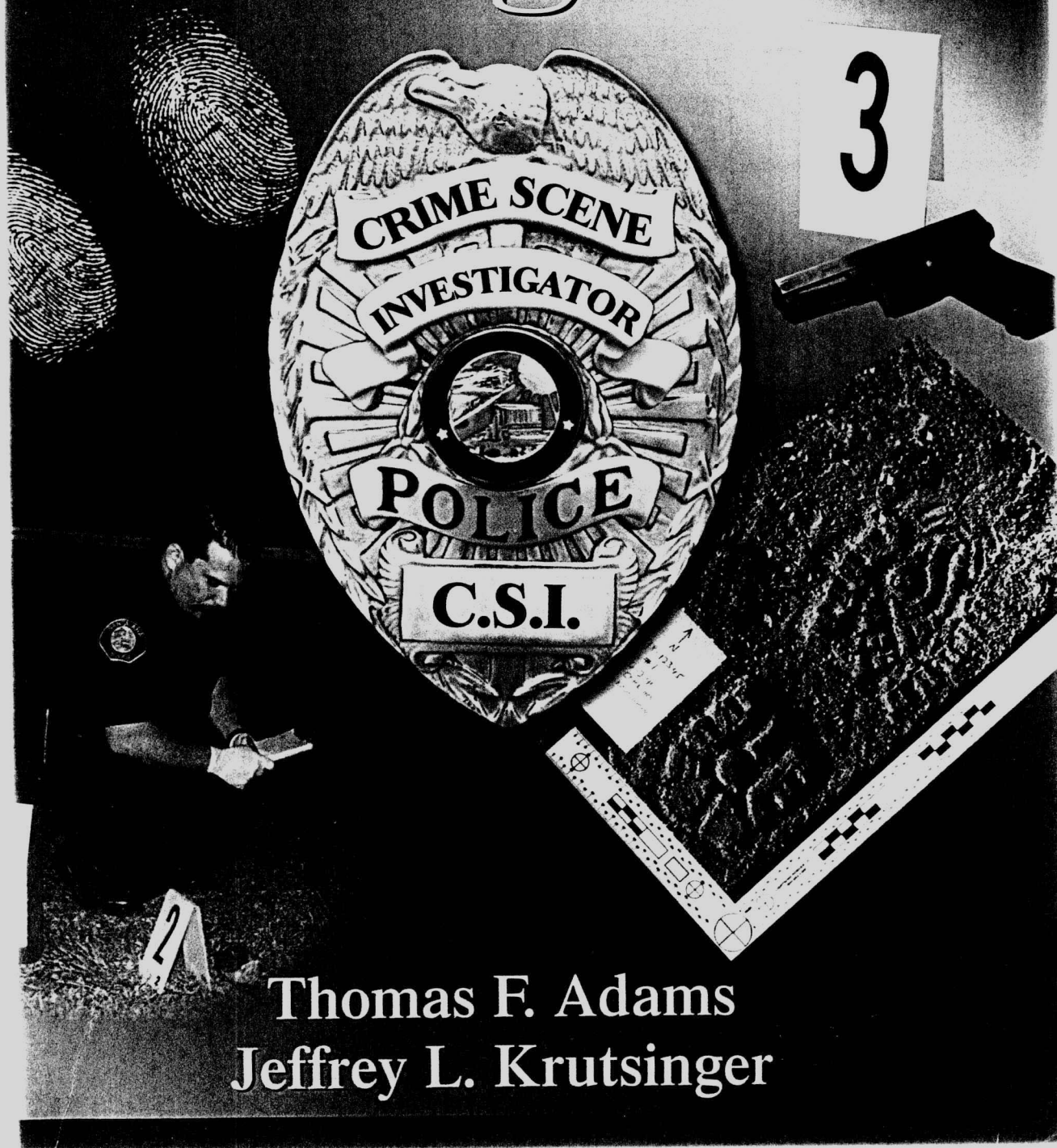


Crime Scene Investigation



Thomas F. Adams
Jeffrey L. Krutsinger



Preface

The headlines blare: "DEFENSE ATTORNEY CHALLENGES THE POLICE EVIDENCE IN MURDER TRIAL, charge the police with planting and sloppy handling of the evidence." Stop! Back up! How did that happen? We did everything exactly according to the book. Unfortunately, that's the problem. We must rewrite the book.

For many years, as crime scene investigators, we collected the evidence, took the photos, prepared the reports, and eventually presented the evidence in court. Hardly ever did anyone, especially defense lawyers, challenge our motives or our methods. We did our job as professionals do. It was a debatable presumption, we believe, that a job done professionally was presumed to have been done correctly.

