ONE
Death Investigation
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On July 4, 1992, in Baraboo, Wisconsin, Chris Steiner, fourteen, disappeared from his home. He was not the type to run away, and what happened to him was told in an episode of Cold Case Files called “The Tortured Truth.” Indications that he had been kidnapped included a shoe impression outside his bedroom window and muddy tracks inside. Five days after he disappeared, his body was found caught on a tree along a bank of the Wisconsin River. An autopsy was performed and the cause of death was attributed to drowning, but the manner of his death—accident or otherwise—remained undetermined.

One aspect of death investigation involves evaluating the cause, mechanism, and manner of death. A cause of death is whatever made death occur, such as strangulation, and the mechanism is what happens physiologically—e.g., oxygen deprivation. The manner of death, according to the NASH classification, places it on one of four categories: Natural, Accident, Suicide, or Homicide. If it cannot be classified, such as was the case with Chris Steiner, then its manner is considered undetermined. It is estimated that some 15–20 percent of deaths around the country occur in a manner that is undetermined.

With no clear leads or ideas about what had happened, the Steiner case went cold. No one in his family knew how Chris could have drowned, but since it was not clearly a murder, the police did not look for a perpetrator.

A year passed and another boy, Thad Phillips, was taken from his bed in the same town while he slept. But he survived to tell the story. He woke up to find himself a captive to an older teenager who called himself Joe. To Thad’s astonishment, Joe grabbed and twisted one of his ankles until it broke. Though in agony, Thad still tried to escape, but Joe caught him, brought him back, and then broke his other ankle in the same manner as the first. He seemed satisfied that this would now keep his captive in place.

While it may appear that Joe was merely being practical by disabling his prisoner, he actually proved to have a sick obsession. He admitted to Thad that he liked to hear bones break. But he also liked to attend to them, and he wrapped Thad’s injuries in socks and braces. Thad remained in Joe’s bedroom for two days, but despite his physical distress he awaited an opportunity to make a second escape attempt. Finally it arrived. He managed to get to a phone and call the police, who surmised from earlier incidents that his captor was a seventeen-year-old named Joe Clark.

After the police rescued Thad, he told them that Joe had admitted to killing Chris Steiner. This came as a surprise, since the pathologist who had examined Steiner at the time had found no sign of an injury. Nevertheless, the case had been mysterious and the body had been bloated from being in the water; the pathologist could have overlooked something. Then investigators learned that no X-rays had been taken.

There was only one way to discover whether Chris Steiner had been subjected to the same bizarre treatment that Thad had endured, and thus to link the two crimes to a single perpetrator: They had to exhume Chris Steiner’s remains. In other words, they had to reopen his grave, remove the casket in which he lay, open it up, and remove the body for a closer examination.

Once this was done, the forensic pathologist went over the small body once again, and this time, armed with more information, he identified four separate breaks in Chris Steiner’s legs. It was apparent that had the boy been thrown into the water in this condition, he could not have used his legs to swim and could easily have drowned—as he actually did.

That discovery gave detectives probable cause to search Joe Clark's bedroom, where they found a notebook with three lists, all written in his handwriting, that included the names of eighteen local boys. Their headings were "Get to now," "Can wait," and "Leg thing." Clark claimed to be innocent in Steiner's murder. His mother backed him up with an alibi. She said that if he had left home on the night Steiner was abducted, she would have known, because he'd have passed through her bedroom. However, it was shown that she was a heavy sleeper and that he'd managed to slip by her before. Thus, Joe Clark had no alibi. A jury found him guilty of Chris Steiner's murder, and this case was finally closed with a conviction.

Death investigation can take place above or below the ground. As such, it calls on a diverse range of scientific specialties, and the coordination of these approaches is most focused in the field known as taphonomy.

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The science of forensic taphonomy is the discovery, recovery, and analysis of human remains in a context that has legal ramifications. The term taphonomy derives from the Greek words for burial, taphos, and laws, nomos. This discipline deals with the complex factors involved in the history after death of physical remains and the ways in which death-related processes have affected them. A corpse undergoes a series of changes, which influence how professionals may estimate time of death, the individual's identification, and the cause and manner of that person's death. These changes also affect the types of other creatures that are attracted to it, how the environment may impact it, and what alterations may occur under and around it, thus making the corpse the center of a micro-environment.

