

SYMPOSIUM

UTILIZATION OF CRIMINALISTIC SERVICES BY THE POLICE

SLOTT

AN ANALYSIS OF THE PHYSICAL EVIDENCE RECOVERY PROCESS



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U.S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
NATIONAL INSTITUTE OF LAW ENFORCEMENT AND CRIMINAL JUSTICE

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**THE UTILIZATION OF CRIMINALISTICS
SERVICES BY THE POLICE
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EVIDENCE RECOVERY PROCESS**

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The observations, findings, opinions and conclusions of the author's report of his findings are his own, and do not necessarily represent the official position of the U.S. Department of Justice.

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FOREWORD

Within the past decade the forensic science laboratory has assumed a prominent position in the investigation and adjudication of criminal offenses. It has been demonstrated that scientific examination of physical evidence by the forensic scientist can develop objective information not possible through other investigative channels.

In recent years, as scientific techniques have become more advanced, the number of crime laboratories in the United States has doubled.

This monograph explores one aspect of the scientific evidence process which has been rarely examined or discussed in the literature: investigation procedures. These include the search for, recognition, and collection of evidence from crime scenes which precede actual laboratory analysis of the physical evidence. Because physical evidence associated with crimes is never recovered and thus never even reaches the laboratory, this report focuses on the behavior of the investigator who in large part determines if forensic science techniques will be used at all.

Crime commission reports have called for greater use of scientific evidence to improve arrest levels; and court decisions restricting forms of criminal investigation have increased the importance of unbiased analytical evidence.

This report, therefore, offers insight into an area important to the overall administration of justice.

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Without, too, the assistance of many other forensic scientists and police officers, this research would not have been possible. Numerous scientists and police personnel provided invaluable information and insight into problems during the months of the study.

SUMMARY

The criminalistics laboratory is frequently cited as a prime means for increasing the overall level of professionalism in law enforcement and for introducing more objective fact-finding techniques into criminal investigation. Utilizing the principles of the natural sciences, the laboratory has been able to provide objective information to the legal process by overseeing the collection, preservation, and analysis of physical evidence.

This report discusses the role of the criminalistics operation within the police and criminal investigation subsystems of the total criminal justice system. It details the investigative and evidence retrieval practices of police agencies that significantly restrict the flow of available physical material to the criminalistics laboratory for examination; and it analyzes aspects of the police investigative process dealing specifically with the search for, recognition, and collection of potential physical evidence at crime scenes.

First, information describing the commonly recognized goals, missions, and standard operating procedures of criminalistics laboratories is discussed. Data presented describe the low frequency of laboratory involvement in criminal cases, the high proportion of drug-related evidence currently being analyzed, and the minimal participation of laboratory scientists in searching crime scenes and training other police investigators in retrieval techniques. Quantitative data which document the presence of physical trace material at crime sites illustrate the high availability of such potential information. The remaining sections describe how this abundance of physical information is screened from the criminalistics process.

A decision-making model is presented which represents the progression of an investigation from the point where the police become aware of a criminal offense to the stage where evidence may be submitted to the laboratory for analysis. The activities of the police "evidence technician" are thoroughly explored, and information is furnished indicating the types and proportions of felony crimes to which these specialists respond and the "success" they achieve in returning evidence for analysis. How the evidence technician perceives his role in the investigation process and adapts to various scientific, legal, and administrative constraints determines which evidence reaches the laboratory for testing.

Both the physical and social environments are crucial in predicting evidence collection patterns for any given crime. Even the largest and most progressive departments presume, inappropriately, that searching for fingerprints and other physical evidence requires few special skills or training of any type. The standards suggested in texts and other professional publications are largely ignored and bear little resemblance to actual evidence technician operations. All too often, crime scene investigations become mere public relations exercises because inadequate or mismanaged resources reduce the opportunity for meaningful investigative efforts.

Although the personnel which police departments provide for crime scene search activities are inadequate in terms of numbers and training, the criminalistics profession must also assume partial responsibility for existing problems. Crime laboratories have been content to accept the mate-

rials submitted by police investigators, have not challenged the methods police investigators employ to screen out the vast majority of potential evidence, and have not demanded that comprehensive and relevant training programs in evidence collection be instituted in their jurisdictions.

The report presents recommendations on organizational and resource commitments necessary for adequate evidence recovery programs, improved education and training provisions, and the initiation of research efforts to attack fundamental investigative problems.

Organization and resource management. Given their resource limitations, police and crime laboratories should generate explicit goals in the evidence-recovery area and establish a timetable for attaining these goals. Agencies must develop adequate resource-delivery systems which will enable the police and laboratory to realize the objectives drafted in the first stage (see pp. 36-39). An information system must be constructed so that activities of the technician unit receive proper documentation and review by supervisory staff, and information is fed back to field technicians on a regular basis. Incentive systems and performance measures specifically tailored for evidence retrieval tasks are necessary in order to establish a meaningful source of motivation.

Education and training. The most important elements of a competent investigative opera-

tion are the line and staff personnel involved. Recruits with exceptional intelligence and perceptual abilities, aptitude in the physical sciences, plus a sincere interest in this area should be identified and given advanced training in evidence-recovery techniques. In addition, supervisors must also prepare the technicians for the types of pressures they can expect from the patrol force, detectives, superior officers, and citizens. Because public involvement is essential for successful police operations, the community should also receive education in rudimentary evidence-preservation practices, and in the types of police investigative service they can reasonably expect.

Research needs. Methods for assigning priorities to the investigation of particular crimes, and the corresponding allocation of police and laboratory resources are extremely underdeveloped. More rational methods are needed for analyzing crime scenes and selecting evidence which has the greatest probability for payoff. Above all, research is needed to clearly identify the benefits of a forensic laboratory system, the corresponding costs, and the relation to other types of policing operations. Comparative studies are required to contrast the investigations and dispositions of crimes involving scientific investigation with those where other information sources were used. Aside from the economic cost/benefit approach, consideration must also be given to those more intangible qualities of the forensic laboratory—objectivity and impartiality.

CHAPTER I. INTRODUCTION

In the areas of policing and criminal investigation, the multidisciplinary science of criminalistics has emerged as an important force having an impact on practically every element of the criminal justice system. Criminalistics has been defined as:

That profession and scientific discipline directed to the recognition, identification, individualization, and evaluation of physical evidence by application of the natural sciences in law-science matters.¹

The roots of this profession go back to the 19th century,² but it is only within the past decade that criminalistics has attracted the attention of criminal justice planners and researchers. In the past, the greatest interest in such scientific techniques was usually generated by incidents where the police were unable to solve heinous crimes which shocked the public and the press.³ The current emphasis on professionalism in law enforcement, continuing concern over high rates of crime, and the development of more refined laboratory techniques have all stimulated growth and interest in criminalistics. This unique science has been portrayed in the literature as an entity which can provide objective and otherwise unobtainable information to the police and the criminal justice system through the scientific examination of physical evidence.

A greater role for criminalistics in the administration of justice has been envisioned as the result of Supreme Court decisions such as *Miranda* and *Escobedo*. Jurists and other criminal justice researchers have predicted a shift to greater reliance on physical evidence and scientific inves-

tigations from dependence on confessions and other forms of evidence retrieval which may be adjudged to infringe upon the rights of the accused.⁴

The President's Crime Commission predicted increased utilization of the analytical procedures of the crime laboratory:

More and more, the solution of major crime will hinge upon the discovery at crime scenes and subsequent scientific laboratory analysis of latent fingerprints, weapons, footprints, hairs, fibers, blood, and similar traces.⁵

Much of the nontechnical literature on crime investigation has emphasized the solution of notorious crimes through the techniques of science. Unfortunately, these accounts are not representative of typical laboratory cases and fail to confront some very serious problems within the field.

The purpose of this report is to discuss particular aspects of this scientific system—aspects rarely studied or discussed in the literature. It describes that component of the total criminalistics system which precedes actual laboratory analysis of evidence: the search for, recognition, and collection of physical trace materials at crime scenes.

It questions much of what has appeared in the literature concerning the goals, values, and general involvement of the criminalistics laboratory in the police and judicial functions. It attempts to explain *how* evidence at crime scenes is either selected or screened out of the criminalistics system. It focuses on police investigators, primarily the evidence technicians, who customarily are given the responsibility of deciding what evidence

at the scene will be preserved, collected, and submitted for scientific analysis.

The way in which patrol officers, detectives, and evidence specialists perform their jobs is exceedingly important, because these personnel largely determine whether criminalistic techniques are used or neglected. Their role is active; the laboratory's primarily reactive. Crime lab personnel rarely initiate inquiries; they usually enter an investigation only when summoned.

METHODOLOGY

The beginning point for this research was a thorough search and examination of all pertinent material in the literature, which served as a guide in the preparation of the appropriate research design and methodology for the collection of data. The primary technique for collecting relevant data for this report was "participant observation"; that is, participating in the actual investigation process and observing and conversing with police and scientific personnel as they carried out both their official and unofficial duties.

Data from police and laboratory reports, compiled during the investigations and documentations of criminal offenses, were also utilized. While the official reports of the police agency could reveal which incidents resulted in a laboratory examination, they could offer little insight into *how* the participants in the investigation process made critical decisions in the retrieval of specific forms of evidence. The two techniques, record examination and observation, provided interesting and complementary methods of information collection.

From 1969-1971, more than 400 hours of field experience were logged with police personnel in five metropolitan communities in different regions of the country. Most of the field time was spent with the evidence technician, the police agent principally responsible for investigating crime scenes for physical evidence. Discussions and interviews were conducted with many field

personnel, as they became involved in the investigation and possible search for evidence. Interviews with police administrators proved helpful in contrasting the attitudes and methods of the line officers with the orientation and perceptions formed by those in policy-making positions. More essential information on collection procedures was derived from discussions with directors of criminalistics laboratories and their scientific staffs.

ORGANIZATION OF REPORT

Chapter II provides background information about the role of criminalistics in the criminal justice system, defines the limits of this study by detailing the boundaries of the scientific investigation process, and describes the commonly recognized goals and standard operating procedures of crime laboratories. Information is presented on the frequency of criminalistics involvement in criminal cases, the types of evidence normally submitted for analysis, and the availability of evidence at the scenes of serious crimes.

Chapter III presents a model of the police investigation process and the search for physical trace material that provides a framework for the subsequent discussion of empirical data. The model should enable the reader to visualize more clearly the critical decision junctures which represent the progression of an investigation from the time the police become aware of an offense to the stage where evidence is submitted to the laboratory for analysis.

Chapter IV examines the role of the evidence technician as he functions within the overall police structure and in close contact with the various criminal investigation units. Data describe the types and proportion of crimes to which technicians commonly respond and the "success" they achieve in recovering evidence for analysis. Also included in this section is a discussion of the "mobile crime laboratory" concept, which has received considerable attention as an extension of the central laboratory itself.

Chapter V includes an account of those routines which best characterize the technician's tour of duty. His on-the-job operations are compared to the official organizational guidelines of his police department. Case studies of several incidents witnessed during the months of observation are presented in the second half of the chapter.

Chapter VI summarizes the fundamental issues—scientific, social and legal—described in the foregoing sections and presents several realistic recommendations which can contribute to the alleviation of many of the identified problems.

The laboratory, the police administration, and the research community must all recognize their individual obligations to bring about necessary change in the physical evidence utilization process. To date, procedures and policies connected with the search for physical evidence have been accepted at "face value."⁸ Hopefully, this report, by highlighting these issues, will stimulate greater interest and serious inquiry in this subject area.

NOTES—Chapter I

¹David Q. Burd, ed., *Physical Evidence Manual* (Sacramento, Calif.: Criminalistics Laboratory, Bureau of C.I. and I., 1970), p. 5.

²Jurgen Thorwald has written two books in which he discusses the origins of forensic science: *The Century of the Detective* (New York: Harcourt, Brace and World, Inc., 1965) and *Crime and Science* (New York: Harcourt, Brace and World, Inc., 1967).

³"In virtually every instance, the genesis of a criminalistics function, whether local or state, has been either the outgrowth of a need laid bare by a major crime of violence, or a series of such crimes occurring in a particular locale. The notoriety which attends such cases, and the ensuing public outcry against the apparent deficiencies of the investigative effort, focused attention on possible avenues of improvement." Wilkaan Fong, "Criminalistics and the Prosecutor," Vol. I, Chapter XIV, in *The Prosecutor's Sourcebook*, ed. by James George and Ira Cohen (New York: Practising Law Institute, 1969), p. 329.

⁴"Recent Supreme Court decisions, which seriously limit the police process of interrogation, have created a void in police investigations that science and technology must fill. More and more, the police must conduct scientific investigations." Leo C. Loughrey and Herbert C. Friese, Jr., "Curriculum Development for a Police Science Program," *Journal of Criminal Law, Criminology and Police Science*, 53, No. 2 (June, 1969), p. 266.

⁵President's Commission on Law Enforcement and Administration of Justice, *Task Force Report: The Police* (Washington, D.C.: U.S. Government Printing Office, 1967), p. 51.

⁶"To ask sociological questions, then, presupposes that one is interested in looking some distance beyond the commonly accepted or officially defined goals of human actions. It presupposes a certain awareness that human events have different levels of meaning, some of which are hidden from the consciousness of everyday life. It may even presuppose a measure of suspicion about the way in which human events are officially interpreted by the authorities, be they political, juridical, or religious in character." Peter L. Berger, *Invitation to Sociology: A Humanistic Perspective* (Garden City, N.Y.: Anchor Books, 1963), p. 29.

CHAPTER II. CRIMINALISTICS LABORATORIES AND THE UTILIZATION OF PHYSICAL EVIDENCE

A. CRIMINALISTICS

This chapter presents basic background information about the criminalistics process, the role of the criminalist, attitudes toward evidence utilization, and the proper position of the laboratory within the criminal justice system. Data which note the limited number of laboratories in the country, the predominance of drugs in the workload of the system, and the participation of scientists in crime-scene search operations are discussed. The second half of the chapter shifts attention from the laboratory to the physical environment—a residence, commercial establishment, or public area—which constitutes the scene of a crime.

1. *Criminalistics: Common assumptions about goals and methods.* The forensic sciences are *defined* as having objectives similar to all the natural sciences, i.e., dedication to the "pursuit of truth" through the application of the "scientific method."¹

From the very beginning, the criminalistics process has been praised for its ability to supply accurate and objective information to the criminal justice system. The impression is also conveyed that physical evidence, in and of itself, is "quite objective, whereas eyewitness testimony is subjective and open more to speculation."² The theories of objectivity are largely based on the assumption that the scientist is qualified and impartial, that his techniques and instruments satisfy scientific requirements, and that real (physical) evidence is an accurate reflection of the events constituting a criminal offense.³ Due to its "hard,"

natural science foundation, criminalistics is usually portrayed as a pure, physical science area, exclusive of all social consideration.⁴

Upon consulting the scientific and legal literature, one could easily gain the impression that the science of criminalistics is at the very heart of the law enforcement and judicial processes. The Crime Commission's Science and Technology Task Force remarked that the "crime laboratory has been the oldest and strongest link between science and technology and criminal justice."⁵ This same task force decided not to discuss crime laboratories in detail, because they were so "well advanced." The opinions of the judiciary, most notably the Supreme Court, have called for greater utilization of scientific techniques, while criminalists themselves have predicted a tremendous growth in laboratory services in the future.⁶

2. *Crime laboratories: Actual conditions.* How accurate are these statements and predictions? One of the few studies designed to survey the status of all criminalistics laboratories in the United States was undertaken in 1966 and funded by the Office of Law Enforcement Assistance.⁷ Based on predetermined criteria, only 105 crime laboratories were recognized within the entire country. Seventeen states operated without the services of a laboratory at any level, and approximately three-fourths of all cities over 100,000 population had no police crime laboratories. A more up-to-date tabulation of all the country's full service laboratories is unavailable. However, preliminary data show that a substantial increase in the number of facilities has occurred.⁸

The OLEA studies revealed that "nearly every laboratory in the United States and Canada is overcrowded, understaffed, underpaid, under-equipped and overworked."⁹ These facts support the 1963 findings of Parker, who estimated that crime laboratory staff members were forced to handle caseloads five times what they should be.¹⁰ Examinations are frequently delayed and investigators are required, in many cases, to wait several weeks for the results of tests on evidence submitted to the laboratory. As a result, the laboratory has become increasingly a "reactive" operation—rarely seeking casework and only marginally able to satisfy requests from the outside.

