They call it, in their jargon, "RIP" — the return address on the Zodiac's letter of 9 July 1974 (Count Marco Letter). Then there is his interest in Old Norse myths. The crossed circle was used by the pagans Scandinavians as a sun-symbol. Z. has, then, an affinity for Vikings. Put that together with his use of the eight-ball symbol, and you could make a case for his being Minnesota Fats. Of numerous possible derivational interpretations, Graysmith prefers the one which supports his theory.

But perhaps the most nekkiss statement Graysmith makes is the one concerning the dates of the murders. He says that all of the Zodiac murders took place "near" or "close to" new and full moon, solstices and equinoxes, which proves his astrological inclination. The fact is that there are 29 days in the moon's rotational period. That means that there is a new or full moon every 14-15 days. That means, in turn, that it is impossible to have any event transpiring on this planet which does not take place within eight days at most of a new or full moon. None of the Zodiac murders actually took place on a new or full moon, just "near" or "close to" it. Two of these events were

off by one day, two by two days, and one by five days. On a scale of zero to eight, a five-day miss is not "close." If anything, it's "far." And the other misses are not significant.

Just for purposes of comparison, I correlated the five major airline disasters of 1985 with the same "astronomical" events. One, Japan Air Lines (12 August) missed the new moon by four days. Air India (23 June) missed the summer solstice by two days. Delta Airlines (2 August) was two days after the full moon. And the other two, Iberian Airlines (19 February) and Arrow Air (12 December) fell right on the new moon. If anything, the correlation between these airline disasters and the same astrological or astronomical events is even closer than that between the same events and the Zodiac murders. That doesn't prove that the phases of the moon are responsible for airline crashes — or that the Zodiac murderer is sabotaging airplanes. What it does prove is that by the use of weasель-words, you can prove anything you want.

Comparison of astronomical events and Zodiac murder dates

Zodiac murder date	Nearest astronomical event	Difference in days
10-30-66	Full moon (10-29-66)	1
12-20-68	Winter solstice (12-21-68)	1
7-4-69	Full moon (6-29-69)	5
9-22-69	Full moon (9-23-69)	2
10-11-69	New moon (10-9-69)	2

Comparison of astronomical events and 1985 airline disasters

Airline	Date	Nearest astronomical event	Difference in days
Iberian	2-19-85	New moon (2-19-85)	0
Air India	6-23-85	Summer solstice (6-21-85)	2
Delta	8-2-85	Full moon (7-31-85)	2
JAL	8-12-85	New moon (8-16-85)	4
Arrow Air	12-12-85	New moon (12-12-85)	0

INCIDENT IN ISTANBUL.

On several occasions, sympathetic persons have suggested to me that I ought to take my case to the Human Rights Commission or the Court of Last Resort. I have already told you about my experiences with John and Darrell Bross, which I think is an adequate answer to such suggestions. Even so, I ought to add a few more examples.

When Terry Webster and I were still on speaking terms (before I published an article suggesting that Leonard Parades had not murdered her daughter), she tried acting as my mouthpiece, first with law-enforcement officials, and when they wouldn't listen, with individuals whose word might carry some weight. She picked on a popular author named David Kahn, who has written several books on the subjects of espionage and cryptography. She approached Kahn with the request that he scrutinize some of my material and render an opinion. To facilitate the discussion, she gave us both a number of postage stamps and certificates issued by the phone company which could be redeemed against our telephone bills.

I sent Kahn a presentation and waited idly for him to respond. He never did. After a couple of months of waiting, I wrote to him and asked him, if he was not going to do what he had agreed to do, to return my materials to me. This got no response. After another couple of months, I wrote to him again, making the same request. Again, there was no response. Finally, I called him on the telephone and asked him why he hadn't returned the material. He said that he had "misfiled" it somewhere and could not find it again.

In the summer of 1983, I was leafing through a recent copy of *Science & SF* and came across a brief article on handwriting analysis which had been prompted by the Hitler diaries. The diaries had been a bombshell that turned into a dud when it was discovered that they had been forged. In the meantime, however, they had been embraced as important, even if phony, by *Newsweek*, which was at that time under the editorship of Bill Bryeley, the former publisher of *California*, at whose behest Tom Bates had butchered my poor little Zodiac article. I noticed that Bryeley had left *Newsweek* not too long after the Hitler diary fraud was exposed.

Be that as it may, this article interested me because of the handwriting samples which we had from Mike O'Hare. The author had consulted an expert named John Thornton, and Thornton had obliged with some scientific remarks on identification through handwriting analysis. John Thornton was a name to conjure with. He and I had been undergraduates together at Berkeley. I gathered from the article that he was now on the faculty there, and when I called him up at work, it turned out that he was living in Napa and had been there for several years during my tenure in the wine country. We had probably passed on the road a number of times without recognizing one another. I made an appointment to meet him at his home on the west side of the valley on a Sunday in July.

When Diane and I located John's home, we found that the driveway was too steep for her under-powered Volkswagen bus, so we parked out on the highway and walked up to the house. The first thing that I noticed on the porch was a whale rib. I had forgotten about the whale rib, which I had traded to John for an Australian aborigine bull-roarer about twenty-five years before. In the intervening quarter-century, I had not only misplaced the bull-roarer but had also completely forgotten

it. John reminded me of the trade. He obviously hung onto things better than I did. Then I remembered his machine gun.

John Thornton, who was a budding criminalist when I knew him in school, found a war surplus .30-caliber machine gun for sale for \$30 at a war surplus store in Oakland. Inspecting it closely, he found that it was in (legally) perfect operating condition. It was a bargain that nobody in an out of his right mind could pass up. I have forgotten who it was that had to accompany him on the AC Transit bus down to Oakland to help carry it back to the dormitory. It was about seven feet long and weighed 85 pounds in its stocking feet. The two of them had to stand it up on end on the bus. The driver made them pay an extra fare for it. The way I heard about the trip, it sounded like something straight out of an early Russian Peasant film (*Two men and a watchdog*).

John somehow managed to find a belt of live .30-caliber ammunition for his gun, which he pointed out of his dormitory room window at the apartment building across the parking lot. The gun came in handy when the students downstairs got too rowdy late at night. John would set the machine gun with its butt plate resting on the floor over their heads and the barrel pointing straight up at the ceiling. Then he would jump up and down on the operating handle like a popo-stick, making the 30-pound steel bolt slam against the butt plate. He came near to separating plaster from ceiling downstairs. It was effective. And since everybody knew he had the ammunition to go with it, nobody complained about it to the house manager.

More machine guns arrived at the store in Oakland, and John got the bright idea that he would sell his gun for \$40, then return to more machine guns at \$30 apiece, which he would then sell for \$60 each, reversion the profits and so forth. He was speculating about all the money he was going to make as an arms merchant through his ad in the *Chronicle* when the Alcohol, Tobacco and Firearms people from the Treasury Department showed up and took his machine gun away from him.

He did eventually make a profit on it, though. The ATF had confiscated a number of antiaircraft machine guns of the same caliber, which had been erroneously released for sale by the Army without first being rendered insipable, as was required by law. The Treasury Department office in San Francisco had nobody who knew how to do this. When, on interviewing John, they found out how knowledgeable he was, they hired him for what was in those days the princely sum of \$6.50 per hour to do their work for them. He even got his own -- insipable -- machine gun back. But I didn't see it in his house in Napa. I didn't ask what he had done with it. But I couldn't picture somebody who would cling to a whale rib for a quarter of a century throwing away a fond souvenir of his youth like an antiaircraft machine gun. He probably used it at the office as a paper-weight.

We met John's wife and his infant son and they had a chat with him about the Zodiac. I gave him the same presentation that I had made at Santa Rosa the past May, and I supplied him with copies of the photographs of Mike O'Riley, the handwriting comparisons, the *Progressive Architecture* photograph, and quite a bit more. He said that he would be able to put in a lot of work on it in a couple of weeks. The upshot was that he did nothing at all. He didn't even call back. About a year later, I wrote to him to ask if I had done something to offend him, and that if so, I was sorry for it. He called me then to say that it wasn't my fault that he had broken off contact. He had had, among other things, to go to Nepal to find himself, and he hadn't had the time to do anything else. It was the last I heard from him.

In 1981, I tried Eugene Waltz, who was at that time the editor of the American Cryptogram Association. I thought that he might be interested in a digital transcription of the 340-Character Cipher. Back in 1969, the ACH had challenged the Zodiac to come up with a cipher in which he really and

only identified himself. They had apparently felt burned by the cryptogram. Z. responded to their challenge with the 340-Character Cipher. At all events, I demonstrated to Waltz how my transcription scheme produced out of the first thirteen characters the fraction of it, how Line 7 contained the spelling MIKADO, and a few other items that appeared to me to be quite interesting.

He responded that he wasn't interested in publishing my contribution, but he did graciously devote a couple of pages to showing me how I could "break out" whatever it spelled. I thought that the fact that it was the fraction of it was interesting enough all by itself. But that apparently didn't register with him. When I got a copy of Graysmith's book, I read that he had figured out, because the first three cipher symbols in the 340-character cipher are HER, that the document was a letter to the *Chronicle* columnist Herb Caen. Out of the symbols POSHT, Graysmith had determined that the subject of the letter was SFPD Inspector Dave Toschi. The similarity between POSHT and TUSCHI was definitive. What lay between the names "Herb" and "Toschi" was unresolved. Graysmith consulted with Waltz on this effort, and Waltz congratulated him on his brilliant detective work.

Finally, after the appearance of the *Herald Bulletin* article, a Mensan in Kansas City named Jake Rostain called me up to say that he knew somebody in Southern California who could get my material to the right places in law enforcement. He would make the necessary introduction in this percentage, a forensic psychiatrist named Michael Grinberg. Jake told me on the phone that Dr. Grinberg had agreed to act as a conduit to what I assumed was a connection in the Attorney General's office in Sacramento, and so I sent Grinberg a package of materials. A lot of it was handwriting comparisons. None of it had anything to do with psychiatry.

Even so, Grinberg eventually wrote me to say that he wanted a retainer of \$1000 even to read the stuff, and he quoted me an hourly fee of \$750 for "evaluating" the mathematics, not to mention appearing as an expert witness. I wrote back to say that since he had no discernible expertise in the materials which he was proposing to charge me \$1000 for reading, I felt that my money would not be well spent. I certainly couldn't envision paying him to appear as an expert witness on the subject of handwriting analysis, cryptography, or mathematics. But turn about is fair play. Just four years before, a mathematician and cryptologist named David Carter had started his analysis of the Zodiac problem from a psychiatric jumping-off point. Why shouldn't Grinberg, a psychiatrist, play at being a mathematician, and charge a fee for doing it?

Good help is hard to find these days.

While I am in a sentimental mood, telling you about long-ago events set off by my recollection of how John Thornton got that whale oil, let me tell you an anecdote which has, I think, a direct bearing on the problem which the Zodiac has set society. It also says something about modern man's loss of perception.

In the spring of 1968, I was in Istanbul, spending a pleasant afternoon at the Museum of Turkish and Islamic Art. I have long been interested in Islamic culture, particularly its artistic and architectural productions. I think my interest derives from the gift of a lavishly illustrated edition of *The Arabian Nights* when I was a boy. You may or may not know that in Islamic art, calligraphy is a highly advanced art form. For one thing, the Arabic alphabet, with its beautiful flowing forms, is ideally suited to calligraphy. For another, there is a prejudice in Islam against representational art. I say "prejudice" rather than "prohibition," which is what many of you will have said one place or another. There is, in fact, no such prohibition. Iranian Moslems have been producing hunting-rugs with elaborate figural designs for a millennium. Turkish and Egyptian manuscript illuminations are rich in figural representations, showing, in some cases, Allah, Mohammed, angels, and

patriarchal figures such as Abraham and Adam and Eve.

Where it comes to decorating places of worship, the conservative interpretation has prevailed, and other than in a few of the earliest Syrian mosques, figural representation is shunned in favor of calligraphy. There used to be a similar prejudice against non-Sacred writing in the Catholic liturgy, until St. Ambrose contributed the first original hymnology. Another prejudice against the use of musical instruments in church lasted even longer. And in the Eastern Christian church, there really was an anti-figural policy during the eight and ninth centuries of our era: we know it today as "Iconoclasm."

In any case, here I was in Istanbul, trying to absorb everything there was to absorb in the Museum of Turkish and Islamic Art, much of which was calligraphic. A Turkish student, who apparently wanted to inflict his English on someone, attached himself to me. He followed me around from one exhibit to another, trying to make small talk.

I stopped to admire a particularly handsome piece of calligraphy, a large plate of ebony inset with Arabic-alphabet writing in mother of pearl. I don't read the Arabic alphabet, and so I don't know whether this inscription was in Arabic, Turkish, or Farsi. But I did see one thing about it that told me what kind of composition it was, no matter what language it was written in. My Turkish companion wondered, rhetorically, what it might be. I answered, non-rhetorically, that it was a poem.

He demanded to know how I could possibly know that. I was a foreigner, after all. But for his part, he was a Turk. Arabic had had the Turkish language Romanized fifty years ago. My young friend had grown up in a country that was — where the alphabet was concerned — completely cut off from its origins. He couldn't read his own language written in Arabic writing. And here I was telling him what kind of composition this congeries of peculiar squiggles and loops was.

I told him that alternate lines ended in the same groups of squiggles. Although I couldn't read the alphabet, I could see the rhyme without hearing it.

He responded that I was wrong. And to prove his point, he jolted his index finger at the right-hand margin of the ebony. Of course, there was no congruence between alternate lines there. He wasn't aware of it, but Arabic, like Hebrew, is written from right to left, not left to right. He was looking at the wrong side of the page. It is possible that what he and I were looking at was written in Turkish, his native tongue, and that if it had been transcribed into left-to-right Roman letters, he would have been able to tell me a thing or two. But as it was, his lack of education in form made my knowledge superior to his. He quickly left me to my own devices.

I have spent six years gathering that the experts do not relish lectures from me on the subject of criminal detection. They don't understand two things. One is that I don't pretend to be a detective. The other is that the central issue in the unique case of the Zodiac murders is not the context, which is what they have spent twenty years poring over, but the *form*, which they have studiously ignored. And when some upstart points out to them what they have been missing all along, they become petulant and annoyed — just like my young friend from Istanbul in 1968.

THE END

Irons continued to dog my life. Charlie called up from Los Angeles to inform me that there was a made-for-television movie coming up which I should make a point of seeing. The title was *A curse of deadly force*, and it had something to do with the coincidental resemblance between what happens in Massachusetts and what most people call justice. Richard Crenna had the lead role, but he wasn't the star attraction for Charlie and me. The action in the screenplay started with, and had to do with, the shooting of a man sitting in a parked car with a .38. The actor who pulled the trigger was named Michael O'Hare. If Mike was watching, I was sure that he was amused.

On 22 April 1986, the phone rang once at 3:16 p.m. and then went silent. The following day, it did the same thing at 4:00 p.m. sharp. I noticed that the interval between 3:16 and 4:00 is 44 minutes. It seemed to be not coincidental that 316° is the reflex angle of 44° . I noted that the first call had come on Julian Date 112 — OH in Morse Code -- and that Mike's next birthday in January 1987 would be his 44th. I tentatively advanced the interpretation that the intended statement was that his 44th birthday would complete a circle. What that might mean in practical terms, I was not prepared to guess. But the twentieth anniversary of Riverside was coming up in October.

I did wonder if there was not some kind of ending in sight. I was thoroughly weary of the shadow-boxing and the suspense. It occurred to me that the expression "the end" appears prominently in the Bus-Bunch Letters; both in the 19-Character Cipher and in the inappropriate expression "swamped out," each time in conjunction with the fraction of the radian, 0.29... When "the end" appears in this manner, it is when the radian is written backward. It does not appear in the 32-Character Cipher, where the radian value appears in normal order. Another interesting point is that the radian fraction is truncated after two places. My mathematical tables, for instance, give it as 0.2957785131, ...

The one place where I am aware of the radian being depicted graphically is in the Death Machine Diagram, where it is flanked by a 50° and a 65° angle, 50 being half of GENE, 65 half of BER. This diagram suggests very strongly that the radian has something to do with Mike's birth. It is surrounded here by half of the father and half of the mother, just as every individual is born with half of his father's and half of his mother's genetic material. Writing "the end" backward might well be intended to convey the opposite meaning, i.e. "the beginning." The word HEGIPNINNG, Morse 0000 + 110 00 10 10 00 00 110, is an enormous number. Either END or the shorthand #010 is much more economical. To make it imply its opposite, just turn it backwards.

The value of the radian in degrees, minutes, and seconds is $57^\circ 17' 44\frac{4}{7}''$. If you were to round it off to the nearest minute, it would be $57^\circ 18'$. By giving its decimalized value as 57.29° , however, you would get a value to the nearest minute of $57^\circ 17'$. The supplement of an angle is an angle which, when added to the original angle, brings the sum up to 180° . An angle plus its supplement, in other words, is a straight line. What is the supplement of the radian -- written as $57^\circ 17'$?

$$\begin{array}{r} 180^\circ 00' \\ - 57^\circ 17' \\ \hline 122^\circ 43' \end{array}$$

I-22-43, 22 January 1943, is the date of Mike O'Hara's birth.

I have already pointed out that the word BIRTH in Morse is binary 8272 and that DEATH is 1072. Coincidentally, both end in -72. The difference between them begins with 72-1 7200. There are 7200² in twenty revolutions (20 x 360), and by the end of next October, twenty years would have elapsed since the murder in Riverside, which might well be the birth of the persona going by the name of the Zodiac. Was this coming tall going to see the end of his career? If so, had Z. planned on this all along? Was "The end" the next item on his agenda? If so, what form would it take?

On 7 May, Charlie called about 9:30 p.m. from Los Angeles to say that he was about to go back to Massachusetts. For months, he had been referring to himself as "Watson," to me as "Holmes," and to Mike as "Moriarty." I felt like telling him that it was more like Mark Twain and his agent Harris. Twain wrote in *A Tramp Abroad* that on the morning he was supposed to climb the Matterhorn, he realized that he had something else important to do and sent Harris in his stead. He did watch Harris climb the mountain, however, through a telescope (he wasn't then busy). I was fresh out of tips, so I just wished him good hunting. He was shooting for Tuesday the 23rd to dig, since he had figured out that that was Julian Date 147 (3 x 49). This playing with numbers is infectious. Having a good omen didn't hurt, though.

He wasn't off the phone for more than a half hour when a fresh omen reported in. The phone rang once at 10:17 p.m., I thought it might be Charlie with an afterthought. Calls from Mike were scarce as hen's teeth these days. When I picked up the receiver, the line went dead. At 10:21, four minutes later, the same thing happened again. I added the two numbers together in my head: 2088. It was awfully close to 2088, Morse Code for THE END. Did it have the significance of "thirty before THE END"? (2088 - 2038 = 50)

The date was 5-1. It was an appropriate date for sending a signal referring to the fraction of the radius, decimalized value 27.29... paraphrasing the 29 as 20 68 ("20 NINE"). But why "thirty before the end"? Would the phone ring thirty minutes hence, signifying that everything was over? It didn't. How about thirty days, then? That would be 6 June. 6-6: 66 was the year in which this all began. 6 June was Julian Date 157, or half of 1000.

On the other hand, there might be a more prosaic explanation. It looked like the end of the current academic year at Harvard. A friend of mine told me once that there was a certain similarity between me and the Irish Republican Army. He wondered what either of us would do if we ever won. I supposed that I ought to lie awake all night worrying about what the message might mean. But I didn't. I fell asleep quickly and slept soundly through the night for the first time in five years.

On the 9th, I was sleeping when the phone rang once at 11:00 p.m. The first thing that occurred to me was this was the fifth anniversary of Mike's first call to me at 1:30 a.m.. That had been the beginning. Was this the end? 1101 begins in binary with a familiar group, 10 00 10 0, NINE, and ends with 1101, binary 13. Was this call meant to be read as NINE 13? Was he using NINE as a substitute for the pronoun IT? If so, what did "I am thirteen" mean? Perhaps it referred to 13 September (9-13). But I couldn't see what sense that would make. How about binary 913? That's 1110010001. How about 111 0010 00 1, OF IT? Perhaps it was a continuation of the previous message: "Thirty before the end OF IT." It had a certain esthetic appeal. OF, 111 0010, is 27 x 2; IT is, by alphabetic quantities, 29 (I = 9, T = 20). In other cases where Z. had used letters to represent numbers with fractions, he had used the digital readings for the integers and alphabetic quantities for the fractions.

If he meant to say "thirty days before the end of it," I had to count over again. THE END was set back two days to 6-8-86. That was a good date, since it was written as a palindrome. But what was going to happen on that date?

I waited a week to respond. On the 16th, I mailed Mike a digital explication of the 32-Character Cipher. I dated it "6-8-86" in red ink and also wrote at the foot of the page that this was THE END, followed by the digital notation 01000, "the end" in Morse. All that he got from this mailing was a digital analysis of the cipher; I did not attempt to go into the geometry of the letter, which contains, among other things, a 58-122-20 triangle formed by the period following the misspelling "bus," Character #12 (second triangle), and the dot over the I of "until."

Five days after this mailing, on the morning of the 21st, the phone rang at 1:00 a.m. I picked up and got nothing but long-distance hiss. He was still on the line. I tried talking to him but got no answer. After a bit, there was a click, and the long-distance hiss gave way to a dial tone. I put my head back on the pillow.

The phone rang again at 1:03. I picked it up and attempted once again to engage my caller in a dialogue. Again, he listened without responding, hanging up after a minute or two on the line.

He called again at 1:06. While I was attempting to banter with him over the phone, everything fell into place. He hung up and didn't call again.

In the Mount Diablo Letter, he had done something that happened in no other communication. He had integrated what I call "invisible geometry" into a cryptographic exercise. The 58-122-20 triangle in the body of the letter is part of the 32-character cipher. It is defined by the period following "bus," Character #12, and the dot of "until." The key to the whole thing was the misspelling BUSS. BUSS all by itself is 1000 . 001 . 000, base-two 520. The superfluous S following it is Morse letter 000, three rings. And BUSS, once again, is itself a digital revision of THREE.