Different climates will affect decomposition rates, with cool temperatures having a greater preservative effect and thus a longer period for decomposing. Signs of early-stage decomposition are bloating, skin slippage, and bacterial discoloration under the skin. The corpse will discharge a foul odor, which grows worse. Eventually the expanding gasses inside burst through, the eyes and tongue bulge out, and the internal organs and fat begin to liquefy. Flies will lay eggs that will hatch into maggots, which feast on the tissues. As tissues are consumed, the remains become increasingly more skeletal and the head or limbs may become disarticulated.

Some researchers in taphonomy use the knowledge they collect to study ancient environments and some to understand human behavior in older civilizations. In other words, the study of human remains includes knowledge of the person's life history, sociocultural context, and any environmental variables related to the remains. To get a useful taphonomic reading requires the team effort of professionals from different disciplines, including biology, entomology, anthropology, and pathology, as well as botany and geology. It may even involve climatology—an analysis of the weather patterns, or an archaeological examination of soil layers in a grave.

In Britain in 1962, three-year-old Stephen Jennings vanished from home. There was a history of abuse to the boy, but the police could find nothing to implicate his father. They could not even find a body until 1988, when bones protruded from the ground near the boy's former home. A team of archaeologists, who could study soil disturbances to establish a time frame for burial, carefully excavated the grave, which indicated that the dead child had been placed under stones. Over the years, a wall of stones had fallen on top of his grave, adding another layer. A pathologist and odontologist (dental specialist) determined that the remains were those of a boy about three to four years old, and

damage to his bones coincided perfectly with medical records for Stephen Jennings. He appeared to have been punched or kicked to death during a bout of prolonged violence that had broken eight ribs. His father was arrested and convicted of the murder.

Taphonomy is primarily concerned with the death event, the soft tissue modification through decomposition, the subsequent bone exposure to external agents, and the event of discovery and collection. At that point, if there's been an injury to the bone, for example, it's crucial for the death investigator to decide whether it occurred prior to death (antemortem), during the immediate stage prior to death (perimortem), or after death (postmortem). That involves knowing the processes to which the bone was exposed, such as animal activity or weathering, and what specific types of damage look like in the bones of a living person versus the bones after death. The former generally contain moisture, the latter generally appear more brittle. In "The Tortured Truth," for example, the taphonomic investigation would involve knowledge about bodies in water, types of injuries that can occur, decomposition rates, marine life that may feed on flesh, and other factors specific to the area and to a drowning. In the case of the abused boy in Britain, anthropologists would need to know how to distinguish postmortem damage from soil and falling rocks from actual abuse to the boy while he was still alive.

The deceased will contribute his or her own individual features to all taphonomic calculation, e.g., height, weight, type of clothing worn (or not), the presence of illness, the use of drugs, ethnicity, and the physical properties of the individual's bones. The type of burial rituals adopted by the person's culture, such as embalming methods, burial procedures, and whether or not autopsies were permitted, can also influence the findings.

Whether a body is found on the ground, submerged in water, buried under dirt or sand, locked in a trunk, dismembered, or exsanguinated (having lost blood) will result in diverse calculations. In one climate, a body can decompose to a skeleton in two weeks; in another it may take three years or longer—or be quite preserved for centuries. Death investigators concentrate on a multitude of factors to try to assess the time since death.

Even the clothing a corpse wears is studied. To understand what happens to clothing in soil, for example, a team of scientists buried different types of material in different types of soil. They recorded the rates of decay over a period of four years. Buried rayon and cotton were the quickest to disintegrate, with total deterioration within seventeen months. Silk and wool lasted longer, with destruction at thirty-five months. Leather and synthetic proved to be the most resistant. Wet soil broke cotton and rayon down faster than did dry clay or sand, yet that same moisture helped to preserve wool and silk. Warmer climates accelerated deterioration, especially above seventy degrees.