It is also difficult for laboratories to procure the necessary funds to maintain adequate facilities and qualified personnel. All laboratory managers interviewed agreed that their own police administrators do not endorse the high costs of scientific equipment and personnel that are necessary, or even essential, to effective operations. In some cases, the total police budget allocated to the crime laboratory is small; in others, practically insignificant.¹¹

Perhaps an even greater concern than this limitation of services is the control that the police agency maintains over the laboratory. Although the mission of the laboratory has been described as performing examinations for "all parties" in a criminal case, in practice, most laboratories will not respond to inquiries from individuals who are not law enforcement officials.¹²

It is not surprising that the great majority of laboratories are components of police organizations, since many such facilities have developed from police photography or identification units, and often have been created as a result of outside criticism of the police for failing to solve particular crimes.¹³

Some officials contend that it is necessary and proper to locate the laboratory within the parent police organization. Others oppose this philosophy and advocate a position of greater independence. Kirk states rather succinctly: "Criminalistics is

a scientific discipline, not a function of operating police."¹⁴ In their case book on the organization of crime laboratories, Kirk and Bradford suggested that an:

... independent operation, not directly a part of any other law enforcement agency but available to all, would certainly find it easier to maintain the high degree of scientific objectivity that is so essential to good operation.¹⁵

Although such an arrangement is frequently suggested, it has been rarely, if ever, adopted. The John Jay study published in 1968 found that:

... in no cases are laboratories supported by public funds operating as an arm of the court, or as an independent scientific organization which would serve... the court, police, and defense counsel.¹⁶

As a part of the total police function, the laboratory is expected to justify the resources budgeted for its scientific services. This pressure has led, in some instances, to record keeping which stresses convictions, clearances, or positive findings—a practice which, to some, contradicts the theoretical goals of scientific objectivity and impartiality.

Due to an absence of universally recognized performance measures, local laboratories sometimes inflate statistical records. One laboratory administrator reported that his immediate predecessor condoned the practice of recording examinations, even though the scientist merely gave the evidence a cursory glance and then routed it to the property storage area. In another instance, a single bad-check writing case might involve 15 checks and 5 exemplars of the suspect's writing or signature. This case can be tallied as 75 examinations (5 x 15), rather than a single case.

All criminal justice researchers have observed the tendency of agencies within the system to stress performance measures which are impressive and "look" as good as possible. This practice of projecting an amplified image of caseloads and competence may have an adverse effect on the laboratory's contribution to the criminal justice system.

3. *Utilization patterns.* The demand for facilities to perform drug analyses has probably been the most important single factor in the recent expansion of laboratory services. A 1970 study in California indicated that selected county laboratories reported more than 1,000 percent increases in drug cases from 1964 to 1968.¹⁷ This astronomical increase in requests for drug analyses has in many respects changed criminalistics from a science of "individualization" to one of routine "identification." According to a 1970 Midwest Research Institute Report, 54 percent of the cases submitted to crime laboratories in 10 jurisdictions involved drugs and narcotics. For the cities of Berkeley, Buffalo, and Portland, the mean drug submission rates were 92 percent, 72 percent, and 67 percent, respectively.¹⁸

A recently published report by Stanford Research Institute (SRI) has described in detail just how deeply crime laboratories have become involved in the identification of drugs. They described the existing relationship between reported crime and laboratory utilization as follows: "The singularly most impressive finding of this analysis was that criminalistics is disproportionately utilized in cases of suspected possession and/or use of drug compounds."¹⁹

Furthermore, the overload conditions and resultant delays in testing have served to deter officers from utilizing the laboratory in other types of crime.²⁰ The same SRI report demonstrated that while laboratory casework in drugs has increased significantly in the past 10 years, casework in the major crime areas has been almost constant and has in fact decreased in some categories.²¹ Ward discovered that in New York City the number of examinations decreased from 1968 to 1969 in the categories of burglary and robbery, while narcotic analyses rose over 60 percent.²² One is compelled to conclude that the influx of drugs into the criminalistics laboratory system has served to shift the lab's attention *away* from examinations "more closely related to criminal investigation."

Beginning with Parker's survey of forensic laboratories in 1963, several efforts at measuring the total input into crime laboratories have been made. It was determined in this early study that less than 2 percent of the total criminal violations at the local level received laboratory examination.²³ Other subsequent studies have placed the involvement of the laboratory at the 1 to 6 percent level of serious crime.²⁴

One study found that physical evidence was collected and examined in less than 3 percent of all official juvenile offenses examined.²⁵ Furthermore, in only a small fraction of these cases did the police utilize the lab reports in making decisions during the investigation of the crime. Even in drug cases, the laboratory would not always be "engaged": "Evidence may be collected but it is not processed unless there is a strong possibility that a youngster will not admit his guilt."²⁶

The capabilities of the laboratory are, unfortunately, often magnified in the literature; its actual impact is far less than many writers suggest. Indeed, the 1970 Midwest Research Institute report concluded:

... the involvement of the crime laboratory in the total body of crime has been so minuscule as to preclude judgment as to the impact of criminalistics on the criminal justice system.²⁷

4. *Laboratory responsibility for evidence retrieval functions.* It is often stated that the laboratory is responsible for insuring the proper collection and delivery of physical materials from the crime scene to the lab. One criminalist has claimed that the individuals charged with the responsibility of processing scenes are "equally as important as the forensic chemist."²⁸ The laboratory must have a strong voice in selecting the types of evidence it receives: "In the final analysis, the laboratory is only as effective as the quality of its input material."²⁹

Text on criminal investigation stress the value of having the criminalist at the scene to direct the search for evidence. However, due to the insufficient number of qualified criminalists and the

volume of laboratory analyses, the responsibility for investigating crime scenes is ordinarily delegated to nonscientific police personnel. Since science has traditionally placed great importance on collecting and determining the significance of data, it is indeed disturbing to note the readiness of criminalists to turn this initial evidence-gathering responsibility over to non-scientists. Information gathered during this study suggests that laboratory personnel are involved in the recovery of less than 10 percent of all evidence reaching the scientific laboratory.

The literature implies that criminalists conscientiously monitor evidence retrieval in order to compensate for their inability to be at the crime scene. Standard texts stress that criminalists should train nonscientific police investigators to be qualified representatives of the laboratory.³⁰ It is also advised that precautions be taken when the role of evidence gatherer is assumed by a nonscientist, who may go beyond his level of expertise by attempting to determine the *actual* significance of physical conditions; he should only determine whether the material *may assume* significance as the result of a scientific examination.³¹ The opportunity for elimination of significant data at the field level is a real danger.

Over half of the criminalists with whom this problem was discussed were concerned and displeased with the general level of competence among police evidence technicians. There were two notable exceptions where scientists were extremely satisfied with the progress of technician efforts and the quality of investigations. Most, however, felt they were so overwhelmed by the sheer volume of cases demanding laboratory attention that they could be only superficially involved in evidence retrieval. Others were sincerely concerned with the inadequate performance of the technicians but lacked the resources and policy-making power to make significant improvements.

Some jurisdictions, however, have been making significant headway in designing training programs for evidence technicians. Of the two su-

perior training programs observed, one was coordinated by the director of the local laboratory, while the other was instituted by a police officer who supervised the city's technician division.

B. THE PRESENCE OF EVIDENCE AT CRIME SCENES

1. *Study description.* Physical evidence, the object of the criminalist's inquiries, is an all-embracing term that potentially includes all physical materials relevant to a criminal act. A 3-month study in a medium-sized Western city in the summer of 1969 examined the level of physical materials present at crime scenes that were suitable for, and capable of, laboratory testing.³² This procedure overcame the normal limitations of inspecting documents which record only the evidence actually retrieved for analysis. It was hypothesized that law enforcement agents often screen out physical materials which are, in fact, present at the scene but judged not worthy or capable of laboratory attention.

In order to record the desired information, trained observers were placed in the field so that they could arrive at the crime scene as the first official notice of the incident was received by the police department. The best method for reaching the scenes of felonies proved to be riding with an "identification officer" who responded to requests for latent fingerprint dusting and photography. Guidelines advised the observer to limit his investigations to all probable entry routes to the scene, all possible exit points, and all target areas within the selected environment.

The investigations at most scenes were limited to approximately 20 minutes; if exceptional conditions arose, the observer was normally free to stay longer. Two primary data-collecting techniques were employed throughout the study; narrative audio reports and video tape summaries. At the conclusion of the study, these reports, together with sketches of the crime sites, were reduced to a more manageable form.

The following list of 23 categories was prepared to facilitate the definition of evidence forms discovered in all investigated incidents:

- 1) Toolmarks
- 2) Fingerprints and palmprints
- 3) Organic material
- 4) Glass and plastic fragments
- 5) Tracks and impressions
- 6) Paint
- 7) Clothing
- 8) Wood fragments
- 9) Dust
- 10) Cigarettes, matches, and ashes
- 11) Paper
- 12) Soil
- 13) Fibers
- 14) Tools and weapons
- 15) Grease and oil
- 16) Construction and packing material
- 17) Documents
- 18) Containers
- 19) Metal fragments
- 20) Hair
- 21) Blood
- 22) Inorganic and mineralogical material
- 23) Miscellaneous.

These categories are defined completely in the Appendix.

2. Discussion of data. Of the 749 cases investigated, 687—or 88 percent—were judged to have physical evidence at the scenes. On an average, each crime site produced physical evidence in three distinct categories. Table 1 indicates the rate of occurrence of each physical object category in each offense classification. The “physical object categories” are arranged in descending order beginning with toolmarks, the most frequently observed physical condition.

The following description is quite typical of physical evidence noted at a residential burglary, the most frequently investigated crime:

Upon arriving at the scene of the reported crime, the technician and the researcher were met by the victim, who pointed out the offender's means of entry. The initial officer on the scene had already taken his report and proceeded on to another case. A screen door in the rear of the two-story dwelling

had been pried open; breaking a small hook latch in the process. The burglar had broken a single 12" square pane of glass in the inner door and had reached through to unlock this second door. The home was relatively undisturbed. A dresser in the downstairs bedroom was the major target area. The drawers were opened, clothing strewn on the floor, and a metal filing box was removed and rifled. The box had been pried open, and the contents, \$175 in cash, taken. The burglar had then apparently left the same way he had entered.

For the purposes of the study report, the following physical conditions or evidence forms were recorded: The toolmark on the back door; the broken glass from the inner door which would likely have been transferred to the offender's clothing; several fibers on the ragged edges of the broken glass still in the door; latent fingerprints on the bedroom dresser and filing box; and more toolmarks on the box itself. For the purposes of quantitative data, four evidence categories were noted: latent prints, toolmarks, glass, and fibers.

Follow-up data revealed that for all burglaries, auto thefts, thefts, robberies, rapes, assaults with battery, and murders committed during the study period (totalling 3303), only 4 cases resulted in a laboratory examination. After the elimination of thefts of under \$50 and minor assaults (over 1900 cases), the data indicated that over 1300 cases could have readily resulted in laboratory review.³³ Of the 489 cases analyzed by the laboratories during that study period, only 4 came from the 7 most serious crime categories; while 452—or 92 percent—involved drugs and narcotics.

That study conclusively demonstrates the great disparity between the quantity and variety of potential evidence present at crime scenes and that which is actually received for analysis. Yet even the very small proportion of evidence directed to the laboratory—1 to 5 percent of Part I crimes throughout the country—can barely be examined adequately by existing laboratory resources. These limitations on laboratory capability may be a major cause of the low rates of submission.

Similarly, there are as yet no reliable cost/benefit indicators which can offer assistance in determining what kinds and how much evidence

Table 1.—PHYSICAL OBJECT CATEGORY RATE OF OCCURRENCE COMPARED WITH SUSPECTED OFFENSE CLASSES

Physical object category	NUMBER OF CATEGORIES PER NUMBER OF CASES IN EACH CATEGORY											Total
	Res.	Burglary Non-res.	Auto	Sub-total	Auto theft	Theft	Robbery	Rape	Assault battery	Murder	All others	
Toolmarks.....	.39	.68	.54	.46	.39	.24	.10	.0	.2	.4	.32	.43
Fingerprints.....	.41	.46	.41	.42	.45	.45	.29	.3	.4	.4	.27	.41
Organic substance.....	.35	.19	.10	.28	.31	.18	.14	.5	.2	.4	.14	.27
Glass.....	.16	.38	.32	.23	.15	.06	.00	.2	.2	.2	.50	.21
Paint.....	.21	.23	.09	.20	.24	.12	.00	.5	.0	.2	.32	.20
Track.....	.23	.31	.04	.22	.10	.09	.10	.3	.2	.2	.18	.20
Clothing.....	.17	.09	.16	.15	.20	.09	.19	.8	.2	.2	.18	.16
Wood.....	.20	.32	.03	.20	.04	.00	.05	.0	.0	.2	.09	.16
Dust.....	.20	.13	.06	.17	.13	.09	.10	.3	.0	.0	.05	.15
Cigarette.....	.09	.19	.07	.11	.29	.18	.38	.5	.0	.2	.14	.15
Paper.....	.07	.19	.10	.10	.31	.12	.19	.2	.0	.0	.18	.13
Soil.....	.14	.09	.04	.12	.23	.03	.05	.2	.2	.4	.05	.12
Fibers.....	.15	.14	.04	.13	.01	.03	.14	.0	.0	.0	.05	.11
Tools.....	.05	.22	.09	.09	.09	.09	.19	.2	.4	.4	.05	.10
Grease.....	.05	.16	.04	.07	.09	.12	.00	.2	.0	.0	.05	.07
Document.....	.05	.16	.03	.07	.10	.06	.05	.0	.0	.0	.05	.07
Container.....	.05	.04	.06	.05	.09	.12	.00	.0	.2	.2	.41	.07
Construction material.....	.08	.11	.03	.08	.04	.00	.00	.0	.0	.0	.14	.07
Metal.....	.03	.10	.04	.05	.05	.09	.00	.2	.0	.2	.14	.05
Hair.....	.06	.05	.01	.05	.03	.03	.10	.5	.0	.0	.09	.05
Blood.....	.02	.06	.00	.03	.05	.03	.14	.2	.6	.6	.23	.05
Inorganic Substance.....	.03	.09	.00	.04	.03	.00	.00	.0	.0	.0	.14	.04
Miscellaneous.....	.09	.07	.12	.09	.14	.09	.05	.2	.2	.2	.09	.10

should be collected and analyzed. Given the present limitations in scientific and police staffs, it is unreasonable to assume that either group could expand their examinations and investigations significantly. Further research is needed to overcome this problem.

NOTES—Chapter II

¹ See: Alan S. Curry, "Science Against Crime," *Science and Technology*, 47 (November, 1965), 39, and D. Patterson, "Science and the Courts," *Journal of the Forensic Science Society*, 1, No. 1 (1960), 5.

² David DeGarmo, "The Role of Physical Evidence in Obtaining Convictions in Three Types of Felonies (unpublished Master's Thesis, School of Criminology, University of California, 1968), p. 11.

³ "Confidence in this real evidence appears to be founded on the belief that objects cannot lie, are not affected by emotions, and thus cannot be impeached." Paul B. Weston and Kenneth M. Wells, *Criminal Investigation* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970), p. 35.

⁴ "Of all the areas of the administration of criminal justice, only criminalistics is strictly, and almost totally, a technological matter." Paul L. Kirk, "The Real Technological Needs of the Criminalistics Operation," in *Law Enforcement Science and Technology III*, ed. by S. I. Cohn and W. B. McMahon (U.S.A.: Port City Press, Inc., 1970), p. 461.

⁵ The President's Commission on Law Enforcement and Administration of Justice, *Task Force Report: Science and Technology* (Washington, D.C.: U.S. Government Printing Office, 1967), pp. 17-18.