That was why I had received three one-ring hangup calls on the morning of 21 May. It was three rings following 5-20. Enclosed in the triangle on the Mount Diablo Letter is a crossed circle, digital value 100; that was why the first call came at 1:00 a.m. sharp. The last time we had received such a series of three calls at three-minute intervals (the morning of 19 February 1984), it had been a specific response to the Boston map showing the 28° angle centered on the bus station. On both occasions, the geometry of the Boston crime was the subject of our correspondence; the first time, it had been shown on the map after the crime. The second time, he was referring to its appearance (irreducibly) on a document composed *before* the crime. I gathered that this was a quiz. While I was solving the 32-Character Cipher, had I noticed the advance announcement of Joan Webster's murder?

That same day, I sent Mike an annotated copy of the Mount Diablo Letter, in which I laid out the invisible geometry. I added a footnote in red in which I indicated that I had copyrighted his letter and my annotations both.

This is the Zodiac speaking

I have become very upset with
the people of San Fran Bay
Area. They have not complied

w
w

THE BOSTON TRIANGLE

Elements: Bas. triangle, Bl. bookmark
(crossed circle)

38°11'11.728° triangle analogies

three Jean Webster-sites on Boston map,
Greek omega (Ω) = "the last," "the end"

NB: the longest leg of the triangle
passes through four forms of the letter D:
lower-case D of "vanished," upper-case D
of "SFPD," triangle (Greek delta, Δ),
crossed circle (= D in cryptogram)
Triangle = Character #12; L of "solid"
is alphabetic #12.

I
if
o.
Ba
• #L

them to
bedfours.

them
, by
old Bass
for
vanished
way.

the

I shot a man sitting in
a parked car with a .38.



SFPD-O

The Map coupled with this
code will tell you where the
bomb is set. You have until
next Fall to dig it up.

C A J I ■ O X L A M T N O R T O
X O F D V T ■ H C E L P W A

I was very eager for the end, and it may be that I allowed my eagerness to express itself in wishful thinking. My correspondent was therefore able to play on my desire to be done with it, just as he had played on my desire to find Jean Webster. In this context, I would like to offer two parallels from other spheres that illustrate the kind of deception the Zodiac is capable of, without being untruthful.

I have characterized the Zodiac's style as "Delphic." What I mean by that is that the way in which he expresses himself resembles the pronouncements of the Oracle of Delphi, who was famous in the classical world for misleading without departing from the truth. Ambiguity is the key to being Delphic. Herodotus tells us that Croesus, king of Lydia, had designs on the Persian Empire, which was separated from Lydia by the river Halys. Croesus traveled to Delphi to consult with the Oracle. He asked her what would happen if he were to send his army across the Halys. She responded, after consulting Apollo, that if his troops crossed the Halys, a mighty empire would be lost. Naturally, it suited Croesus to believe that she meant the Persian Empire, not his. As things turned out, the Oracle was absolutely correct in her prediction of the future. The Lydian army attacked Persia and was routed. Lydia was occupied by the Persians, and Croesus was deposed, nearly paying for his mistake with his life. (How he escaped death is a very touching story, which I think is worth everyone's time to read.)

Another way of describing this kind of deception is to say that the author lets his audience deceive itself into thinking that it has the whole story, when a little more work on their part would reveal the whole. Here's a real-life illustration. I was trained by the U. S. Army as an artillery surveyor. In the classroom, we received instruction in special procedures practiced in the Eighth Army in Korea.

For years, Korea has had a cottage industry in recycling U. S. Army brass, mostly spent cartridges left on rifle ranges. But benchmarks used by Army surveyors are also made of brass. It became apparent early on in the game that benchmarks had a life expectancy of about a week. By the end of that time, on average, they would have been dug out of the ground and melted down, to be re-cast in the form of something more useful -- or nonmeasurable, at any rate. Since benchmarks are extremely important reference points for artillery use (you have to know with a fairly high degree of precision not only where your target is, but also where your own guns are, in order to use them effectively, which includes not only hitting the enemy, but also not dropping 155mm howitzer shells on your own troops or innocent civilians), benchmark-theft is a very serious problem.

The technique employed by surveyors in Korea to protect benchmarks from theft is to bury them deep in the ground, cover them with a little earth, and then place another benchmark on top of them. The loss of the topmost benchmark is guaranteed; but the thief, thinking that he has got all there is to get, will leave the second benchmark alone. The obvious parallel in the Zodiac case is the cryptogram of July 1989. It was represented as an exercise in code-breaking. On one level -- the continental level -- it was a genuine cryptogram, or substitution cipher, whose English-language contents said nothing worth knowing. Once it had been determined that the "code" read on this level was useless, all further efforts to extract information -- from the form -- were abandoned, just as the author had expected. He could tell the truth but also reasonably anticipate that the truth would not be detected.

It may turn out that I have been deceived about the location of Jean Webster's remains. Obviously, my correspondent never explicitly said that that was what lay at the end of the trail. He may have just let me think so. On the other hand, no one has ever actually tested the information. Even if it proves to be wrong, I think that it would be a mistake to leave this particular stone unturned. I may also have been deceived about "the end" -- whatever that might be -- but I feel that in this case as well it is wrong not to take indications received from the horse's mouth at face value.

On the 22nd, the phone rang at 9:52 p.m. I picked up and got a caller with a New York accent who asked me if I was Gareth Penn. I responded in the affirmative, asking him why he was calling. He said that he was responding to an appeal on a New York hotline called "Apology" to call me up at inconvenient hours and make my life miserable with a lot of nuisance calls. I asked him who had left the message on the hotline, and he said that it was "the Zodiac." I pointed out to him that he had stayed up until well after midnight to obey the commands of an anonymous person and that by so doing, he was demonstrating nothing but his own weak-mindedness. He apologized for inconveniencing me and then hung up.

I called Apology right away and got the message. I was the first item on the program this time.

This is the Zodiac speaking. Your life is degenerating, quite frankly, into a stroke-line, if I may use the phrase. There are a number of valuable things that can be communicated through a telephone system such as this. You are wasting your time.

I recognized the voice.

I don't imagine that you are going to play this, because for one thing I am going to tell people that if they want to call and bother Gareth Penn, that's very easy to do. His telephone number is 415-499-0870. That's Gareth Penn. He's a pest, and he deserves everything he gets in the way of nuisance calls. You're not going to play this because I gave that, and I'm going to give you a number of other interesting rights or issues to come. But you're turning this into a stroke-line, and if you keep up this stroke-line nonsense, you're not going to get anything from me, do you understand? I'm tired of running through this crap, this motherfucking crap! You don't know what drama is!

The caller went on ranting in this vein for a few minutes more, then threatened to track down the operator of the hotline by means of reverse telephone directories and make trouble for him ("I'm going to get you, PAL!"). It was the imposter again.

He had been wrong about one thing. The hotline operator had had the poor judgment to play a recording which exposed not only the caller, but himself as well, to both civil and criminal prosecution. Starting the next day, my phone was ringing off the hook with nuisance calls. They came at all hours of the day and night. As much of a nuisance as it was, the thing that bothered me most about it was that just at this critical juncture in my relations with Mike, I would be hard put to distinguish between genuine communications from my correspondent in Massachusetts and just calls generated by the imposter and his dopes, one of whom operated the hotline.

When the phone rang about 8:30 p.m., I was prepared to yell at the caller, assuming that he stayed on the line long enough for me to do so. I had to put away my adrenaline. It was Charlie calling from Concord. He had settled in at the Colonial Inn and had gone back to the Penn School site. He had done some digging at spots that he liked. He sounded rather disappointed. He had found, with some experimentation, that the soil was so layered that he could tell after digging a foot or so whether it had ever been disturbed. That gave him the option of doing a lot of shallow digging at several locations. He said that he was going back to do some more digging the next day. He had found that he attracted no attention from passersby by working between the hours of five and eight in the evening. He would do the same the next day, then call me in the evening to let me know what he had found -- or not found.

In the meantime, I had been talking to the security department of the telephone company. They were rather perturbed about the use of their facilities for incitement to the commission of a crime. They called their counterparts in New York, who called up the hotline and listened to the pseudo-Zodiac's ranting, then shot off a letter to the hotline operator informing him that if he did not remove the offensive recording, they would cancel his telephone service.

That afternoon, my son Felix answered the telephone at about half past five. He told me that the caller had asked to speak to me by name but refused to identify himself. When I picked up, I heard the voice of the pseudo-Zodiac say, "I hope this teaches you to be more polite to your fans!" Then he hung up. About a month later, he called again in the middle of the night with another phony collect call from "Michael Henry O'Hare." This time, I addressed him by his correct name and suggested that he grew up. He splattered something in his defense, to the effect that I had richly deserved what he was dishing out. I told him to grow up again, repeating his name. I never heard from him again. This time, the Rumpelstiltskin Effect worked.

The next day, there was no call from Charlie. I had talked to him in the morning, before he was supposed to go out and dig. He had said that he would call back after his day's quota of digging, but he didn't call. He didn't call on Sunday, either. And all day Memorial Day went by as well without any word from back east. It was beginning to seem ominous. Charlie Ziarke is a punctual, dutiful person who leaves one with the impression that he can be swerved from his objective only by a major catastrophe. His character is written all over him; he is someone who will do what he has said he will do or die in the attempt.

That meant there were three possibilities. Either Charlie was physically incapacitated, dead, or in jail. I didn't think there was much chance of either of the first two alternatives, but there might be a logical reason for the third. He had found Joan Webster, notified the police, and had been arrested on suspicion of murder.

NO END IN SIGHT

I was on telephone all day Memorial Day. When Charlie finally called, about 7:00 p.m., the reason for his silence turned out to be a disappointingly prosaic one. He had been true to form - super-diligent. He just hadn't found anything, had gone back over old ground several times to make sure, and reported late. I was left with an enigmatic manila envelope containing 529 little squares of paper.

On the morning of the 28th of May, there was a one-ring hangup call at 12:27. I could do that one with my eyes closed, so I did. It said 1 40 11 0 010 11 - TIMER 3. Reading the number 3 as a synonym for BUS, I supposed that it referred to the Death Machine Diagram, where the center of the Timer is joined to the center of the bus, forming the right leg of the 65° angle. What he wanted me to say with this expression, what he wanted, and why he had expressed it on this particular date were hidden from me.

On 8 June, I waited all day for some kind of sign. There was none. I wondered if I would have to wait for someone else to bring me the news. I waited until the 20th, then called Mike's office at Harvard. When his receptionist told me that he was not in, I left a message in the name of Theodore Edison, phone number 202/331-2668. I told her that Mike would know what it was about. 202 is MIKE in Morse, and both 331 and 2668 are variants of 29, "the end."

Five days later, there were two calls at 11:34 and 11:46 p.m.. Their sum was 2280, Morse 1000 11 011000, BM 80. BM would begin her eightieth year of life on 7 September. Was that what he was referring to? There had been quite a number of 11:46's in the 1984-1985 period, including two separate one-ring hangups at 11:46 p.m. on 4 January 1985. I had never made any headway with the number 1146. It took me another six months to get around to dealing with this problem.

Nothing at all happened during the month of July. Diane got tired of watching me hit my fingers nail down to the elbows and took it on herself to do something about it. She rides at Marin Stables and had been talking to an acquaintance there about her frustration. He asked her what she intended to do about it, and when she said she didn't know what she could do, he suggested talking to the local sheriff about it. By chance, he was acquainted with Marin County Sheriff Charles Prandi. He and Diane were riding together at the time, and his mount was the same one Prandi rides in parades, at the head of the Sheriff's Posse. Without my knowledge, she got her friend to make her an appointment with Prandi for 3 August. It's an interesting comment on our affairs that human relationships can be facilitated by a horse.

Diane had meant to tell me that she was going horseback riding, but she wanted to dress up for her appointment. Moreover, we live just two blocks from the Civic Center, so she had decided not to take the car. She realized that if I saw her walking down the driveway in high heels and a dress, I would never believe her cover story. So the night before, she told me about what she was doing. I thought that it certainly wouldn't do any harm, although I didn't see what interest the Marin County authorities would have in the Zodiac, since no Zodiac crimes were committed in this county.

Diane had an hour with Prandi and one of his homicide investigators. She picked them in person and outlined the problem orally. Prandi allowed as to how he was impressed by the ZIK and said he was going to turn it over to one of his subordinates for inquiries.

On the 18th, Detective Sergeant Rich Keaton called for Diana, who was out riding. I asked if I could take a message. He said that I would do. He was calling to say that he had called every California agency that had ever had a Zodiac file. All but two had closed the case for lack of progress over nearly the past twenty years. The open cases were in Napa County and at the Attorney General's Office in Sacramento. He said that both agencies were "quite aware" of Michael O'Hare and had come to the conclusion that there was not enough evidence available in California to obtain an indictment. The person he had talked to at the AG's office had a Japanese name. He had also talked to the FBI. They had not had a Zodiac investigation before, he said, but they certainly had one now, and they were actively "working" Michael O'Hare in other parts of the country.

I didn't say it, but I supposed that those other parts of the country included Boise Cascade Corporation in Idaho and Skidmore, Owings & Merrill in New York, not to mention Lucy Johns and Carol Blanchard O'Hare. The non-events that had characterized the months since the publication of the Menor Bullock article were, in my mind, consistent with FBI inquiries. If I were the personnel director of the SOM office in New York, having been queried by the FBI about a former employee, I would certainly call them up if I received a similar query from a private citizen in California. And if I were the FBI, I would ask SOM to keep things confidential.

I told Keaton that I was very grateful to him for the trouble this had cost him, since it was not his official business. I also suggested that if somebody had told me the same thing five years before, I would have kept my mouth shut. But given the monolithic silence of the police since 1981, I had to assume that they were doing nothing. And so I had assumed the role of guilty. Of course, I don't know when they began to act -- it may not have been until after much provocation on my part. I know for a fact that the FBI did nothing at least up to 11 July 1984, when Mr. Hubbard told me to my face that I was wrong. I suspected that it was the nucleus at Harvard that had brought them in. Harvard had presented their ZKE and their observations of Mike to the Boston field office of the Bureau. In order to keep from eating crow now, the FBI would have to call Harvard University a pack of idiots. They could call me an idiot, but it would sound rather presumptuous for the Bureau to make a similar statement about Harvard University.

On the 28th, there was a one-ring hangup at 11:51 p.m. 1151 is the last number in the range of binary numbers beginning with 100011, BM, and ending in five digits. In this case, it reads 1000 11 1111, BM zero (Morse zero = 1111). I could only guess as to what that might mean. Perhaps 1111 wasn't meant as zero; maybe it was the binary number 31. BM had been 31 when she married GENE. But that was on 28 September, not 28 August. It seemed more like a family portrait: BM, Z, EKO -- "EKO" being the initials of Eugene Robert O'Hare. It fit the same pattern as "Biggest Mealeat Zucchini...Camelot."

On 6 September, the day before BM's 79th birthday, there came a call at 12:45 a.m. 1245 in binary breaks down into two groups: 1 00 11 0 11101, TIME 29. Was it time for "the end"?

A very obvious interpretation of "the end" is death. In the Bus Bomb Letter, on whose first page Z. had equated "the end" and 29 twice, he said that his bomb had been a "dad." DUD, Morse 100 001 100, is a digital synonym of DEAD, Morse 100 0 01 100. The number expressed is 288. Bearing in mind that 68 and NINE are two different ways of saying the same thing, we can read DUD as another way of saying "2 NINE" -- the fraction of the radius as expressed by the 32-character cipher. Since the radius is defined by the parts of the circle, it would be appropriate for its fraction to stand in Zodiacese for both birth and death.

On the 25th, I called Mike at his office again. This time, I was Dudley, calling from St. Louis (Area Code 314). I had thought of using that name because it began with Dud, then remembered that it was the name of Mike's undergraduate club at Harvard. The 25th was Julian Date 268, by the way. The next day, the 26th, there was a one-ring hangup call at 10:00 pm, sharp. 1000 is binary 111111000, which can be redivided into Morse 11 111 010 00, MORI, Latin for "to die." I did an exhaustive redivision, finding that it wouldn't spell anything else. Assuming that this is what was meant by it, the choice of Latin could have been dictated by the inadequacy of other words. DIE, for instance, is binary 10. It doesn't lend itself to expression as clock time.

Whatever else you might say about personal death, it was clear that Howard Burnham's screenplay, *J2:22*, had breached its last. I hadn't heard from Alan in almost a year. On 2 October, he wrote a letter which arrived on Monday, the 6th. The second paragraph is of particular interest -- and self-explanatory:

I got a call from Whit Caldwell, out of the blue, a couple of days ago. I had not heard from Whit in many months, since his retirement from Blue Security. By chance, he happened upon a very high security officer at Harvard. That person told Whit, in turn, that the FBI or all over the place on MOH, as are the State prosecuting authorities. The person did not know the context of the investigation but did confirm that the FBI and the local prosecutors are spending a lot of time learning about MOH. What this means, and where this fits, neither Whit nor I could say. However, Whit assured me that in light of our history and in further light of his fascination with the case, he would frantically could report to me whenever he had anything to say.

I thought it was a bit disingenuous of Alan to say that he did not know what this development meant. The involvement of Massachusetts prosecutors was highly significant. Surely Alan, who had been a prosecutor once himself, did not think that the Massachusetts authorities would be at all concerned with crimes committed in California seventeen to twenty years ago.

It was apparent to me that it had finally percolated through to the powers that be in the Bay State that they were barking up the wrong tree with Leonard Paradiso. Regardless of how you interpret the esoteric information which I had derived from the Zodiac letters and my clock-and-telephone correspondence with Mike O'Hare, if they had any reason to suspect him of being a serial killer (and the handwriting, photos, employment history, etc. gave them plenty of reason), then he was the most logical candidate for suspicion of having murdered Joan Webster.

Mike O'Hare was exactly the kind of person from whom Joan would have accepted the offer of a ride home from Logan Airport. Dan Goldfarb had seen that immediately. He was good-looking, educated, articulate, and single. Although the Websters had never been able to establish a connection between Mike and Joan, it is quite plausible that the two were known to each other by sight, as frequently happens to people who frequent university campuses. Mike had spent eight years of his life connected to the School of Design, where Joan was a student. It would seem likely that he had maintained social ties to the people in that department. Joan, as a graduate student in the same department, would have been around the School most of her waking hours. She must also have attended exhibits and public lectures given at the School, not to mention parties thrown by students and faculty. In fact, given the kind of hot-house atmosphere prevailing at major universities, it would seem implausible for two people of this sort not to have been at least nodding acquaintances.

Even George and Terry Webster had thought it likely that Joan knew Mike at least superficially. Somehow, they had lost sight of that likelihood after Burke had sold them on kidnapping Paradiso. Since then, I had put in almost five years' worth of salesmanship, much of it in print, which now

seemed to be bearing fruit. The only thing that I wondered about now was to what extent Mike was aware of the investigative activity going on around him. It seemed to me that he must be conscious of it. There were too many people in his circle of friends who would report to him that they had been called on by the FBI. What Caldwell had talked to Carol Burchard O'Flaherty on the phone in early 1982, and she had immediately called up Mike to report the conversation. Why would she not do the same where the police were concerned?

On 22 October, a letter to Mike was dropped in Boise. It was in a Boise Cascade Corporation envelope, franked with three 17-cent stamps, to imply the phrase TIMES 17. Enclosed was a digital explication of the 13-Chaumier Cipher, in which the value of the radius is expressed in base-two notation. The fraction of the radius is carried out to nine places. I added as a footnote, "Raphael may search cabi alibi." Minnes's response to Virgil's challenge. I had been casting about for years for the password, the formula which would bring on the Rumpelstiltskin Effect, and I thought that maybe this would be it.

Six days later, on the 28th, we got a one-ring hangup call at 12:11 a.m. Here's a comparison:

11100110100001111011...	Base-two radius value to 12 places
0100010111011	Base-two 1211 + leading zero

He had carried out the radius fraction to twelve places. Given that in my writing of 1211, the leading zero is not significant, the probability of coincidence is equal to one in two to the eleventh power. In other words, the odds against coincidence are 2048 to one.

That was on a Tuesday. The next Tuesday, 4 November, there were two one-ring hangup calls, at 12:16 and 12:22 a.m., 1216 = 10011000000, which I readivide as 1 00 11 0 00 000, TIME IS. Taken together with the next call, it forms a sentence whose meaning is only too clear: TIME IS 12:22. That was the time left on the timer switch found by Cheri Bates' body. I had never let Mike know that I knew about it. It had never been published. By this time, of course, I had had the information for about five years.

Why was he bringing up Riverside at this late date? Suppose the calls of the two Tuesdays were somehow related? Z. had seldom been able to refer to Riverside, the past unknown crime, without mentioning Boston, the future unknown crime, in the same breath. I had sent him the solution to a puzzle in which he had carried out the fraction of the radius to nine places, and he responded with twelve. Was that because binary 1211 resides in Boise as 1001 0111 011, XIW? The spot in the pine grove in Concord, being on private property, had gone untouched since he had first read about it on the front page of the *Times* in November 1984, almost two years before. It had been marked in the *Ares* story with the letter X. I didn't have much trouble reading XIW as referring to Jean Webster. It's well known that X marks the spot.

On the 16th, there was a one-ring hangup call at 11:30 p.m. That's another one of those numbers that begin with BM-. 1130 = 1000 11 0110, BM "end of message."

For some time, it had appeared to me that this was exactly the kind of situation that Mike had been trying to create all along: one in which everybody knew what he had done but was incapable of touching him legally. All along, his problem had been one of separating credit from consequences. He had accomplished a feat that nobody else had ever attained. He had committed the perfect crime (or crimes) not only by getting away with it, but by advertising his identity on the front page of the *San Francisco Chronicle*, and still getting away with it.