Death investigation can take many different forms:

n the search for a body when someone is missing and presumed dead
n the search for identity and clues about the manner of death when a body is found
n an autopsy to determine cause and manner of death
n the identification and analysis of skeletal remains
n an exhumation to find something that was missed the first time around, such as in the situation with Chris Steiner when no one caught the broken bones in his legs

The search for a body can be quite complicated. Anthropologist Doug Owsley is shown in his biography, No Bone Unturned by Jeff Benedict, searching for four missing members of David Koresh's Branch Davidian compound after it went up in flames in 1993. A garbage-strewn landscape nearby had confused the cadaver dogs, so he pushed a long, thin rod around in the dirt until he found loose soil that told him it had recently

been disturbed. Sure enough, the four bodies had been piled, one on top of another, in this makeshift grave shaft.

Quite often, such searches involve dogs trained in the detection of decomposition odors, but sometimes an investigation requires more sophisticated means, as depicted in the Cold Case Files episode “Portrait of a Killer.” When photographer Michelle Wallace, twenty-five, turned up missing from Gunnison, Colorado, in 1974, the police suspected a drifter named Roy Melanson. It turned out that he had Michelle’s camera, yet he insisted that she had been a casual acquaintance and had given it to him. Eventually some hikers found a clump of brown hair and a piece of human scalp, but a thorough investigation of the area turned up nothing more. The case went cold.

Eighteen years later, in 1992, a team of investigators known as NecroSearch went to Colorado to begin one last search for Michelle’s body. Incorporated in 1991, NecroSearch International is a volunteer organization of victim advocates comprised of biologists, geologists, chemists, meteorologists, geophysicists, plant ecologists, anthropologists, and other specialists who use the most advanced technology to help solve unsolvable crimes and to find bodies in unusual places. They often work separately but in tandem to use different branches of science to look for the same thing—the time it takes a plant found on a murder victim to wilt, for example, compared to the developmental stages of insects on that body. Referred to as the “Pig People” because they use swine carcasses to demonstrate the effects of decay during burial in various circumstances, the NecroSearch team has been able to find both bodies and evidence that had once seemed hopelessly lost.

In the case of Michelle Wallace, twenty NecroSearch members mapped out a grid in the remote area where the hair had been found so they could cover it in a uniform manner. They aligned themselves roughly an arm’s length apart, walking through the terrain and using their professional eye to look for anything out of place or indicative of human activity. If they could not find something in this manner, they would bring in the high-powered electronic equipment they had as well. But this time, they were lucky.

At one point when geologist Cecilia Travis stepped away for a break, she glanced down a hill and spotted what appeared to be a large, white mushroom. Then something near it glinted in the sun, and Travis knew they had a discovery: Michelle had had a gold molar. Travis went to investigate and the “mushroom” turned out to be a skull. Nearby, more bones were carefully excavated from the ground.

After eighteen years, investigators had enough evidence to try Roy Melanson, the original suspect, for the murder of Michelle Wallace. Found on the camera in his possession were pictures of hers that she had not developed. Melanson was found guilty and sentenced to a life term in prison. Michelle’s father, who had lost his wife to suicide after Michelle had disappeared, could now lay his daughter to rest.

3

A body itself is a death scene. Sometimes it’s also a crime scene.

The first known application of medical expertise to determine the cause and manner of death was in 44 b.c., when Roman physician Antistius announced which of the twenty-three stab wounds inflicted on Julius Caesar had actually killed him. He declared this to the governing body, and in Corpse, Jessica Snyder Sachs points out that this is the origin of the word forensic—“before the forum.”

A death can often be analyzed by clues at the scene where the body is found, and the type of specialist utilized will depend on the condition of the remains: either a corpse in some