Then something happened. Attorneys found that by challenging the evidence and the way it was collected and handled, and suggesting that perhaps the evidence collector had some ulterior motive, the case could be won by raising sufficient reasonable doubt about how the entire case was handled. This was not a new tactic, but with the mega-publicity blitz given the so-called "trial of the century" and the alleged "dream team" of defense attorneys, other attorneys have taken the baton and are running with it.

The purpose of this book is to focus on the basics of crime scene investigation. Not only must the crime scene investigators perform a perfect job, but their work must appear to have been done perfectly by strictly unbiased investigators searching for the proof. The crime scene investigator is not an advocate, and should make every effort not to appear as one.

When I, co-author Adams, first started working on this project it soon became apparent that it would be worthless without taking on board a currently working crime scene specialist who would collaborate on the

final phases of the writing, but his principal contribution would be as a photographer. With the collaboration of co-author Krutsinger, I believe we have come up with what is the best text on crime scene investigation on the market today. Actually, we found that this subject is usually relegated to just one or two chapters of a more comprehensive text of Criminal Investigation procedures, and we could find no current publication devoted exclusively to this one subject. We believe this book fills that void.

ACKNOWLEDGMENTS

Special thanks to Santa Ana, CA Police Chief Paul M. Walters, who authorized Jeff Krutsinger's participation in this project as co-author (who produced most of the photographs in this book). Two former editors of Prentice Hall, Jack Pritchard and Bob Howland, are responsible for the first few texts by author Adams, and two relative newcomers to PH, Kim Davies and Neil Marquardt were the facilitators for this book with the addition of co-author Krutsinger. Thanks for your faith and encouragement.

Special thanks to our mentors, instructors, and colleagues who inspired us and through example and other media have been instrumental in our development in the fine art and science of crime scene investigation. Thanks also to our colleagues who do their jobs in a professional manner and make us look as though we know what we are writing about.



Contents

PREFACE xi

CHAPTER ONE OVERVIEW 1

- Introduction 1
- Presumption of Efficiency 1
- Anticipate Critical Review of Your Work 2
- The Fourth Amendment 3
- Evidentiary Values 3
- Criteria for Determining Evidentiary Values 5
- Corpus Delecti*, The Elements of the Crime 7
- Discovery 8
- Liability Protection 8
- Theory of Transfer 9
- Chain of Continuity or Custody 10
- Media Relations 10
- Summary 11
- Suggested Outside Projects 12
- Discussion Questions 13

CHAPTER TWO THE CRIME SCENE KIT 15

- Introduction 15
- The Ideal Crime Scene Kit 16

Summary	25
Suggested Outside Projects	25
Discussion Questions	25

CHAPTER THREE THE INITIAL RESPONSE 27

Introduction	27
Suggested Procedure	27
Summary	32
Suggested Outside Projects	32
Discussion Questions	32

CHAPTER FOUR THE CRIME SCENE SEARCH 35

Introduction	35
Plan Your Search	35
Interior Searches	36
Exterior Searches	40
Recording the Search	45
Transient or Short-lived Evidence	45
Conditions Related to the Crime	46
Summary	50
Suggested Outside Projects	50
Discussion Questions	50

CHAPTER FIVE EVIDENCE COLLECTION 53

Introduction	53
Tire Impressions	54
Shoe, Boot, and Footprints	54
Blood and Bloodstains	56
Liquids Other than Blood	62
Fingerprints	63
Weapons	63
Other Evidence	65
Packaging and Labeling Evidence	76

Chain of Custody	77
Summary	77
Suggested Outside Projects	77
Discussion Questions	78

CHAPTER SIX EVIDENCE BY THE TYPE OF CRIME 79

Introduction	79
Crimes Against Persons	79
Crimes Against Property	89
Summary	93
Suggested Outside Projects	94
Discussion Questions	94

CHAPTER SEVEN IMPRESSION EVIDENCE 97

Introduction	97
Summary	112
Suggested Outside Projects	112
Discussion Questions	112

CHAPTER EIGHT FINGERPRINTS 115

Introduction	115
The Fingerprint Expert	115
Summary	126
Suggested Outside Projects	126
Discussion Questions	126

CHAPTER NINE DOCUMENTING THE CRIME: REPORTS, PHOTOGRAPHS, VIDEOS, AND SKETCHES 129

Introduction	129
The Report	129
Photographing the Scene	134
Presentation of Photographs in Court	139