The letters had been a kind of time capsule. He knew that eventually they would be solved and his identity revealed. But that would take years, especially given the propensity of the police to withhold documents from publication. They couldn't do anything with them themselves, and they kept others from working on them, others who might have achieved some results. If he wasn't exposed in his lifetime through the efforts of others, I wouldn't put it past him to hold a press conference on his 75th birthday or after his doctor told him he had six months to live, provided that nobody else had busted him prior to that time. He was, in my estimation, determined to garner the glory, while postponing or avoiding the consequences that the glory would normally bring, if at all possible.

If Mike knew that the FBI and the Massachusetts authorities were now poking around in his past, he was probably fascinated by the process. He was wondering if and when the knock on the door would come. I believed that he would be completely passive about it all. He had set up a game in which he got to make all the initial moves and then had to wait to see what the other side would do about them. He had managed to stall by raising a fuss with the FBI and the AG's office, thoroughly cowering both of them. But he had never frightened me. Unfortunately, at this point, there were no buttons left for me to push. I would have to be as passive as he was, waiting to see what would happen.

All along, it had been a matter of time. It was not only about time. Time was what it was about.

HIGHLANDS

I would like to make use of this chapter to discuss a few more letters selected from the ancient literature. Compared to the telephone literature of 1983-1987, the Zodiac letters of 1969-1974 are refreshingly simple. I am not going to go into great detail with several letters for the reason that I do not have a photographic copy of any of them. The supposedly diplomatic renditions made by the Chronicle and Grayshift are textually corrupt, and, as I think should be obvious by now, since invisible geometry is invariably present in these letters, anything but a photographic copy is useless when a detailed analysis is wanted. I will bring out certain details about these other letters, however, insofar as a photographic copy is not necessary.

The first document, from which this chapter takes its title, is the Minnie Badlands Letter of 8 May 1974. It was mailed to the Chronicle on that date from the vicinity of Fremont, at the southern end of the East Bay. I believe that this is the letter to which Dr. Minor, in the psychological profile quoted above, refers to as "inventive." He calls it inventive. I say it's a put-on.

In January 1974, Z. had sent the Chronicle the Enochian Letter, which was laced with egregious misspellings. Now, three and a half months later, he sent another letter which, if not elegant, is at least correct. There are two misspellings in the whole letter, and both have been corrected. The author has crossed them out and replaced them with the right spellings. He makes these two errors in the same line. In the rest of this letter, there are no such errors, let alone corrections. Isn't that rather curious?

What the strike-throughs do is fill up Line 2 graphically. It isn't so noticeable that way how few letters are left standing in that line. In the first line, there are sixteen letters. In the second line, there are nine. $16 - 9 = 7$. $PI \approx \pi$.

These are nineteen lines ($19 = 38/2$). Reading from top to bottom, the middle line is #10. In that line, there are five words (and one ampersand). The middle word is the third one, "time." TIME, in other words, is the center of the grid; the body of the letter has been organized around a disguised form of the number 14. Note the word "killing" preceding it. It appears that "time" was written in first, and the words before it were written later; they are not on the same line.

Then there is the signature. The word CITIZEN is an anagram for the Zodiac sentence "Z (is) OH (+) TEN." As noted elsewhere, TEN in Morse is identical to the binary number ten (1010). CHI, of course, is the Roman numeral 102. $102 + 10 = 112$, binary 11110000, Morse OH. Why don't we read CITIZEN as another way of saying, "Z (is) OH?"

On 14 February of the same year, Z. had sent the Chronicle his short disquisition on Old Norse verbs. The one he chose to mention was skid, which has the same form as the acronym of the Sym-bionic Liberation Army, which was rather prominent on the front page at the time. In a short space, he gives us "SLA" and skid. Why does he hang on this combination of letters? In the WIZARD-alphabet, SLA is an anagram of the sentence, "Z (is) OH" ($S = H$, $L = O$, $A = Z$). Incidentally, the word SLAVES, which is a major theme of the cryptogram, contains a WIZARD-part, VE, which drops out on analysis. The remainder, SLAS, is a WIZARD-anagram for "Z (is) BROH."

Sir - I would like to
express my unusual
consternation concerning
your poor taste & lack of
sympathy for the public, as
evidenced by your running
of the ad for the movie
"Killers," featuring the
blurb "In 1957 most people
were killing time, not really
killing people." In
light of recent events, this
kind of under-valorization
can only be deplorable at
best (not that glorification of
violence was ever justifiable).
Why don't you show some
concern for public sensibilities
& cut the ad?

A citizen

This is the Zodiac speaking
like I have always said
I am crack proof. If the
Blue Meanies are ever
going to catch me, they had
best get off their fat asses
to do something. Because the
longer they fiddle & fad
around, the more \$1000's
I will collect for my after
life. I do, have to get them
out of the way for stumbling across
my write-in activity, but
they are only finding the
easy ones, there are a hell
of a lot more down there.

The reason I'm writing
to the Times is this, They
don't bury me on the back pages
like some of the others.

The *Los Angeles Times* Letter was motivated primarily by the need to respond to the Chronicle's revelation of the Riverside murder. It does not, to my mind, display the degree of sophistication found in some other Zodiac compositions. But it does have its points. Take, for instance, the misspellings. There are only two, and they occur in the same line ("Marshall" and "evens" in Line 4). A variation on this technique has already been found in the Movie Buffhants Letter. In this case, the errors involve misspellings of eight and five letters, and they occur in Line 4.

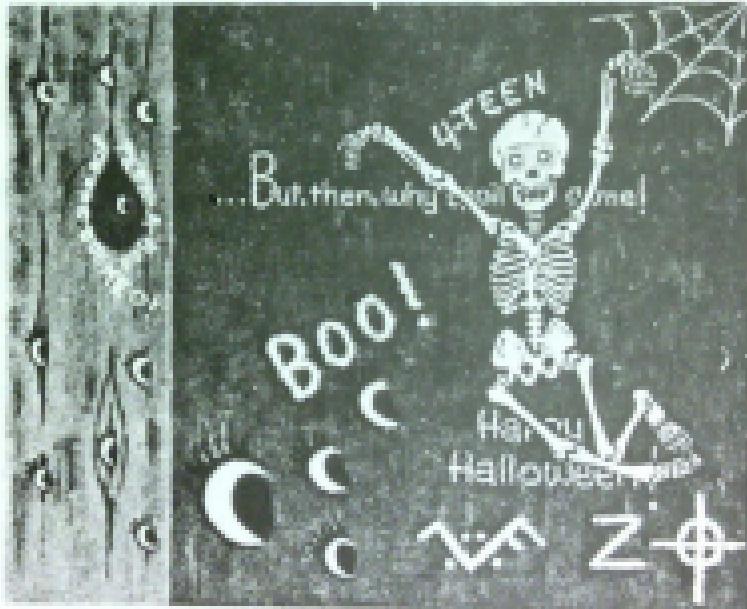
I have already noted that the format of the cryptogram and the 340-Character Cipher (24 x 17 and 20 x 17, respectively) implies the expression 1M16S 17, as does the footnote "17" appended to this letter to the *Los Angeles Times*. Do the misspellings of eight and five letters in Line 4 imply the operation 83 x 4 - 1 = 340, or 20 x 17? Or perhaps they imply just the opposite, 4 x 88 (= 352, a paraphrase for *Renta Marguerites*). On the day that this letter was postmarked, 15 March 1971, BM was exactly 23,200 days of age. 232 is the predicate, 00 (1) is the subject: "I am" 232."

Obviously, BM is on the author's mind. In Line 4, he writes the common noun "Blue Meanings" upper case. By way of contrast, in Line 13, he writes the proper noun "Riverside" lower case. It's in the same literary league as "Biggest Mother Zucchini."

In late July 1970, the Zodiac sent a letter to the Chronicle, in which he quoted at length from the patter-song "You got a little list," from The Mikado. The quotation — and the letter, for that matter — are probably of great interest, but since the text has never been reproduced photographically, I can't attest to the authenticity or significance of individual spellings or passages. Here it is, as given by Grayshifts:

*At some day it may happen
That a victim must be found.
I've got a little list. I've
got a little list, of society
offenders who might well be
underground who would never
be missed who would never be
missed. There is the great
admiral murderer who writes
for autographs, all people who
have flabby hands and contami-
ning thoughts. All children who
are up in dates and explore
you with his plate. All people
who are shaking hands shake
hands like that. And all third
persons who with unspooling
take those who insist. They'd
none of them be missed. There's
the burglar murderer and
the others of his race and
the piano organist I got him
on the list. All people who
eat peppermint and phosphorus
in your face, they would
never be missed. They would
never be missed. And the*

By
FIRE
PAR
SLAVES
By
DICE
By
ROPE
By
KNIFE



*Fellow who preaches with enthusiastic tone of creatures
but this and every country has
its own, and the lady from
the provinces who dresses like
a guy who doesn't try and
the singularly abnormal the
girl who never dances. I don't
think she would be missed
In short she wouldn't be
missed. And that nice impudent
that is a rather stiff the judg-
ing business I've put him on
the flat All fancy fellows, com-
mon men and clowns of private
life. They'd none of them be
missed. They'd none of them be
missed. And uncompromising
kind such as nonconformists,
atheists, and like wise, well-
meaning, and not not not not
and whatnots, and you know
who, but the soul of filling
up the blanks I rather leave
up to you. But it really does
it matter where you place
upon the flat, for none of
them be missed, none of
them be missed.*

Graysmith is demonstrably rather cavalier with respect to the text, but the above quotation from his book conveys the impression of having been faithfully copied from the original. Beyond that, I take no responsibility for it. I do think it appropriate, however, to quote, for purposes of comparison, from the original text of William S. Gilbert:

*An anomaly it may happen that a victim must be found,
For you a little list -- I've got a little list
Of society offenders who might well be underground,
And who never would be missed -- who never would be missed?
There's the presidential assassin who writes for autographs --
All people who have Rabbie Burns and Irritating Raughs --
All children who are up in dates, and flour you with 'em flat --
All persons who in shaking hands, shake hands with you like that --
And all dead persons who are speaking the "athas" twice --
They'd none of 'em be missed -- they'd none of 'em be missed.
There's the singer soprano, and the others of his race,
And the piano-organist -- I've got him on the list!
And the people who eat peppermint and puff it in your face,
They never would be missed -- they never would be missed?
Then the idiot who preaches, with enthusiastic tone,
All creatures but this, and every country has his own;*

And the lady from the provinces, who always like a guy,
 And who "doesn't think she's worthy, but would rather like to cry";
 And that singular anomaly, the lady novelist --
I don't think she'd be missed -- I'm sure she'd not be missed!
 And that Miss Price audience, who just now is rather ripe,
The Judicial immortal -- I've got him on the list!
 All funny fellows, come men, and clowns of private life --
They'd none of them be missed -- they'd none of them be missed!
 And apoplectic statements of a comprising kind,
 Such as -- *What d'ye call this -- Thing'ra-bob, and likewise --*
Never-mind,
 And So -- 'er -- 'er -- and What-a-bit-name, and also You-know-who --
The tool of filling up the blanks I'd rather leave to you.
 But it really doesn't matter where you put upon the list,
For they'd none of 'em be missed -- they'd none of 'em be missed!

Again, I recommend caution in accepting Guyanith's orthography. Nonetheless, out of recently-nine misspellings in the Zodiac text (including "dress" for "dresses"), I count twenty-three words in which the letter I has been erroneously omitted ("postdoctoral," "homosexual," "provinces"), misspellings marking words with I-dot ("paperboy," "singular," "white"), and misplacement of I ("organize"). I suggest that a photographic copy of this document would make possible development of invisible geometry expressing the usual Zodiac themes in the form of linear dimensions, angular dimensions, or both.

As mentioned elsewhere, this Mikado -quotation is preceded by what seems to be a box-score claiming thirteen victims. As suggested there, I believe that an examination of a photographic copy of the original will demonstrate that the number 103 is expressed graphically before this passage.

At least one other feature is deserving of mention, i.e. the misspelling "phomphit" for "puff it." I suspect that the I-dot of "phomphit" has a place in the invisible geometry of this page, but there is no reason that the misspelling cannot do double duty. PHOMPHIT analyzed algebraically gives P2 H2 O M I T. It isn't hard to rearrange those elements into an equation:

$$\text{H2O2PI} = \text{H2O}.$$

MT, once again, is a Zodiac paraphrase for "circle." A circle divided by 20 is a radian, and "H2O" is one of the killer's many sobnames.

On 27 October 1970, Z. mailed a third commercial greeting card to the *Chronicle*, but this time not to the editors. His addressee on this occasion was reporter Paul Avery, who had by-lined almost all of the paper's Zodiac stories up to this time -- and who, about three weeks later, was to publish the revelation that Z. had murdered Cheri Jo Bates in Riverside.

There is nothing noteworthy on the front of the card, a Halloween "secret pal" greeting. The author has added nothing here. But on the inside, he has done quite a bit. First, he has pasted in a three-story paper skeleton. Using white artist's ink, he has added nine stylized eyes to the knotholes in the woodgrain printed on the left side of the card. Around one of the knotholes, he has written, in tiny letters, "Peek-a-boo -- you are doomed!" To the right of the woodgrain, he has drawn four more stylized knotholes, with eyelashes attached. From left to right, there is one very large eye-hole, then three somewhat smaller ones to its right.

Over that, he has written the word "BOO" in large letters, and still higher, the word "4-TEEN." Toward the foot of the card, he has written a sort of inverted letter W with dots, a letter Z, and the crossed-circle sign. On the back of the card, he has formed a cross of the words PARADISE and SLAVES, within the four quarters of which he has written "By fire," "By gas," "By knife," and "By rope."

Naturally, the *Chronicle* interpreted the thirteen eye-holes as meaning that the Zodiac was claiming thirteen victims — even though he says no such thing. The word-number "4-TEEN" was interpreted as meaning that Z. intended to make Avery his fourteenth victim — even though no such intention is expressed. As usual, the author had only to state a number, and he could rely on the *Chronicle* to obfuscate the issue for him.

Let's take "4-TEEN" first. This is another alias. TEEN is Morse 1 0 0 10, binary eighteen. Four before eighteen is eighteen minus four, or fourteen. In other words, "4-TEEN" is one of those formulations that gets the same result two different ways, linguistically and mathematically.

Secondly, let's take a close look at the eye-holes. There are nine tiny eye-holes in the woodquain to the left. To their right, there is first one large eye-hole, then three somewhat smaller ones. Let's read the large eye-hole as the numeral 1. The three smaller ones to its right would be, then, the numeral 3. To their right, there are no eye-holes. Let's read them as zero. 1.30: it's another way of writing the name of Michael O'Hare's mother.

Now wait a minute, I hear you saying. Even if these eye-holes are meant to express numbers, how do you know that the number being expressed isn't 13, or 1.3, or 1,000,000? The answer is simple: the author has built in a key which certifies this reading. On the left, we have nine little eye-holes, and above, we have "4-TEEN." When I was in fifth grade, Mrs. Freeman taught me to make a "little house" around expressions like this:

$$\begin{array}{r} 14 \\ \hline 9 \quad | \quad 130 \end{array}$$

Nine goes into 130 4-TEEN times.

If BER (130) is there, can GENE (000) be far behind? At the foot of the card, we find a letter Z (100) followed by crossed circle (000). That sequence of digits, 1000000, divides neatly to 100 0 10 0, GENE.

What about BOO? I suggest that you note the graphic similarity between the letter B and the number 13. BOO is meant, I suspect, as a disguised form of 130-0, digital BER and the initial of O'HARE.

"Peek-a-boo — you are doomed!" illustrates the use of exclamation mark in the Zodiac literature to mean multiplication. The same sign is used in conventional mathematics to denote the factorial, the product of a series of numbers multiplied together, and that is, I submit, the source. PEAK-A-BOO — by the number of letters expressed — is 4-1-3. In conjunction with an exhibit from the Utica dissertation, I have shown that 413 (the missing page 4-13) is used as a passphrase for the Golden Section (binary 0.10011, Morse 100 11, letters DDD, by alphabetic quantity, 4-13). YOU ARE DOOMED, counted the same way, is 3-3-6. 336 times the Golden Section (1.6180339...) is 544, binary 10 00 10 0 000, Morse NINES. What the juxtaposition of the eye-holes and "4-TEEN" demonstrates is the casting of odds out of the number 130.

That leaves the curious inverted-W figure. When I had described it over the telephone to Malcolm Reynolds back in late December 1980, he had suggested Morse Code. It was that suggestion that made me try the approach which has been demonstrated in this book and which has, I believe, been amply proven. At first, I was looking primarily for linguistic expressions, and I read the manifold references to the number 38 as a disguised form of the word TIME. As time went by, however, I came to realize that the manifold repetitions of the word TIME in the Zodiac literature were meant to express the number 38. So it was with this formulation as well.

Graysmith naturally sees this symbol as astrological in origin. He says it is a Taurus-sign. I had read Ken Narlow's annotations to the Hallowe'en Card, and he had decided that this sign was a meteorological symbol showing wind-speed and direction. Unfortunately, the resemblance is not only superficial — read this way, it shows the wind blowing in two different directions at once. Even so, it seems rather serendipitous that Narlow should have hit on wind as a clue to the author's identity. My suggestion is that this strange-looking sign is nothing more nor less than a binary number, 101001011. The accompanying illustration shows how Iquantes transform this string of ones and zeros into the figure at the foot of the Hallowe'en Card. Not only is there a formal similarity, there is a foundation in historical fact for this reading.

The number in question is 331. I have already shown several instances in the literature in which it is used as a paraphrase for 29 in the sense of "the end." Again, 331° is the reflex-angle of 29°: the two angles are identical; you might say that 331° is 29 turned inside-out.

At the time the Hallowe'en Card was mailed to Avery at the Chronicle, there was one more meeting of the Reno Regional Planning Commission scheduled to consider the application of Boise Cascade Corporation to build Incline Village Unit 6. That meeting took place on 4 November 1970, just one week after the card was postmarked. This was the third time at bat for Boise Cascade. They had obviously decided to quit if their permit application was turned down a third time, and they in fact did just that when it happened.

If the application had been approved, then the project would have been turned over to subcontractors for the actual construction of buildings. If the application was not approved, then Boise Cascade was minded to give it up for lost. In either case, their consultant, Arthur D. Little, Inc., headquartered in Cambridge, Massachusetts, would be out of the picture. ADL was never meant to have a role in construction, and if the project was abandoned, there was no more need for their services. Mike O'Hare knew that. The stint that he had put in at the San Francisco office of ADL in October 1970 was to be his last. After the RPC meeting on 4 November, he would have no more occasion to return to the Bay Area — at least on a company expense account. The Hallowe'en Card was intended to be his own song, his valedictory. That's why he wrote "331" at the foot of the card. Are you ready? As far as he could see ahead in time, it would be "the end" as far as letters to the Chronicle were concerned.

What happened to change his mind was the publication, on 16 and 17 November 1970, of Avery's two-part series on the Bates murder in Riverside. Z.'s best kept (albeit best-advised) secret was out, and he had to respond to the Riverside story. It would have been very *un-Zodiaclike* not to. It was too important to let lie. But he could not reply from Massachusetts. A Boston-area postmark would have discredited one of his best defenses, the assumption that the Zodiac lived in the San Francisco Bay Area. The police had turned Northern California inside out looking for him without any success. Writing to them from the East Coast would divert them from this useful diversion. Moreover, it would have automatically brought the FBI into the picture, on the presumption of

interests fight to avoid prosecution. And the FBI's investigative resources are considerably greater than, let's say, those of the Napa County Sheriff's Department.

He had to wait until he could afford both the time and the money to make a return trip to California. But neither time nor money was unlimited now. He had to do it on his own hook. That is the likeliest explanation for the four-month interval between publication of Avery's story in November and the Zodiac's response the following March. It also has something to do with the fact that this belated reply and the follow-up card, a picture of Incline Village Unit 6, were separated in time by only a week; that was all the time that Mike O'Hare could spare out of his own schedule and his own pocketbook for what appeared then to be the curtain call.

Speaking of Avery, he is one of the three individuals to whom Z addressed communications. The envelope containing the Holloween Card is addressed to "Paul Avery." A superfluous L is added to the surname, and the letters LAV are underlined. Let's see what the alphabetic quantities of the three groups of letters are: PAU = $16 + 1 + 21$, or 38. LAV = $12 + 1 + 22$, or 35 (B34). ELLY = $5 + 18 + 12 + 25$, or 58, the two-digit shorthand for the surname OHABEE (E = 5). These readings are absolutely consistent with formulations found in abundance in other documents.

At that time, there was no way for him to foresee his return to California in 1974, three years hence. I have no doubt that he did so in connection with the unspecified 1971 consulting job which is listed at in his class-reunion book. He had undoubtedly thought that each time Unit 6 came up before the RPC would be the end of his trips to the West Coast. The Chronicle's Riverside revelation gave him a new, if brief, lease on life as the Zodiac in March 1971. Then he got a new opportunity to have his excursions to California paid for by someone else. As a consultant, he had some latitude in selecting the dates for these trips.

The first letter in the 1974 episode (the Bixenst Letter) was postmarked on 29 January, 1-29. The second letter (the SLA Letter) was postmarked on 14 February, 2-14. The third (the Movie Blackbirds Letter) was postmarked on 8 May, 5-8. The fourth and last, concerning the Chronicle columnist Count Marco, was postmarked on 9 July, 7-9. It is worth noting that the third of these four letters was not delivered to the Chronicle until 6 June, almost a month after it was postmarked.