⁶ "The general public as well as the legal profession and judicial system have in recent years come to realize the merits of criminalistics and there can be no doubt that the demand for services of criminalistics laboratories will increase exponentially over the next few decades." Lowell W. Bradford and Aryeh H. Samuel, "Research and Development Needs in Criminalistics," in *Law Enforcement Science and Technology III*, ed. by S. I. Cohn and W. B. McMahon (U.S.A.: Port City Press, Inc., 1970), p. 465.

⁷ Alexander Joseph, "John Jay College of Criminal Justice, Study of Needs and the Development of Curricula in the Field of Forensic Science," in *Crime Laboratories—Three Study Reports*, OLEA Projects #013, #140 and #66-3 (Washington, D.C.: U.S. Department of Justice, 1968), p. 6.

⁸ This author is in the process of compiling an up-to-date listing of all criminalistics laboratories in the country, and a preliminary draft indicates that the figure has now risen to more than 200.

⁹ *Crime Laboratories—Three Study Reports*, op. cit., p. 84.

¹⁰ Brian Parker, "The Status of Forensic Science in the Administration of Criminal Justice," *Revista Juridica de la Universidad de Puerto Rico*, XXXII, No. 2 (1963), 417.

¹¹ *Ibid.* See also: *Crime Laboratories—Three Study Reports*, op. cit., p. 85, and Ronald H. Rogers, *Survey of Criminalistics Facilities in California*, Submitted to the California Council on Criminal Justice (Long Beach, Calif.: California State College, 1970), pp. 12-21.

¹² "The services of the laboratory are available to all local

and state law enforcement or investigative agencies . . . No evidence studies can be conducted for private persons or corporations in either civil or criminal cases." David Q. Burd, ed., *Physical Evidence Manual* (Sacramento, Calif.: Criminalistics Laboratory, Bureau of C.I. and I., 1970), p. 11.

¹³ The Wickersham Commission noted in 1931 that it expected the newly formed crime laboratory in Chicago to induce police to place greater reliance on scientific evidence "instead of the extortion of confessions by brutal methods." National Commission on Law Observance and Enforcement, *Report on Lawlessness in Law Enforcement*, No. 11 (Washington, D.C.: U.S. Government Printing Office, 1931), p. 131.

¹⁴ Paul Kirk, "Criminalistics at the Crossroads," *The Criminologist* 4, No. 11 (February, 1969), 36.

¹⁵ Paul L. Kirk and Lowell W. Bradford, *The Crime Laboratory: Organization and Operation* (Springfield, Ill.: Charles C. Thomas, 1965), p. 22.

¹⁶ *Crime Laboratories—Three Study Reports*, *op. cit.*, p. 9.

¹⁷ Rogers, *op. cit.*, pp. 1-15.

¹⁸ Walter R. Benson, John E. Stacy, Jr., and Michael L. Worley, *Systems Analysis of Criminalistics Operations*, LEAA Grant NI-044 (Kansas City, Mo.: Midwest Research Institute, 1970), p. 19.

¹⁹ Brian Parker and Vonnie Gurgin, *The Role of Criminalistics in the World of the Future*, National Science Foundation Grant GI-30011 (Menlo Park, Calif.: Stanford Research Institute, 1972), p. 6.

²⁰ Walter R. Benson, *op. cit.*, p. 9.

²¹ Parker and Gurgin, *op. cit.* pp. 59-65.

²² Richard H. Ward, "The Investigative Function: Criminal Investigation in the United States" (unpublished D. Crim. dissertation, School of Criminology, University of California, Berkeley, 1971), pp. 131-139.

²³ Parker, "The Status of Forensic Science . . .," p. 417.

²⁴ See: Paul Rosenthal, *Planning Study for Evaluation of Laboratory Services in Erie, Niagara, and Wyoming Counties*, New York (Buffalo, N.Y.: Cornell Aeronautical Laboratory, Inc., 1969), pp. 49-50, and Brian Parker and Joseph Peterson, *Physical Evidence Utilization in the Administration of Criminal Justice*, LEAA Grant NI-032 (Washington, D.C.: U.S. Department of Justice, 1972), p. 37.

²⁵ Barbara Zuniga, "Scientific Evidence and Juvenile Offenses" (unpublished graduate paper, School of Criminology, University of California, 1969).

²⁶ *Ibid.*, p. 27.

²⁷ Walter R. Benson, *op. cit.*, p. 7.

²⁸ Joseph D. Nicol, "Criminalistics," in *Municipal Police Administration*, ed. by George D. Eastman (Washington, D.C.: International City Management Association, 1969), p. 309.

²⁹ Walter R. Benson, *op. cit.*, p. 8.

³⁰ "As far as the training of police is concerned, the scientist has a major responsibility. Advances in scientific technique must be conveyed to officers who investigate crime." Alan S. Curry, *op. cit.* p. 48.

³¹ Brian Parker, "Status of Forensic Science . . .," pp. 414-415.

³² Parker and Peterson, "Physical Evidence Utilization . . .," *op. cit.*, pp. 1-38.

CHAPTER III. A MODEL OF THE EVIDENCE COLLECTION PROCESS

A. AN EVIDENCE SCREENING MODEL

The total police investigation process can be viewed as a series of choice situations encountered by participants in the system. Various individuals, including the evidence technician, are required to select specific courses of action from an enormous array of possibilities. The decision-making model presented here provides a framework for understanding the series of decision levels which constitute the police investigation process, and the search for and collection of physical evidence (See Figure 1). Following the two preliminary stages (I and II), the decision model focuses on the evidence technician procedures which culminate in evidence being received by the laboratory. Decision points IV, V, and VI form the central core of evidence recovery activities, which are detailed in the last two chapters.

1. *Initial police involvement (Decision level I)*. The first critical decision in the selection of physical evidence for scientific analysis is the patrol officer's determination to intervene in a situation which may or may not be "criminal." Studies have determined that "more than 80% of the field officer's *on-call* time was spent on non-criminal matters."¹ Field officers, therefore, spend a minority of their time dealing with crime-related activities.²

The decision of the patrol officer to become involved depends on a number of factors which also affect the subsequent decisions relating to evidence retrieval. The "seriousness" of an offense will be a major determining factor in the officer's

decision to intervene. Research has demonstrated that the policeman is less likely to intervene or invoke the criminal process when the conduct viewed conforms to his conception of the *normal* standards of the individuals involved.³ The "seriousness" of a crime seems to diminish as its frequency of occurrence increases⁴ and, aside from personal injury crimes, is largely measured by the value of the property lost or destroyed.⁵

The guidelines and policies of the local police department, and of course the criminal law, also influence the officer's decision to intervene. The individual learning experiences of the officer, including past rewards and penalties for becoming involved in similar situations, will undoubtedly influence these initial decisions. A final consideration, although of lesser importance than other variables at this stage, is the actual presence of physical evidence. For example, the presence of a weapon, which may later be collected as evidence, would contribute substantially to the officer's original decision to become involved.

2. *Formal handling (Decision level II)*. The second decision that the police officer must make is deciding whether to handle a situation "informally" or through official departmental channels. The field officer has a great opportunity to exercise his discretionary powers in such duties, even though most police administrators often state that *all* laws are enforced uniformly, *all* investigations are conducted without regard for social pressures, and *all* persons are treated with equal respect.⁶

The official police guidelines, the seriousness of the suspected offense, the possible presence of a

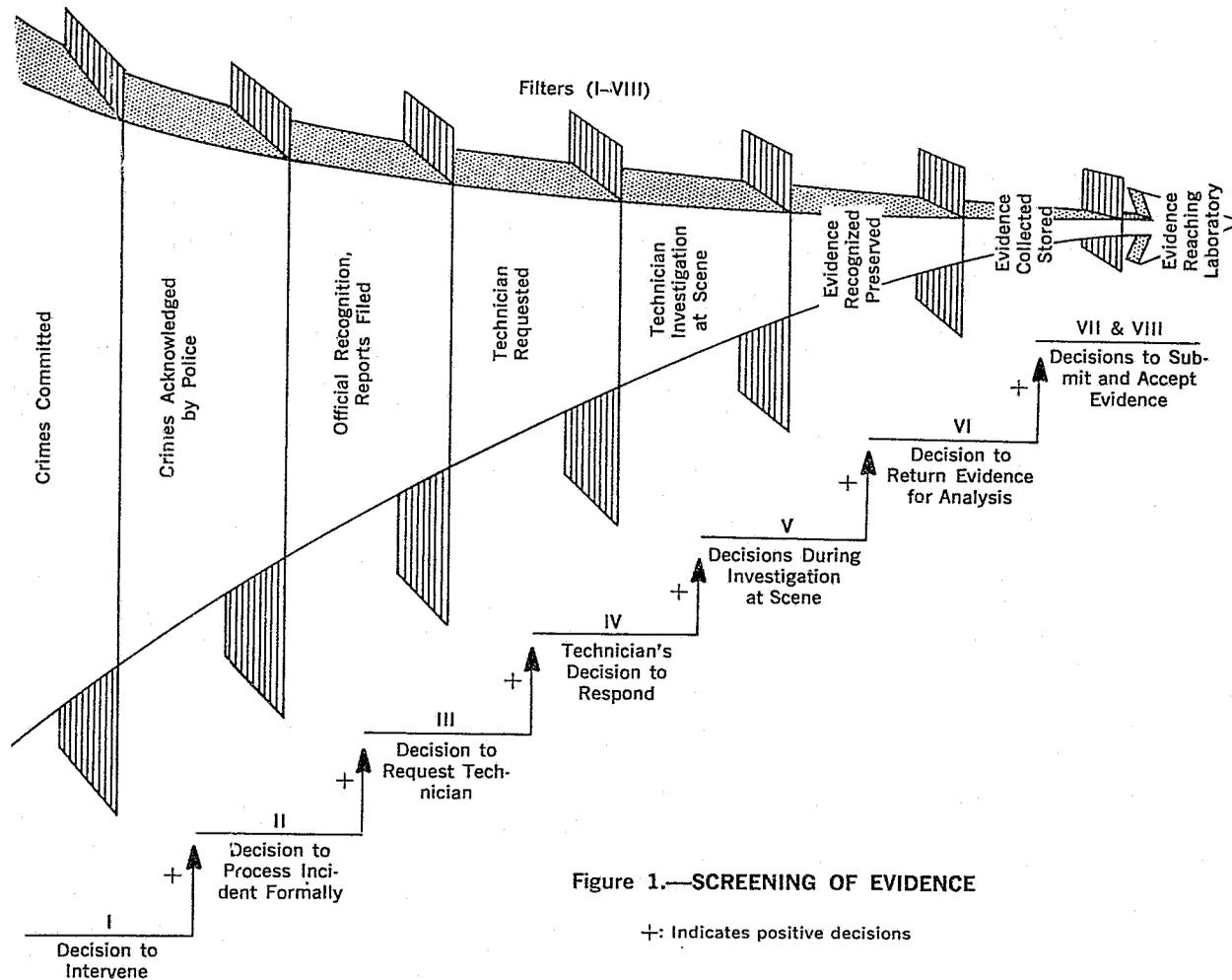


Figure 1.—SCREENING OF EVIDENCE

suspect and his subsequent identification by the police (perhaps as a former felon) all affect how the patrolman will handle a case. In situations where the authority of the officer has been challenged by a suspected offender, the policeman's response will usually be formal and sometimes excessive.⁷ The victim's attitude and the relationship he develops with the officer will also contribute to the officer's decision.

Once again, physical evidence may reinforce a positive decision to intervene at this point, particularly if evidence is present which implicates the person in custody and suggests a strong case for conviction. With the emphasis on high clearance rates, a patrolman is more inclined to file a crime report in such cases than in those where such evidence is absent. This decision level is crucial; unless the case is formally acknowledged, there will be no further investigation or search for physical evidence.

3. *Technician request (Decision level III)*. The next level of decision making takes place where field officers, or perhaps their superiors, determine whether they should request the assistance of an evidence technician. This model considers only those factors that influence decisions to request an evidence technician or "identification" officer. (Only once during the four months of field observations was a laboratory criminalist called to the scene of the crime; the great majority of cases were handled by police technicians.)

As will be discussed in the next chapter, there may be rigid police guidelines which require the presence of a technician at the scene, regardless of the individual officer's evaluation of possible physical clues. It appeared that the perception of "seriousness" was also important; the greater the perceived seriousness, the more likely a technician would be summoned. Patrol officers also stated that they would request the services of a technician more frequently in cases where a suspect was identified or possibly apprehended. In such cases physical evidence would serve to strengthen the prosecution's proof of the suspect's involvement.

Social-situational factors that contributed to the decision included attempts by the victim, particularly in property crimes, to have certain physical materials collected as evidence. In other cases, victims were adamant in their desire to have the investigation completed as soon as possible and not to have a search for physical clues. Frequently, pressure on the officer to resume patrol activities or to respond to another call for service served to reduce the opportunity for a technician's response. While some jurisdictions required the officer to remain at the scene until the technician arrived, others permitted the patrolman to resume his other activities.

The officer's previous experiences with the technician unit and the laboratory were equally important. While a rigid departmental rule requiring a technician response may—for all practical purposes—eliminate most opportunities for discretion, such conditions did not prevail in most jurisdictions. A "positive" experience with physical evidence utilization may result in an officer placing considerable confidence in the criminalistics laboratory. Conversations with officers revealed that where previous evidence gathering efforts had resulted in convictions or otherwise positive experiences there was a greater inclination to use such evidence in the future. Conversely, negative results from the laboratory and other unrewarding experiences will lead the officer to rely upon other sources of information.

4. *The Technician's response (Decision level IV)*. The decision of the technician to respond to the crime scene occurs only if there has been a series of affirmative decisions prior to this juncture. Although there are undoubtedly exceptions to this pattern, in all cities visited, a technician would become involved in a particular crime only if he was first requested to do so. As will be explained in subsequent sections, the technician normally has the freedom to adjust the priorities of requests and to delay his response to those scenes where he may have an aversion to the neighborhood, detective at the scene, or type

of investigation anticipated. There were exceptional cases where requests were delayed for so long that the appeal for service, in effect, was rejected.⁸

Of initial importance at this level is the current involvement or "status" of the technician. If he is already involved in the investigation of a particularly serious crime, he will probably be unable to respond to any other crime for several hours. The perceived urgency of a request was important. Generally, this was based upon the seriousness of the crime, the probability that the crime scene would become contaminated or disturbed, and the rank of the officer or detective making the request. It was observed, also, that the technician normally performs an "estimate" of the task which awaits him. Did he have the necessary tools and supplies to recover the evidence described in the request? How distant was the crime scene? What were the weather conditions if the search was to be conducted outside?

The technician's individual learning and past experiences are also important—his previous impressions of working in the particular neighborhood to which he has been asked to respond, the knowledge he has of the officer or detective making the request, and his previous successes or failures with this type of crime or environment. Although certain crime categories continually produced more physical evidence, the seriousness of those crimes may have been considered so insignificant in past situations that the technician reacted negatively to subsequent calls for service in those categories. A prime example would be school burglaries, which normally yield great quantities of physical data caused by breaking and entering of buildings, yet have such low priority that evidence is almost never collected or examined. This type of knowledge is primarily important in predicting *when* the technician will respond to the scene.

5. Investigation and search for evidence (Decision level V). The fifth decision level focuses on the series of judgments which the

technician must make at the scene of the crime. Depending upon the flexibility of the departmental rules and the pressures exerted by other officers and detectives, the technician's discretion in searching for physical evidence will vary significantly.

As the technician arrives at the scene of a crime, the number of cases awaiting investigation, the reports he must write by the end of the shift, and—of course—his anticipated activities at the particular scene can be competing for his time and attention. The technician will make physical judgments of the crime scene, including an appraisal of the cleanliness and orderliness of the environment. Scenes which are disorderly and contaminated serve to make the recovery of evidence more difficult. The evidence specialists are often quite concerned over how well the scene has been preserved, whether items have been returned to their original positions, and whether citizens or other policemen have been allowed to somehow alter or destroy evidence at the crime site.