stage of decomposition or a set of bones. We'll look at the corpse here and the science of bones in the following chapter.
When a corpse is discovered, a coroner or medical examiner is called to the scene (depending on the jurisdiction). A coroner will generally bring the body to a forensic pathologist for an autopsy, unless a doctor can be found to acknowledge that the individual was ill and the death was from natural causes not dangerous to the community. A medical examiner, who generally has more medical training than a coroner, may make a cursory examination at the death scene.
The next step is to identify the deceased. Sometimes a piece of ID is on the body (in a wallet or purse), but sometimes the body itself serves as the means for identification. Generally the teeth, which tend to last much longer on a body than soft tissue, offer a means for identification through the records a dentist may have from X-rays and previous dental work. If no records are available, sometimes a scar, distinctive mole, or tattoo can assist. A forensic artist may also make a drawing or sculpture of the face to be photographed and publicized. At the very least, a DNA profile can be extracted from tissues via biological techniques in a lab.
Even while the process of identification is going on, the time of death must be established as soon as possible, because it can place victims with a suspect at a certain time, eliminate suspects via alibis, or break alibis altogether. Such an investigation might arrive at a postmortem interval (PMI) with the line of reasoning used in the Cold Case Files episode "The Unluckiest Man."
Following four fires that had been associated with John Veysey during the 1990s and for which he had been paid off heavily in insurance money, the Bureau of Alcohol, Tobacco and Firearms investigators determined that the latest one in 1997 in Illinois had definitely been arson. They then looked into the 1995 death of Veysey's first wife, Patricia, from a supposed heart attack. He'd collected nicely from that incident as well. A closer look at the autopsy report indicated that while Patricia had been discovered lying on her back, she'd had a nasty bruise, or contusion, on her head, above her eye. She could not have hit her head falling forward, as was erroneously surmised in the report, so it seemed likely that someone had hit her.
Prosecutors asked experts in pathology for a good fix on the time when Patricia Veysey had died. They went over the crime reports and learned that when the first responders arrived on the scene, Patricia had already shown signs of rigor mortis in her jaw and tongue, and at 4:08 p.m., she was cold. The pathologist had determined that she had been dead approximately two hours. That put her time of death at approximately 2:00 p.m., at least forty-five minutes before John Veysey was believed to have left the house that afternoon. He had no alibi and he clearly had a motive. John Veysey was not tried specifically for the murder of his wife. However, a jury implicitly found that he had caused his wife's death: He was convicted of committing mail and wire fraud against his insurance company, based on the fact that he had "caused the death of Patricia Veysey and then filed a fraudulent insurance claim, concealing his role in her death." For his conviction on this charge and related arson charges, a court sentenced him to 110 years in federal prison.
While time-since-death estimates can be difficult to determine, and while experienced medical examiners can totally disagree, it's generally the case that the sooner after death the time frame is established, the more accurate it is. A leading researcher, Claus Henssge, who had worked hard to establish a formula based on a wide variety of

variables, concluded that only if a body is found within twenty-four to forty-eight hours after death can time-since-death estimates be reliable.

Historically, time-since-death postmortem interval (PMI) estimations have been based on a variety of changes following death, because these changes were observed to proceed in a predictable order. None are wholly reliable, since all are affected by diverse internal and external factors, but taken together, some pathologists believe they provide a reasonable estimate (though this has also been disputed).

The early anatomists who dissected corpses gained a bit of support when the Emperor Charles V decreed in the 1500s that medical expertise be relied upon in all trials involving suspected murder or abortion. They were the ones who noticed how things like rigor mortis (state of muscle rigidity) or algor mortis (the body's cooling temperature) worked, and to the list they also added the progression of coloration changes known as livor mortis, or lividity (blood settling in the body at the lowest point of gravity).

In the late 1700s, French physician Pierre Nysten recorded the changes in rigor mortis from flaccid to stiff to flaccid and provided "Nysten's law," to the effect that the process begins in the face and neck and moves downward through the body. Even decapitation, he discovered, did not seem to change this.

In England, Dr. John Davey used thermometers to measure the diminishing body temperature of corpses to add a scientific time clock to that indicator.

The stage of digestion of a meal also came to be considered a significant factor, as did the level of potassium in a cadaver's eye.

However, as more data became available, the experienced pathologists grew less confident of the formula, and their time-since-death parameters became more generous. By the 1990s, even the potassium level readings appeared to have an indirect and unpredictable relationship to the PMI. Nevertheless, death investigators keep searching for something that will remain accurate despite different conditions.