Sketching the Scene	140
Summary	146
Suggested Outside Projects	147
Discussion Questions	147

CHAPTER TEN THE CRIME LAB 149

Introduction	149
The Microscope	149
Comparison Microscope	150
Biological Microscope	150
Stereoscopic Binocular Microscope	151
Ballistic Expert	151
Gas Chromatograph	153
Spectrophotometer	153
Neutron Activation Analysis	154
Wet Chemistry	155
X-ray	155
Infrared	156
Ultraviolet	157
Evidence Vacuum	157
Sound Spectrograph	157
Automated Fingerprint System (AFS)	158
DNA Analysis	158
Forensic Toxicology	159
Forensic Anthropology	159
Composite Drawings, Computer Imaging	160
Polygraph, the Lie Detector	161
Print and Trace Experts	161
Summary	162
Suggested Outside Projects	162
Discussion Questions	162

CHAPTER ELEVEN GOING TO COURT 165

Introduction	165
The Subpoena	166
Pretrial Conference	166
Expert or Experienced?	167
Waiting to Testify	167
Testifying as a Witness	168
Examination and Cross-Examination	169
Use of Notes	169
Tesimony in Other Matters	170
Summary	170
Suggested Outside Projects	171
Discussion Questions	171

FOR FURTHER STUDY 173



Chapter One

Overview

INTRODUCTION

You have been assigned to investigate the scene of a crime that just recently occurred in your jurisdiction. You may or may not have done this before, and investigation of such scenes may or may not be a regular part of your duty assignment. Whatever the case, the success or failure of the investigation is largely up to you, because the initial phases of any criminal investigation most often determine the final outcome. How you conduct the investigation will directly affect all that follows, up to and including the eventual prosecution of the perpetrator(s). Once you have completed your work at the scene, the tapes and barricades removed, and the premises returned to the occupants, you will never be able to go back and do the job again. Oh, you may return to pick up the pieces, but the scene will change and will never be identical to the condition in which you found it when you first arrived and secured the scene.

In this text we intend to provide the information you need to guide you through the initial crime scene investigation from beginning to end, with the objective of assuring you and your colleagues that your investigation is as thorough and complete as possible, which will lead to a successful follow-up investigation and conclusion. Another case cleared.

PRESUMPTION OF EFFICIENCY

According to the rules of evidence, it is a rebuttable presumption that the work you do as a professional peace officer in the course of your official duties is done correctly and thoroughly. If you have read enough fiction, you probably have gathered that all police officers perform their duties according to the book and never make mistakes (well, hardly ever).

Unfortunately, that is one of the great myths about police work. *Many times, far more than we want to believe, officers do make mistakes, and sometimes very serious ones at that.* What you must do is to develop a correct routine, which varies from case to case, but a routine nevertheless that will assure everyone involved in the case that you have performed your job correctly and completely. It may be necessary to develop your own checklist to use during your investigation to assure complete investigations. Before they leave the ground, experienced and well-trained pilots and crewmembers religiously use checklists to assure a safe flight for themselves and their passengers. So should you prepare and use checklists to assure thorough investigations before you leave the premises of a crime scene.

ANTICIPATE CRITICAL REVIEW OF YOUR WORK

You should be the toughest critic of your own investigative work. After the dust has cleared and you have completed your phase of the investigation, review and evaluate what you have done. Make notes on what you should have done that you did not do, or should have done better, and how your next crime scene investigation will be more thorough. There will be critics galore both within and outside your department. Your supervisors, the follow-up investigators, division chiefs, and even the chief executive of your department will be reviewing and evaluating your work. Then there are the prosecutors who you will sometimes feel are actually on the "other side" because they find fault with your work, as they often play "devil's advocate" in anticipation of the defense attorneys' tactics, who will attack your work every step of the way in order to get evidence excluded or the case dismissed on behalf of their clients. Of course, the defense attorneys will find fault with your work even when there is none to find, because they can, and because that's the very serious game they play to assure adequate representation of their clients.

Then there are the appeals that follow conviction, providing one was obtained. Trial judges, appeals court justices, and even the honorable justices of the state Supreme Court and/or the U.S. Supreme Court may have a crack at reviewing the work that you and your colleagues did investigating the crime scene. Sometimes a convicted defendant will have his or her conviction overturned because of what you might choose to call a "technicality," which actually may be what some or all of those individuals see as inadequate or improper performance by you and your colleagues.