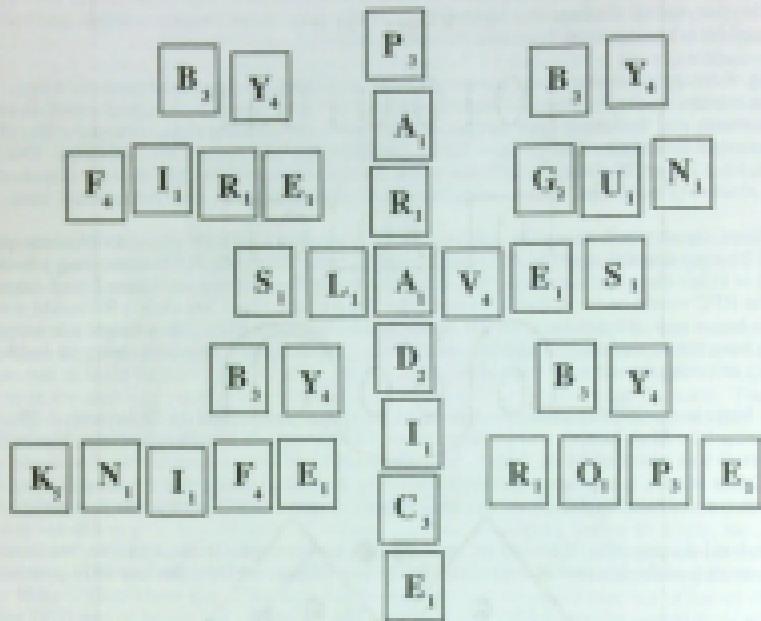
Here is what I think you will find to be an intriguing comparison. In the first line, we have the bare-bone writing of the fraction of the radium. In the second line, we have the four 1974 postmarks:

4-29,	57,	79,
1-29,	2-14,	5-8,

There are two things wrong with this comparison. First, 5-8 fails to match 57 by one digit. Secondly, we have "2-14" interlacing between the first and second groups of radian-fraction digits. I suggest that just as the U. S. Postal Service failed to cooperate with the Zodiac where delivery was concerned (the one-month interval between postmark and receipt), they also failed to cooperate with him on the postmark. Given the other matches, I don't think it far-fetched to suggest that a postmark of 5-7 was intended.

As to the second letter having a postmark of 2-14, let me point out that this message (the SLA Letter) was signed, "a friend." Remember that in documents previously examined here, the word END is equated with the 0-29 of the radian fraction and invariably follows it (cp. SWAMPED OUT

SELCHOW & RIGTER, PLEASE COPY



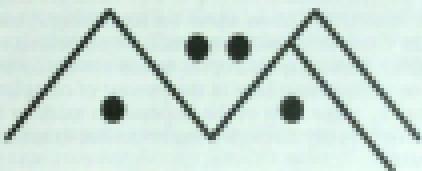
According to the rules of Scrabble™, a letter which is common to two words counts twice. In the cross formed by the words PARADICE and SLAVES on the back of the Halloween Card, the letter A is shared. Even though only 27 letters appear here, by the rules, 28 have been played. Curiously, the point score for this cruciform structure comes to 79.
Binary 79 = 1001111, a revision of 10001111, 9-7.

Binary 331

101001011

10001011

00001



The Zodiac's "signature"
and return address
on the Halloween Card

and the 12-Character Cipher). The remainder of the signature, AFRI, when expressed as a binary fraction, 0.0001000000, is an approximation of the radian-fraction, i.e. base-ten 0.28518625.

AFRI, written as a fraction, sounds off to 0.29, and it is followed by the word END. I worth quote from the Count Marco Letter, being dependent here on the *Chronicle* and Graysmith rather than on a photographic copy, but I do believe that the signature is worth mentioning. The closing salutation reads, "Red Phantom (red with rage)." I have suggested before this that the word RED is a Zodiac paraphrase for "circle." MT is another one. RED PHANTOM is easily analyzable into the acronym, RED MT PAN OH. RED is a circle (O), MT is a circle (M), and as such, they express the first person singular pronoun I (Morus 00). The predicate is PAN OH. OH is, of course, easily construed as a short form for the surname OHARE. What about PAN?

The word Pan is Polish for "Master." Such a formulation should not be too surprising, coming from someone whose mother was born and raised in Poland, e.g. Berta Margolinis O'Hare.

REDWITH, expressed as a fraction, is 0.00010011001000, or base-ten 0.28438625. RAGE is 0.01001100, base-ten 0.2944945625. REDWITH and RAGE average out to 0.2944945625. Here's a comparison of that average with the true value of the radian-fraction, carried out to the same number of places.

0.0100101101000	average of REDWITH and RAGE
0.0100101110100	radian fraction

As you can see, the resemblance is rather striking.

While we're at it, since this last authentic Zodiac letter had as its subject Count Marco, why don't we count MARCO? MARCO in Morse Code is binary 11 01 000 1010 111, base-ten 13,625. It is of some interest that the initial letter of MARCO, M, is the thirteenth letter of the alphabet, that this word, written as a binary number, expresses a quantity in the thirteen-thousand range, and that the first digit of the binary expression is 1,102, two to the thirtieth power. MARCO gives us thirteen no fewer than three different ways.

I am appending to this book what little I know about the remaining Zodiac documents. Given the propensity of my sources, the *Chronicle* and Graysmith, to embellish and alter the text, I do not consider it particularly reliable. Photographic copies would obviously be far more suitable to this discussion. Nevertheless, I am adding them here in the interest of completeness. Even if alterations have been made, they do convey some idea of the impression made at the time, if not of the author's intent. That can be arrived at only through a mathematical examination, which this means of reproduction renders impossible.

ON THE INDEX

This is the next-to-last chapter. Here is where you get your update on all the major players but one. I am saving him for last.

In June 1988, there was a primary election in the County of Napa. One of the offices at stake was the post of sheriff. Ken Native was running. As the voters would have it, there was no clear majority in a field of several candidates. A runoff election was held in November. Native ran against another Sheriff's Department employee named Simpson in that election, receiving forty-nine percent of the vote. It was a tight squeak.

In that same month, Charlie Zinck sent me a clipping from the *Los Angeles Times*. I reproduce it here verbatim without comment:

WHO IS THAT MASKED MAN?

San Francisco's Zodiac killer -- still on the loose -- will see his most sinister wishes come true in early 1987 when a mass-market book (from Berkeley [sic]) hits the stands and a Hollywood theatrical film, tentatively titled "Zodiac," goes into production for Atlantic Releasing.

Berkeley [sic] will ship a quarter-million copies of Robert Graysmith's "Zodiac," which includes an account of the writer's eight-year pursuit of the serial killer. And Graysmith is a major character in writer-director Chip雀雀's screenplay.

Zodiac [sic] was linked officially to six murders from 1968 to 1969, but Graysmith's account has him active for a decade and racking up 55 killings. The killer was fond of taunting detectives by placing with his kills to "read about myself in a paperback book and see myself on the screen in a major film." Said Graysmith, police long ago identified a strong suspect but lack enough evidence to bring him to trial.

Two partners behind the film expressed fear of the killer and asked that their names not be used. Said one, "There's a very real concern for my family's safety." His partner added -- apparently seriously -- that the killer "might want part of the action."

Graysmith scoffed: "Zodiac [sic] is so identified and now so well-watched that there is virtually no danger."

In mid-summer, Diane had learned through her mutual friend at Marin Staples, who has connections with everyone in law enforcement in Marin County, that the local FBI agents had been musinging about me behind my back. The FBI had had an exhibit at the Marin County fair; the mutual friend had dropped in, and the special agent who had had the misfortune to be assigned to swelter it out at the Civic Center and write at crowds of smarmy children attended by polished fathers wearing baseball caps had confided in him that the FBI considered Gareth Penn a nuisance whose back they would be glad to see receding into the distance.

In December, Barry Bartle called from Los Angeles to say that he had talked recently with an old friend named Maria Michaelson, an attorney in the General Counsel's office of Harvard University. Michaelson had threatened Barry with bodily harm if he said anything to me about their conversation, but he did it anyway.

Michaelson had confided in Barry Bartle the wish that Gareth Peirce would drop dead. I found this interesting, since I had never heard of Maria Michaelson in my life. I had had a brief correspondence with a Robert McGraw, in the same office, almost two years before, on the subject of the rooms of "whist". I had written to Harvard Planning Group requesting information from their records about the mystery building in Mike's dissertation, and HPG had passed the buck to McGraw.

In my second of two letters to McGraw, I had repeated my request for access to Harvard's records. I suggested that if the information had to be obtained over Harvard's objections and that independent research subsequently determined that the data had been fabricated, i.e. that fraud was involved, then others — i.e. anybody but myself — might suspect that Harvard University was covering something up.

McGraw's response was a testy letter in which he said that he resented the gratuitous inference that Harvard University might be involved in any kind of misconduct. That was the last I heard from him, and I did not press the issue, feeling that I had come to a dead end. At all events, I didn't think that the exchange between McGraw and me nearly two years before could possibly have been the occasion for another person in the same office (i.e. Michaelson) to wish me dead. There must have been something more serious going on.

In any case, I was gratified to learn that I was really getting under people's skins. It's easy to dismiss crank and gadflies. I was obviously a major irritant both to the FBI and Harvard University. I liked the balance. Both are major institutions of American society; one gets its paycheck from the taxpayer, the other from private enterprise. Anybody who seriously argues two such diverse institutions must be doing something right.

In early autumn, I had submitted an article to *Mensa Bulletin* on the subject of the 12-Character and 13-Character Ciphers. As demonstrated in an earlier chapter, I had found that they both expressed the numerical value of the radian, about which there could be no dispute. It appeared to me that the many Mensans who had responded to the first article would be very interested in reading this contribution, since it beat out the first one, based on evidence which had not been seen before. I had made no attempt even to hint at the identity of the author based on the information contained in these two ciphers. I had already gotten a taste of Mensa's aversion for even the remotest possibility of litigation. Surely nobody would sue them for publication of information which could easily be obtained from any standard mathematical table.

I was wrong. About mid-December, Kent Van Cleese called from Phoenix to tell me that Mensa's new legal counsel, Barbara Wertheimer, had come to the conclusion that publication of this very innocuous article would expose American Mensa to a libel suit, even though it could not be construed as naming anyone or even hinting at an identity. Amy Shaugnessy, the national chair, therefore prohibited "The radian cipher" from appearing in *Mensa Bulletin*. The decision was wrapped in several layers of secrecy, to keep the membership from finding out about this act of censorship.

I won't draw any obvious parallels with South Africa or the Soviet Union. They would be overdrawn if I did. But I will say that it is my feeling, from having read a lot of history, that when they start censoring you, you know that you have arrived. I was hitting too close to home for everyone concerned. The FBI and Harvard have limited powers of censorship, so they just gripe

to anybody who would listen. *Mens* did have some power over its own publications, and they were cracking down, out of the same kind of fear that caused Bob Grayson's backer to request anonymity — in the one case, because of the fear of death, in the other, because of the fear of lawsuits.

In my case, far from feeling frustrated or discouraged, I took this new development as a mark of achievement. A number of people had preceded me down the path of being censored, and they were all glorious examples. What's more, they had all succeeded in their aims. History was on my side. The important thing was not to give in, under any circumstances. Besides, as it turned out, a number of influential *Mensans* who were aware of the controversy expressed themselves very vehemently as being on my side of the issue.

In August 1986, I was contacted by a freelance writer named Sandra Hansen Koste, who occasionally writes for the *San Francisco Chronicle*. Ever since my disastrous encounter with the *Chronicle* back in 1981, I had been daydreaming about how to handle the next engagement, which I always knew was coming. At first, I had harbored thoughts of vengeance. In the interim, I had come to realize that the *Chronicle* is not the only institution of our society that is fundamentally defective. I therefore resolved to be more charitable. And since Koste was not on the *Chronicle* payroll, there was no reason to hold her accountable for the failings of the likes of Wallace and Magagnini. Besides, good publicity is like chicken soup. It can't hurt.

I called Koste for a couple of hours on the telephone altogether, and I virtually bombarded her with black-and-white documentation for the next month or two. On 21 December 1986, here is what the *Chronicle* had to say about it. The lead that they put on the article read:

Eighteen years ago yesterday, the Zodiac killer murdered his first victim. He has not been heard from since 1974. So why do we keep thinking about him?

In plain fact, the Zodiac's first murder had taken place more than *nineteen* years before, on 30 October, not 20 December. What special gift enabled the *Chronicle* to keep screwing up the facts, whether Paul Avery, Bob Grayson, or Sandy Koste was doing the writing? Did they have a special dispensation from the Pope, or was it just a gift that nobody else had?

Here's an excerpt from her article:

"We [the Zodiac] has an absolute mania for marking anniversaries, especially of his slayings," says Peterson. "It's all part of his astrological M.O."

"Nonsense," says Gareth Powe of Marin County. "It's as plain as could be that the Zodiac had a mathematical M.O." [That isn't what I said. She made it up.]

Powe, a member of *Mens*, the organization for people with extra-high IQ's, and a professional researcher, has spent the past five years painstakingly piecing together evidence he says proves that a brilliant, Harvard-educated engineer who shall be known here as "Mike" is the Zodiac.

"What shields him from arrest and prosecution is not that he is clever, although he is that," says Powe. "His best and foremost line of defense is his education, and the enormous culture gap that separates one line of our society from another."

[I didn't say that either. It's a rather clumsy misquotation of the concluding paragraph of the *Mens Bulletin* article. I don't know what a "line of society" is, unless it has something to do with education.]

Penn claims that several of "Mike's" numbers were located on the legs of the same radium hose [sic] types (a measurement used by engineers), and that another radium passes through Riverside, where the Zodiac is suspected of killing a female student in 1968 [sic]. He says that the Zodiac's cipher is based on the same radium and binary numbers. [Anybody who has read this far knows that I never said anything like that. I don't know how you could base a cipher on radium.]

Although material from all Penn's studies would fill several large notebooks [an attached case would do nicely], some of the high points include his theory that the 17 stab wounds in one victim coincide with a binary number symbolizing [sic] both the suspect's birthday and his mother's date of birth. He also says the binary equivalent of the victim's longitude adds up to the suspect's social security number. "That part never fails to elicit gasps," says Penn. [What I had written to Koenig was that Dan Goldfarb's reading of the Napa County coroner's report bore out the Napa Register's account that both victims of this crime had been stabbed a total of 17 times.]

"Mike's" motive, according to Penn, was the desire to see his slewing alter to create a huge conceptual sculpture [sic]. "The most ridiculous one in history," says Penn. "It has absolutely nothing to do with random serial murder [I believe I did say something like that]."

Penn cheerfully admits that his fascination with the case borders on the obsessive. [I never admitted any such thing, "cheerfully" or otherwise.] He regularly seeks interested parties what he calls his "Standard Zodiac Identification Kit," [I call it my "Zodiac Identification Kit," no "Standard" involved] which contains such items as a photocopy of a picture of "Mike" with glasses (asked in several witnesses [one of them a shooting victim, two others officers in the employ of San Francisco Police Department] claim the killer wore glasses), a family history (to prove "Mike's" astute background, which would support the sculpture theory), some of his articles on engineering and his resume.

Anxiously, Penn claims he has never been threatened by a lawyer. He says coolly, "My suspect knows I'm right." [What I said was that I had never been sued.]

Nor is he concerned his activities might jeopardize his life, although he admits he once bought a gun, "just in case all my intellectual acrobatics turns into a lemon." Penn's rationale for his dogged pursuit of the killer? "I just want to get the S.O.B." [Actually, what I said to her was, "I want to be the one who beats the sonobitches."] [At this point, he admits the reaction from authorities to his theories has been "disappointing."]

I had sent her a copy of Alan's letter about the visitation on Harvard of the FBI and local prosecutors. She called me up on 10 October, two and a half months before this article appeared, to discuss it. She asked me then if I felt "vindicated." I replied that I felt that the news was "encouraging." Somehow, by being translated into Chronicleese, this word had turned into "disappointing." As to the rest of it, I was repulsified by the factual distortions, since I had given her my material in writing. I just didn't see how anybody could be so corrupt or stupid as to go back on what they had before them in black and white. Once again, I was reckoning without the Chronicle.

Misquotation can be an art form in itself. Artful misquotation either puts in someone's mouth something that he didn't say, but should have, or it takes something that he said and impinges on it. Most of our well-known quotations from Mark Twain and Ralph Waldo Emerson belong to one of these two categories. Koenig's rendition of my remarks, which she had before her on paper, didn't fit in either of them. Her story was just vintage Chronicle — all the news that's fit to invent.

About six weeks after this article appeared, I got a telephone call from someone named Blaine Blaine. Blaine Blaine was calling from a pay phone, and he was close to the point of hyperventilation. I gathered that the reason he was using a pay phone was to keep me from using my supernatural powers to trace the call to his home. The reason he was so short of breath was that he considered even calling me on the phone as a risk to his life. Our conversation revealed the reason. He had just talked to Sandra Kotze, who had received a copy of a letter from me to the editors of the Chronicle, in which I had requested publication of corrections to her errors (see above). The result was typical of San Francisco Bay Area journalism. The newspaper did not print a correction, regardless of the obvious correctness of what they had printed, and Sandra Kotze had told Blaine Blaine that I was a "hostile and dangerous character." He allowed as to how I didn't really sound all that dangerous on the telephone, and he added that when he had challenged her about another factual error that he had caught, she had just slammed the receiver into the cradle. Of the two of us, Blaine Blaine said he thought she was the one who was "hostile."

In September, I had received a telephone call from a television news writer named June Smith in Massachusetts. She was interested in anything that might contribute to a story on Leonard Paradies, who was still having legal problems. She sent me a clipping from a Boston-area newspaper. The story was titled "Paradies gets 18-20 years for assault of Boston woman." Terry Webster had told me about this case, when she was still talking to me. I have no opinion about Paradies's guilt, having no information to go by. I do know that the local prosecution intended to get him for everything they could because they couldn't try him for the murder of Joan Webster. I also knew that because of the prevailing atmosphere, it would be very difficult for him to get a fair trial, guilty or not. I think it is worth quoting the story in full.

Convicted murderer Leonard J. Paradies was found guilty yesterday in Suffolk Superior Court of a 1980 assault on a Boston woman in Revere.

A jury convicted Paradies of assault with intent to rape and assault and battery, but acquitted him of assault with intent to murder.

Paradies is in prison for a 1984 conviction of second-degree murder and assault with intent to rape Marie S. Jameson of East Boston in 1979.

He would have been eligible for parole in 2017, but Judge James D. McDaniel Jr. yesterday sentenced him to another 18-20 years.

Paradies was accused of beating and attempting to sexually assault a 20-year-old woman along a deserted stretch of Winthrop Parkway on July 10, 1980.

She accepted a ride from Paradies, 47, of Revere, in the North End after he agreed to take her to a Revere nightspot, said Assistant District Attorney James Larkin. She managed to flee her attacker's car and was taken to the Revere Police Department by an unidentified passerby.

"We always planned when justice is served," said Larkin. "[Paradies] deserves to be kept away from society as long as possible. Now he won't be able to attack any more women."

During the four-day trial, defense attorney Frank Bruno said Paradies never owned a car resembling the one in which the woman, now 26, said she was assaulted. Bruno says he plans an appeal because authorities didn't alert him about another suspect in the case.

Authorities have linked Paradies to the disappearance of Harvard University graduate student Jean

Webster, who was last seen at Logan Airport in November 1981 after returning from a visit to her parents' home in Glen Ridge, N.J.

Webster's wallet was found in a Sougan marsh about 300 feet from where Lanza's body was discovered two years earlier.

No charges have been brought against Paradiso in the case, but Lurkin called him "the prime suspect." Lurkin said he asked Bruno and Paradiso before yesterday's sentencing whether they wanted to discuss the Webster case, but they refused.

Lurkin's purpose in bringing up Joan Webster was the same one the authorities had had in mind all along. If it appeared to Paradiso that there was no possibility of his ever getting out of prison, he should be willing to clear up the Webster case in exchange for privileges that would make his time in jail easier. It seems clear that if Paradiso had cooperated and confessed to Joan Webster's murder, Lurkin would have asked the judge to go a little easier on him. That was why Joan Webster came up before sentencing. The attempted rape for which Paradiso was being tried was just window-dressing; as with the Lanza trial, the real subject was the crime with which nobody could be charged.

On the morning of 29 November, we got a nocturnal telephone call, the first since the 1st. It came at 1:11 a.m., 111 is Manu letter Q. I noted that it was the twentieth anniversary of the Confession Letter. I have speculated in these pages that the Zodiac might have set himself a twenty-year term. If so, "Q" might be read as signifying that he had come full circle. This was "the end."

I lay awake for hours thinking about it. Back in May, I had received two calls adding up to 2088 on 5-1. 51 is the integer of the radius, 29 is the fraction; and 2088 (20-NINE) is a paraphrase of 29, "the end." 2088 was too close to 2089 not to be seen as an allusion to it. I had read it as "thirty before the end" and interpreted it as meaning that "the end," whatever it might be, was thirty days in the offing.

The difference in days between 7 May and 29 November is 206. $2088 - 206 = 1882$. If he had sent "1882," it wouldn't have been close enough to be recognizable. The difference in weeks between those two dates is thirty. I believe that "the end," whatever form it took, occurred on the twentieth anniversary of the confession in the murder of Cheri Jo Bates in Riverside.

On 10 December, there were two nocturnal one-ring hangup calls, one at 12:32 a.m., the second at 12:33. 1-2-3-2, 1-2-3-3, . . . The next step, obviously, was 1-3-3-4. The Julian Date was 348. 3-4-4, . . . 3-4-5. Both the two clock times and the Julian Date implied a series of consecutive integers. How did that fit in?

Mike's next birthday was not far off. In fact, it was 43 days until 22 January. 43 days before he turned 44. 43-44: another series of consecutive integers. By this time, twelve minutes had gone by. I picked up the phone on the nightstand and dialed his number. I let it ring once, then hung up. It was 3:45 a.m. in Massachusetts. Then I went back to sleep.

TIMES 17

I don't know why it had never occurred to me before. The ninth anniversary of my discovery of the secret of the Indian was fast approaching, and in all that time, I had never thought of constructing a magic square. I made up for the deficiency as soon as I had an hour or two to spare.

A magic square is a square divided into a number of smaller squares. Each of the smaller squares contains a number. When all the numbers of each row, each column, and each of the two major diagonals are added up, you get the same sum every time.