The concept of degree days, for example, involves measuring the climatic temperature along with the rate of decomposition over the course of a specific number of days, with the temperature's effects on decomposition being recorded at various points. Adding up the measurements over a specific period of time can make the analysis of decomposition in one area of the world comparable to another, whether it's Siberia, Knoxville, or Peru. Roughly put, ten days of ten degrees has a similar effect on a body as two days of fifty degrees. Through a chemical analysis of body fluids in the soil from beneath a decomposing corpse, for example, while taking into account the surrounding temperature and weather, scientists can estimate how many degree days the found body has accumulated in that spot. Thus, they can better determine time since death.

Pathologists in Scotland have tested microprobe electronic thermometers thrust into various organs and monitored via computers that compare the temperature readings with standard cooling curves produced in cadaver experiments. Japanese pathologists have looked into light-absorption meters that measure lividity, and scientists in many countries keep watch on changes in eye chemistry to see if some other reliable decomposition by-product might be found there. A few are experimenting with electrical conductivity through dead tissue at various stages, and some concentrate on the changing activity of identifiable microbes such as aerobic and anaerobic bacteria.

As various death investigators teamed up with entomologists, it became clear that time-of-death estimates could better be found via those things that the corpse attracted than from factors within the corpse itself. Forensic entomology became a formally recognized discipline in the U.S. during the 1980s, although insect analysis first came into a Western

court case in 1850 in France. A mummified infant was discovered between the walls of a building undergoing renovation, pointing the finger of accusation at a young couple who resided there. Yet other couples had lived there before them, so Dr. Marcel Bergeret constructed a time line based on the insect activity evident in the body. He established via logic and a naturalist's study that the infant had been placed between the walls two years earlier—before the current couple had moved in.

This case inspired widespread interest among pathologists, notably Edmond Perrier Mégnin in France, who regularly visited morgues and cemeteries, and eventually recorded eight distinct stages of necrophilous insect infestation. He wrote a book on forensic entomology, published in 1894, which identified the insects that assisted in PMI estimates over the course of three years, should a corpse out in the open last that long: egg-laying blowflies, beetles, mites, moths, and flies that liked fermented protein. The progression was different for buried corpses, and Mégnin warned that the results might differ in other lands and climates. Much work still needed to be done.

"We do not estimate the postmortem interval using insects," says Dr. M. Lee Goff, chair of the forensic science department at Chaminade University in Honolulu. "What we estimate is the period of insect activity on the body." In other words, the insects may not get to it right away if it is carefully wrapped or boxed, or if weather conditions delay infestation. Once flies do lay their eggs, the biological clock begins. By looking at the most mature species present on the body when it is found, entomologists work backward to determine how long it took the flies, under those conditions, to get to that stage. That becomes the minimum time since death.

During the 1970s, a fortuitous incident occurred that brought forensic entomology together with forensic anthropology in a way that inspired an entirely unique development.

4

Dr. William Bass III, forensic anthropologist, is the founder of the Anthropology Research Facility at the University of Tennessee at Knoxville, also known as the Body Farm. Here, researchers lay out corpses to study in many different conditions, and much of their work has been devoted to refining the time lines for necrophilous insect activity. There is no other place like it in the world, so how did it come into existence?

Bass began his professional work for the Smithsonian Institution in Washington, D.C., cataloguing the bones of Native Americans. He also taught at the University of Kansas, and while there, a case was brought to his attention that planted the initial seeds for the idea of the Body Farm. Since he was a forensic consultant to the Kansas Bureau of Investigation, which looked into crimes involving livestock, he was asked about a cattle-rustling case. One agent wanted to know if Bass could tell from the skeletal remains of a cow just when it had died. Bass was stymied. He could find no information on the subject, so he suggested an experiment that involved killing a cow and studying it. No one took him up on that, but he realized that if professionals in this field were to learn about decomposition rates, they'd have to find a way to study them quite rigorously in various actual conditions, under scientific controls. The idea remained theoretical . . . for the moment.

Moving to Tennessee in 1971 to teach at the University of Tennessee at Knoxville and consult with that state's law enforcement agencies, Bass realized that the denser population in the area made it likely that bodies would be found fairly quickly—before

they had skeletonized. Often, he was faced with consulting on corpses covered in maggots. Once again, however, he found mostly anecdotal literature.