THE FOURTH AMENDMENT

The Fourth Amendment of the Bill of Rights, which protects persons and places from unreasonable searches and seizures by agents of the government, does not apply to the basic crime scene, which by circumstance has opened itself up to careful scrutiny by you and others directly involved in the criminal investigation. It falls within the “reasonable cause” category when you are at the scene of a crime, and the goal of your search is to determine the nature of the crime, to find all of the evidence necessary to prove all of the elements of the crime, and to identify the person or persons responsible for the crime. It is also reasonable to identify the victim and all of the circumstances about the person and/or place that is the object of the attack. In other words, it is only a very rare circumstance when you will need a warrant to conduct a crime scene search.

If and when the occasion arises for you to seek a search warrant from the local magistrate, the affidavit must state where you wish to search, including the exact address, an accurate description of the place, exactly what you expect to find, and what reliable information you have that leads you to believe that the search will yield the evidence that you expect to find. Once you have the warrant in hand, then you may proceed with the search, which should be consistent with what you expect to find. For example, if you are searching the residence of a burglary suspect for small tools used to gain entry and several handguns, it would not be logical to search places where one would not be likely to find those objects, such as in the pages of a paperback book or a diary. But let us get back to the crime scene. Search warrant procedures are covered in other texts in much greater detail. If in doubt about any aspect of any search that you conduct, seek the counsel and advice of your department’s legal counsel or the prosecuting attorney.

EVIDENTIARY VALUES

All of the evidence that you will collect and eventually present in court falls into two basic categories: direct and circumstantial. Although some people will argue that one has more value than the other does, actually they are both of variable value, depending on their own unique set of circumstances about how and when the items of evidence are collected. On its face, direct evidence, such as an eyewitness account of robbery and identification of the robber in a lineup by the eyewitness, would appear to be about the best evidence you can get in a robbery case. But, what if your eyewitness was intoxicated at the time of the crime and has a history of allegedly being present during various crimes and exaggerating his own involvement in such cases when talking to the police? Eyewitnesses are

known to make mistakes; therefore, this bit of direct evidence is of questionable value at best. Compare that with a set of fingerprints left on the cash register by the robber at the time of the crime, which positively identifies the culprit as the owner of the prints. That item of circumstantial evidence appears to have much more value than the first example. You must evaluate not only the evidence but also the source and the means by which it came into your possession.

Actually, most facts in a criminal case are proven by circumstantial evidence, and it is not possible to state that direct evidence is in all cases better or worse than circumstantial evidence. All evidence is important, and each item or bit of information that lies in the category of evidence must be regarded as though it were the most crucial element of the investigation. Sometimes it is not until months later that what seemed to be an inconsequential item would prove to be the single most important element of the case. In some cases, judges or jurors may determine in their own minds what convinced them of the defendant's guilt or innocence. Consider, if you will, the 1995 trial of Orenthal J. Simpson, when the jury completely disregarded some of the most overwhelming evidence, which would have convicted anyone else of double homicide, and found him "not guilty" in spite of the evidence.

Because nothing is absolute in the field of evidence, the experts always speak of reliability of evidence in terms of probabilities. A fingerprint expert will never state that the latent prints found at the crime scene are positively those of the suspect as a result of comparing the latents with a rolled set of comparison prints taken in the office or found in the files of the FBI or another agency. What the expert will say is that the probability that the latents were left by someone other than the defendant is about one in 100 million. In other words, of the 100 million sets of fingerprints searched, only one set of prints, those of the defendant, matched the latents found at the crime scene. So far, in all the years that fingerprint files have been maintained worldwide, no two people have come up with identical sets of prints.

Take DNA, or deoxyribonucleic acid, for example. Of the current world population of about 5 billion people, some experts have proclaimed that no two people—except for identical twins—have the same DNA, or genetic code. The mathematical probability of duplicate genetic codes, with the exception of identical (not fraternal) twins, would be 5 billion to one. Of course, the scientists have not cataloged the DNA of all 5 billion inhabitants on earth but use projected mathematical probabilities not unlike opinion polls. An oversimplified example of such a poll would be that 100 Republicans randomly selected and 100 similarly selected

Democrats (in this case allegedly representing all the Republicans and Democrats in a given area) are asked if they favor "three strikes and you're out" laws. Eighty-five Republicans and 85 Democrats state that they are in favor of the law. The pollsters would then project that 85 percent of all Democrats and Republicans believe the law is a good one. If they question 10 more of each and come up with a different breakdown, the results will change. For instance, if someone is fingerprinted or yields a DNA sample and is found to be identical to another person, then the odds for fingerprints would be one in 50 million or DNA would be one in 2.5 billion. Scientifically speaking, those are still pretty good odds.