What occurred to me now, in early December 1986, was to construct a magic square divided into seventeen squares to the side, to imply the expression TIMES 17. The whole thing would be made up of 289 squares, or 17 TIMES 17. The sum of numbers that I was aiming for was 9745, the number which subdivides in Mensa Code to read TIMES 17.

The constraints on constructing magic squares are such that if Mike had ever done the same thing, he would have come to exactly the same result as I did. Anyone who wants to make a magic square of a certain number of boxes expressing a certain sum has to start at the same place, with the same number, and finish it according to the same routine as anybody else does.

After doing a few simple mathematical operations on 9745, you get the starting number 429. That is entered in the center box of the topmost row. Then every number following 429 is entered in a prescribed manner in consecutive order until the final number 717, which is entered in the center box of the bottom row. If you add 429 and 717, then divide by two, you get 573, which is found exactly midway between those two boxes, in the central square of the larger magic square. That square is common to the middle column and the middle row and to the two major diagonals as well.

One of the operations which you do in order to determine the starting number is to divide the sum, 9745, by the number of boxes to the side, 17. The quotient is 573, with a remainder of four. You might say that 573 is the central number on which this square is built. Since there are 289 squares in all, the beginning number is 144 before 573, or 429; the last number entered, 717, is 144 after the middle number 573.

The division of 17 into 9745 is not clean; there is a remainder. The last operation required in constructing a magic square is the addition of this remainder to the numbers in seventeen special boxes, most of which are separated from one another as if by knight's moves on an imaginary chessboard. (The knight's move is also an integral structural feature of the "Nasik cube," which is very much like a three-dimensional magic square, and which antedates the cube of Rubik by more than a century.)

I think it appropriate to mention here that the methodology which I followed in constructing the TIMES 17 magic square was acquired from an article by David Kirby, which appeared in the December 1981 issue of *The Explorers*, along with the first Zodiac article which I published in any Mensa periodical. Kirby, who is a prominent member (and former Local Secretary) of San Francisco Regional Mensa, confides in this article that he has spent quite a lot of his time working on a

621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638
639	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646
626	627	628	629	620	621	622	623	624	625	626	627	628	629	620	621	622	623
621	622	623	624	625	626	627	628	629	620	621	622	623	624	625	626	627	628
622	623	624	625	626	627	628	629	620	621	622	623	624	625	626	627	628	629
623	624	625	626	627	628	629	620	621	622	623	624	625	626	627	628	629	620
624	625	626	627	628	629	620	621	622	623	624	625	626	627	628	629	620	621
625	626	627	628	629	620	621	622	623	624	625	626	627	628	629	620	621	622
626	627	628	629	620	621	622	623	624	625	626	627	628	629	620	621	622	623
627	628	629	620	621	622	623	624	625	626	627	628	629	620	621	622	623	624
628	629	620	621	622	623	624	625	626	627	628	629	620	621	622	623	624	625
629	620	621	622	623	624	625	626	627	628	629	620	621	622	623	624	625	626
620	621	622	623	624	625	626	627	628	629	620	621	622	623	624	625	626	627
621	622	623	624	625	626	627	628	629	620	621	622	623	624	625	626	627	628
622	623	624	625	626	627	628	629	620	621	622	623	624	625	626	627	628	629
623	624	625	626	627	628	629	620	621	622	623	624	625	626	627	628	629	620
624	625	626	627	628	629	620	621	622	623	624	625	626	627	628	629	620	621
625	626	627	628	629	620	621	622	623	624	625	626	627	628	629	620	621	622
626	627	628	629	620	621	622	623	624	625	626	627	628	629	620	621	622	623
627	628	629	620	621	622	623	624	625	626	627	628	629	620	621	622	623	624
628	629	620	621	622	623	624	625	626	627	628	629	620	621	622	623	624	625
629	620	621	622	623	624	625	626	627	628	629	620	621	622	623	624	625	626

THE TIMES 17 MAGIC SQUARE

The numbers contained in each row, each column, and each of the two major diagonals add up to
67145 (TIMES 17)

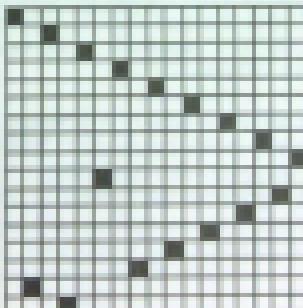
First entry (middle box of top row) = 629
 Middle entry (middle box of middle row) = 673
 Last entry (middle box of bottom row) = 717

MAKING A MAGIC SQUARE

		1 20		
		17 19 38		
		16 18 37		
		15 24 26		
		14 33 35		
		13 32		
		12 31		
		11 20		
10 29				
28				9
Special Case: Entry path from center square through upper right-hand corner etc.				
			8 17	
			7 26	
			6 25	
			5 24	
		4 23		
		3 22		
		2 21		

Special Case:
Entry path from
center square
through upper
right-hand corner
etc.

The starting number is determined by dividing the sum to be expressed by the number of boxes to the side, then subtracting half of the total number of boxes minus one. In the case of a 17-box-sided magic square expressing a sum of 9745, the starting number is 439 ($9745 \div 17 = 573$); the total number of boxes is 289 (17×17), and half of 289 minus one is 144; $573 - 144 = 429$). Division of 9745 by 17 leaves a remainder of 4, which must be added into 17 boxes each of which is common to one row and one column only. The plan according to which the numbers, starting with the beginning number, are entered on the magic square is shown above. The plan according to which the remainder (if any) is added is shown below.



magic square expressing a sum of one million, with 127 bases to the side. His fascination with 127 has to do, he says, with the fact that his birthday is 27 January, 1-27. The amount of work involved in the construction of a magic square of this size — still not completed at the time of publication of this article (December 1991) — says a lot about the lengths that people will go to for the sake of vanity.

If someone were minded to transmit the contents of the TIMES 17 magic square over the telephone by making one-ring hangup telephone calls in the middle of the night, some adjustments would have to be made. Many of the numbers in this square cannot be transmitted as clock times. Take the middle number 573, for instance. There is no such time as 2:573. But if you bear in mind that the only difference in binary notation between a number and its double is the addition of a zero, then a substitute might be found in 11:46 (573 ± 2), which does express a clock time.

In going over my records, I found that during the latter part of 1984 and the first part of 1985, I had received a number of mystery phone calls at 11:46. I had wondered about it at the time, but all that I could make out of it was 1041 26 = 1146 is in the range of 1120-1131, in which every number begins with Morse BM-. Of course, 26 is the alphabetic quantity of Z. But it didn't seem like a very interesting message, even though it made some sense. It was hardly worth two one-ring hangup calls on the evening of 4 January 1985, for instance. It was also the clock time with which Z. had begun the little composition which I have called the "Square of Nine." That one was also nocturnal. And on 25 June 1985, I had received one-ring hangup calls at 11:34 and 11:46 p.m. These were the first mystery calls in four weeks, and six weeks went by afterward without more of the same. If 11:34 and 11:46 are allusions to the TIMES 17 magic square, all the sense that I can make of them is that 567 (1134/2) is found in a box on one of the major diagonals.

In discussing the Square of Nine, I have interpreted the appearance of a call on 7 August 1984 at 3:20 followed by another on the 8th at 10:37 as yielding the number 717. 320 before 1037 is 1037 minus 320, or 717. 1037 itself is the product of 61 TIMES 12. Here, 10:37 is found in the same column as 11:46, at an interval of two weeks. Note that both are in the Wednesday column of the calendar grid, which is the center column, just as the column of the TIMES 17 magic square in which 573 is found is the center column of that grid.

Five months later, in January 1985, 11:46 shows up in the Wednesday column again, followed again in the same column by 10:37 (this time, at an interval of one week). In the TIMES 17 magic square, 517 is entered one knight's move from 573. Here, the double of 517, 10:34, is entered on the calendar grid at a knight's move from the double of 573. Right above that on the calendar grid are the two nocturnal calls at 11:46. Three weeks directly above that on the grid is a call at 4:47. In the TIMES 17 magic square, 447 is the second entry in the column containing the 573-box.

During this period covering the end of 1984 and the beginning of 1985, there are two squares of the calendar grid marked with 11:46. Each of them is adjacent to a square marked with 10:45 (BERTA ± 1045). In one case, the 10:45 square is in the same row as the 11:46 square; in the other, the two are found in the same column.

The two 11:46 nocturnal calls are not in the center (Wednesday) column, but in the Friday column. They connect to the 11:46 call in the center column by a diagonal containing a 1:50 call (1:50 ± TITAN or DIGIT UP). Another diagonal, also containing a 1:50 call, joins 4:47 to the square of the center column where it would appear in the TIMES 17 magic square. And right above that square, on 14 November 1984, is where the receptionist at Litigation Support Corporation had recorded a one-ring hangup call at 4:29 p.m. Eight weeks later, she had written down another 11:46 call.

9 December 1984 - 26 January 1985

		4-39			11-36 11-39 4-87	
		11-31 486	11-31 11-39		4-36	
				11-32 11-39	11-36 11-39 11-37	1-39
		Knight's move shown in parentheses			11-31 1-39	11-34 11-36
	11-33 486			1-39	11-34 11-36	11-34 $11-34 \times 2 = 11-68$
	11-39	9-36 11-42	11-36 11-39 11-44	1-39		11-34 $11-34 \times 2 = 11-68$
8-31	11-36 11-39 2-12	2-38 2-39	11-37	2-31 4-31	3-39	

22 July - 12 August 1984

		11-48 11-39 4-31	11-36		11-41 11-39 2-14 4-39, 4-17	
				9-36 11-39 11-31 3-23, 2-16		
		1-39	11-37		12-38 9-31	9-319

Neutral cells shown in boldface

11 November 1984 - 19 January 1985

Magic Square
Entries

	1121 1122 1201	1142 1149 1154	1039 1040 814 429	1131 327	1040 1044 2,04,2,07 301		429
							447
							460
							483
							505
							519
							537
							555
							573

429 appears in row 1,
1116 (103 + 2) in row 5,
just as 409 and 373
do in the magic square

1040
1044
1047
1048

1131
1149

1042
1047

1046
1049

1043
1046

1139

1046
1047

1148

Necturnal calls shown in
boldface

1048 cells are
in squares adjacent
to 1139 cells
1040 = DROMA

Several entries in this calendar grid, in other words, show the same relationship to one another that you would expect to find in a magic square of 289 smaller squares whose contents add up in every direction to 9345, TIMES 17. My author had put in just enough of them to make any other interpretation statistically untenable, then added in several other overlapping structures serving other purposes, one of which was to camouflage the magic square. It had taken me only two years to notice it. By the prevailing standards of discovery of what the Zodiac was up to, that was record time.

I sent Mike a copy of the calendar grid compared with the TIMES 17 magic square entries. In fact, it was a copy of the same illustration which appears here on page 344. I enclosed it in a note card from the Boston Museum of Fine Arts, a former employer of his. It was mailed on Friday, 2 January 1987. On Thursday, 1 January, my phone rang once and then went silent at 2:04 p.m., 284 in binary 1 00 11 0 000, Morse TIMES. The next one-ring hangup call came on the 18th, at 8:46 p.m. Self Pacific Time is 11:46 Eastern Time.

Not long before that, Dick Rutan and Jeana Yeager flew around the world in Voyager. Like everyone else in the world, I was inspired by their tenacity, their dedication, and their endurance. They had singlemindedly stuck to their goal for six years in the face of obstacles and adversity, going deeply into debt while in pursuit of success. They had gotten off to a bad start, damaging their aircraft while taking off, but they went ahead and did it anyway.

I imagine that there were people down there in Mojave, California, who told their children that Rutan and Yeager and their crew of volunteers were "obsessive," people of suspect emotional stability who had an unhealthy devotion to a peculiar project. These same people would have been the first to crowd the tarmac at Edwards AFB in order to cheer the heroes home, probably holding their children up in the air so that they could get a better look and tell their children that they had been there. That's the way of the world. There is a very thin line between being regarded as a national hero and being taken for the village idiot.

At a press conference after conclusion of the flight, Dick Rutan said that if the U. S. Government had tried to do the same thing, it would have cost the taxpayers hundreds of millions, whereas it had cost these private citizens, most of them volunteers, only two million. I think that he was trying to say that, Had it been left up to the U. S. Government, it wouldn't have been done at all. There are some kinds of projects that are best left to individuals to do.

Many years ago, I took a course in anthropology from Lanza Nader, Ralph's sister. That was back in the days before there was such a thing as a Ralph Nader. The subject was law in pre-industrial societies. We don't think much about it, generally speaking, but comparing the way we do business with the way they do it in the Arctic or the jungles of Africa can be quite instructive.

The whole apparatus which we employ to deal with interpersonal conflict and antisocial behavior is dependent on surplus wealth created by mass production industry and mechanized agriculture. This surplus goes in part to support the courts, the prosecutors, the police, the prisons, the probation system, and all the other appurtenances of the legal apparatus.

In societies which do not have that surplus wealth, other mechanisms have to be found to deal with the same kind of problems. For instance, where nine out of ten people must produce food in order to support everyone in the society, no one has the free time available to keep prisoners in confinement. In primitive societies, such as the one which existed over two millennia ago in Greece, exile was one of the means used to punish miscreants. The designation of criminals was a process that involved the whole of society (or at least, the free which ruled), and from the method used by the

ancient Greeks, we have the word "ostracism." In Teutonic tribal law, the same thing was called "outlawry."

In Eskimo usage, when two parties have a dispute that cannot be smoothed over easily, they square off in front of an audience made up of the entire community and heap invective on each other. The invective must be in verse, and it should be witty. The winner, as determined by the amount of applause received, is not the one with the best legal case, but the one who has been more adroit at verbally skewering his opponent. In most cases, the vanquished party will acknowledge defeat, thus resolving the conflict. But just in case he is not satisfied that he has received justice, he is free to resolve the conflict on his own by ambushing his antagonist. In an economically marginal society such as that of the Eskimos, cooperation is so important a social value that society is willing to turn a blind eye to murder, if it will heal an otherwise incurable dispute which detracts from the ability of society at large to gather food.

We occasionally find *The Ancient Ways* turning up even in our industrially advanced society. You may recall an incident that took place in Missouri a few years ago. A town bully, who had assaulted and beaten a number of people in his community, seemed to be untouchable to law enforcement. He apparently had not only his fellow citizens, but also the police, completely intimidated. Finally, he was shot to death on the main street of town in the view of several dozen witnesses. Not one of these witnesses can remember now having seen who it was who pulled the trigger. No one has ever been accused, charged, or tried for this killing.

There is a danger that events like this can be taken as a justification for lynch law. I think that there is a very clear distinction between what happened in this little Missouri farm town and a lynching. Everyone knew what the bully had done. Many of the people in the crowd who witnessed the shooting had been victimized themselves. There was no doubt about his guilt, and there was also no doubt about the inability of the legally constituted authorities to deal with him. He might go on terrorizing the town forever if some individual did not take upon himself the awful burden of making up for the failings of the police and prosecutors. He -- or perhaps she -- exposed himself to prosecution for murder. His fellow citizens closed ranks behind him to protect him from the consequences of an act that protected them from a monster.

Oedipus became king of Thebes by defeating the Sphinx, which had been ravaging the city. And defeating the Sphinx meant answering its famous riddle. Both contestants staked their lives on the outcome. And since this event took place in prehistory, the monster was obliged to abide by the Rules of Follydom. The Rumpelstiltskin Effect was still in force. When Oedipus supplied the correct answer, the Sphinx destroyed itself. But that was back in the days when men were men and monsters were monsters.

In publishing the book which you have just read, I have exposed myself to civil and criminal prosecution, to the possibility of assassination, to harassment, to ridicule and scorn. I have stuck to my guns for six years, and now I am throwing down the glove. I appoint you, gentle reader, to be my jury. You have seen the evidence. You have patiently and indulgently listened to my interpretation of that evidence, for whatever it is worth. I leave it to you to decide whether the effort, the expense, and the risk were worth it.

APPENDIX A

WHAT WENT WRONG?

In the summer of 1988, I sent a ZIK to a correspondent in Southern California. Just a few weeks before, I had mentioned the name of Michael O'Hare to him in connection with the Zodiac murders, and his first reaction was to call Mike up and tell him that I had suggested that he was a criminal. Mike's response, incidentally, was to say that he couldn't sue me because he would have to prove damages. [NB: The law specifically exempts plaintiffs in defamation cases from having to prove special damages. His excuse for not suing me simply didn't hold water. But he did have to say something, and doublespeak was better than nothing.]

At all events, I then zicked my correspondent. A few days later, he called to complain, after having seen the handwriting comparisons, "How has he [i.e. Mike O'Hare] managed to stay out of jail all these years?" He found the corroborative evidence overwhelming. If your reaction to the evidence presented in this book is like that of everyone I have talked to who has taken five minutes to look at it, you may be asking yourself the same thing.

He raised an interesting question. How has the Zodiac managed to evade arrest and prosecution for the last twenty years? Quite apart from the matter of justice, if all the foregoing is worth anything at all, it ought to contain some kind of lesson or generalization which we can apply to other situations. As this is a free country, you can draw your own lessons from it. As this is my forum, I am going to suggest some for you to think about.

I don't think that the failure of law enforcement to deal with this criminal is due to his manifestly superior intelligence. It is due to major failings of our society, of which I would like to pinpoint three.

The first failing is a widespread and profound contempt for humanistic education. This contempt is particularly prominent in law enforcement, but it has not been patented by the police. I don't want to suggest that police detectives should take courses in medieval Provengal love poetry. Obviously, training in literature or linguistics seldom has any bearing on the detection of crimes. Policemen require training in analytical methods, but it doesn't have to consist of parsing Homeric hexameters.

My experience with the police over the last six years suggests to me that they are convinced that literary analysis is unscientific. This seems to me to be a counterproductive assumption, since almost all of the evidence in this particular case is literary. The Zodiac left very little physical evidence, and the eyewitness evidence, while apparently good, has advanced the case to nowhere between 11 October 1969 and the present. But we do have a large quantity of the murderer's writings, and it seems to me that a literary-analytical approach ought to have been the first resort, not the last.

The second major defect in our system is the press, or to use a more modern term, the media. In the ideal Jeffersonian universe, the media act as a corrective to the faults of government. My experience has taught me that the media in fact amplify those faults. The function of the free press is supposed to be rooting out corruption. But how can it perform this task when it is fundamentally corrupt itself?

I am not suggesting that reporters take bribes in the form of cash payments (although that seems to happen from time to time). The bribes which the media do take are increases in circulation and advertising revenue. In the interest of keeping these hefty revenues flowing, newspapers, magazines, and electronic media outlets pander to the lowest common denominator, doing everything they can to titillate the public's desire for sensational stories, and doing violence to the truth whenever useful in the interest of sensationalism.

In the particular case of the Zodiac, false reporting of the linguistic facts, not to mention imaginative interpretations of Zodiac utterances, has characterized media coverage, especially that of the *San Francisco Chronicle*, which is surely one of the ethically and intellectually most corrupt newspapers in the world. I believe that this judgment is sufficiently supported by my experience, on which I have reported here.

The Zodiac was perfectly aware of the *Chronicle's* penchant for sensationalism (all he had to do was read a few issues to see it), and I suggest that that was a major factor in his selection of this newspaper as the recipient of most of his letters. He knew how it would be interpreted if he were to write a number at the foot of a letter -- the *Chronicle* would literally squeeze blood out of a turnip if it could, on the theory that gore sells newspapers. And so he played on the newspaper the way that Yul Brynner plays on his fiddle. The one major journalistic contribution to the solution of the Zodiac puzzle, the revelation of the Riverside murder, sold newspapers in November 1970; it took the *Chronicle* sixteen years to figure out how to sell newspapers by repeating its own story, but eventually they managed (see below).

I have suggested that the most important evidence relating to the detection of the Zodiac's identity is his literary legacy. How can that legacy be evaluated intelligently when it has been trivialized and fossilized by the *Chronicle*? How can anyone form an intelligent opinion about the facts, when the *Chronicle* consistently reports them wrong? Obviously, the student must resort to other sources of information.

An excellent example of this kind of intellectual corruption at work is found in the *Chronicle* story by Sandra Hansen Korte, which I mentioned elsewhere. Besides willfully and egregiously misquoting me -- for the sake of a better story -- she leads into her subject with this passage:

Eighteen years ago yesterday [20 December 1986], the Zodiac killer murdered his first victim. He has not been heard from since 1974. So why do we keep thinking about him?

In a two-part series run under Paul Avery's by-line on 16 and 17 November 1970, the *Chronicle* had revealed for the first time ever that the Zodiac had murdered Cheri Jo Bates in Riverside on 30 October 1968. As far as anybody knew between 1970 and 1986, she was his first victim. But now in December 1986, Korte -- and the *Chronicle* -- decided to overlook the Riverside murder. Why?

I confess that I was not present and that the following is just a reconstruction based on my knowledge of media practice. The Korte story was intended for the Sunday magazine section *This Week* (which is in fact apparently). There was no issue open until December. One Sunday in December, the 21st, happened to follow the eighteenth anniversary of the Lake Herman Road murders by twenty-four hours. Editors like to have a "hook" on which to hang feature stories; anniversaries are very good hooks to use.

The Sunday closest to the twentieth anniversary of the Riverside murder was not available, since the magazine's contents for that date had already been determined. So the story was put into the issue for 21 December, and to make the "book" more sensational, the Riverside murder, which the *Chronicle* itself had originally attributed to the Zodiac — and which Z. had admitted in following publication of Avery's story in 1970 — was downgraded. In her article, Kone says that the attribution of the Bates murder to Z. is only a "theory." That makes Lake Herman Road the "true" Zodiac murder, which justifies her lead-in, and that in turn makes her story more sensational. The truth is thus subordinated to the economics of peddling the *Chronicle*, and the facts are so compromised that no one could base a sensible judgment on them in the form in which Kone "reports" (i.e. distorts) them.