Bass wanted to replace guesswork with science, but it wasn't until the late seventies that he set the wheels in motion for the Facility. One day, he was asked to estimate the age of a skeleton dug up on property that had belonged to the descendents of William Shy, who had been a colonel in the Confederate Army during the Civil War. Bass said that the remains were those of a white male between the ages of twenty-four and twenty-eight, and that the man had been dead about a year. Bass soon discovered from the age of the material in the clothing, and its fashion, that he was far afield on the time of death. The corpse turned out to be that of Shy himself, and he had been dead and buried since 1864—some 113 years.

Bass realized that someone had to start a serious study of this subject, so he asked the university to give him a small plot of land for the research and he acquired the unclaimed cadavers of several homeless men. They received numbers like WM 52 8/86 on orange tags to identify their cases. As they lay out, exposed to the elements, buried, or placed in water, they provided a plethora of information about what happens to decomposing bodies under different conditions. As the research progressed and the researchers expanded in number and specialization, the Body Farm became a center for training and consultation in difficult cases—including cold cases. Cold Case Files developed one of these, called "The Baiting Game."

On a fall afternoon in 1992, some hunters reported a furniture dumping that exuded a terrible odor. Henry County Detective Ronnie Minter located a couch, and beneath it he spotted a human head. The dead man was wrapped in a sheet and was badly decomposed. There was no identification, so the first layer of skin from John Doe's hand, the epidermal glove, was removed and sent to the latent print unit.

The print specialist slipped the epidermal glove onto his own hand in order to stabilize it and roll a print from the right thumb. The resulting print was entered into the Automated Fingerprint Identification System, which produced a hit: The deceased was thirty-five-year-old Jerry McLendon, a sailor from Virginia Beach, Virginia.

Now the investigators needed to link him with his killer.

During autopsy, the pathologist found evidence of death by asphyxiation, and the toxicology report indicated high levels of alprazolam, or Xanax, a tranquilizer. So he had apparently been drugged and then suffocated.

The detectives went to McLendon's apartment, 250 miles away from the body dump site, and found signs of a struggle in the bedroom. A pillowcase, the design of which matched the sheet wrapped around the victim, was stained with what appeared to be bodily fluids. A check on McLendon's ATM account showed activity over the past three days, and photographs captured the images of a man identified as David Deshazo and his fiancée, Roxanna Latham, withdrawing money. Detectives also discovered that they had moved to Henry County, just two miles from where the body had been found.

The circumstances were incriminating, but while these two clearly had robbed the victim, nothing definitely tied them to the murder. With no other suspects, the investigation went cold.

Yet there was too much circumstantial evidence to just give up, so after a few years the investigators turned to Dr. Bass. He agreed to analyze the McLendon crime scene.

He began by studying photos of the body when found and assessing the body's rate of decay, given the conditions. Bass managed to narrowed McLendon's estimated time of death to no later than September 27, 1992, but that was not as precise as the investigators

needed, since McLendon had disappeared nearly a week before that. So Bass looked more closely at what the bugs indicated.

As it decays, the corpse emits odorous chemicals such as cadaverine and putrescine, which flies can smell from several miles away. They can find a corpse within minutes of death to lay their eggs, making the corpse attractive to other species. As different chemicals emerge with the postmortem changes, other insects such as carrion beetles are attracted, along with predators and parasites of the flies and beetles. Ants will consume the fly eggs and beetles will eat the newly hatched maggots. Wasps may lay eggs among the maggots, or eat them. One type of blowfly can feed on either body tissue or maggots. Finally, spiders use the body as a habitat to prey on other insects, and moths may decimate any clothing left on the corpse. Maggots, if they survive the predators, consume the flesh for some two weeks or so before leaving it, and they will make trails as they do so.

Insects can also yield information about a number of other things, from whether the corpse has been moved to whether the person had taken drugs or been poisoned (entomotoxicology). The insects go through stages of development and yield clues through what they have ingested from the body, all of which can assist detectives in their analysis.

In McLendon's case, there had been a maggot infestation, and Bass knew from his research that flies were only active in temperatures over fifty-two degrees. From the autopsy photos, he measured the maggot size. Then he studied the climatology reports from the middle weeks of September 1992 for the area in which the victim had been found and used all these factors to pinpoint the time since death more precisely. He announced that the victim had likely died between September 21 and September 22. That was as close as he could get to establishing the PMI.