CRITERIA FOR DETERMINING EVIDENTIARY VALUES

1. *Mathematical probability.* As long as every attempt to replicate an examination to produce identical results comes up negative, the criminalist can say that of 3,000 attempts to produce an identical result, it did not happen a single time. Therefore, the probability of matching two pieces of broken glass as in a jigsaw puzzle, and being able to duplicate a match of one of those pieces of broken glass with another is 1 : 3,000 because of the 3,000 unsuccessful attempts by the criminalist. So it can be said with some scientific certainty (but not absolutely) that two pieces of broken glass that fit together in all likelihood came from the same pane of glass and that they were previously both part of one piece, and now there are two that fit together at the place they were separated.

Here are a couple of other examples. When you toss a coin, the probability that it will come up "heads" is one in two, 1 : 2 (because there are two sides to the coin). If 40 percent of all humans have type O blood, you can say that two of every five people have type O blood. Even if you come up with five people in a row who have type O blood, the probability will not change because so many people have had their blood typed, and of all of those individuals, 40 percent of humans have type O blood. If you have type A blood, what is the probability that the next time your blood is typed it will be anything other than A? Zero, of course, because blood type does not change.

2. *Uniqueness.* A shoe print that appears to have been made by a size twelve shoe is found impressed in the soil in a flower bed

outside the murder victim's bedroom window. The design of the print on the sole, including a logo and some type of lettering, is characteristic of only one type of shoe custom made by a shoemaker in Milan, Italy, according to the shoe print expert of the Federal Bureau of Investigation. No other shoemaker can be found who manufactures a shoe with a similar design. The victim's son wears a size twelve shoe, and you find in a search of his apartment a sales slip showing that the son bought a pair of size twelve shoes from that same shoemaker in Milan. How many people wear size twelve shoes? How many people known to the victim wear size twelve shoes? How many people purchased size twelve shoes from that particular shoemaker in Milan? Further examination of the shoe print shows a distinctive wear pattern and a cut across the heel impression that appears to have been made by a knife. You find the son's size twelve shoes and one of the shoes appears to have similar wear pattern, logo, and lettering design, and one of the shoes has a knife cut across the heel. The shoe expert will point out the similarities between the shoe and the impression that it probably made, and the improbability of any two shoes making an identical impression, but he or she will never say that a specific shoe made that specific impression. Yet the situation is so unique that it can hardly be attributed to coincidence.

3. *Inconsistency.* A middle-age rape victim who has lived alone for the past twenty years, who does not smoke and has never allowed anyone to smoke in her house, finds a half-smoked cigar in her bathroom sink. It is reasonable to assume that the intruder was the one who brought the cigar to the scene and left it behind because of its inconsistency with the victim's lifestyle. In an embezzlement case, the office manager started working late every night without asking for overtime pay and at the same time volunteered to take care of the bank deposits. One of the clerks at the bank became suspicious when the office manager opened a second account with himself as the signator, which was inconsistent with the company's previous banking practices. After the office manager started making withdrawals from the second account, the bank employees became suspicious and phoned the owner of the company, who subsequently went to the police department and filed

a complaint against the office manager for embezzlement of several thousand dollars. The manager had coincidentally taken an unscheduled vacation (which was also inconsistent with his behavior of never wanting to take time off for vacations or even illness).

4. *Physical match.* The perpetrator of a "smash and grab" burglary broke a window. Fragments of glass taken out of a suspect's clothing were compared with the glass still remaining in the window, both as to physical characteristics and mechanical match, and the criminalist's expert opinion was that the glass fragments found on the suspect were probably—with little chance for doubt—part of the broken plate of glass. The mechanical match was made by photographing the larger fragments that have a shape to them and photographing the remnants of the window at the scene, and moving the photographs around as one would put together a jigsaw puzzle, coming up with a match. It is virtually impossible for any two sheets of glass to be broken in exactly the same way. Virtually, but not absolutely. We are dealing with the law of probabilities again.

CORPUS DELICTI, THE ELEMENTS OF THE CRIME

When you respond to the crime scene, not only keep in mind what type of crime has been reported but also keep your mind open to the possibility that the evidence may show you that the crime is not as originally reported, or that one crime, such as arson, was committed to cover up another crime, such as murder. It is possible that another type of crime altogether was committed, or your investigation may prove that there was no crime at all. That's why the investigation must be as thorough as possible. Let the evidence present itself to you and then determine what crime, if any, occurred. A very common error in communication is when a burglary victim comes home and reports to the police that he or she has been "robbed." Even the media writers and reporters often confuse the two completely different types of crimes.