The method which the technician selects to discover forms of evidence that merit collection and possible laboratory review is, of course, a critical stage in the decision process. Given the brevity of most investigations, evidence that is visible to the naked eye and positioned in areas which coincide with perceivable entry, exit, and target points is more likely to be discovered. Evidence forms will be rejected if the technician does not possess the equipment or skill to recover them: a footprint may not be preserved if the officer does not have the necessary casting supplies. Evidence in a form which can be recovered easily, such as a knife, will have a higher likelihood of recovery than a type which necessitates meticulous preservation.

When a particular item of evidence is discovered very often determines whether that evidence will be collected; for example, if a latent print is found at the start of an investigation, it is quite likely to be developed and returned for evaluation. However, if that same evidence was

discovered 30 minutes later in the investigation, and after several other items have been collected and recorded, the probability of recovery is significantly less.⁹

The technician's ability to recognize physical conditions and materials that could become significant only after scientific analysis is essential to conducting an effectual investigation. Very ordinary materials within a dwelling may assume extraordinary significance in a single isolated case. The manner in which an object was used by the offender in committing a crime may not be immediately apparent, or the obvious evidence forms may attract such attention that other, more subtle forms are overlooked.

The technician's past experiences with the crime laboratory profoundly influence his selection of evidence. The particular "success" he has achieved in the past with types of evidence at the scene often dictates recognition and recovery patterns. Not only will individual evidence types be preferred, but technicians also develop favorite locations to search for evidence, and in repeated investigations continue to search for evidence in the same areas. For instance, some technicians, in investigating stolen autos, check only the back of the rear view mirror for latent prints and neglect other potential areas. Technicians also reported that their past recollections of presenting evidence in court influenced them in selecting or rejecting forms of evidence.

6. Return of evidence to storage area (Decision level VI). The next decision level (VI) concerns the potential elimination or destruction of physical evidence before it is returned to the police station, laboratory, or other storage facility. This decision level assumes that a collection has occurred when the technician leaves the building or residence with material which the victim perceives has been retrieved. If the technician, shortly thereafter, determines that this evidence should not be retained or submitted for analysis, then this is a *negative* decision to return *collected* material for examination. The evidence

which is most often collected but not officially returned for analysis is fingerprints. The lifting and collecting of smudges and other dubious formations are related to the degree to which the local police agency views the technicians as public relations agents. If latent print dusting is *not* considered as principally an effort to create a favorable public image, then this decision level will not assume major importance in tracing the flow of evidence from the crime scene to the laboratory.

7. Submission of evidence to the laboratory (Decision levels VII-VIII). The final two decision levels are closely related and may occur simultaneously. In some jurisdictions, "All physical evidence is deposited in the Property Section and forwarded to the Criminalistics Section for analysis only upon request of a follow-up investigator."¹⁰ Material collected from the field will therefore remain in storage until a detective decides that the evidence should receive analysis. The criteria which the detective employs to pass this evidence along to the scientist are similar to those factors he considers in getting involved in a case at the outset.¹¹ Unless in his judgment the scientific analyses will be of assistance, or the case is an extremely important one and other leads have failed, the evidence will probably not reach the criminalist's attention. The relationship between the laboratory and the detective is of obvious importance and is shaped by past results, physical distance, and personal contacts.

The final screening process through which physical evidence must pass is that erected by the laboratory itself. Unless the integrity of the samples can be supported by documents prepared by the investigation staff and technicians, the laboratory will not accept the material for examination. Not only must the legal chain of evidence be established, but the packaging, labeling, and preservation of the evidence must meet minimum standards imposed by the laboratory scientists and the courts. Discussions with criminalists revealed that only a minor fraction of the total material submitted for analysis is not accepted. Still, the

very presence of such a screen exerts a significant influence on the completion of the preceding steps by technicians and detectives.

The decision levels which have been discussed in this chapter represent only one path by which evidence may proceed to the criminalistics laboratory or other "identification" divisions. Evidence may also be recovered and submitted by detectives and field officers, and by associated personnel in hospitals and medical examiner's offices who handle victims and their personal effects. The purpose of this decision-making model has been to detail only the activities which relate to the evidence technician function as it operates within the larger system of criminal investigation.¹²

NOTES—Chapter III

¹ Gordon E. Misner, "The Urban Police Mission," *Issues in Criminology*, 3, No. 1 (Summer, 1967), 38.

² For an excellent discussion of those activities which normally fill an officer's tour of duty, see: Albert J. Reiss, Jr., *The Police and the Public* (New Haven, Conn.: Yale University Press, 1971), pp. 19-45.

³ Wayne R. LaFave, *Arrest: The Decision to Take a Suspect into Custody* (Boston: Little, Brown and Co., 1965), p. 103.

⁴ Gordon E. Misner and William F. McDonald, *Reduction of Robberies and Assaults of Bus Driver, Volume II: The Scope of the Crime Problem and Its Resolution* (Berkeley, Calif.: School of Criminology, 1970), p. 277.

⁵ Peter W. Greenwood, *An Analysis of the Apprehension Activities of the New York City Police Department* (New York: The New York City Rand Institute, 1970), p. 34.

⁶ For one excellent discussion of the discretion which police officers officially and unofficially employ, see: Herman Goldstein, "Police Discretion: The Ideal Versus the Real," in *The Ambivalent Force*, ed. by Arthur Niederhoffer and Abraham S.

Blumberg (Waltham, Mass.: Ginn and Co., 1970), pp. 148-156.

⁷ James Q. Wilson has delineated the various "styles" which an individual officer or department may adopt in approaching and intervening in situations. A "legalistic" police style means that "when the police are called by the public to intervene, they are likely to intervene formally, by making an arrest or urging the signing of a complaint." James Q. Wilson, *Varieties of Police Behavior* (Cambridge, Mass.: Harvard University Press, 1968), p. 173.

⁸ "We learn to fear and avoid people and events associated with unpleasant happenings and to like and approach events associated with pleasurable happenings." William Lambert and Wallace E. Lambert, *Social Psychology* (Englewood Cliffs: Prentice-Hall, Inc., 1964), p. 69.

⁹ Hoffman has theorized that an investigator should "calculate the expected value of the information and net gain from the search for additional evidence." Richard B. Hoffman, "A Probabilistic Evaluation of the Quality of Evidence," in *Law Enforcement Science and Technology*, ed. by S. A. Yefsky (London: Academic Press, 1967), p. 428.

¹⁰ Study report provided by Mr. Duayne Dillon, Chief, Contra Costa Criminalistics Laboratory, Martinez, California, May, 1971.

¹¹ Misner and McDonald found in their study on assaults of bus drivers that detectives have a tendency to quickly dismiss cases which they sense to be "losers," unless there are other strong pressures to continue the investigation. The Science and Technology Task Force Report concluded: "Detectives . . . appear to allocate their efforts according to the value of the case . . . the average value in cleared cases is significantly higher than in uncleared ones. Furthermore, the cleared cases having detective follow-ups tend to be even higher." *Science and Technology*, op. cit., p. 98.

¹² For a more complete discussion of this particular decision model and other concepts of decision making, see: Joseph L. Peterson, "The Perception, Control and Utilization of Criminalistics Services by the Police: An Analysis of the Physical Evidence Collection Process," (unpublished D. Crim. dissertation, School of Criminology, University of California, 1971), pp. 248-294.

The reader is also encouraged to study models which have been constructed tracing the flow of evidence through the forensic laboratory itself. See: E. S. Krendel, R. M. Dummer, and L. R. Freifelder, *Management Planning for Forensic Science Laboratories*, LEAA Grant NI 71-070-G (Philadelphia: University City Science Center, 1971).

CHAPTER IV. AN ANALYSIS OF EVIDENCE TECHNICIAN OPERATIONS

A. FORMATION OF TECHNICIAN PROGRAMS

O. W. Wilson, a proponent of specialization in police agencies, was one of the first to define the objectives and official role of the police technician.¹ He recognized that the collection of material from the field was crucial to the success of the laboratory and that the responsibility of processing crime scenes was often ill-defined and unclear. A combined dependence upon the patrolman, the detective, and the criminalist to collect evidence often proved unsatisfactory. He also noted:

The search of crime scenes for physical evidence calls for the services of specialists supplied with essential equipment and assigned to each tour of duty so as to be available at any hour.²

Wilson predicted that such a technician force, by minimizing delays in retrieving evidence and insuring a higher level of material returned for analysis, could increase the proportion of crimes cleared by arrest.³ Technician units would also allow criminalists and other police officers to pursue their primary responsibilities.

The importance of the actual search for evidence has been pointed out by many forensic scientists:

The initial steps in the investigation of a suspected criminal violation can easily nullify any possible help by scientific personnel.⁴

Few problems were anticipated in assigning these tasks to police officers with little or no scientific training, provided that the technicians were given adequate instruction, the necessary tools

and supplies, and were closely supervised by the laboratory staff.⁵ These three conditions, however, have rarely been realized by most law enforcement agencies.

Some evidence technician units have been formed primarily to satisfy current demands for "scientific police procedures." The President's Crime Commission noted:

... a very great lack in police departments of all sizes of skilled evidence technicians, who can be called upon to search crime scenes not merely for fingerprints, but for potentially telltale evidence like footprints, hairs, fibers, or traces of blood or mud.⁶

The Commission also declared that there were too few technicians on the staffs of most police agencies and that current recruitment and training policies were below the standards necessary for having scientifically competent representatives at the scenes of crimes.

Yet, police technician units have grown significantly. In a 1971 study of 106 police departments throughout the United States, 76 percent of the agencies reported that they had evidence technicians available for crime scene processing at all times.⁷

Closer inspection, however, often reveals that the published number of technicians on a department's staff often exceeds the actual personnel assigned to this detail on a regular basis. Although technicians are listed as "on duty," they may be involved in other tasks—a situation that means they investigate few or no crimes and collect little or no evidence.

The police literature supports the expansion of technical services; but many departments are un-

willing to provide sufficient resources for this function:

While forces are aware of the need to search crime scenes for physical evidence, few seem prepared to do so on a broad scale for want of adequate manpower.⁸

In fact, City A, one of the cities visited during this project, recently cut its technician staff by over 50 percent, declaring that technicians would no longer be "routinely assigned to every felony incident."⁹ This department cited three main reasons for reducing the manpower devoted to evidence-retrieval functions. First, their "evaluation" determined that most crime scene searches were generally "nonproductive." Second, the laboratory was unable to handle the quantity of latent prints and other evidence items submitted for analysis. Third, the department perceived a need to relocate the technical personnel to areas more directly involved with "preventing crime and apprehending criminals."

B. OPERATIONAL CHARACTERISTICS

The evidence technician unit is located in different divisions of police departments throughout the country. O. W. Wilson suggested that evidence technician units should operate within the patrol division.¹⁰ He maintained that as part of the patrol force, the technician could assume regular patrol duties during slack periods or back up beat officers in emergency situations. Criminalists, however, have generally suggested that technicians and mobile units should answer directly to the head of the crime laboratory. Under such an arrangement, the laboratory would have greater influence over the types and quantities of evidence returned for examination.

The larger cities visited normally maintained two different evidence collection operations. In City D, the centralized "mobile crime laboratory" unit operated from a large technical division in

the central headquarters. This unit, with special vans and equipment, had the exclusive duty of processing major crime scenes. Crime scene search officers, located in all the precincts throughout the city, employed standard patrol cars and fingerprint dusting kits for the investigation of burglaries and stolen automobiles.

In contrast, City B maintained a totally centralized system of evidence gathering, with the mobile division charged with handling the entire city of approximately 1,000,000 population. The administrator of the police crime laboratory coordinated the requests for crime scene processing and dispatched the technicians to all crime sites. Although two vans were operational during the day and evening tours, the technicians expended an inordinate amount of time in driving to various locations within the city limits.

In the cities that were smaller or that did not maintain crime laboratories, technicians were usually located in the patrol division. One medium-size department, in a city of over 100,000 population, operated its technician service out of the records division. The rationale for this arrangement was that officers who *filed* reports, photographs, and fingerprints could also be responsible for taking crime scene photos and dusting for prints. Discussions with other police administrators revealed that most departments had determined that this arrangement, not uncommon several years ago, was not as effective as originally conceived.

C. TECHNICIAN TRAINING AND PREPARATION

The success of technician programs depends upon the training that selected officers receive. Aside from the personal skills of recognizing and collecting evidence, the qualified technician must be able to utilize specialized equipment that the patrol officer or detective cannot be expected to manage.¹¹ Fewer than 50 percent of the departments studied in this present project provided any

additional instructions beyond that offered in the police academy or in the course of on-the-job training. The new technician usually received some in-service training by riding with an experienced technician for several weeks and observing his methods.

Of particular interest was a two-week technician training program instituted by a Midwestern regional crime laboratory in City E, serving approximately 15 municipalities. Two officers from each of the police agencies served by the crime laboratory underwent instruction in both crime laboratory techniques and the searching of crime scenes. Mock crime scenes were prepared and, as technicians searched for evidence, their efforts were videotaped and later critiqued by other officers and instructors. Each technician also spent at least another week observing scientific procedures in the crime laboratory. Monthly sessions were also scheduled to update technicians on new instruments or methods available in the laboratory and to discuss any other problems encountered by the search team.

The three-week training program instituted in City D, on the other hand, placed a greater emphasis on the many operational and administrative problems that new technicians face. The instruction not only covered the basic forms of physical evidence and the corresponding techniques for recovery and preservation, but also devoted several class periods to a discussion of relevant departmental orders and report requirements, general administrative theory, and the information needs of other criminal investigation units. This agency's approach was the most comprehensive; it focused on some of the operational roadblocks confronted during evidence gathering efforts—problems not discussed in other training classes that dealt only with the theoretical recovery of physical evidence.

While most crime laboratory staff presumed it their duty to train officers in forensic techniques, some regarded this education as unimportant or largely the responsibility of the parent police agency. The few officers who possessed a better

than average knowledge of evidence collection techniques seemed to have acquired such competence on their own, either through college police science courses or their relationships with other scientific operations. One such technician had worked in a U.S. Army crime lab while in the service, and continued to study laboratory techniques through an Army Reserve Program.

D. MOBILE CRIME LABORATORIES

Police evidence technician programs are frequently augmented by vehicles which are labeled "mobile crime laboratories." One proponent of such a concept has written:

Each mobile unit is actually a miniature laboratory on wheels containing equipment to process evidence and to commence analytic procedures while it is fresh.¹²

The mobile laboratory concept has quite a lengthy history, dating back to 1941. Early efforts were actually attempts to display hardware and to impress the media and public with innovative police technologies. Consider this comment contained in an article in an old police journal:

A mobile crime laboratory, completely equipped with the latest crime detection equipment and armored to combat the most desperate criminals is now being constructed It will be the first crime laboratory on wheels ever to be built.

This laboratory was to be built on a truck chassis measuring 30 feet in length and was to be protected with 20-gauge steel and bullet proof glass windows. The unit was to contain scientific equipment for testing firearms, a chemistry and microscopy section, darkroom, and space for polygraph examinations. Perhaps most extraordinary: "Directly behind the driver's cab will be a bullet proof observation turret which can be raised automatically." The turret was to have been equipped with a machine gun. One criminalist recalled that this vehicle was never used because its size exceeded

the specifications of the division of highways and motor vehicles.

More realistic mobile vans that did prove more successful have been discussed in the police literature.¹³ As with the evolution of criminalistics laboratories themselves, the mobile units were often the result of crimes where the absence of proper equipment hampered efforts to preserve and recover available evidence. What followed were vehicles like the "Eugene Crimemobile,"¹⁴ a combination disaster unit, communications center, command post, and "stakeout" car. Labeling such vehicles "mobile laboratories" is an exaggeration, considering the requirements of even a minimally equipped forensic science laboratory.

Some criminalists are strongly opposed to the "sheer fantasy"¹⁵ of mobilizing the laboratory, and most contend that it is much more realistic to have the evidence preserved and transported to a stationary facility. Many scientists believe that the time required to transport evidence to a lab is, under most cases, less significant than the sacrifice of scientific accuracy which necessarily accompanies mobilization of laboratory instrumentation.