The third failing is in the general reliance in American society today on psychological speculation. Everybody and his brother is an amateur psychologist, and I have never talked to anyone about the Zodiac without the conversation beginning with psychological generalizations. Some years back, a very useful book was published under the title *Psychobabble*. I gather that it sold rather well, but it seems to have had no lasting power. Its thesis was that factual and logical discourse has been completely replaced by jargon borrowed adroitly from the field of psychology and which is generally not understood even by the person who is using it.

It has been my experience over the last several years that people who use psychobabble are doing so in order to get around difficult intellectual and moral choices. If you don't understand something, discuss it in terms of complexes or psychopathology. Since what you are saying can neither be proven nor disproven, you are safe in saying whatever you want. The application of psychology to criminal detection has produced the psychological profile, an instrument which, by the FBI's own admission, is less accurate than flipping a coin. Yet FBI agents stamp on their profiles as if Moses had written them down from the summit of Sinai. And for twenty years, anyone like Mike O'Leary has been excluded from consideration as a suspect because of the pontifications of law enforcement's psychological gurus.

Psychological jargon is also favored as a means of obfuscating moral issues. As a society, we tend to shy away from moral judgments, perhaps because they seem old-fashioned. Since nature abhors a vacuum, when matters can not be discussed in polite company in moral terms, psychological terminology rushes in to fill the gap. And the advantage of psychological jargon is that it can be bent to mean anything.

Coffey's magazine subtitled my Zodiac article as "A Tale of Obsession." Vic Fensko, trying to make me out an unfit parent, called me "obsessive" in court because of the time that I was devoting to this project. Sandra Kone fabricated a quote for her *Chronicle* article in which I "cheerfully" confessed to being "obsessive." If you went by what all of these self-diploma'd psychiatrists have put in the public record, Gareth Peirce is practically a raving maniac.

By the end of my fifth year in this project, I had heard this theme enough to make me wonder myself. At that time, I was in the process of receiving hundreds of letters from Messians all over the United States in response to the publication of the *Mexia Bulletin* article. Quite a few of them made use of words like "persistence," "tenacity," and "courage" to describe what Drs. Bates, Fensko, and Kone describe as "obsession." In other words, what some people see as vices, others see as symptoms of psychopathology. What our grandparents thought of as positive moral values, we think of as manifestations of mental instability.

I have already mentioned that the only real psychiatrist with whom I have ever spent much time discussing this matter, Laona Thompson, suggested to me that the Zodiac's mental problem is that he

is simply "evil." It was very refreshing to me to hear a statement couched in moral terms coming from the lips of someone with genuine credentials in psychiatry. Be that as it may, psychobabble not only turns virtue into silliness; it also excuses evil, the opposite of virtue, as a medical problem. Children are excused from school attendance if they have a note from Mommy saying that they have been ill. To a large degree, we tend to excuse immoral behavior in adults on the same grounds.

I can't count the number of people who have told me that the Zodiac, like all criminals of his type (is there anyone else like him?), is "insane." How do we know this? Because only an insane person would do something like this. Notes were made in just the right way to support eyeglasses, which proves that this is the best of all possible worlds. QED.

Fortunately, the Zodiac was content with executing a conceptual art project. That required only a handful of homicides. What if his objective had been to overthrow the United States Government? Given his superior capabilities and the manifest inability of the forces of law and order to deal with him, it seems likely that he or anyone like him would have a fairly easy time of it. And for all we know, our political and economic institutions have already been undermined by individuals of high mental capacity, who are simply not being apprehended or prosecuted.

What stands between us and chaos? We have abandoned moral values, which are meant to serve as guidelines for our own behavior and against which to measure the behavior of others. We have no respect for humanistic intellectual tools — except insular as they keep us supplied with electronic gadgetry — tools which help us to analyze difficult or complex problems. And the institution of the press, which is supposed to act as an honest broker of information, has been turned into the exact opposite of that by its own economic imperatives.

The impression that I am left with from my experience of the last six years is that what protects us from barbarism of the most ghastly kind — a taste of which we just had between forty and fifty years ago — is not the wisdom of the Founders or the principles of Jefferson, the magnanimity of Lincoln, the inventiveness of Edison, or any of the other clichés which we Americans like to use to congratulate ourselves about how wonderful we are. What has kept this republic going for two hundred years without a major catastrophe is nothing more nor less than blind luck.

The laws of probability dictate that eventually that string of luck will break. What will we do then? How will we deal with the resulting horrors without intellectual integrity or moral values? To see the consequences of the abandonment of values, all you have to do is look back to the history of Central Europe between 1933 and 1945. All the same ingredients are with us here and now.

I went looking for the Zodiac, but what I found was the roots of fascism.

APPENDIX B

A ZODIAC DICTIONARY

The following entries reflect the most commonly encountered items of Zodiac vocabulary. They occur not in alphabetical order, but are ranked in what appears to me to be order of importance to the author. This order also reflects to some degree their frequency of occurrence.

BER., short for BERTA. In Morse Code, BER = 1000 0 010, binary 130. It may appear as 260 (130 x 2), as in Crossed Circle #7 of the 340-Character Cipher (Character #260) or as four, the product of casting out nines ($1 + 3 + 0 = 4$, see 100, below). BEH/130 is the root of the expressions THREB and BUC, both of which are digital refinements of the sentence "BER (are) 1." It is probably also the key to the misspelling BROWNETT (Confession Letter), which I read analogically as TN BEH TWO1. TN is digital 1, 10, a refinement of the previous ME. Of course, as the only authority on the content of an assignemt is the author, this reading must remain conjectural until the source is heard from. BERTA, which appears mainly in the telephone literature, is Morse 1000 0 010 1 01, binary 1045.

BM, the monogram of Bern Margoules. In Morse Code, BM = 1000 11, binary 25. BM occurs in the Zodiac literature in a variety of forms: as acrostics (e.g. "Blue Measures"), as alphabetic quantities (Julian Date 213, where 2 = B, 13 = M), as binary 25 or 7D (BM x 2), and in the sentence 140 (binary 1000 11 00, Morse "BM (are) 1").

GENE, the nickname of Eugene Robert O'Hare. GENE in Morse 110 0 10 0, binary one hundred. Like BER and BM, GENE can occur in doubled form as 260 (e.g. Dot #9 of the 340-Character Cipher).

UE, a two-letter code formed from the first syllable of "Eugene," corresponding to the two-letter code BME pertaining to Bern Margoules. By giving the letter E the idiosyncratic alphabetic quantity of 3, Z. is able to establish a mathematical equivalence between the two-letter codes UE and BME through refraction: BM = 2-13, UE = 21-3. Unlike GENE, BIR, and BM, UE cannot be expressed as a binary number, since it is spelled in Morse Code with a leading zero. The Zodiac therefore resorts occasionally to the reverse-alphabet cipher (WIZARD-alphabet) to disguise this form as PV or sometimes VF. The groups PV, VP, PV, are found in the 340-Character Cipher beginning with Characters #89, 98, and 166. The intervals expressed are nine and sixty-eight, respectively. Binary 68 = 01 00 10 0, Morse NINE. I don't think it coincidental that the numerical quantity of the one, 9, is spelled in English by the binary-as-blone writing of the other. I also do not think it coincidental that just as PV and VF are mirror-images of one another, so are 89 and 98.

38, a two-digit number which Z. uses with almost economy to express his identity. Bern Margoules' 38th birthday took place on the date 9-3-45; 9745 in binary is 1_00_11_0 000 1000 (Morse TIMES 17), a number whose root is binary 38 (underlined). In 1960, Michael O'Hare moved to Cambridge, Massachusetts, where all the telephones have the Area Code 617, written in binary notation as 1_00_11_0 1001, Morse TIMEX (the brand name of the switch left at the scene of the Zodiac's first murder in Riverside, California). Again, the root number is 38 (underlined).

During his undergraduate years, Mike was a staff writer and eventually editor-in-chief of the Harvard literary publication *Cambridge 28*, which took its title from the postal zone in which Harvard University is located (new ZIP Code 02138). 28 itself is binary 1 00 11 0, Morse TIME. This concept is expressed in the literature both by the explicit use of the words TIME and TIMES and by the author's use of clock faces, both in documents and on the mail covers containing them, 100, the digital value of the crossed-circle sign. Being written with nothing but a one and two zeros, it is ambiguous; it could be read in base-ten as "one hundred" or in base-two as "four." Binary one hundred is the Morse writing of the name GENE. Four is the result of casting nines out of 100. Read in this manner, 100 appears to stand for the names of both parents. It may be said to represent their union. In the digital revision of the mystery sentence "reclam eata blabot" (Dragon Card, 28 April 1970), 100 is equated to both GENE and ISAI.

MIKE, the given name of Michael Henry O'Hare, son of Bern Margulies and Eugene Robert O'Hare. MIKE occurs most frequently as the rebus, "100 before MIKADO" (in three documents). MIKE in Morse Code is binary 11 00 101 0, binary 102, which occurs occasionally in the telephone literature. There is one occurrence of an implied MIKE in the Mount Diablo Letter, in the expression "Four inches" (the equivalent in millimeters, written in binary, gives Morse "MIK TIMES 2" -- multiplication by two adds a zero in binary, which is the same as the Morse letter E). A variation is the expression MIKE 0, Morse 11 00 101 0 111, binary 1023. MIKE 0 appears invariably either as the number 1023 (letter-count of the Confession Letter) or as the alphabetic equivalent PW (P = 16, W = 23).

IK, two-letter code corresponding to BM and UE, apparently taken from the predicate of the sentence "ME IK," formed by anagram from the name MIKE. Like UE, IK begins with a leading zero and thus cannot be written as a binary number. It occurs in the approximation of π , UEIKMH (second passage of the 340-Character Cipher), and in the expression "150 IK" from the letter covering the 340-Character Cipher (Morse FT, 0010 1, is a digital revision of IK, Morse 00 101; for the predicate 150, see TITAN, below).

II (Roman PI), the rational number which defines the relationship between the parts of the circle. All depending on how far your mathematical education went, this number is written variously 3.1, 3.14, 3.1416, 3.14159, 3.141592653589793, or a number whose fraction is ascending -- i.e., it cannot ever be completed. These writings given above are in base-ten notation. Like any other number, it can be written in any base, e.g., two. In base-two (binary) notation, and carried out to twenty-three places beyond the decimal (binary) point, it is written in this fashion: 11.0010000011111001100011. The first thirteen digits to the right of the decimal (binary) point, 0010010000111, appear as the first passage of my digital transcription of the 340-Character Cipher. This passage happens to coincide, digit for digit, with the Morse spelling of the surname O'HARE written in reverse: Morse ERKAHO = 0 010 01 0000 111. II appears in a variety of forms in the literature. It is used in a strictly mathematical way, e.g., in the structure of the Cryptogram (999 letters of English, eighteen of anagram, expressing a ratio corresponding to the ratio between the rational and irrational parts of the number 1308). It appears in its Roman spelling PI either as letters or as alphabetic quantities. The misspelling MINUTS in the Confession Letter, Morse 11 00 10 001 1 000, is a digital revision of 110 0 10 0 0110 00, GENE PI. The first two lines of the Mount Baldi Letter, with its rather pointed corrections, are written in sixteen and nine letters, respectively. By alphabetic quantity, 16 = P, 9 = I. Then there is the Melvin Belli Letter, where Z refers to victim "no nine." By alphabetic quantity, N = 14, D = 15. NO NINE is another way of saying "14159," the base-ten fraction of II to five places.

SS is a two-digit short form for the surname O'HARE. This name is written in Morse Code with five dashes and eight dots. It appears in a variety of ways. It is found as absolute number (three of

the six digits in the 340-Character Cipher express character numbers 29, 116, and 232 — i.e., 58×2^0 , 58×2^1 , and 58×2^2 , a progression from which 58 (58×2^0) is conspicuously absent). It appears as atomic number, as in "versus" (Bau Bomb Letter), the element carbon having an atomic number of 58. It appears in binary notation immediately following the first occurrence of digital 130 in the 340-Character Cipher; if 130 is a given name (i.e. BMH), then 58 is found in the position which would ordinarily be occupied by a surname.

BMH is another two-digit short form for the same name. Here are two examples from the literature. The second letter from Z, in 1974, harped on the letters SLA, a WIZARD-anagram for the sentence "Z (is) BMH." The next letter in 1974 was signed, "A Citizen." The word CITIZEN can be read anagrammatically as the sentence "Z (is) CII 1+ TEEN." CII is the Roman numerical writing of 102. $102 + 10 = 112$; binary 111-0000, Morse BMH. For a third example, see RKB, below.

Radian, a unit of angular measurement equal to approximately $57^\circ 17' 44''$ or a circle divided by 2π . The radian was coined in the late nineteenth century as a replacement for the degree-minute-second system, which goes back ultimately to the Babylonian calendar. The degree, like the rad used by the NATO military — there are 6400 miles to the circle!, is an arbitrary unit for division of the circle. The radian is intrinsically related to the structure of the circle itself, which makes certain kinds of computations much easier. In decimalized notation, the degree-value of the radian is $27.2957749131\dots$ (as with π , the fraction of the radian is never ending when translated into degrees; the chief advantage of using the radian for computational purposes is that since the unit incorporates π , irrational fractions can be avoided). In the Zodiac Literature, the radian appears in the invisible geometry of the Death Machine Diagram and in the map-scheme Blue Rock Spring-Mount Diablo-Presidio Heights, expressed as angular measurement. The author refers to it explicitly in two letters in the summer of 1970. Its numerical value (in degrees) appears in the 32-Character Cipher (as advertised) and the 12-Character Cipher.

BMH, a Zodiac paraphrase for the Golden Section, defined in number as the quotient of the operation $(1 + \sqrt{5})/2$, or approximately 1.61803399... \downarrow . The Golden Section (or "Golden Mean") is also given in mathematical parlance with the Greek letter phi. BMH occurs in the expression "Death Machine" — used to describe the first Bau Bomb — and in the Zodiac's telephone call to the Napa Sheriff's Department recorded on tape as beginning with, "I want to report a murder — no, a Double Murder" [my emphasis] — note the use of *not-a-murder*, here a self-correction, to underline a significant statement. BMH is usually connected with Bella Margotoff's birthday. In the example just quoted, Michael O'Hare was, on the date of the Lake Berryessa murder in Napa County, 9/14/53 days of age, 9-7-45 being the date of his mother's 38th birthday. The "Tuner" of the Bau Bomb Diagram contains a Golden Mean right triangle, one apex of which is the apex of an invisible geometry 38° angle. In binary notation, the fraction of phi carried out to five places is 0.10011, which is identical to the Morse writing 100-11, BMH. Taken this far, the fraction of phi is 10012... or 38/64. BMH occurs at least once in the O'Hare doctoral dissertation in the mispaginated (mis>tagged) page 4-13; by alphabetic quantity, 4 = D, 13 = M. The base-two fraction of phi is 0.10011-110001101110111... to twenty places.

RED, one of many paraphrases for the word CIRCLE. Since π determines the relationship between the parts of the circle — and since its base-two writing spells the name OHARE in Morse Code — circles appear to be very important in the internal mental life of this author. In the article proposing the new art form "meta-writing" (Cambridge 28, February 1961), he published a photograph of an original sculpture, which is made up entirely of circles and segments of circles. The Zodiac's last letter, postmarked 9 July 1974, was mailed in San Rafael, which not only straddles the 38th Parallel, but also has a branch post office designed by Frank Lloyd Wright; this post

office, like the rest of the buildings in the Civic Center complex of which it is a part, is made up entirely of circles and segments of circles. That letter was signed, "Red Phantom (red with rage)." (REDWITH in Morse is 010 0 100 011 00 1 0000; binary 0.2843865; RACG is 010 01 110 0, binary 0.3046875; the average of the two fractions is 0.2944945, which is remarkably close to the fraction of the radius (see above)). Taking RHD as a paraphrase for the word "circle" or "zero," and reading MT as another circle-paraphrase (see MT, below), the expression RED-PHANTOM is easily amalgamated as RED-MT PAN OHL. RED-MT is another way of saying "001," the Morse letter I, subject of sentence. The predicate, PAN OHL, is how you say "Master OHL" in Pol-Ish. That might seem far fetched if it were not for the fact that Michael O'Hare's mother, Herta Margoulis, was born and raised in Poland.

150, the Morse-to-binary writing of the word TITAN. 150 appears explicitly in the letter covering the 340-Character Cipher, where Z, refers to the distance between him and the police as "150 ft." 150 appears most frequently in the telephone literature, redivided as 1 001 0110, where the initial 1 stands for the word "digit" and the balance for the Morse letters UP, signifying the English sentence, "Dig up." The expression DIG IT UP as found in the Mount Diablo Letter of the Zodiac is probably meant to be read as the signature TITAN. 150 as TITAN is used to refer to Nimrod, King of Babylon, who constructed the tower that brought on the Confusion of Languages. Dame condemns him to an eternity of speaking a language that no one else understands. In another combination, 150 followed by binary four, 00010110 100 (base-ten 1204) is used in the telephone literature to refer to another denizen of the Ninth Circle, Antos, the archetypal serial killer.

MT, another paraphrase for "circle." MT is Morse 11 1, a digital redivision of 111, Morse letter O. MT is the simplest phonetic redaction of the English word "empty." Since its inception, the natural ratio has been syncretism with emptiness. Our word "zero" derives from the Arabic *zif*, whose concrete meaning is "empty." MT appears in numerous Zodiac messages in such a way as to be sensible when equated to the words "circle" or "zero."

117, the longitude in degrees of the city of Riverside, California. 117 appears digitally in the 32-Character Cipher, as angular measurement in the invisible geometry of the Bas Bomb Diagram, and as the Character number of the third Crossed Circle in the 340-Character Cipher. 117 appears to denote both the city of Riverside and the crime committed there by the Zodiac. Followed by the letter O (Morse 1111), standing for the degree-symbol (%), i.e., 117 O, digital 1111001 111, we have binary 943. The mirror-image of 943, 348, appears to refer to the last Zodiac crime, the murder of Jean Webster in Massachusetts in 1981. The group 117 is the first three digits of Michael O'Hare's Social Security number (117-32-2126). Consequently, 117 is rooted in 58 (see above); binary 117 is binary 58 followed by a one (1111001 1 = 117 [58 is underlined]).

Circle 7, a Dame-reference signifying "murder," is expressed in a variety of ways, e.g. in the 340-Character Cipher, where the next to last passage reads 11 0 0000000, MIL Circle 7.

NINE O, another Dame-reference signifying the abode of both Nimrod and Antos. It appears in redivided form both in the initials DLMT (Deer Lodge, Montana) and in TITWILLO ("TITAN [ang] NINE O"), in the Exorcist Letter. NINE O x 2, found in the telephone literature (check time 11:02), appears to stand for the expression 9090, the base-ten writing of 1000 11 10000010, Morse BM 150.

ZODIAC, a digital redivision of the expression GENEBERTA. Two variant forms of standard Morse letters are required to complete this redivision. 000 is used as crossed circle, to replace the letter O, and 0101, the mirror-image of Morse C, is employed as the final letter. Thus, GENE-BERTA (110 0 10 0 1000 0 010 1 01) redivides to ZODIAC ([110 100 100 00 01 0101].

29. a paraphrase for THE END. It appears as such in both the 12-Character Cipher and the inappropriate expression SWAMPED OUT (both on the same page of the Bin Bomb Letter). Alternate forms are digital 00010, Morse shorthand for "end of message" and 331 (331° being the reflex angle of 29°). TWENTY NINE is 20-68 (where binary 68 = Morse NINE). 2068 is binary 1000-00001100, which reduces to Morse 1-0000 0 0 10 (0), THE END.

APPENDIX C

A ZODIAC CHRONOLOGY

26 October 1966

Z. disables Cheri Jo Bates' automobile while she is in the Riverside City College library by disconnecting her battery. When she comes out and finds that her car will not start, Z. offers her a ride home. About three blocks away, he forces her into an alleyway off of Terracina Court and cuts her throat after a brief struggle. He leaves a man's Times watch stopped at 12:22 beside her body.

29 November 1966

Z. mails carbon copies of a typewritten letter titled "THE CONFESSION" to the *Riverside Press-Enterprise* and the Riverside police.

20 April 1967

Z. mails three handwritten copies of a second letter to the *Press-Enterprise*, the Riverside police, and to Joseph Bates, the victim's father (entire text: "Bates had to die. There will be more. Z"). About the same time, he leaves a poem scratched into the top of a desk at the city college library; the poem apparently alludes (at least) to the Bates murder.

20 December 1968

Z. murders Bettina Jensen and David Parsley at a lovers' lane near Benicia (Lake Herman Road) with a .22-caliber firearm.

4-5 July 1969

Shortly after midnight on the 5th, Z. attacks Darlene Ferrin and Michael Magana in another lovers' lane near Vallejo (Blue Rock Springs golf course), this time using a 9mm automatic pistol. Ferrin is DOA at Vallejo General Hospital; Magana is only superficially wounded and survives to describe his assailant. After the attack, Z. drives four miles across the city of Vallejo and Interstate 80 to report the shooting from a pay phone at Bud's Texaco on Springs Road, about four blocks from the Vallejo police department building.

25 July 1969

Z. mails the cryptogram, divided into three parts, and accompanied by cover letters in which he identifies himself as the author of the murders at Lake Herman Road and Blue Rock Springs, to the *Vallejo Times-Herald*, the *San Francisco Chronicle*, and the *San Francisco Examiner*. He claims that the solution to the cryptogram will yield his identity. He substantiates his claim to being the murderer by describing in detail the clothing of the two victims at the first murder scene and the position of their bodies with respect to the car and the points of the compass, as well as giving the brand name of the ammunition used and the number of shots fired (which could be compared with

the number of spent cartridges found at the scene); he also describes Magena's behavior, which had been unpublished hitherto (Magena leaped into the back seat of the car and struck out at Z. with his feet after being shot once in the face).