As you know, each of the disparate elements of the corpus delicti must be proven by reliable and constitutionally admissible evidence. You cannot infer that evidence exists; you must prove that such evidence exists by legally presenting it in court. Often defense attorneys will challenge testimony and evidence that they are able to review prior to the trial by means of discovery.

DISCOVERY

All information and evidence that you discover during the investigation must be revealed to the defense, and the defense must also reveal to the prosecution what evidence and information it has, with the exception of those items that may be withheld to assure the defendant's Fifth Amendment rights not to be a witness against oneself. Although not a game, the discovery process is similar to playing a hand of poker where all players must show the others their cards. Under such conditions it would be rather hard to bluff the others with the impression that one player is holding a royal flush when they can see only a pair of eights. When the defense attorneys see that your evidence is weak—which they believe does not prove an element of the corpus delicti or which they believe was collected in violation of the search and seizure rules, or *Miranda* in the case of statements or admissions obtained—they are going to petition the court for a pretrial hearing to suppress that evidence so that it cannot be presented later at the trial.

So what you have here are several tests along the way before an item of evidence may be allowed to serve its purpose to prove an element of the crime. The bottom line is that every item of evidence must be carefully collected, meticulously packaged and transported to the evidence repository, or the laboratory, carefully analyzed by the laboratory technicians and criminalists, transported to the courtroom for the trial, and legally presented in court. All of this has to be within the strict confines of the rules for maintaining a continuous and unbroken chain of custody.

LIABILITY PROTECTION

We operate in a world filled with litigation-happy people and a legion of hungry attorneys. Be careful to protect yourself and your department from lawsuits when the property owners and even the victims whose crimes you are investigating claim that you or your colleagues destroyed or stole their valuable property while investigating the crime scene or searching other places for evidence. Even though you are the "nice guys"—helping out the victims by working to solve their crimes, recovering their property, and prosecuting the "bad guys"—it brings out the greed in people when they see a chance to cash in on some "big bucks," and their attorneys can pay the rent for a few more months. Some victims will blame the investigators when the case goes awry, and it is not unusual to encounter suspects who will file a lawsuit in hopes of using it as a bargaining chip to negotiate for the police and prosecution to drop or reduce the criminal charges against them.

You and your department represent “deep pockets,” into which these litigants and their attorneys seek to reach and fill their own pockets, sometimes garnering the sympathy of jurors who tend to sympathize with “underdogs” who are victimized by bureaucrats. You must anticipate that such lawsuits are going to be filed against you no matter how meticulous and honest you are. For that reason, be careful to document everything that you do, see, and say throughout the investigation.

Depending on your department’s human and financial resources, consider adding to the team of crime scene investigators a videographer-historian whose sole purpose is to memorialize the entire investigation from beginning to end. If the date and time feature on the camcorder is available, be sure of the accuracy of the date and time the tape is being made. In one so-called “crime of the century,” the O.J. Simpson case, a videographer recorded scenes of the suspect’s house for liability protection purposes yet caused some serious credibility problems when the date and time showing on the tape were different than when he and other officers testified he made the tapes. That seemingly inconsequential matter, which the videographer overlooked when checking out the camcorder, gave the defense team some good ammunition with which to attack the prosecution’s case.

THEORY OF TRANSFER

Although many cases may cause you to question your faith in the theory of transfer, always consider the possibility that perpetrators often take something away from a crime scene and leave something there, although it may be only a memory. You don’t have to be a psychic to feel someone’s presence at a crime scene without knowing what you are sensing, and then to have a *déjà vu* experience when you are later face-to-face in the same person’s actual presence. Sometimes the odor of a person’s cologne or aftershave lotion lingers at the scene, or the pungent and distinct aroma of a particular type of pipe or cigar tobacco permeates the crime scene, especially if it is an enclosed space. Then later, when you are in that person’s presence, you may smell the same odor and not even be aware of what is happening. That’s a more subtle type of transference, which is not likely to serve as presentable evidence in court, but it may help narrow down your list of suspects.

Look for items that the culprit may have left behind at the crime scene. Fingerprints, shoe impressions, and traces of body fluids are what you are most likely to search for. Also consider discarded cigarette butts outside the point of entry, or candy or chewing gum wrappers, tools or