Discussions with criminalists revealed that many jurisdictions had gone through a cycle, beginning with the purchase of a special van or truck, then reverting back to the utilization of a station wagon or even a conventional sedan for technician use. They frequently suggested that the potential public relations value is one of the prime reasons behind the purchase of vans in the local community. Other laboratories, especially those which serve several counties or an entire state, maintain mobile units for much more legitimate reasons.¹⁶

Although writers have recommended that technicians be provided with special evidence-gathering equipment,¹⁷ this generally is not the case. A 1969 survey was designed to determine the types of equipment maintained and utilized by police departments serving cities of 25,000 to 250,000 population.¹⁸ An itemized list was requested of the tools and materials furnished to evidence personnel, along with an estimate of the extent to which

these supplies were used during the preceding year.

Based on 316 responses, 97 percent of the departments provided fingerprinting supplies to evidence personnel, 86 percent furnished containers, 84 percent supplied photographic equipment, 59 percent provided casting materials, and 55 percent furnished miscellaneous tools. Consumption data, however, indicated that only 67 percent of the units actually used fingerprint supplies, 50 percent made use of containers, and 18 percent utilized casting materials.

Field investigations and discussions with technicians revealed that some vans labeled "mobile crime labs" were essentially devoid of equipment and tools. Even the technicians in City D, which had the best equipped vans, reported that they rarely made use of equipment other than fingerprinting kits, cameras, and measuring tapes.

E. GUIDELINES FOR REQUESTING TECHNICAL ASSISTANCE

Of critical importance to evidence technician operations are the departmental guidelines that stipulate when a technician should be called to the scene of a crime. A variety of policies were in effect in the jurisdictions visited. All but one police department had a formal procedure explaining when technicians or criminalists were to be requested.

In City C, the patrol officers were given greater individual responsibility in all areas of investigations and were advised to use their own judgment in requesting technicians. This department rarely recovered any physical evidence other than fingerprints; patrolmen requested a technician only in cases where latent prints were suspected or photographs desired.

In City D, the department had issued a general order defining the crimes or other circumstances when a technician *must* be called to the scene. For particular crimes, including homicide, rape, armed robbery, serious assault, and burglary exceeding \$100, the reporting officer was required

to contact the mobile lab unit, which would then dispatch a technician to the crime site.

From field observations and statements made by officers, it was evident that several members of this department had informally relaxed these requirements, so that a substantial number of the defined crimes did not receive the attention of a technician. One detective suggested that, because there were so many assault cases, a mobile crime unit would be requested only where it appeared that the victim would die. For most burglaries, the request for service was not directed to the central technical division, which was supposed to receive all such calls, but rather to a technician in the local precinct.

Misner and McDonald discussed a similar policy which advised that *all* crimes in particular categories should receive a technician's attention.¹⁹ In one of the cities they studied, a departmental guideline directed that a technician be called to every robbery scene.

You should call for a technician at the beginning of your investigation and you should assist him in every possible way. Remember that the technician, like you, will be required to submit a report on the incident and he will need your cooperation to do so.²⁰

They discovered, however, that a technician was called in only 30 percent of the robbery cases, and that in no cases did a technician write and file a report.

Officers told me that they were disturbed by policies that reduced or eliminated their autonomy and discretionary powers. Nearly all patrolmen interviewed felt that they were qualified to judge which cases should receive a search for physical evidence. Having to request a technician visit proved very exasperating to them, if in their judgment there was no reason to do so.

In City B, a departmental policy that required all burglaries to be processed reduced enthusiasm and interest in recovering physical evidence. Patrol officers reported that they had received reprimands from their superiors when offense reports were

filed without documentation that a technician had processed the scene. Beat officers were sometimes forced to remain at the scenes of what they considered trivial crimes until a technician arrived. The patrolmen resented losing valuable time in situations where they "knew no evidence was to be found." Many officers adopted these negative attitudes, even when the crime was extremely serious or where physical evidence was obviously present and of high potential.

Police Department A formulated guidelines to reduce the level of "unnecessary and unproductive work"²¹ by technicians. The patrol officers were advised to call for technical assistance only in homicides, cases involving explosives, crimes where the perpetrator was in custody or the M.O. fit a recognizable pattern, crimes involving "grave circumstances," and situations where the officer had located evidence which he was unable to collect himself. These standards were designed to *decrease* the number of requests for evidence technicians and to reduce the level of physical evidence submitted to the crime laboratory—in contrast to the above policies, which increased the number of crimes receiving technical attention.

F. TECHNICIAN RESPONSE CHARACTERISTICS

Statistical data are available to illustrate the response patterns of technicians to crime scenes. In 1966, the President's Commission on Crime in the District of Columbia reported that, in Washington, D.C., less than 10 percent of Part I Crime sites were investigated by technicians, dusted for fingerprints, or photographed.²²

The 1967 *Science and Technology Task Force Report* described a case study of 626 burglaries, of which 307 had "indications of evidence at the scene of the crime."²³ A technician was contacted in 43 percent of all cases, but it was not determined how often he actually arrived at the scene. Fingerprint evidence was "booked" in only 28 cases, representing 5 percent of the total burglaries

and 10 percent of the cases where evidence was thought to be present.

The California Council on Criminal Justice has reported that, for crimes where potential physical evidence is present, "only two percent of the available evidence is noticed or collected by the investigative officers."²⁴

In Ward's criminal investigation survey, responding police departments indicated that technicians were dispatched to approximately 77 percent of felony crime scenes.²⁵ This rate seems extremely high compared to all other data compiled by outside researchers who independently search the documents and records.

Duayne Dillon, Chief of the Contra Costa Criminalistics Laboratory, reported on data collected by officers in one of his training classes. Their search of their own department's files revealed that evidence was more frequently collected in offenses where a suspect was already in custody. In many of the cities I studied for this project, an extra effort was exerted when officers had a suspect against whom they could compare latent prints or other forms of evidence.²⁶

Table 2 presents data compiled for a 1-month period by the criminalistics laboratory in City A on the percent of burglary scenes visited by the technician force and the proportion of cases in which latent prints were recovered.

Table 2.—RESPONSE AND COLLECTION OF PRINTS IN BURGLARY INVESTIGATIONS IN CITY A FOR 1-MONTH PERIOD IN 1971

Burglary type	Number	Cases responded to by tech.		Cases where prints recovered	
		No.	Percent	No.	Percent
Commercial.	301	55	17.6	29	9.6
Residential..	666	62	9.3	38	5.7
Auto.....	653	13	2.0	9	1.4

Based on the records of the mobile unit in City B, which maintained only a centralized evidence-gathering staff, technicians responded to 18 percent of the Index Crimes in 1969. Physical evidence was retrieved in 8 percent of the cases where a unit responded—about 1.5 percent of the total Index Crimes committed.

In City D, which maintained a central mobile division as well as technicians in all precincts, the "mobile crime lab" responded to approximately 3 percent of all Index Crimes, including: 90 percent of homicides, 38 percent of rapes, 3 percent of aggravated assaults, 2 percent of robberies, and 0.7 percent of burglaries. The precinct search technicians, who also performed general patrol duties, responded to approximately 30 percent of all burglaries and auto thefts.

At the time of the visit to City D's department, the crime scene search activities were undergoing major reorganization, which subsequently resulted in a large increase in resources allocated to evidence recovery efforts. Data collected in 1972 show the present coverage by City D's crime scene search officers: 89 percent of burglaries, 77 percent of auto thefts, 60 percent of larcenies, 29 percent of robberies, and 10 percent of assaults. This information excludes the scenes processed by the central mobile crime lab unit; but, even without such data, it is apparent that there has been a dramatic increase in coverage patterns. It does appear, then, that with sufficient manpower and efficient operations, evidence technician units can process a higher proportion of felony scenes.

NOTES—Chapter IV

¹ O. W. Wilson, *Police Administration* (2d. ed.; New York: McGraw-Hill Book Co., 1963), pp 287-289.

² *Ibid.*, p. 287.

³ *Ibid.* Ward has collected data showing a slightly higher clearance rate for police departments with technician units as opposed to those with none. Richard H. Ward, "The Investigative Function: Criminal Investigation in the United States" (unpublished D. Crim. dissertation, School of Criminology, University of California, 1971), p. 146.

⁴ Brian Parker, "Science and Crime," *Technology Review*, 70, No. 8 (June, 1968), 10.

⁵ Paul L. Kirk and Lowell W. Bradford, *The Crime Laboratory: Organization and Operation* (Springfield: Charles C. Thomas, 1965), p. 106.

⁶ President's Commission on Law Enforcement and Administration of Justice, *The Challenge of Crime in a Free Society* (Washington: U.S. Government Printing Office, 1967), p. 1. 8.

⁷ Ward, *op. cit.*, p. 128.

⁸ President's Commission on Law Enforcement and Adminis-

tration of Justice, *Task Force Report: The Police* (Washington: U.S. Government Printing Office, 1967), p. 51.

⁹ Quote from a departmental directive, supplied by the staff of police agency in City A.

¹⁰ Wilson, *op. cit.*, p. 289.

¹¹ George D. Eastman, ed., *Municipal Police Administration* (Washington: International City Management Association, 1969), p. 136.

¹² Charles Samen, "MiniLab on Wheels," *FBI Law Enforcement Bulletin*, 38 (May, 1969), 13.

¹³ Maurice Hamilton, "New Mobile Lab Assists Work of Homicide Squad," *City-County Record: San Francisco and the Bay Area*, 25 (May, 1958), 5-7; Mario J. Ferrari, "Camden Police Mobile Crime Unit," *Police*, 7, No. 2 (1962), 72-73; "Rhode Island's Mobile Crime Laboratory," *FBI Law Enforcement Bulletin*, 40 (April, 1971), 28-29; and "Mobile Crime Unit Aids Police," *Newport News, Virginia Press*, December 26, 1971.

¹⁴ R. D. Lockard, "Eugene's Crimemobile," *Pacific Northwest Law Enforcement News*, 28 (Summer, 1961), 39-43.

¹⁵ Joseph D. Nicol, "Criminalistics," in *Municipal Police Administration*, ed. by George D. Eastman (Washington: International City Management Association, 1969), p. 311.

¹⁶ Crime Laboratory Division, *Criminal Investigation and Physical Evidence Handbook* (Madison, Wis.: Department of Justice, 1968), p. 4.

¹⁷ Eastman, *op. cit.*, p. 136.

¹⁸ Edward T. Blake, "Equipment for the Collection of Physical Evidence: A Survey Reduction and Analysis" (unpublished graduate paper, School of Criminology, University of California, 1969), p. 78.

¹⁹ Gordon E. Misner and William F. McDonald, *Reduction of Robberies and Assaults of Bus Drivers, Volume II: The Scope of the Crime Problem and Its Resolution* (Berkeley: School of Criminology, 1970), pp. 276-278.

²⁰ *Ibid.*, p. 278.

²¹ Information supplied by selected city department.

²² President's Commission on Crime in the District of Columbia, *Report* (Washington: U.S. Government Printing Office, 1966), p. 202.

²³ *Task Force Report: Science and Technology*, p. 99.

²⁴ The California Council on Criminal Justice, *A Statement of Policy and Master Plan for the Development of Criminalistics Services within the State of California* (October, 1970), p. 8.

²⁵ Ward, *op. cit.*, p. 143.

²⁶ Dillon found that even in cities which had policies requiring that *all* scenes be processed, only 70 percent received attention by technicians. Latent prints were recovered most often—in slightly less than 50 percent of all cases to which technicians responded. Duyane Dillon, interview, April, 1971.

CHAPTER V. PATTERNS OF POLICE TECHNICIAN ACTIVITY

A. STRUCTURAL AND FIELD ACTIVITY PROBLEMS

The objective of this chapter is to present selected operational characteristics of the evidence-gathering units in this study. The departments visited varied in size from 250 sworn officers to over 4500, and were distributed over a wide area. Technician field patterns are analyzed in terms of three general constraints: formal organizational policies and priorities, motivation and feedback provisions, and situational and individual crime scene contexts. The second half of the chapter will present case studies which will more clearly illustrate the routines and responses of technicians in a variety of physical and social environments.

1. *Management and organizational problems.* One of the principal management problems afflicting technical operations is the failure of departments to devote adequate human and physical resources to this function. It is common for administrators to issue blanket statements of scientific dedication yet to withhold the necessary funds, personnel, and administrative support to realize these goals.

The technicians themselves could often identify many of the most frustrating and demoralizing organizational problems. Some argued that their superiors rarely drafted guidelines or orders which reflected the technicians' experiences and knowledge of crime scene investigations. In a department which had experienced a major reduction in technician manpower, the affected officers were never informed as to why such a cut was made. In City B the technicians complained that they

were not well represented by their immediate supervisor, who sometimes disregarded their suggestions and grievances by failing to take corrective action or to relay the problems to the head of the department.

Meager resources and absence of rational planning forced the technicians to respond to incidents widely dissimilar in purpose and location. Technicians in City B, who operated from a totally centralized unit, estimated that well over half their on-duty time was spent in their vans driving to locations in divergent points of the metropolitan area. By the time they were able to reach a crime scene, both the investigating officer and the victim had often left, necessitating still another trip to that particular location later in the technician's shift. In the same city, technicians would be called to one of the department's district substations to photograph stolen property, because the mobile crime lab unit possessed the only workable cameras.

Technicians in all cities were assigned secondary duties during the periods they were not searching crime scenes. These tasks ranged from taking photos at the morgue to running errands for supervisors. It was not uncommon for these specialists to be asked to pick up cleaning at laundries, to purchase coffee from grocery stores, or to deliver material to other laboratories.

It seemed that the technician's activities and responsibilities were viewed as less important than other "regular" police operations. Dusting for fingerprints or taking photographs were jobs which could be postponed or sometimes neglected altogether. This attitude also carried over to the

individual technicians, who in turn found the opportunity to cash checks at the bank, pick up packages at the post office, and check on used cars while "in-between" calls for service.

There was also an alarming absence of awareness by administrators on how line personnel interpreted and carried out organizational directives. It often seemed that supervisors were not cognizant of the deviance of line personnel from formal policies regarding the proper investigation of crime scenes for physical evidence. Discussions with administrators would reveal their adhorrence of the very actions or methods being employed by their own men.

The investigation reports which were written and filed by technicians were the principal means for superiors to evaluate field practices. However, these documents were rarely reviewed, examined, or criticized by technical supervisors. The evidence forms which were used would not suggest abnormal practices even if they were reviewed, for they merely documented the presence of a technician at the scene and described any evidence which was collected. They were not designed to explain how decisions were made during the course of the investigation or why particular evidence was screened out.¹

2. Problems of motivation and feedback. There was a striking absence of goals, rewards, or other motivational provisions within police technician operations. The traditional authoritarian approach to police management seemed particularly inappropriate for dealing effectively with these specialized police activities. Many of the existing job requirements discouraged the technician from conducting thorough crime scene searches and collecting available evidence.

When evidence was actually removed from the crime scene, the reports which had to be filed involved more detailed writing and diagramming. Unless the technician could find extra time during the day to fulfill such administrative tasks, he was forced to complete the reports at the end of the shift, on his own time. Technicians noted that

these administrative requirements deterred them from conducting thorough investigations; it was much easier to file a report stating that "no evidence was present."

These negative reports were an essential part of the operation, for they would be needed by the police or attorneys who might be called upon to substantiate the claim that the crime scene, in any particular case, had been properly searched for evidence. Technicians also noted that thinking a case report might possibly be scrutinized by a judge or defense attorney was often a mental deterrent to going out of their way to collect evidence that was not absolutely essential. These officers had learned from past experience that going beyond what was minimally required rarely resulted in personal rewards and sometimes provoked criticism and negative feedback.

Technician supervisors frequently expressed attitudes that were skeptical of scientific evidence (as distinguished from non-physical evidence) and expected officers to substantiate the value of all materials collected. In City C, the sergeant who monitored the evidence collection activity questioned and criticized technicians who returned evidence from the field which, based largely on his own subjective judgment, he considered worthless. In another jurisdiction, the supervising technician stated that he expected his officers to be able to explain how the evidence they collected would contribute to the clearance of a case. Recognizing the overtaxed conditions of the crime laboratory, this supervisor considered it his responsibility to be selective and to submit only evidence which had a reasonable probability of yielding positive results.