1 August 1969

Z. mails a lengthy letter to the *Examiner* in which he repeats his claim that the solution of the cryptogram will reveal his identity, and he reviews events from the first two Bay Area murders.

27 September 1969

Z. accosts Cecilia Ann Shepard and Brian Hattell while they are picnicking at Lake Berryessa. He is wearing a black cloth hood on which he has embroidered his crossed-circle signature in gold-colored thread. Holding the couple at gunpoint, he says that he was born in Colorado and has escaped from prison at Deer Lodge, Montana, and that he killed a guard while escaping. Saying that he intends to take their car, he demands their car keys. Then he ties them up with a length of clothesline. Having done so, he puts away his pistol and pulls out a butcher knife, with which he stabs them repeatedly. Leaving them for dead, he leaves an inscription on their car door with a black felt-tip marker. Afterward, he drives some forty miles into downtown Napa to report the crime to the sheriff's department from a pay phone at a car wash on Main Street, about four blocks from the hall of justice.

11 October 1969

Z. hires a Yellow Cab in downtown San Francisco driven by Paul Stine. He asks Stine to take him to the intersection of Maple and Washington in Presidio Heights. Somewhere along the line, he tells Stine to drop him off instead at the corner of Cherry and Washington, a block away from the original destination. At that intersection, Z. shoots Stine once in the hand with a .38-caliber revolver. Getting out of the cab, Z. tears into the driver's side from the street while he uses a knife to back off one of Stine's shirt tails, which he then dabs in Stine's blood. Eyewitnesses who have heard the shot call the police emergency number. A confused dispatcher alerts the responding police units to stop a fleeing "black" suspect. The first two officers on the scene stop Z. and ask him if he has seen a suspicious-looking black man running away. Z. responds with something on the order of "He went thataway." Shortly thereafter, the police realize their mistake when they compare notes with the eyewitnesses who have observed Z. leaving the cab.

14 October 1969

Z. mails a letter to the *Chronicle* in which he identifies himself as the murderer of the people in the North Bay as well as of the taxi driver from three days before. To prove it, he encloses a snippet of Stine's bloodstained shirt tail. The fabric and the blood type match. He misidentifies the intersection at which the cabby murder was committed as Maple and Washington. He recounts his close call with SFPD. He muses about attacking a school bus as his next project.

10 November 1969

Z. mails to the *Chronicle* a commercial greeting card with a fountain-pen theme, a lengthy letter in which he recounts in even greater detail his encounter with the San Francisco police, and the 340-Character Cypher. The letter contains a diagram for an infernal device which he says he will use to carry out his school bus attack. He calls it his "death machine."

20 December 1969

Z. mails a letter to personal injury attorney Melvin Belli. He discusses his technical difficulties with the "death machine" and says that he is out of "control." Melvin Belli cuts short a ski vacation in Nevada to return to San Francisco, spending considerable time on the radio appealing to the murderer to give himself up.

19 March 1970

Z. disables the car of Kathleen Johns on Highway 132 in the Central Valley, not far from the Bay Area. Luring her into his car with the offer of a lift to a service station, he then openly admits that he is going to kill her and her infant child. Johns manages to get away and identifies her assailant to the police as the Zodiac from a likeness she sees on a wanted poster in the local sheriff's department.

20 April 1970

Z. mails the *Chronicle*: a letter containing a thirteen-character cipher which he says reveals his name. On the second page, he presents a detailed diagram of his new "buried bomb," the first one having been a "dud." He appears to be claiming a total of ten victims.

28 April 1970

Z. mails his second commercial greeting card, this one with a dragon-theme, to the *Chronicle*. He complains about not seeing anyone wearing a Zodiac "baton." He says that he does see people wearing "buttons" bearing the slogan, "melvin eats blubbs." He makes his last threat to attack a bus.

29 June 1970

Z. mails a letter to the *Chronicle* containing a thirty-two character cipher, which he says will reveal the location of a concealed bomb when used in conjunction with the enclosed map (a Phillips 66 road map of Contra Costa County, annotated with a clock face centered on Mount Diablo). He says that the police will find "something interesting" if they place a radian on Mount Diablo, that to find the "buried bomb" it is necessary to go "four inches along the radius" and that it is necessary to turn the "magnetic indicator" on Mount Diablo to north.

17 July 1970

Z. mails to the *Chronicle* a letter in which he describes tortures he envisions for future victims. He quotes at length -- with numerous and egregious misspellings -- from the patter-song "I've got a little list" from the Gilbert and Sullivan operetta *The Mikado*, and he alludes to the attack on Kathleen Johns, which has not been mentioned in the press up to this point.

6 October 1970

Z. mails to the *Chronicle* a postcard in which he has punched thirteen holes (a row of ten and a row of three) and on which he has pasted snippets cut out of newspapers and magazines. Sample: "Pf, I am crackproof."

27 October 1970

Z. mails to the *Chronicle* a commercial greeting card relating to Halloween. On the inside of the card, he pastes a dime-store paper skeleton. Using white artist's ink, he draws in thirteen knotholes with eyelashes and writes the expressions "HOO," "SA-TEEN," and "Perk-a-boi — you are doomed!" This card is not mailed to the editors of the newspaper, but to Paul Avery, the reporter who has by-lined all of the paper's Zodiac stories to date. He misspells Avery's name as "Averdy."

4 November 1970

The Regional Planning Commission for Reno, Sparks, and Washoe County holds the last of three public meetings at which the construction permit for Noise Cascade's Incline Village Unit 6 project is taken up — and voted down. Noise Cascade abandons the project.

16-17 November 1970

Avery publishes a two-part series in the *Chronicle* in which it is revealed for the first time that Z. has murdered not only the five known Bay Area victims, but also Cheri Jo Bates in Riverside. Until this time, it has not been known publicly that the same person is responsible for the Riverside murder as well as the Bay Area crimes.

19 March 1971

Z. mails a letter to the *Los Angeles Times* in which he owns up to the Riverside murder. Four months have elapsed since his authorship of this murder was revealed in the *Chronicle*. He says that the police are finding only "the easy ones," and that there are "a hell of a lot more down there." He writes the number "17" at the foot of the letter, which the *Chronicle* interprets as meaning that he is claiming seventeen victims. This is the only letter from the Zodiac in the period 1968-1971 which is not postmarked in San Francisco. The postmark on this letter is Pleasanton, in the East Bay.

22 March 1971

Z. mails a postcard to the *Chronicle* on which he has pasted an architect's rendering of a condominium project at Lake Tahoe. It has pasted over it several strange-sounding phrases, such as "Sought Victim 12." A hole is punched in the upper right-hand corner of the card. The *Chronicle*, which publishes a week before that Z. was claiming seventeen victims, now says that he is claiming twelve.

28 January 1974

Z. mails to the *Chronicle* a letter in which he quotes from the "Willow Song" from *The Mikado*, gives a brief review of the movie, *The Exorcist*, which he describes as "the best satirical comedy," and threatens to do "something nasty" if his letter is not published. This letter is postmarked near the foot of the San Francisco Peninsula, in Sunnyvale or Palo Alto.

14 February 1974

Z. mails to the *Chronicle*, from San Francisco, a brief note in which he points out that SLA (as in "Symbionese Liberation Army") is the spelling of an Old Norse verb meaning "kill." He signs himself "a friend."

8 May 1974

Z. mails to the Chronicle, this time from southern Alameda County, a letter signed "A Citizen," in which he takes the newspaper to task for running advertisements for the movie *Death Wish*, because, as he says, it glorifies violence.

9 July 1974

Z. mails the Chronicle (from San Rafael in Marin County) a letter in which he complains about their columnist, Count Marco. He signs himself "Red Phantom (red with rage)." Nothing more is ever heard from the Zodiac in the Bay Area.

28 November 1981

Harvard graduate student Joann Webster returns to Boston from a Thanksgiving visit with her parents in New Jersey. She is last seen alive at Logan Airport in the Eastern Airlines baggage-claim area. Her wallet and purse are discovered a few days later next to the southbound lanes of Highway 107 between Boston and Lynn. Her suitcase is discovered about two weeks later in a storage locker at the Greyhound bus terminal in downtown Boston. Her body has never been found.

APPENDIX D

CLAIMS OF VICTIMS

The relationship between the Zodiac and the news media has always been characterized by the tendency of the press to attribute to him far more victims than can be proven to have been murdered on the basis of objective evidence. This is a natural consequence of a sensationalist editorial policy, especially on the part of such newspapers as the San Francisco Chronicle.

While inflating the number of murder victims beyond what could be proven by the evidence, the Chronicle ironically led the way in denoting the survivors of Zodiac attacks from victim status. Before it was known that the Zodiac had murdered Cheryl Jo Bates in Riverside, he was credited in the San Francisco Bay Area news media with only five victims. The two individuals who had been shot at point-blank range with a 9mm automatic pistol or stabbed seven times with a butcher knife were, by Chronicle semantics, not "victims." Only the dead were.

The Zodiac knew that by writing a number prominently on a letter, the news media would interpret that number as a victim-claim. Several examples have already been cited in this book. In those cases, the expression in question does not contain the word "victim," and the number in question does not stand in a syntactic relationship with subject and verb, as in the sentence, "I have killed X people," where X stands for some number.

The cases where this syntactic relationship does not exist can easily be discounted as victim-claims. For instance, I have shown how the supposed victim-count of the Ecopist Letter, "Mr 37," makes more sense as a self-description applied both to Michael O'Hare and his parents. But there are cases in which there appears to be an unequivocal statement as to the number of people killed by this murderer, and in each case, the number in question sharply diverges from historical fact. The purpose of this appendix is to reconcile the apparent discrepancies between victim-claims and the proven facts.

Two of the most important Zodiac idiosyncrasies to bear in mind here are the idiomatic value of 3 for the letter E, already discussed above, and casting out nines. These two assumptions make it possible to resolve the seeming discrepancy between history and language. I have already demonstrated how the expression, "all the I have killed" is made sensible by the assumptions E = 3 and casting out nines. Similarly, "Des. July, Aug, Sept, Oct = 7" yields sensible results when analyzed according to the same assumptions.

Coincidence may be ruled out if explicit victim-claims, analyzed the same way, produce similar results. What about his statement in the Bus Bomb Letter of 20 April 1970, "I have killed ten people to date"? That seems to be very explicit. There can't be much doubt about what he is saying. If he just wrote the number "10" all by itself, as he does at the foot of the following page (Bus Bomb Diagram), that would be one thing. But here, he connects this number with the sentence, "I have killed X people." It seems to be an unequivocal claim to having murdered a specific number.

I am going to add the raius-device to E = 3 and casting out nines in analyzing this statement. I believe that the results will amply justify my assumptions. PEOPLE read algebraically is P2 E2 D.L. P = 16, E = 3, O = 15, L = 16, and 2 + 2 = 4. The sum of 16 + 3 + 15 + 16 + 4 is 88. If we read

PEOPLE as the number 88, then the sentence says, "I have killed ten (before) 88 to date." I have inserted the understood word "before" to describe the rebus-relationship between it and the following number. I have demonstrated in several other places that the use of the rebus (X before Y = Y minus X) produces meaningful results when applied to Zodiac utterances. That also appears to be the case here.

Ten before 88 is 88 minus ten, or 78. When we cast out nines, $7 + 8$ is 15, $1 + 5$ is 6. As of 20 April 1970, the Zodiac had in fact murdered six people.

That is an indisputable historical fact. What about the expression "to date"? Does it have some kind of role to play here? The postmark on the San Bomb Letter is 20 April 1970; Julian Date 110. 110 to the base two is six. In other words, the date gives the same count as the expression TEN PEOPLE. It is there to reinforce the other reading.

In the letter covering the 240-Character Cipher, we have a similarly explicit-speaking victim-claim: "This is the Zodiac speaking. Up to the end of Oct I have killed 7 people." That sounds very unapologetic — until the statement is examined in the same way as the seeming claim in the Pen Card ("Dec, July, Aug," etc.), which was mailed on the same date. OCT is $15 + 3 + 20$, or 38. If we bear in mind that 38 and TIME are interchangeable, the claim of seven (dead) victims — including Leon Webster in 1981 — makes historical sense. In 1981, Michael O'Hare was 38 years of age. I have shown numerous examples of the prediction of that crime, ten to twelve years before it happened, in the California literature. Reading 38 as TIME also makes sense. The same predictions identify the Boston murder as the last one: "up to the end of TIME I have killed 7 people" is also, in the light of the other indications in the literature, quite sensible.

I think it is appropriate to add here a discussion of the next two sentences in the same letter. Having just made the seeming claim of seven murder victims, Z goes on to say,

I have grown rather angry with the police for their telling him about me. So I shall change the way the collecting of slaves. I shall no longer announce to anyone, when I commit my murders, they shall find file routine robberies, dillings of anger, & a few false accusations, etc.

"I shall change the way the collecting of slaves" sounds as if something has been left out, somewhat like "all the I have killed" in the cryptogram. Graysmith reproduces the first page of this letter, in which "I shall change the way" appears. His caption reads:

Part of Zodiac's seven page letter of November 9, 1969, to the Chronicle, in which he "changes his way of collecting slaves."

Graysmith's scholarship values are showing through again. The author always called himself "the Zodiac," not "Zodiac." Graysmith has no way of knowing when the letter was written. It was postmarked on 10 November 1969, not the ninth, which was a Sunday (10 November 1969 was Julian Date 314, or 1088), and what Graysmith encloses in question-marks is not what the author has actually said. Graysmith makes "change" into "changes," "the" into "this," leaves out the "of" following "collecting," and inserting an "of" between "way" and "collecting."

This is the Zodiac speaking up to the end of Oct I have killed 7 people. I have grown rather angry with the police for their setting lies about me. So I shall change the way the collecting of slaves. I shall no longer be anonymous to anyone. When I committ my murders, they shall look like routine robberies, killings of negroes, & a few fake accidents, etc.

The police shall never catch me, because I have been too clever for them.

1 I look like the description passed out only when I do my thing, the rest of the time I look entirely different. I shall not tell you what my disguise consists of when I kill 2 As of yet I have left no finger-prints behind me contrary to what the police say

This is the Zodiac speaking
up to the end of Oct I have
killed 7 people. I have grown
rather apathetic with the police
for their arrogance.
So I shall
be collecting
no long or
when I committ my murders,
they shall look like routine
robberies, killings at large,
a few fake accidents, etc.

GENE = 2 = 50	one.
188 + 22 = 210 (BERO)	the
T of "TO" = Character #520 (THREE)	
"TIME" = Word #118	
Ampersand = Character #256 (28)	

The police shall never catch me,
because I have been too clever
for them.

- 1 I look like the description
passed out ~~only~~ when I do
my thing, the rest of the time
I look entirely different. I
shall not tell you what my
describtion consists of when I kill
- 2 As ~~of~~ yet I have left no
finger prints behind - contrary
to what the police say
#520 (= THREE)

This is the Zodiac speaking up to the end of Oct I have killed 7 people. I have grown rather angry with the police for their telling lies about me. So I shall change the way she collecting of slaves. I shall no long or answer anyone, when I committ my murders, they shall look like routine robberies, killings of anger, & a few fate accidents, etc.

The police shall never catch me, because I have been too clever for them.

~~1 I look like
polled out ^{120°} my
my thing, the rest of the time
I look entirely different. I
shall not tell you what my
desire consists of when I kill
2 As of yet I have left no
finger-prints behind me contrary
to what the police say~~

120° = one-third of a circle
reflex angle = 240° , or two-thirds

The last alteration in the text is interesting. It appears to be what this sentence is crying out for. "I shall change the way of collecting of slaves" is not elegant English, but it does sound more correct. I submit that the omission is supposed to suggest the word "of" to the reader, just as it has to Graysmith. Grammatically speaking, "collecting of slaves" is an objective genitive, where the possessive (with "of") replaces the verb-direct object relationship. Digitally speaking, OF is Morse 111-0000, binary 111, or the product of 21 x 3. As pointed out in connection with the 32-Character Cipher, 21 x 3 contains the two major story-elements pertaining to the murder of Joan Webster in 1963 (THREE = BUS, the Boston Greyhound terminal, where her suitcase was deposited by her murderer, being the apex of a 36° angle formed by the three Joan Webster sites).

This apparent reference to a future murder is found in a sentence in which the Zodiac is discussing future murders. In context with "up to the end of Oct" (= 38), it is quite consistent with what we know about this future murder. Another indication in the letter bears out this interpretation, and this time it is given in the form of invisible geometry.

On the first page, there are three misspelled words, "comm," "entire," and "descrie." All three feature the letter L with accompanying dot. The three L-dots form a 120° angle. Or, seen another way, they form a 240° angle. If we can count Joan Webster as a (future) Zodiac victim, then we can say that two out of three Zodiac episodes have been completed. Riverside and Bay Area murders are behind Z., and Boston lies ahead. 240° is two-thirds of a circle. The same device appears in the second Riverside letter ("States had to die. There will be more. Z"), postmarked on 30 April 1967, Julian Date 120. That letter marked the end of the first Zodiac episode (one-third of the total), and like this letter of 20 November 1969 (postmark), it predicts future victims. Both letters express the number 120, one as a postmark, the other by means of invisible geometry.

This letter has a number of other interesting features. One of the more obvious ones is alliteration, which is used, to my knowledge, in no other Zodiac letter. No one has ever commented on it before; but it stands out here like a sore thumb. "When I commit my murders, they shall look like routine robberies, killings of anger, & a few fake accidents, etc. This pattern begins in Line 9. Is it any wonder that the sequence MLRP in Morse Code, 11 0100 010 0010, is a redivision of 11 0 10 00 00 0 010, ME NINE? "Nine" is an alternate form of the word "nine" used by the military and some technical professions to help avoid confusion in telephone communications between "nine" and "five.")

Toward the bottom of the page, Z. begins numbering his paragraphs. The last line on the page begins with the preposition "to," the T of which is Character #520. Morse THREE, 1-0000 010-0 0, is binary 110, which also redvides to Morse 000 001 000, BUS.

Just by way of experiment, I joined the cross of Character #520 with the cross of the T of "time," in Line 18. Then I connected both to the cross of the ampersand in Line 11, partly because it is the only figure of its sort on this page, and partly because it is Character #256 (2⁸). The 108° angle at the T of "time" redvides in Morse to 11 0 1100, ME Z, and it adds to the 22° angle at "to" to make the number 130 (RFR). The angle whose apex is on the ampersand is 50° (GENE/C). Note that the line TO-TIME joins not only the crosses of the two letters T, but also the 1-dot of "time." The line TD-ampersand neatly intersects the cross of the T in ENTHILL. I connected that to the cross of the T of TIME and ampersand. What I got was a 36° angle.

Sierra Club

...around in the snow
in the mountains

Sought victim 12 pass lake below area

"Post through the pines."

3 - 23 - 71

(OL-6)



SEARCHED BY

Then we have the line which bisects this page. Above the line, Z. has written 278 characters, including the notation "1/6" in the upper right-hand corner. Below the line, he has written 259 characters. 278 over 259, or 278/259, is 1.07. 107 is the number of the highway beside which the murderer of Joan Webster left her wallet and purse a bit more than eleven years after this letter was received. 38, HHS, triangle, 107 -- these we have the elements of the Joan Webster disappearance twelve years after this document was received.

Finally, we have a phrase appearing on the Luke Talbot Card, "Sought victim 12." At the time, the *Circusicle* interpreted this as meaning that the Zodiac was claiming twelve victims. Just the week before, they had interpreted the appearance of the number 17 on the *Los Angeles Times* Letter as meaning that he was claiming to have killed seventeen. Here, of course, the number does appear in context with the word "victim." It is also the object of the verb "sought." If we are to take this at face value, then it is a claim of eleven victims, not twelve. It may be that if ye seek, ye will find, but seeking is not the same thing as finding.

But I suggest that this is not a victim-claim at all. In the first place, the card shows a picture of a Michael O'Hare project. The name of the game is self-identification, not keeping score. I am going to treat this phrase as an anagram. We have to remember that the only authority for the content of an anagram is the author's word, and we do not have that here. Even so, I believe that the following analysis is correct, since it yields something consistent with what we know about Michael O'Hare.

UGHT is a paraphrase of the word "zero." OUGHT = 0. MT is a standing Zodiac paraphrase for the same thing. MT = 0. CVII = 107. 8 = 19. 12 = 12. The sum of 107, 19, and 12 is 138. OUGHT MT = 00, and algebraically speaking, 00 = 02. I suggest reading SOUGHT VICTIM 12 as 02138, the ZIP Code of West Cambridge, Massachusetts, where Harvard University is situated. 02138 replaced the postal zone Cambridge 28, from which the student literary periodical *Cambridge 28* took its title. Once again, Michael O'Hare was a staff editor for Cambridge 28 for three years and its editor for one (academic year 1963-1964).

We know for certain that the Zodiac murdered six people in California and that he severely injured two others. It seems certain to me, based on evidence discussed elsewhere in this book, that he also murdered Joan Webster. It seems equally certain that he has killed no one else and that he will never kill again.

Sensationalism helps to sell newspapers and books, and so over the years, the score of supposed Zodiac victims has been raised to levels that cannot be justified by the evidence. Z. played on this tendency, and by means of ambiguous statements and seeming claims that had been camouflaged by mathematical trickery, he has succeeded in making unwitting allies out of the media. The wilder the claims sounded, the more confusion, and the more confusion there was, the harder it would be to identify and apprehend this criminal. I hope that this book will help to clear up the confusion.

APPENDIX E

TELEPHONE AND OTHER NUMBERS

Michael O'Hare's telephone number in 1981 was 347-6266. I have already recounted how the discovery that binary 6266 spells the monogram MHQ in Morse Code earned David Cantor and California recognition awards. But aside from pointing out that his 1974 business phone number, -0451, is a lightly disguised form of his mother's 58th birthday, I didn't say anything about the rest of the 1981 number — or his current one.