In the meantime, the detectives had worked on the suspect couple. All relationships go through phases and this one was in bad shape—something cold case detectives count on. It was time to try to turn one person against the other. If a clearer picture could be gained about the time when McLendon had been killed, it could be compared with the scientific analysis.

Roxanna told detectives that Deshazo had been jealous of McLendon. He had spoken of murder, and on September 22 she had found him holding a pillow over McLendon's face. Fearing for her own life, she reluctantly helped to loot McLendon's ATM and dump his body in Henry County.

Roxanna agreed to call her ex-fiancé in a phone sting, but he provided details that she had not offered, and detectives realized that she might be more culpable than she had admitted. Deshazo claimed he had watched Roxanna empty her prescription bottle of Xanax into simmering spaghetti sauce. She had then poured the poisoned sauce onto a plate of pasta and fed it to Jerry McLendon.

That was good enough to make two arrests, and armed with the information from Bass's analysis, David Deshazo was convicted of murder one, while Roxanna Latham was found guilty of murder in the second degree.

5

To solve some cold cases, people who were buried may have to be disinterred to be examined again. We saw this with Chris Steiner in the case that opened this chapter. Let's examine this procedure more closely in "Through the Eyes of a Child."

From prison, George Morgan began to research his family genealogy, and in the process he received the death certificate for his sister, Michelle Morgan. To his surprise, it was dated 1976, which he knew was a full fifteen years after she had actually died. He could not understand how such a mistake had been made, but then he saw that the certificate stated that she had died from pneumonia. That, too, was not true. He had seen her murdered, so he corresponded with Deputy Coroner Bob Shay, who decided to investigate the death—though it had occurred thirty-five years earlier.

George Morgan claimed that when he was eight years old, he had watched his father's new wife, Mary, drown, stomp, and beat his sister to death. That was quite a charge, and it meant that a murderer had gone free. In order to pursue the case, the authorities needed some proof.

The investigators went to the military base where Morgan's family had lived and searched for an autopsy record. Just as Morgan recalled, Michelle had been only four years old when she died, and according to the report, she had sustained massive trauma to the chest. Records showed that she had been to the hospital twenty times, once staying there for a month. Among her injuries before the age of four had been a broken nose, multiple injuries to her chest and back, burns on her skin, and a broken arm. The detectives tracked down the pathologist and he recalled the case. Apparently the local prosecutor had reviewed the matter but had not pursued it. The investigators were now at a dead end, so they decided to exhume Michelle's body to determine the cause and mechanism of her death. Once the coffin was opened, the condition of her remains, even this many years later, told a story of terrible and continuous abuse to the point of death. This evidence substantiated what Morgan had claimed about his stepmother, Mary Morgan.

They tracked her down and found her in West Columbia, Texas. She refused to acknowledge what they were telling her, but when they left, she made preparations to flee. She was arrested and eventually pleaded guilty to involuntary manslaughter. What surprised the investigators was that four of Morgan's children stood by her, despite the fact that she had confessed and that, collectively, they had taken 150 trips to the hospital before the age of five.

Thanks to a reinvestigation that went all the way to a little girl's grave, this woman was sentenced to five years in prison.

Historic exhumations have been performed for a variety of reasons:

n Sometimes it's done to set history straight, such as when Professor James Starrs exhumed remains from the grave marked Jesse James to use mtDNA analysis to indicate that the infamous outlaw had indeed died when reported and been buried in that grave.

n An exhumation of seventeen German soldiers from a mass grave in southwest France in 2003 revealed a secret kept by a village for nearly sixty years. These men had been prisoners of war, executed in revenge for an atrocity committed by Germans routing out French Resistance fighters. They were finally removed from their ignoble grave and laid to rest in a military cemetery.

n Abraham Lincoln, whose remains had been moved seventeen times since his original burial and his coffin opened five times, was exhumed in 1901 to move him to a more permanent grave to prevent thieves from ever disturbing him.

n Recently, a team of scientists was formed to exhume some fifty members of the Medici family, who were powerful merchants in Italy during the Renaissance, to study the lifestyle of the rich and famous in that time and place.