This report does not suggest that all discrimination of this type is unwarranted. Under those circumstances where laboratories have limited capabilities, it would be irresponsible to imply that *all* physical evidence related to each serious crime could be scientifically examined. The prime issue concerns the competence of the personnel who engage in such discrimination, and the cri-

teria they employ to screen out potential evidence. If those criteria are indefensible, or otherwise inconsistent with accepted criminalistics principles, then every effort should be made to change and improve them.

Positive feedback normally flowed to technicians in the form of laboratory results or personal comments from the scientific staff. As the size of the police bureaucracy increases and the physical and organizational distance between the technician and the examiner becomes greater, communications tend to break down even more. Technicians usually become detached from a case after their brief involvement in the search for evidence, and do not have the opportunity to follow an investigation through to the end as does the detective. In the area of latent print examinations, one police agency published a newsletter that tabulated the number of "cases identified on latent fingerprints" developed and submitted by technicians.² The evidence personnel were enthusiastic about such sources of recognition and indicated their efforts had improved since this feedback provision was instituted. If physical evidence is to be awarded the distinction of being a totally objective and impartial source of information, then police performance ratings should also give recognition to the technician who recovers evidence which serves to exonerate a suspect in a criminal case.

The absence of positive feedback can also be explained by another prevalent condition. Most material retrieved from the field and deposited in the property room of the department or laboratory *does not even reach* the criminalist's bench. For obvious reasons, there can be no positive feedback to technicians in such cases. Although one cannot be sure at the time of a crime which evidence will eventually prove valuable, material that is collected, yet never examined, is often viewed by police personnel as a waste of scarce resources.

3. **Patterns of field operation.** Field activities present problems which are distinguishable from those resulting from inadequacies in the

police department or laboratory organizational structure. Although writers have maintained that technicians are unlike other officers, in that they deal with *things* while the patrolman deals with people,³ it will be shown that this is a misleading simplification. The human activity which precedes and surrounds a criminal act influences a technician more than the actual physical trace material.

A technician's shift may begin with five or more requests for service already logged, or on the desk of the police dispatcher. It was not uncommon for a technician to work an entire shift without eliminating this initial backlog. Although criminalists have suggested that a thorough search for evidence—even at a burglary scene—might take up to an hour, most technician investigations lasted less than fifteen minutes. Time constraints can therefore partially account for the tremendous amounts of physical data which are overlooked or neglected at the scene.

The technician, upon receiving a call for service, would psychologically prepare himself for the type of environment and investigation that awaited him. The speed and directness of his route to the crime scene were influenced by his perception of the surrounding community and his appraisal of the relative seriousness of the criminal offense. He was particularly sensitive to those sections of the community which were "unreceptive" to police and where problems had arisen in the past. He was cognizant also of the comparable ease of working in other neighborhoods that were not hostile toward police officers.

The beat officer may not even wait for the technician to arrive at the scene before he answers another call or resumes general patrol activities. In these situations, the officer will sometimes leave a note with the victim or other citizen detailing the type of investigation he desired. If the officer waits for the technician, the essential communication between these personnel occurs in the first few seconds of their meeting. The "teamwork" which is stressed in texts on investigation proce-

ture is ordinarily absent from searches for physical evidence.⁴

The beat officer, or possibly a detective, may advise the technician at the outset that particular objects are out of place or that certain areas might be fruitful in discovering prints and other evidence. This "advice" may also serve to rule out an "objective" search for evidence, for the technician may only follow the directions of these other personnel and neglect other possible locations. Information that a particular person or suspect type is being sought by investigators can serve to screen out evidence which may point to other possible suspects.⁵

Aside from the exchange of information which is necessary for reports, there is virtually no other communication. There is even less interaction when the reporting officer advises the technician that he was summoned, not to search for physical evidence, but to give the victim "some service." This refers to calls which are described by police as efforts to promote "public relations."

In New York City this is often referred to as "the twenty-five dollar job"; terminology that implies no reference to graft—the practice is carried out to give the taxpayer the feeling that he is getting his money's worth out of "his police department."⁶

While some crime scenes are approached with the primary intent of "doing a P.R. job," other investigations may take on such characteristics after the technician determines that the scene has no evidence. It was also observed that technicians, virtually bound to a routine of handling 10 to 12 scenes per shift with insufficient time to conduct complete investigations for evidence, rationalize that perhaps their limited efforts have some public relations value.

The Stanford Research Institute Report, "The Role of Criminalistics in the World of the Future," found that "public relations constitutes one of the two primary circumstances where physical evidence is most likely to be examined."⁷ Case studies discussed later in the chapter describe actual

encounters where evidence technicians conducted public relations investigations.

The effort put forth by all investigators, including the technician, is related to the "seriousness" of the criminal act and to the identification of a suspect. If information suggests that the perpetrator is unknown and that there are no other leads or witnesses who might possess information leading to his identification, then collection of evidence other than latent prints is extremely unlikely.

A technician in City B had decided that, in investigations where a suspect was not in custody, he would merely take photographs of the point of entry at the crime scene and conduct no other search for evidence. He had surmised that such a procedure would "protect him" if a suspect was eventually captured and his evidence was requested by an investigator or if his testimony was required in court—both of which were extremely unlikely. Although such policies seem irrational and groundless, they serve as convenient and familiar routines for the technician who sees little purpose in his job and few opportunities for incentive rewards of self-satisfaction.⁸

The technician would often speculate as to what the eventual disposition of the offense would be and perform his investigation accordingly. In situations which were not likely to result in a prosecution or where the felony would probably be reduced to a misdemeanor, the search for evidence became perfunctory. Cases involving altercations among relatives or friends and offenses where juveniles were suspected normally were given cursory investigations.

In some jurisdictions it is not possible, legally, to fingerprint a juvenile even though he is suspected of being involved in numerous thefts, burglaries, or robberies.⁹ In these jurisdictions, technicians saw no point in a search for latent prints in cases where a juvenile was suspected. It was impossible to determine how often these theories and deductions were actually valid, and how often they were responsible for valuable evidence going unrecognized, a suspect not being arrested, or an

innocent person being charged with a crime he did not commit.

Very often, the residence or the surrounding physical environment served to influence the type of investigation undertaken by the technician. A home which was unusually dirty or strewn with furniture, clothing, or other belongings was frequently perceived as one where the search for evidence was impractical.¹⁰ It cannot be denied that such disorderly scenes make it much more difficult to distinguish "evidence" from all other physical materials. An orderly environment with clean surface conditions is much more amenable to latent print and trace evidence recognition and recovery. If a room is in a chaotic condition, it is very difficult to determine what the state of the environment was before the crime and which conditions reflect the interactions between the offender and the scene.

Technicians also expressed their reluctance to work at scenes where it was probable that their uniforms would become soiled. Again such crime sites were usually those which involved a very rundown or dirty residence, a factory or another commercial business. Most departments required their men to absorb the expense of keeping their uniforms clean and, due to their daily contact with fingerprint powder and other supplies, technicians were concerned about excessive cleaning bills. Some officers would go out of their way to avoid dirty areas even though it meant particular evidence would not be collected.

The areas which were in the most "undesirable" physical states, from a technician's perspective, were those generally inhabited by racial minorities and poor people. It appeared that these physical conditions compounded the strained relations that already existed between the police and urban residents. It has been recognized by many other researchers that, for many reasons, "lower class individuals do not count as much"¹¹ to the police. While there have existed other very serious deficiencies in service to lower class citizens, for instance the dismissal of "reports of all but the

most serious offenses . . .,"¹² the failure to deliver technical assistance must not be overlooked.

The manner in which technicians approach and process crime sites is also affected by the interest or pressure which victims or onlookers exert. In situations where the technician perceived that the victim *expected* evidence to be retrieved, he would usually make some type of collection. Particularly in cases where an individual had carefully guarded a button, thread, or cigarette butt, the technician would accept it; while under conditions where this pressure was absent, such material would be dismissed. As will be explained below in a number of case studies, the collection of evidence does not necessarily assure its analysis by the laboratory or even its return to the property storage room.

In his relationship with the victim, the technician often used "stock phrases" to explain why latent prints were not found or other items of evidence not collected or preserved.¹³ It is not suggested that these explanations were always unjustified, but rather that they were employed by the technician to support actions which could be "misinterpreted" by the victim and possibly result in a complaint about poor service. Common phrases used to explain the absence of fingerprints were: "criminals usually wear gloves" or "they're just too smart to leave behind any prints." The technician would often dismiss items, furnishings, or even entire rooms as incapable of registering identifiable fingerprints because the "surfaces were too rough or porous" or "the items had been handled by too many different individuals."

Robert Merton has discussed how organizations often attempt to shape the expectations of the client to fit the prevailing policies or capabilities of the agency.¹⁴ The explanations that the technician offered to the victim at the scene were attempts to align the citizen's expectations with the service which the evidence division was prepared to give. Without this shaping of citizen expectations, the technician perceived a greater

likelihood of victim dissatisfaction—possibly resulting in a complaint to the department.¹⁵

Most criminalists suggest that it is a good policy to dust *all* surfaces where there may be latent prints, for it is only then that one can be positive that there are no prints present. One technician stated to victims that merely by looking at a surface he could determine whether latent prints had been deposited, and if they would be distinguishable from all others. Searches were therefore confined to a "sphere" of objects or surfaces that had produced positive results for that technician on previous occasions.

Routines would also be established by evidence technicians to reduce the likelihood of being called to more cases than they cared to handle. Because the police radio in his van or sedan was the principal source of additional calls for service, the technician would try to regulate it for his own benefit. Following investigations which required lengthy write-ups or detailed diagrams, the radio would be ignored or turned off until such tasks were completed. In one city which maintained a centralized technician service, but with two radio channels, a technician commented that he tried to stay tuned to the frequency which in the past had had the fewest calls and the lowest level of criminal activity. Also, if the technician had decided to end his field investigations for the shift and to return to the station, calls would be ignored or referred to the next technician coming on duty.

It was apparent that the "output" of any single technician on the staff was related to the working patterns of all other evidence specialists. Most of the techniques which were cited in this section were learned and adopted on the job by new technicians through in-service training. The process of "learning the ropes" gives the new technician the opportunity to identify those practices which other more experienced officers employ. For example, if it is noted that other technicians do not handle requests for service one-half hour before quitting time, then this informal practice

will likely be viewed as the norm which can safely be followed.

In the routines that the technician employs to handle requests for service, he develops a style, tailored to his own jurisdiction, that enables him to exert minimal effort yet still maintain his good standing in the eyes of the citizenry and his superiors. The technician, though required to perform a variety of diverse tasks, is surprisingly successful in satisfying those demands. But the style of "getting by" and not making too many serious, recognized mistakes is quite different from the textual standard, which expects the technician to search for and retrieve all potentially significant physical evidence.

B. CASE STUDIES

Most of the descriptions of routines and patterns of behavior which have been discussed in the preceding pages were derived from observations and participation in investigations throughout the cities visited. To illustrate better the reactions of technicians to various social and physical environments, selected incidents, representing larger classes of similar events, will be presented. These have been chosen because they represent the most interesting and controversial investigation practices employed by investigators.

1. *Physical and social environments.* The physical environment constituting the crime scene influences the response and investigation patterns of the technician. The following incident occurred during a series of burglaries of the same residence, to which the technician was called for fingerprint processing. On the initial visit, the rooms were observed to be very dirty, in a disordered state, and possessing a strong and offensive odor. Approximately two days later, the same officer received a request to return to the same address to investigate another burglary which had taken place. The technician remarked that he was not going back to that "dirty, smelly place" and,

accordingly, did not respond to the call, but left it for the next technician coming on duty several hours later.

It should be added that, though the building may have been in a dilapidated state, such conditions did not always reduce the time devoted to an investigation. A response to an apartment building for another burglary investigation found the victim to be a young girl with a child. They lived in a basement section with a dirt floor. An individual had broken through her back door and removed cash from a purse in the bedroom. Because the girl could not speak or understand English, the technician freely explained his procedures to this author. Although he was positive that there were no prints or other evidence worth retrieving, he continued his search for perhaps 20 minutes, examining various articles in the room. He remarked that he felt sorry for the young woman and found it difficult to simply walk out, though from the beginning he knew the search would be a failure.

At other times, the "life style" of the victims in a property crime was a key to the thoroughness of the investigation. The technicians' reactions to persons who, at least on the surface, lived lives based on value systems different from their own, often influenced the search for evidence. Technicians would exert only minimal effort at crime scenes when radical, anti-police literature or posters were present or where paraphernalia in the residence suggested the occupant was using drugs.

On several occasions thefts and burglaries were reported to the police where an individual who had been living at an address had disappeared with money or other possessions. Often the victim did not personally know or even remember the suspect's name. Such circumstances reduced the "legitimacy" of the crime, such that it was perceived as not "deserving" the same quality of investigation as a crime in which, for instance, a stranger had broken into the dwelling and stolen items. This condition was further modified by the attitude that the victim demonstrated toward the technician.

An expression of friendliness often served to lessen the initial suspiciousness or dislike of the victims.

One other example will illustrate that the priority which detectives assign a case may also be based upon the condition of the residence or socio-economic class of the victim. A particularly brutal assault had occurred in the black section of a city geographically divided along racial lines. Though the inside of the home was literally covered with blood and other physical debris, photographs and the pieces of a fractured aluminum level were the only items collected by the technician. The other personnel present at the scene were uniformed officers who had been taking reports from witnesses. Upon leaving, the technician remarked that had this same crime occurred in a white, middle-to-upper class section of the city, the investigation would have received much more attention and "would have been swarming with detectives," who would have directed the search for physical clues.

The technician saw himself as providing a "service" for the victim or other community members. In this respect, if the technician "typed" the victim as representing a class or group which continually created problems for the police or as one whom the technician disliked for personal reasons, then the person's right to the service was diminished. In such situations, the approach of the technician became mechanical and was carried out with indifference or carelessness.

2. *Curtailement of the investigation.*

This next section will discuss those incidents, occurring during the course of a normal investigation, that were responsible for its abrupt termination. In one such instance, a technician was investigating a scene where the resident had reported the burglary of a television and phonograph. During his search for latent prints, four youths, who were in the same room and drinking from beer cans in paper sacks, began to laugh and make comments about the missing items. This situation continued until the technician packed his gear and announced that the investigation had

ended. He complained afterward that he was not required to withstand the ridicule that the young men were obviously directing toward him. He suggested that it was probably they who had stolen the items, and a search for prints would therefore be senseless.

Investigators were often influenced by the manner in which victims or other police personnel *failed* to preserve crucial areas of the physical scene. Actions by the victim which disturbed any of the potential evidence would be interpreted by the technician as cause to halt the investigation instantly. Even though other areas had been satisfactorily preserved, the single vase or lamp which had been uprighted triggered a mental mechanism which produced a "stop" response. Other times, the termination of an investigation was more justified where, for example, the item which the victim had carefully guarded for latent prints was *handed* to the technician upon his arrival. This was reported to have happened quite often. Even patrol officers made such careless mistakes.

Another quite common occurrence which cut short investigations was the discovery of evidence or latent prints at the very beginning of the search. Whereas only a portion of the scene had been surveyed, the development of a print that "looked good" signaled the investigation was completed. While this practice is contrary to most principles of good criminal investigation, it illustrates well the actual purpose of such "technical" service. Due to the limitations of staff and available time, the discovery of *some* form of evidence not only satisfies the victim and supervisor, but can also mean to the technician that he can safely halt the investigation and move on to another.