Working backwards, his present number, -0451, is a rather curious mathematical counterpart to the -6266 number. Here's 6266 in binary: 1100001110010. The underlined part is identical in form to the Morse spelling of MHQ (11 0000 111). Here's 451 written to the base two: 111000011. It's the mirror image of MHQ. In 6266, the MHQ-sequence is followed by -1010. MHQ is a curiosity, being another one of those convergences of systems so dear to the Zodiac's heart.

If you write out the word ONE in Morse, you get the binary number 601111 10 0. We have already found several instances of TWO, which is interchangeable in Zodiacese with 99 (1 001 111), THREE, Morse 1 000 000 + 0, is binary 520. The numbers FOUR through EIGHT cannot be written as binary numbers, since they have leading zeros. NINE (Morse 10 00 10 0) is interchangeable with binary 68. In other words, of the numbers whose English names can be written in Morse Code so as to form a binary number, there is no resemblance between the quantity represented by the English word and the quantity represented by its Morse-to-binary form.

TEN is the convergence of systems. Morse TEN, 1 0 10, is binary ten (1000). It is astonishing that such a convergence would exist at all. The designers of the English language and Morse Code certainly weren't planning on it. It's just another of those amazing coincidences which attend this subject.

The alphabetic quantities of M (13), H (8), and O (15), add up to 36. I suspect that 6266 is meant to be read as 36 (x) TEN, or 360 — another paraphrase for "circle." But it has another dimension as well. I have pointed out the Zodiac's use of the mathematical idea, where one number before another implies subtraction of the leading number from the one following. But there is another way to read such a configuration of numbers. Half of this number (32) is to the left of the other half (66). Let's read it as "32 left of 66." Curiously, this expression defines the date on which the Zodiac committed his first murder in Riverside, on 20 October 1966, when there were 32 days left of the year.

The root of 6266, the part that spells MHQ in Morse Code, is 110000111, binary 391.

Curiously, and I suspect not at all coincidentally, the second Zodiac murder took place on 20 December 1968, 782 days following the first. What makes it curious is that 782 is the exact double of 391 ($391 \times 2 = 782$).

The third Zodiac murder took place — all depending on where you choose to listen to — on the 4th or 5th of July 1969. The reason for discrepancies in the telling is that the shooting actually took place shortly after midnight on the night of the 4th. Technically speaking, the Blue Rock Springs

murder occurred on 5 July. In the letters accompanying the cryptogram parts, the Zodiac usually refers to Lake Herman Road by name; but he consistently refers to the second Bay Area shooting by its date, the Fourth of July. He knew, from reading the newspaper accounts, that the date was actually on the 5th, just as he must have known that the shooting of Paul Stine took place at the corner of Washington and Cherry. But he insisted that Stine had been murdered at Washington and Maple anyway. There had been no report in the papers about the trip-book entry indicating that the corner of Maple Street had been the original destination, and he was anxious lest the house numbers in the block between Maple and Cherry (3800s) escape public notice. Similarly, having missed the date on which he had intended to commit the murder at Blue Rock Springs — due to bad luck — he harped on the date in defiance of the historical facts.

I pointed out that the root of 6266 is binary 391. I also pointed out that the double of 391 is 782, the interval in days between the Riverside murder and the first Zodiac attack in the San Francisco Bay Area. Just as a thought-experiment, let's figure out half of 391, $391/2 = 195.5$. If you were to express 195.5 as a number of days, you would have to round off. In every place excepting the U. S. Army artillery, fractions of 0.5 or higher are rounded up. (According to the Artillery Round-Off Rule, fractions of 0.5 and below are rounded down.) In other words, half of 391 calendar days would have to be 196. That just happens to be the exact interval in days between the Lake Herman Road murders and the shooting at Blue Rock Springs — assuming that the Blue Rock Springs shooting took place on the Fourth of July.

The timing of the first three murders, then, appears to constitute another missing-number puzzle, in which the missing number is 391. Or perhaps it's just coincidence.

(391 is the product, incidentally, of the operation 23 TIMES 17. $23 \times 17 = 391$.)

You wouldn't think that it would be possible even for a person who is totally preoccupied with certain numbers to get them expressed in real-estate documentation; but they crop up in Michael O'Hare's property records.

Take, for instance, the easement on file in the Strafford, Vermont, Town Records, in which Mike deeds to the local utility company a right-of-way across his property for a power line to pass "approximately 79 feet" from his summer home. I submit that "79 feet" is not "approximate" at all. It is quite precise. Once again, binary 79, 1000111, subdivisions to 10001111, 9-7, the date of this individual's mother's birthday. Perhaps it's only coincidence — and if it isn't, it must have taken some doing on Mike O'Hare's part, since there was another party involved in the transaction — but the purchase price on the Strafford property was (in 1971 dollars) precisely \$9700.

Then there's the Harvard job. Mike taught for seven years at MIT, where he was taken on as an assistant professor without a D.P. (dissertation in progress). As soon as he had completed the Ph.D. program at Harvard, he was promoted to associate professor. In other words, he had job security, good academic wages, and status. He quit MIT to take a job in Massachusetts state government, then went on from there to a job as lecturer at Harvard's Kennedy School of Government.

Lectureships are the lowest rung on the career ladder in academia. Harvard is noted for not promoting in-house, but for recruiting associate professors from outside. He had no job security, low pay, no status, and little hope of advancement. What a come-down for someone who had been so successful at MIT! Why did he do it? Was there some kind of idealistic or altruistic motive involved, or did it have something to do with the street address of the Kennedy School of Government — 79 John F. Kennedy Drive?

Then there's the house in Brookline. Early in 1982, following his divorce from Carol Ann Bertrand, Michael O'Hare purchased a large house in Brookline, in joint tenancy with Debra Sanderson, a professional associate. The two partners put up a down payment of \$80,000, leaving a mortgage balance of \$165,000 - a rather hefty amount for two people low down on the academic pay scale. The move to 12 Abbotsford Road in Brookline also meant moving across the Charles River from Cambridge, where Mike had lived for most of the past twenty-one years. Again, there must have been a compelling reason for doing so. Could it have had anything to do with the fact that 12 Abbotsford Road is on surveyor's parcel #38?

Not long after "The Calculus of Evil" appeared in *Mystery Readers*, I received a very thoughtful letter from a reader on the East Coast who said that in any single instance of the patterns which I had documented in the Zodiac letters, coincidence could easily be the cause. But the sheer number of repetitions, he said, reduced the probability of coincidence to insignificance. I suggest that the same observation applies to the phenomena noted above as well.

There are just too many of them.

APPENDIX F

MISCELLANEOUS LETTERS

For the sake of completeness, this appendix presents the texts of several letters which have received short shrift in the foregoing book. With one exception, they are not available to me in photographic reproduction. The first letter, which accompanied the portion of the cryptogram text sent to the *Valley Times-Herald*, was published in that paper on 1 November 1981. I am reproducing it here in diplomatic form because the photograph is of such poor quality.

Dear Editor:

I am the killer of the 2 teen-
agers last Christmas at Lake Herman
and the girl last 4th of July. To
prove this I shall state some facts
which only I & the police know.

Christmas:

- 1 Brand name of ammo: Super X
- 2 10 shot feed
- 3 Boy was on back foot to car
- 4 Girl was lying on right side
foot to waist

4th of July:

- 1 Girl was wearing patterned
pants
- 2 Boy was also shot in knee
- 3 Brand name of ammo was
Western

Here is a cipher or that is
part of one. the other 3 parts
have been mailed to the S.F.
Examiner & the S.F. Chronicle.
I want you to print this
[new page]

cipher on your front page by
 Fry Afternoon Aug 1-69. If you
 do not do this I will go on a
 kill rampage Fry right that
 will last the whole week end.
 I will cruise around and pick
 of all stray people or couples
 that are alone then move on to
 kill some more until I have
 killed over a dozen people.

[crossed circle signature]

The next letter was reproduced photographically in part in the *San Francisco Examiner* on 4 August 1969.

Dear Editor:

This is the Zodiac speaking.
 In answer to your asking for
 more details about the good
 times I have had in Vallejo,
 I shall be very happy to
 supply even more material.
 By the way, are the police
 having a good time with the
 zodiac? If not, tell them to cheer
 up; when they do crack it
 they will have me.

On the 4th of July: [colon written as two circles]
 I did not open the car door. The
 window was rolled down already.
 The boy was originally sitting in
 the front seat when I began
 driving. When I fired the first
 shot at his head, he leaped
 backwards at the same time
 thus spoiling my aim. He end-
 ed up on the back seat then
 the floor in back thrashing out
 very violently with his legs;
 thus how I shot him in the
 knee. I did not leave the scene
 of the killing with squealing
 tires & screeching engine as described
 in the Vallejo paper. I drove away

quite slowly so as not to draw
attention to my car.
The man who told the police
that my car was brown

[end of photograph]

The balance of the text is taken from Graysmith. In Graysmith's version, "thashing" is corrected to "thrashing," "Originally" is corrected to "originally," "That's" is corrected to "that's." The lines, "... attention to my car/The man who told the police/that my car was brown" are changed to "... drew attention to my car/ The man/who told the police my car was brown" (the conjunction "that" is omitted). These alterations are quite clear from comparison of Graysmith's text with the published photograph. In short, the chances are quite good that the rest of the text has been corrupted by Graysmith. With that caution, let me go on.

...
was a negro about 40-45 rather shabby
dressed. I was in this phone booth
having some fun with the Vallejo
cop when he was walking by.
When I hung the phone up the
damn thing began to ring & that
drew his attention to me & my car.
Last Christmas.

In that episode the police were
wondering as to how I could
shoot & hit my victims in the
dark. They did not openly state this,
but implied this by saying it was a
well lit night & I could see
silhouettes on the horizon.

Balistic that area is surrounded
by high hills & trees. What
I did was tape a small pencil flash
light to the barrel of my gun. If
you notice, in the center of the beam
of light if you aim it at a wall or
ceiling you will see a black or
dark spot in the center of the
circle of light about 3 to 6 in.
across.

When taped to a gun barrel, the
bullet will strike exactly in the
center of the black dot in the light.
All I had to do was spray them...
No address

Thus Graysmith, who claims in his foreword to be reproducing "every word" the Zodiac wrote, The Examiner says otherwise, quoting Z. as concluding, "All I had to do was spray them as if it was a water hose; there was no need to use the gun sights. I was not happy to see that I did not get front page coverage." This letter, which was received and printed by the Examiner on 4 August 1969, is identified by Graysmith as having been written on 7 August and sent to the Times-Herald. Obviously, until a full photographic reproduction is published, there will be no way of knowing exactly what the author wrote.

The first page of the next letter, which carried the Death Machine Diagram is photographically reproduced elsewhere in this book. The balance is from Graysmith.

This is the Zodiac speaking
up to the end of Oct I have
killed 7 people. I have given
rather angry with the police
for their telling lies about me.
So I shall change the way the
collecting of slaves. I shall
no longer announce to anyone
when I commit my murders,
they shall look like routine
robberies, killings of anger, &
a few like accidents, etc.

The police shall never catch me,
because I have been too clever
for them.

1. I look like the description
passed out only when I do
my thing, the rest of the time
I look contric different. I
shall not tell you what my
descrip consists of when I kill
2. As of yet I have left no
fingerprints behind me contrary
to what the police say

[end of first page]

What follows is Graysmith's rendition:

in my killings I wear invi-

parent finger tip guards. All it is is 2 coats of airplane cement coated on my fingertips -- quite unnoticed & very effective.

3 - my killing tools have been bought on through the mail order until before the ban went into effect, except one & it was bought out of the state.

So as you can see the police don't have much to work on. If you wonder why I was wiping the cab down I was leaving fake clews for the police to run all over town with, as one might say, I gave the cops some busy work to do to keep them happy. I enjoy needling the blue pigs. Hey blue pig I was in the park -- you were using fire trucks to mask the sound of your cruising prowler cars. The dogs never came within 2 blocks of me & they were to the west & there was only 2 groups of parking about 10 min apart than the motor cycles went by about 150 ft away going from south to north west, p.s. 2 cops pulled a goof about 3 min after I left the cab, I was walking down the hill to the park when this cop car pulled up & one of them called me over & asked if I saw any one acting suspicious or strange in the last 5 to 10 min & I said yes there was this man who was running by waving a gun & the cops peaked rabbits & went around the corner as I directed them & I disappeared into the park a block & a half away never to be seen again.

Hey pig doesn't it rise you up to have your nose rubbed in your

booboo?

If you cops think I'm going to take
on a bus the way I stated I was,
you deserve to have holes in your
heads.

Take one bag of ammonium nitrate
fertilizer & 1 gal of stove oil &
dump a few bags of gravel on
top & then set the shit off
& will positively ventilate any
thing that should be in the way
of the blast.

The death machine is all ready
made. I would have sent you
pictures but you would be nasty
enough to trace them back to
developer & then to me, so I
shall describe my masterpiece
to you. The nice part of it is
all the parts can be bought on
the open market with no quest
ions asked.

1 bat. pos. clock -- will run for
approx. 1 year
1 photoelectric switch
2 copper leaf springs
2 6V car bat.
1 flash light bulb & reflector
1 mirror
2 18" cardboard tubes black with
shoe polish inside & out.

[diagram]

the system checks out from one
end to the other in my
tests. What you do not know
is whether the death machine
is at the sight or whether
it is being stored in my
basement for future use.
I think you do not have the
manpower to stop this one
by continually searching the
road sides looking for this
thing. & it wont do to re root
& re schedule the busses bec-

use the bomb can be adapted
to new conditions.
Have fun!! By the way
it could be rather messy
if you try to bluff me.
PS. Be sure to
print the part I
marked out on
page 3 or I shall
do my thing.
To prove that I am the
Zodiac, Ask the Vallejo
cop about my electric gun
sight which I used to start
my collecting of slaves.

Finally, the Zodiac mailed a letter to the *Chronicle* from San Rafael on 9 July 1974. It was the last authentic letter received from the murderer. It had to do with the *Chronicle* columnist Count Marco. Once again, the text is according to Graysmith:

Editor --
Put Marco back in the hell-hole
from whence it came -- he has
a serious psychological disorder --
always needs to feel superior. I
suggest you refer him to a shrink.
Meanwhile, cancel the Count Marco
column. Since the Count can
write anonymously, so can I --

the Red Phantom
(red with rage)

Concordat Valla, 1498 - 1507. Valla was an early Humanist who is primarily remembered for his analytic analysis of the so-called *Donation of Constantine*. The *Donation* was a statement in which the Roman Emperor Constantine purported temporal power over Italy to the Pope when he removed the capital of the Empire to Byzantium. For centuries, a debate raged over the Pope's acting as *pope*, since they seemed to be prohibited from doing so by the doctrine of "Kinder non Caesar" that which is *Cesar's*, *under* *unto* *God* that which is *God's*.¹ The *Donation* satisfied even such Papal critics as *Bonac* as to the legality of the arrangement, but not as to its wisdom.

Valla proved, on the basis of textual analysis, that the document had been written in the Papal chancery some time around the middle of the ninth century, about 300 years after the death of Constantine. This analysis was not only politically dangerous, since it undermined the legal foundation of Papal government, but Valla was also an ardent advocate of his own ideas, and he only narrowly escaped assassination.

Valla's work on the *Donation*, *de falso credita*, was published in 1499. It immediately aroused the wrath of Pope Eugenius IV. It was not until Eugenius had died and had been succeeded by Nicholas V in 1447 that his analysis was officially sanctioned. In the intervening eight years, he lived the life of a fugitive and was the target of the violent attacks by his enemies. But he persevered. Nicholas restored him to grace and even installed him in the Vatican as apocryphal secretary. The controversy over the *Donation* did not stop there, however. Valla did not live to see the end of it. In fact, the last voices of opposition to his work were not silenced until three hundred years after his death. His exposure of the *Donation* as a fraud is now universally accepted.

Jean Fran^cois Champollion, 1790 - 1832. Champollion began his scholarly career early in life. At the age of fourteen, he published his first paper, in which he tried to demonstrate that the names of the gods in the Bible and Greek mythology showed that they were personifications of natural phenomena. He is better remembered, however, as the father of Egyptology.

The French military expedition to Egypt of 1799 brought back to France an inscription now known as the Rosetta Stone. The inscription — a public proclamation — is written in three different forms: Greek, for the benefit of the large Greek population of ancient Egypt, and both hieroglyphic and demotic Egyptian. The Rosetta Stone is what scholars of ancient languages call a "trilingual" document. Greek was a known language, and Egyptian was unknown. By means of comparing the content of the Greek text with the Egyptian text, Champollion was able to reconstruct Egyptian phonetics, vocabulary, and grammar.

He started with groups of hieroglyphics around which the scribe had drawn lines, which Champollion called *cursiveies* (lit., "lines"). He found that they appeared in the Egyptian text in about the same position as the names of royalty in the Greek text. Since he could easily read Greek, it was just a matter of trial and error to reconstruct the Egyptian forms. This gave him a basic vocabulary of sounds and symbols to use in analyzing the remainder of the text.

Champollion's work aroused a storm of controversy. Many felt that his seeming success had just come in him too easily. What had bullet-proof established scholars the centuries should not have been so easily solved by an upstart hardly thirty years of age. While he received many honors in his lifetime, Champollion's work on the Egyptian language was not universally accepted until long after his death.

Emilie Brugsch, 1879 - 1902. During the First World War, Brugsch was at first assigned to an artillery unit on the Eastern Front. Because of his standing as an Oberstleutnant, however, the Austrian high command saw to it that he was transferred to Istanbul, notably as a liaison officer with Austria's ally, Turkey. The real purpose of his being sent to this assignment was to enable him to continue his work on the analysis of Hittite documents unearthed at the ruined palace of Bogazkoy not long before the war had broken out.

Prior to this time, the Hittites had been regarded by the scholarship as a minor tribal group living on the fringes of the Egyptian empire in Syria and to some extent in Palestine. The main source of information about them was the Old Testament. There were none at all over Anatolia that had come to be recognized by the end of the nineteenth century as Hittite documents, for the historical role of the Hittites in the ancient Near East was still a deep mystery.

The Library at Boghazkoy, which had gone undisturbed for millennia, contained thousands of clay tablets, inscribed in cuneiform writing according to the system which was well-known from the scholarship having to do with ancient Babylon. Babylonian inscriptions in cuneiform writing had been thoroughly analyzed, and the principles of the ancient Babylonian language were well-established. Using what was known about the phonetic values of Babylonian cuneiform, Huysevay transliterated a large quantity of Hittite documents and then examined the results carefully, looking for any similarities that he might find with known languages.

In one document, he came across the word *ušular*, which, in context, looked as if it might mean "water". If that were so, then it appeared to indicate that ancient Hittites was not originally a Near Eastern language at all, but rather an offshoot of the Indo-European family of languages, from which modern English, among others, is descended. This finding naturally produced a great deal of controversy. Scholars were accustomed to thinking of the Hittites as an Oriental people, not as emigrants from Europe. But Huysevay's analysis was internally consistent, and his readings of Hittite documents produced agreement after agreement with historical fact known from the diplomatic archives of ancient Babylon and Egypt.

The picture of the Hittites that eventually emerged was radically different from anything that the scholarship had ever conceived of. It now appeared that far from being a basically marginal people, the Hittites had been in fact a world power in their time. The ancient world was divided up between the Egyptians, the Babylonians, and the Hittites. The Egyptian and Roman royal families had even intermarried. Now the scholars had to rewrite their ancient history books. This view of Hittite history is now universally accepted. The traditional conception of ancient history had been completely overturned just because Bedřich Huysevay noticed a similarity between *ušular* and *water*.

Michael Ventris, 1922 - 1956 Michael Ventris wasn't even a professional scholar. He was an architect by profession. He made his living by designing prefabricated buildings. Yet he dabbled in ancient languages.

One of the last emerging linguistic problems facing philology in the first half of the twentieth century was a corpus of documents unearthed by archaeologists in Crete. These documents, inscribed in faded clay, were written in two distinct styles. One style was called, quite simply, "Linear A," and the other was called, equally simply, "Linear B." Neither had ever been deciphered. It was well known, both from archaeological findings and reading of contemporary Egyptian records, that ancient Crete had been the home of a wealthy and powerful trading nation. All that was known was that the Cretans had left behind robes decorated with beautiful motifs and other artifacts giving many insights into culture and life style. Since mythology had given the name "Minoan" to a ruler of Crete, this civilization was called "Minoan."

Archaeology in Greece had shown that the Minoan civilization had many things in common with the civilization prevailing on the mainland at the time of Homer. The palaces at Argos and Mycenae contained pottery and other artifacts of a type which was widely represented in Cretan palaces. It was assumed, therefore, that the Minoans had colonized Greece, establishing trading foundations that had served as the nuclei of several Greek city-states. It was only long after this colonial arrangement had been established that the Greeks had invaded and conquered Crete. Many books and scholarly papers had been based on this view of ancient history.

Linear Linear A has never been deciphered. It appears to be ideographic, like Chinese writing. Thus, unless a bilingual document like the Rosetta Stone is discovered, Linear A may well never be interpreted. But Linear B was deciphered by Ventris. He established beyond the shadow of a doubt that Minoan Linear B is phonetic, and that furthermore, it is not Minoan at all. It is pre-Homeric Greek. From the number of Linear B documents found in Crete, it is apparent that Greek was the language of the Cretan ruling class at a time when scholarship had long assumed that Minoan-speaking people had the upper hand on the mainland. Again, the ancient history books had to be completely revised. The experts were confounded. Such controversy as was raised did not last long, however. Michael Ventris died at the early age of 34, but he still lived on as his work inspired by everyone.

I saw & think "The Exorcist"
was the best satirical com-
edy that I have ever seen.

Signed, yours truly ::

He plunged him self into
the titwillie wave
and an echo arose from
the swallows grove
titwillie titwillie
titwillie

P.S. if I do not
note in your A
will do something
which you know I'm
doing

F

X
L.A.

IS THE AUTHOR
OF THIS LETTER
A MORON OR A
GENIUS?
WHO IS HE, AND
WHY DID HE
WRITE IT?

R.A. - 37

EFPO - O