An exhumation differs from an excavation in that exhumations involve disinterring known bodies from a specific grave, usually in a cemetery. Excavations involve carefully removing soil with tools such as trowels and brushes from a discovered grave in which the condition of the remains, and usually the identity of the person, are unknown and must be recorded. Exhumations focus on the remains in a coffin, while excavations may also encompass an area surrounding the grave, as well as focusing on possible trace evidence. Each stage is photographed and soil samples are collected for later screening and analysis.

Exhumations in regular cemeteries generally take place before the cemetery officially opens, to avoid interfering with business. A backhoe is used to remove the dirt, and if there is a cemetery vault or liner, it must be broken open to get to the casket. (Several decades ago, as it became clear that deteriorating caskets made graves sag, many cemeteries required the use of a sturdy vault surrounding the casket to prevent the earth from settling onto the bodies.) Straps lift the casket out and it is then removed to a place where it will be opened.

If an autopsy was done before burial, the body will be examined to compare it to that report, to check for what might have been overlooked—or possibly what might have been fabricated. Sometimes it's discovered that someone was placed into a grave meant for someone else. At any rate, the point of an exhumation in a cold case is to find information on or inside the body that can enlighten investigators about aspects of the crime that they cannot acquire in any other manner.

Dr. Michael Baden, former medical examiner for New York City for more than two decades, described in his book Dead Reckoning how an exhumation helped to solve a case three decades old. Civil rights leader Medgar Evers was shot and killed in 1963 in Jackson, Mississippi. Investigators recovered a rifle and traced it to Bryon De La Beckwith, but two trials had ended in indecision with hung juries. With no other suspects or leads, the case went cold.

During the early 1990s, the case was reopened, and while the rifle that had killed Evers was located, the bullet was not. Baden explained that a re-autopsy could trace the path of the bullet trajectory to establish cause of death. So the team exhumed Evers from a plot in Arlington National Cemetery and transported the remains to Albany, New York.

With an X-ray, Baden was able to locate bullet fragments where the bullet had struck a rib before exiting the body. He provided enough information from the autopsy as to cause and manner of death for investigators to extradite De La Beckwith for trial. The man had believed that he'd gotten away with a serious crime, but he was wrong. He was convicted of murder and given a life sentence.

It's not just victims who get exhumed. Thirty-seven years after the rape/murder of a young mother in El Cajon, California, DNA was extracted from the semen sample removed from her and stored. The key suspect at the time was a Catholic priest, but he had since died. Police had another suspect as well, whom they would have to track down, so they decided first to exhume the priest to get a DNA sample from his tissues. By this means, he was eliminated, which put investigators on the trail of the still-living suspect, who proved to be a match and who was convicted in 2003.

Ultimately, an exhumation can produce remains that will speak from the grave to solve cases and bring killers to justice.

Italian financier Roberto Calvi, sixty-two, was found hanging from Blackfriars Bridge in London in June 1982. There were bricks in his pockets, along with approximately $15,000 in cash. Just days before, the Vatican-based bank of which he had been president

had collapsed under massive debt. Calvi was linked with both organized crime and the Vatican. He was also a member of an influential but unauthorized and illegal Masonic lodge, whose clandestine rules included death to betrayers by being weighed down with stones and drowned. One inquest concluded that he had committed suicide, but his family insisted he had been murdered. A second inquest left the question open.

An informant indicated that the Mafia had killed Calvi to silence him about their money laundering and to punish him for losing their money. They had staged it, he said, to implicate the Masonic group.

Calvi's remains were exhumed in 1998 for a renewed investigation, coordinated between England and Italy, with the intent of applying the most up-to-date methods of forensic science. The panel of forensic experts who examined him failed to find the injuries to Calvi's neck normally associated with death by hanging. Their conclusion was that Calvi had likely been strung up from underneath the bridge, which he could not do himself. Thus, he had been murdered. That finding has led the investigation in a completely new direction.

From bodies to bones, the forensic analysis of skeletal remains requires a different kind of scientific specialty.