3. *Neglect and destruction of evidence.*

In a great many cases, physical evidence of high potential value was either not recognized or simply neglected. In one shooting incident, where the victim later died, bullets which had been fired in the apartment were overlooked by investigators. When the researcher arrived, permission was granted by the officers to examine the room fol-

lowing the removal of the injured person and the taking of photographs. Great quantities of blood and other physical data were present, but had not been sampled. The husband of the victim was suspected as being responsible, and apparently this strong suspicion was the reason for the neglect of this evidence. When the bullets were pointed out, the officers collected them but made no further efforts to recover the other forms of evidence.¹⁸

Scores of other incidents, though of lesser magnitude, involved the obvious presence of physical evidence forms which are not developed or preserved. Impressions such as tire tracks leading up to the back door of a home where several appliances were stolen were observed, but not cast. A well defined footprint outside the door of an establishment which was burglarized was examined by the technician but not developed or retrieved as evidence. A continual supply of fibers, toolmarks, hair, blood, and other physical evidence was normally seen but left behind. From discussions with these personnel, it was determined that often the reasons for the non-retrieval of evidence were the technician's insufficient training and the absence of necessary supplies.

Most technicians possessed limited knowledge of latent print development and relied almost exclusively on the brush and powder technique. They would attempt to develop latent prints with powder, regardless of the surface on which they were deposited. In one extensive residential burglary of valuable silverware from a storage room, latent fingerprints were discovered in a thin layer of dust on a chest which had housed the missing items. The technician used a brush and graphite powder on the ridge patterns and, of course, completely destroyed them. In another case involving the theft of a check from an envelope, the evidence specialist used powder which again obliterated all of the ridge patterns which were present. Although fingerprint cameras and techniques for the chemical development of prints were available, they were rarely used.

4. Misrepresentation of evidence collection process. Often the extra effort involved in submitting evidence for laboratory testing or returning to the station for additional equipment served as a deterrent. In one such case, a technician was in the field on a photography assignment, but was stopped by a patrol officer who requested that he conduct a search for latent fingerprints in a nearby commercial office building. With only a standard 4 x 5 police camera, the technician entered the scene, took photographs of the areas where prints were suspected, and returned to the van. He had informed the office staff that he possessed a special camera with film designed to photograph latent fingerprints. Although the procedure and explanation were deceitful, they demonstrate the intent of many technician assignments: to give the victim the *impression* that the police department was doing its utmost to solve the crime and to arrest the perpetrator.

Another technician was observed "dusting" crime scenes for prints, while failing to use any powder on his brush. The act of whisking the brush over surfaces was intended to give the victim the impression that prints were being sought. Discussions with criminalists revealed that such activity was known to them and that it was a commonly recognized practice in many jurisdictions. One former director of a large urban criminalistics laboratory noted that several years previously two detectives, who performed their own searches for evidence, had gained an excellent reputation in a community for their investigations. This criminalist discovered that they often failed to use powder, and the prints which they did lift from the scenes were ones they themselves had intentionally deposited.

Perhaps the most questionable and widespread practice involved the recovery and collection of evidence at a crime scene which was later discarded before it was submitted for analysis. Normally, the dusted print would be lifted with adhesive tape and mounted on a white card in full view of the victim or other persons at the scene. After

leaving the crime site and returning to the van, the technician would "evaluate" the print and often destroy it because of the absence of sufficient identifiable points or characteristics. When asked about this practice, technicians explained that a much better relationship was achieved between the police and the victim when the citizen *believed* that evidence of positive value was recovered. To reject or destroy evidence while in the presence of the victim could be quite discouraging and could be interpreted as an unwarranted or improper decision on the part of the technician.¹⁷

It was apparent that most citizens had formed their conception of "criminal investigation" through the media, especially television programs which dramatize the refined scientific procedures of the modern police department. Rather than admit that his department did not handle evidence in such a manner, the technician would try to conform to such expectations by collecting physical material. The probability of a citizen following up on evidence that might have been collected, perhaps by checking with the laboratory, was very remote; so the technician had little reason to be apprehensive about the destruction of such evidence.

5. Closing observations. In many of the investigations involving technicians, the search for physical clues became incidental to conversations usually initiated by citizens. Those persons especially who lived by themselves would seize the opportunity to discuss a variety of topics with the police officer. Not only would a major portion of the visit be consumed by speculating as to how the perpetrator made his entry and advanced through the residence, but some citizens would lead the technician on a "tour" of the home, pointing out personal collections or antiques.

Technicians were normally very accommodating and only infrequently would they insist that they be allowed to pursue their searching activities. Some victims of property crimes were inclined to dismiss their loss as a minor event in comparison to the opportunity to talk with a policeman.

It is not surprising that technicians often saw themselves as public relations agents, whose mission was to diminish the distress of anxiety of the victim.

A variety of miscellaneous patterns of technician behavior merit brief comment. The technician would sometimes ignore additional information about the crime offered by the victim or other witnesses, considering such report-taking the responsibility of the investigation officer and not his concern as an evidence specialist. He would instruct the individual to contact the police department or the officer who took the original report. It was often apparent that the technician saw himself not as part of a "team" designed to solve crimes but rather as an individual interested primarily in fulfilling his assigned duties.

The technicians' cursory investigations and occasional indiscriminate spreading of powder over furniture and appliances prompted objections from displeased citizens. Strained relations also developed when the technician offered advice to the victim on how he could avert such trouble in the future. Although persons do make serious mistakes in not securing their homes and protecting valuable possessions, they generally do not care to be lectured as to how a loss could have been avoided. Many of these latter communication problems could have been averted had the officer restricted his "service" to areas of physical evidence.

This chapter has offered examples of technician response patterns which detailed the characteristic styles of these specialized police officers. It has been emphasized that the decisions these men make, in reference to collection duties, are most often based on a combination of social and physical variables. The intent has been not so much to illustrate deficiencies in operating patterns as to stress the criteria which are commonly employed as the basis for these preliminary decisions. Physical evidence as an "objective source of information" must be viewed from a perspective which takes into account these subjective judgments by participants in the initial stages of the criminalistics operation.

NOTES—Chapter V

¹ James Q. Wilson has observed that very often the primary purpose of report-taking, from a police administrator's perspective, is to "protect the department against a charge that it 'did nothing'." James Q. Wilson, *Varieties of Police Behavior* (Cambridge, Mass.: Harvard University Press, 1968), p. 70.

² Quote removed from newsletter published by the technical division of one of the department's visited during the study.

³ O. W. Wilson, *Police Administration* (2d ed.: New York: McGraw-Hill Book Co., 1963), p. 288.

⁴ The technician has been described as a specially trained representative of the laboratory who "works hand in glove with the investigating detectives." Joseph F. Moomaw, "Forensic Laboratory Services," *Laboratory Management*, 3, No. 1 (January, 1965), 30.

⁵ "We select what we believe will be harmonious with those elements we have perceived and repress those that will create conflict for us." James Marshall, *Law and Psychology in Conflict* (Garden City, N.Y.: Anchor Books, 1966), p. 23.

⁶ Richard H. Ward, "The Investigative Function: Criminal Investigation in the United States" (unpublished D. Crim. dissertation, School of Criminology, University of California, 1971), p. 125.

⁷ Brian Parker and Vonnice Gurgin, *The Role of Criminalistics in the World of the Future*, National Science Foundation Grant GI-30011 (Menlo Park, Calif.: Stanford Research Institute, 1972), p. 8.

⁸ "All human activity is subject to habituation. Any action that is repeated frequently becomes cast into a pattern, which can then be reproduced with an economy of effort and which, *ipso facto*, is apprehended by its performer as that pattern." Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality* (Garden City, N.Y.: Anchor Books, 1966), p. 53.

⁹ Several states and local jurisdictions restrict the fingerprinting of juveniles; for a discussion see: David N. Smith, *Law and Government, A Series: The Law of Confessions and Scientific Evidence* (Chapel Hill, N.C.: Institute of Government, 1963), p. 247.

¹⁰ "It is untidiness, disorder, the unusual, that a copper disapproves of most of all: far more, even than of crime which is merely a professional matter." Colin McInnes, *Mr. Love and Justice* (London: New English Library, 1962), p. 74, quoted by Jerome H. Skolnick, *Justice Without Trial: Law Enforcement in Democratic Society* (New York: John Wiley and Sons, Inc., 1966), p. 48.

¹¹ Arthur Niederhoffer, *Behind the Shield: The Police in Urban Society* (Garden City, N.Y.: Anchor Books, 1967), pp. 57-58.

"Throughout history, the urban poor have disliked and distrusted the police, and the feeling has been reciprocated." James Q. Wilson, *op. cit.*, p. 297.

¹² President's Commission on Law Enforcement and Administration of Justice, *Task Force Report: Crime and Its Impact—An Assessment* (Washington: U.S. Government Printing Office, 1967), p. 22.

¹³ Persons will often attribute their failures to material or neutral, inanimate objects—those things beyond their control.

Prints are undetected not because the technician lacks the necessary skill or finesse, but because the "surfaces are too rough," "the powder too coarse," or the "brush too old."

¹⁴ Robert K. Merton, *Social Theory and Social Structure* (New York: The Free Press, 1957), pp. 197-200.

¹⁵ "Burglary victims. They all wanted to know why detectives weren't over at their apartments dusting for prints. 'He came in the door. He came in the window. There must be fingerprints. Get the fingerprints' They didn't believe it when you told them you needed all ten for an identification. And that anyway the burglar was probably some junkie with no address. They looked at you like you were contradicting twenty years of television." James Mills, *Report to the Commissioner* (New York: Farrar, Straus and Giroux, Inc., 1972), p. 62.

¹⁶ Kirk has noted that only a minority of homicides are

thoroughly processed for physical evidence, depending largely upon the notoriety the case receives. Paul L. Kirk, "Criminalistics at the Crossroads," *The Criminologist*, 4, No. 11 (February, 1969), p. 37.

¹⁷ The fact that fingerprint utilization is not adequately understood by the public sometimes serves as a source of conflict between the police and a citizen. Police departments continue to process scenes for prints even though they themselves do not anticipate actual assistance from the laboratory or possibly the FBI. "The detective also finds, if he does not already know, that the scientific methods of crime detection that he and everyone else has seen on television are a fraud. Fingerprints are the prime example." James F. Ahearn, *Police in Trouble* (New York: Hawthorn Books, Inc., 1972), pp. 26-27.

CHAPTER VI. CONCLUSION

A. SCIENTIFIC AND LEGAL ISSUES

Based upon the observations discussed in Chapters II–V, the claim that criminalistics and physical evidence utilization processes operate in a “sensible, fair, and effective” manner is disputable.¹ The assertion that forensic science actually reduces “subjectivity in fact finding” should receive serious and intensive evaluation.²

1. *Criminalistics as a science.* The regulated and complete collection of relevant raw data has been the hallmark of science for the past several hundred years.³ The forensic scientist cannot, therefore, ignore the manner in which data collection is interpreted and performed by other associated police personnel. If the collection of physical data from the field is indeed part of the total criminalistics system, then greater safeguards must be imposed by criminalists themselves, who are dedicated to the scientific goals of objectivity and truth.

Insuring that the entire system of scientific investigation is meaningful and consistent with scientific requirements is a goal which is extremely difficult to attain. In forensic science, the severe limitations of staff and resources are sometimes presented as arguments to dramatize the impossibility of reaching such idealistic goals. The need for immediate concern would not be so acute if the criminalistics profession were moving to correct some of the problems of evidence retrieval. Unfortunately, many influential scientists continue to neglect such issues and to see their primary problems as improving analytical techniques and securing more laboratory equipment.

While the criminalist views his mission within a scientific framework, the police view the laboratory in much more pragmatic terms. The criminalistics laboratory is used by the police in much the same way that other technologies are being utilized—as services to achieve comparatively immediate and practical goals.⁴ A crime laboratory is not as controllable or as predictable as a telecommunications system. Not only are criminalists often independent and perplexing to the police, but they frequently return reports to investigators which, though valid, are inconclusive or in opposition to the flow of a particular investigation. Such unpredictability coupled with the necessary extra effort to collect and to describe physical evidence has reduced police enthusiasm. The limited resources of the laboratory have created inordinately long “turnaround” times for tests which further compound this strained relationship.

The police, because of limited scientific resources and a tremendously high volume of crime and available evidence, are forced to develop ways to eliminate such potential information. Twenty years ago the police could somewhat comfortably reserve the laboratory for cases which demanded immediate attention and resolution; today, with an increased emphasis on scientific principles, they must respond professionally in almost all cases. For want of adequate resources and expertise, law enforcement agents respond *pro forma* so as not to alienate the public. As a practical solution, some departments have concluded that mobile crime laboratories and evidence technicians have definite public relations value, even though their scientific benefits are limited.

2. *The socio-legal dilemma.* There are distinct similarities between current judicial practices and criminalistics utilization patterns. Just as the courts rely upon "informal, invisible, administrative procedures for handling offenders,"⁵ the investigations for evidence fall far short of the models which are suggested in the literature and manuals for investigators. Presently, the court systems are only able to function because of the waiver of defendant's right, including plea bargaining, and resultant guilty pleas. Neither the courts nor the criminalistics laboratories can be satisfied with operations which exclude the great majority of serious criminal cases from their full attention.

Various criminalists have noted that the dangers of scientific evidence being withheld from defendants, or misinterpreted by prosecutors, have lessened with the growth of "discovery" provisions.⁶ Even so, those agencies which represent "official authority" have the benefit of searching for the evidence at the outset and determining which evidence will be preserved, and similarly have the primary privilege of requesting the laboratory to perform particular examinations:

With the vast resources of scientific investigation made fully available to formal authority only, the scales of justice are unequally weighted against the defense.⁷

The Fourteenth Amendment right to due process rests at the core of another legal issue: Is the defendant being denied the right to due process when investigations do not include the legitimate and unbiased search for, and analysis of, physical evidence? The adversary system of justice can only arrive at fair decisions when the defense has equal access to the facts.⁸ Considering that the police have a virtual monopoly over the investigation of crime scenes, the accused has the right to expect that the search for evidence be conducted rationally and fairly.

Giving the police the responsibility of selecting the evidence which will receive scientific analysis may be placing an excessive and unfair burden on

law enforcement agencies. Under present legal practices the police are expected to investigate crimes, to identify and to arrest suspected offenders, and—as a prelude to the prosecution stage—to collect sufficient evidence to demonstrate the unquestionable guilt of the accused. Can the police be expected to become completely impartial during the investigation phase and to bring attention to physical evidence which points toward the innocence of a defendant as well as his guilt?

One may also examine present police investigation patterns from another perspective, commonly referred to as "equal protection of the laws."⁹ Often the race and socioeconomic status of the victim or suspect is a principal determining factor in gauging the type of search for physical evidence which will take place.

... where a prominent person is the victim of a crime, the likelihood that scientific investigation will come into play is heightened. Conversely, where the victim is from the lower socioeconomic classes, scientific investigation is less likely to be employed.¹⁰

The emphasis upon crimes involving the more affluent and a high monetary loss neglects the consideration of the *relative* loss suffered by the victim. The burglary of a black and white television worth \$40 from a ghetto family may have a much greater relative impact on those persons than the impact on a manufacturer of the theft of 25 color sets from his warehouse.

B. RECOMMENDATIONS AND ALTERNATIVES

This final section will be a discussion of several recommendations which are necessary for the construction of an effective physical evidence recovery and utilization program. These suggestions are general in scope, as have been the other problem discussions in this report, primarily because they are directed to a general audience of scientific and police professionals rather than to a single jurisdiction or police agency with specific problems.

1. *Organization and resource manage-*

ment. It is absolutely essential that the police and crime laboratory agencies which are called upon to retrieve physical evidence recognize the need for satisfying basic organizational and system requirements. Unless these organizations formulate explicit guidelines for the collection of evidence and its examination, all other subsequent suggestions for training, equipment development, and new research will be irrelevant. There are four primary areas in which the criminalistics and police institutions must develop detailed statements: goal setting, organizational delivery system design, supervision and feedback provisions, and a meaningful system of incentives.

a. **GOALS.** Of all criminal justice agencies the crime laboratory is most dedicated to the proper utilization of physical evidence, but it has sometimes neglected and often underestimated the role of the police agency in the total evidence utilization process. Similarly, the police organization has not developed complete confidence in the scientific procedures of the laboratory, and has perhaps continued to rely excessively on the processes of witness interviewing, interrogation, and other forms of verbal testimony. Because of this fundamental disparity, neither of the organizations is capable alone of dictating a policy which includes the orientation of both the law enforcement and scientific fields. The two institutions must collaborate and develop a set of goals which recognizes the objectives and interdependency of these two organizations.

In order to develop an effective evidence retrieval system, representatives of the crime laboratory and the investigation and patrol branches of the police agency must develop specific goals for the evidence collection activities. There will necessarily be a compromise between the goal of gathering all evidence from all serious crime scenes and the realistic limitations of scientific and police resources. Even so, specific statements should be drafted to designate and to define those circumstances where a concerted evidence retrieval effort is desirable.

Policy-makers must not only define meaningful goals but also determine the types of resources which will be required in order to accomplish such goals. It is strongly suggested that the process proceed in this direction and not the opposite one (available resources dictate the goals); for the goals will probably exceed the present provisions of the system and may require several years to attain. If the goals are restricted from the outset, then expansion and improvement are unlikely.

b. **STRUCTURE AND ALLOCATION OF RESOURCES.** Perhaps the most crucial step in the development of such a program is the decision by appropriate policymakers to make available the necessary resources. There is no question that the investigation for evidence requires a significant allocation of both personnel and equipment. In too many jurisdictions throughout the country, police and laboratory administrators have simply failed to provide such resources and other backup support. While no attempt will be made to state, for example, the number of personnel required to search crime scenes, some specific guidelines can be suggested.

(1) Structurally, it is most desirable for evidence technicians to operate out of either the patrol division or the laboratory itself; it is recommended that they not be placed within the detective division.

(2) Personnel designated as technicians should be given exclusive responsibility in this area and not be expected to perform other duties. Where technicians were required to assume other tasks, it was found that very often the evidence-gathering responsibilities were slighted. Complete specialization also enables the technician to become skilled in evidence-gathering activities, which is not possible for a generalist.

(3) Departments should not restrict technical positions to sworn police officers, but should also consider recruiting non-police civilians for this task.

(4) Jurisdictions should recognize that the *personnel* who are involved in the evidence re-

retrieval process are most essential and that support equipment should be considered secondary. The acquisition of a mobile crime laboratory will not automatically result in better investigations for evidence, particularly if the technicians are not adequately prepared. Only after such personnel training is assured should administrators consider investing sizeable sums in special vehicles or other sophisticated crime scene processing hardware.

(5) It is, of course, essential that training efforts and the commitment of resources by the police be carried out with the knowledge and assistance of the crime laboratory which will be providing the scientific analysis capability. Provisions for the collection of evidence must be in phase with the capability of the crime laboratory. Because the development of an effective evidence-gathering team will probably mean the retrieval of more evidence than is currently being collected, staff should consider the need for expanding the resources of the respective crime laboratory or identification division.

(6) The formal organization must establish a system for routing evidence and information throughout police department and examination facilities. This system must not only guarantee the integrity of all evidence but also deliver the evidence to the appropriate examiners and disseminate the results to all concerned personnel in an expeditious manner.

c. DOCUMENTATION, SUPERVISION, FEEDBACK. In order for an evidence recovery system to be successful, several principles of quality control must be addressed. The provisions which are made for documenting the activities of an officer at the scene and his decisions relative to the collection of evidence are extremely important. Not only must these reports establish the "chain of evidence," but they should also provide a basis for subsequent evaluation of the individual technician's efforts by those in supervisory positions.

The report forms, themselves, should be complete but not of such complexity that they discourage technicians from recovering evidence. They should

be constructed so that the evidence specialist is required not only to describe the evidence collected but also to provide explanations of how decisions relative to the collection were made. The report forms should be designed and standardized, so as not to retard subsequent attempts at data storage and analysis. It should be remembered that these records are the primary source of information by which supervisors can effectively examine, criticize, and improve the performance of field officers.

Every effort should be exerted to designate a full-time supervisor who can coordinate and monitor the activities of the personnel involved in evidence retrieval. If this individual is qualified, it is not necessary that he should be a police officer or a scientist, although it would be preferable if he had experience in both areas. He must study the reports of technicians and provide feedback information to them on how they might upgrade their investigations. This individual would also have the responsibility of securing the results of actual laboratory examinations and feeding this information back to officers on a regular basis.

His activities should not be limited to administrative paper work. He should periodically go into the field and observe officers as they search scenes for evidence and write up the reports. It would be his responsibility to assure that reports filed by technicians are accurate descriptions of the investigations performed and that the appropriate evidence was, in fact, preserved and submitted for analysis. In this way, the supervisor would be able to overcome the very definite limitations of report reviews, which do not adequately explain how the *process* of evidence retrieval is interpreted and carried out by line officers.

d. MOTIVATION. A necessary accompaniment to the previous recommendations for a system of supervision and feedback is the utilization of appropriate measures of performance which will evoke the best possible technician performance. Personnel cannot be expected to put forth their maximum effort in an organization where con-

scientific field efforts go unrecognized or result in reprimands for being too thorough and collecting "too much" physical evidence. Above all, rewards should not be confined to situations where evidence was instrumental in "making" a suspect with prints from a scene, or where a conviction was secured.

A technician should have positive feedback in any case where the evidence he retrieved resulted in information which contributed to a decision regarding the scope or direction of a criminal investigation and prosecution. In any case where a technician demonstrated unusual skill or perception in recovering evidence, regardless of its practical utility, the technician should receive recognition.

2. Education and Training. Criminalistics laboratories have not fulfilled their obligations to train and educate police personnel utilized to recover physical evidence. The scientists must take a much more active interest in the initial preparation of officers at the recruit school level and in the advanced training of personnel selected for evidence processing. Criminalists should adopt the philosophy that such effort devoted to training is essential to the success of their own laboratory work. Similarly, the scientists must exert more pressure on police administrators to support such programs and to give them higher priority in the total educational framework.

The police themselves have a major responsibility to make their training programs more cognizant of the various pressures which the officers face in the field. To offer a standard training class in physical evidence, while ignoring the types of factors discussed in the body of this report is unrealistic and will not produce more capable personnel. Procedures for selecting technicians must be examined and refined. New procedures should identify officers who not only have the desire to participate in such programs but also have the necessary perceptual, cognitive, and scientific skills to perform investigations properly.

The findings of this research project also demon-

strated the need for education in the public sector. While technicians frequently commented that fingerprint dusting or possibly the taking of photographs was primarily for the citizen's gratification, such practices should be discouraged when they have no investigative or scientific justification. While the public has been "educated" in crime laboratory techniques primarily through television, such information has created an illusion of scientific procedures. Many of the victims of crimes revealed a certain naiveté by accepting the actions of the technicians without question, while others expected a police investigation far more complete than was warranted by the nature of the offense. A well-informed public would help assure that evidence was properly preserved and that investigators were providing the service which all citizens in a community have a right to expect.

3. Research needs. The enhancement of present evidence utilization programs through improved organization and better educational programs has very obvious limitations. There is an absence of basic information about the costs and benefits of criminalistics laboratories and their proper role in the criminal justice system. Very briefly, several central concepts will be presented which merit serious attention by both the research and operational elements of the criminalistics profession.

Almost all professional groups are biased in the sense that they usually conceive solutions to problems in a framework similar to their primary area of expertise. Criminalists can be expected to call for the expansion and improvement of scientific investigation because that is their principal area of professional interest. The police officer maintains his own perspective and, based on observations and interviews, believes that approaches which are clearly police oriented are the key to more effective detection and apprehension procedures. Although the police are called upon to be more "scientific," they exhibit a strong reluctance to make large commitments because of their skepticism of the actual value of the laboratory to

them. Before one can call for an expanded role for the laboratory in the criminal justice system and increased efforts at recovering physical evidence, there must be more clear indicators of the performance of the laboratory in investigations and the administration of justice.

The placement of the criminalistics laboratory within the police bureaucracy has created a myriad of problems, which may exceed the advantages of having the laboratory within the law enforcement structure. Studies are necessary which analyze the benefits of alternate organizational arrangements and the possible institution of criminalistics labs as independent municipal facilities. If criminalistics is to develop into a true evidentiary science, then the fundamental decisions regarding its utilization and development should reside primarily in the hands of scientists.

Comparative studies are necessary to contrast those investigations and corresponding dispositions of cases where there is complete utilization and testing of physical evidence with those where no criminalistics techniques are used. By monitoring cases through the complete investigative, prosecutorial, and judicial stages, one should be able to identify the distinct benefits and costs of laboratory involvement. Similar studies are needed to examine the area of scientific services for defendants, noting the frequency with which accused offenders are provided with critical information.

Because it remains highly unlikely that every Index Crime can receive a thorough search for physical clues, research is needed to provide a better framework for approaching crime scenes and selecting evidence from particular environments. Much more is necessary than better training techniques or the selection of competent technicians. One of the most crucial problem areas which must be addressed involves the individuality of scenes of crimes—the statement that “no two crime scenes are identical” is very nearly accurate, as specific evidence forms assume different values from location to location. Very often, collected

evidence will only assume importance when another branch of the investigation yields clarifying information or possibly a suspect. Although such variability exists, inroads must be made both in establishing the information capacities of all physical evidence forms and in identifying those physical environments which characteristically yield these evidence forms.

In conjunction with such studies, research is needed to establish a more objective basis than the police now use for assessing the “seriousness” of crimes, thereby providing a rationale for justifying greater expenditures of effort at some scenes and less at others. From a scientific perspective, the subjective manner in which police officers establish investigative priorities was one of the most disturbing processes experienced in the months of research for this paper. For the laboratory to be engaged regularly in unsolved homicides is a necessary and logical pattern; however, when the identity of the victim in other felonies dictates the effort exerted to solve that case, then changes in the decision-making structure are called for. Similarly, the dollar value of property destroyed or stolen is an inadequate measure for deciding if the scene merits a complete investigation. Perhaps, among other things, the income of the victim should be considered along with absolute dollar loss.¹¹

Basic research must obtain answers to a number of questions in order to determine the optimal operational patterns for evidence collection teams. For example, would a civilian technician with three months of training in crime lab and scene investigation techniques be more effective than a police officer with a year of street experience and two weeks of “in-service” preparation? Should technician personnel operate exclusively from the crime laboratory; should a small unit operate from the lab with other technicians distributed throughout the city; or should technical staff operate from the patrol division with complete decentralization? What is the best arrangement for dispatching technicians to scenes of crimes; should this be left

to the discretion of the patrol officer, or should he be required to call in a specialist on particular crimes?

Scientists have also always assumed that they are the best qualified individuals to search a scene, although they rarely have the opportunity due to continual laboratory commitments. The assumption that the criminalist, who has complete knowledge of laboratory techniques, is more proficient in collecting material which will yield the most evidentiary information has never been verified. Efforts are needed to evaluate those qualities of an investigator which are most critical in properly searching a crime scene and perceiving physical conditions which reflect the offender's interactions with the victim and the environment.

This report has indicated that crime laboratory techniques, specifically the scientific techniques of analyzing physical evidence, are far more sophisticated than the procedures regularly used to gather the evidence from the field. This initial stage, which unquestionably is a most critical link in the total evidence utilization process, must be improved to a level comparable with the internal standards of the crime laboratory. Only through education and increased interest in conducting field research may the physical evidence collection process be upgraded. Forensic scientists must be willing to broaden their scope to inquiry and

responsibility and to initiate new efforts to study and professionalize the evidence-gathering process.

NOTES—Chapter VI

¹ Donald M. McIntyre, Jr. and Daniel L. Rotenberg, *Detection of Crime* (Boston: Little, Brown and Co., 1967), p. xv.

² James R. Richardson, *Modern Scientific Evidence* (Cincinnati: The W. H. Anderson Co., 1961), p. 15.

³ Marshall Walker, *The Nature of Scientific Thought* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963), p. 25.

⁴ J. Bronowski, *The Common Sense of Science* (New York: Vintage Books, 1953), p. 122.

⁵ President's Commission on Law Enforcement and Administration of Justice, *The Challenge of Crime in a Free Society* (Washington: U.S. Government Printing Office, 1967), p. 127.

⁶ Depending upon the legal jurisdiction, "discovery" allows the defendant to examine evidence in the prosecution's possession prior to the trial. Confessions, statements of witnesses, police reports, grand jury transcripts, physical evidence, and the corresponding lab reports are "discoverable" in certain jurisdictions. Joseph L. Peterson, "Utilization of Physical Evidence in the Judicial Process" (unpublished graduate paper, School of Criminology, University of California, 1970).

⁷ Richardson, *op. cit.*, pp. 22-23.

⁸ *Ibid.*, p. 26.

⁹ See Clark's comments on "equal protection" in: Ramsey Clark, *Crime in America: Observations on its Nature, Causes, Prevention and Control* (New York: Simon and Schuster, 1970), p. 42.

¹⁰ Richard H. Ward, "The Investigative Function: Criminal Investigation in the United States" (unpublished dissertation, School of Criminology, University of California, 1971), p. 125.

¹¹ For more complete discussion of several "seriousness" measurement techniques, see: Michael D. Maltz, "Evaluation of Crime Control Programs," (Washington: U.S. Dept. of Justice, LEAA, 1972), pp. 39-41.

APPENDIX. PHYSICAL EVIDENCE CATEGORIES

1. *Toolmarks.* Included all physical conditions where it was evident that one object, serving as the tool, acted on another object, creating impressions, friction marks, or other striations. A screwdriver, pry bar, automobile fender, or gun barrel might all produce toolmarks.

2. *Fingerprints and palmprints.* All such prints, latent or visible, including also footprints and prints from gloves or other fabric.

3. *Organic, botanical, zoological material.* Excreta, residues from botanical sources, and food stains were typically classified in this category.

4. *Glass and plastic fragments.* Broken, chipped, or splintered glass or plastic discovered in locations suggesting that it was the result of an offender's actions or was transferred to such persons.

5. *Tracks and impressions.* Skid and scuff markings, shoe prints, depressions in soft soil or vegetation, and all other forms of tracking. Toolmarks would not be included in this category.

6. *Paint.* Liquid or dried paint in positions where it could have been transferred to individuals passing by. Freshly painted areas, cracked and peeling surfaces on window sills, and automobile collisions were frequent examples.

7. *Clothing.* Items of clothing which were left, carried, removed, or discarded by offenders. Individual fiber characteristics would be included in this category.

8. *Wood Fragments.* The fragmenting and splintering of wood, with prying, kicking, and chopping actions at entry points being the most frequent examples.

9. *Dust.* Instances where "dust" (all forms of surface contamination) was disturbed by an offender in the criminal act.

10. *Cigarettes, matches, and ashes.* Discovery of any of these combustible materials, or their remains, in positions which suggest their relationship to offenders.

11. *Paper.* Cases where the paper itself may be traced to its original position or orientation, and where latent

prints or other contaminating substances may be present on the surface of the paper.

12. *Soil.* The presence of soil or soil-like material in locations where identification or individualization seemed possible.

13. *Fibers.* Included both natural and synthetic fibers discovered primarily on sharp corners or edges, or on surfaces where electrostatic or mechanical forces caused a transfer.

14. *Tools and weapons.* Instances where tools and weapons were found at crime scenes or in automobiles, and where there existed a strong possibility that such objects were involved in a criminal act.

15. *Grease and oil.* Any lubricant or fatty substance, sometimes possessing environmental contamination, found in a position suggesting its relevance to a crime.

16. *Construction and packing material.* All those substances found in work areas and not belonging in any other category.

17. *Documents.* Written or printed paper capable of being traced to a particular person or instrument. Suicide and robbery notes—as well as cases involving the theft of equipment, such as check protectors—where a document could be traced back to that instrument.

18. *Containers.* All bottles, boxes, cans, and other containers which held substances or other residues of an informative nature.

19. *Metal fragments.* Materials found near industrial machinery and scenes of collisions, and other scrapings with high probability of being transferred to offenders.

20. *Hair.* Any suspected animal or human hair found in an environment, with reasonable probability of being traced to an offender.

21. *Blood.* Any suspected blood, liquid or dried, animal or human, present in a form suggesting a relationship to the offense or the individuals involved.

22. *Inorganic and mineralogical material.* Inorganic substances not falling in any other categories.

23. *Miscellaneous.* All other physical phenomena.

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