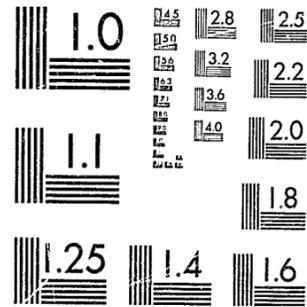


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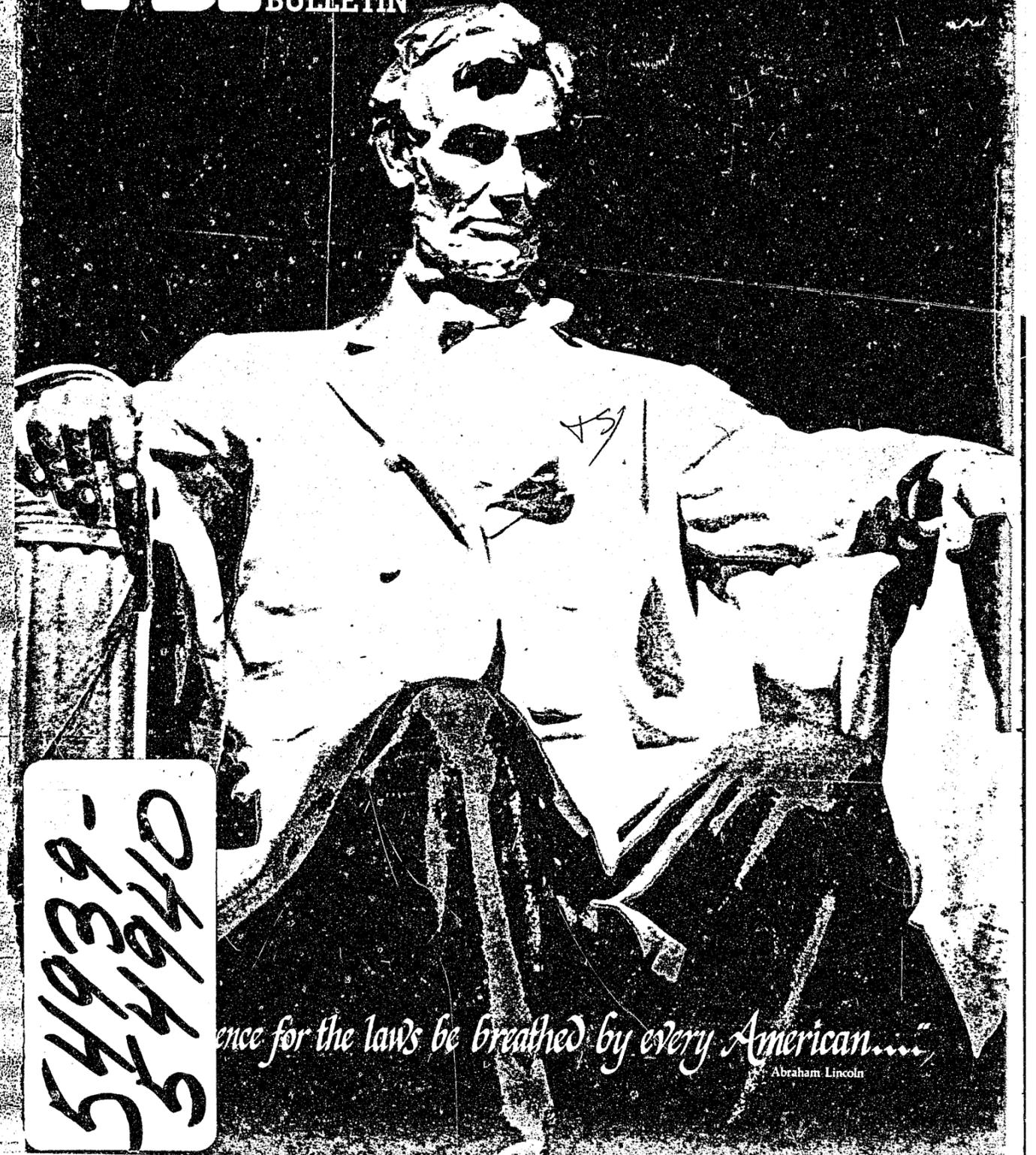
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National Institute of Justice
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FBI LAW ENFORCEMENT BULLETIN

FEBRUARY 1979



Justice for the laws be breathed by every American.
Abraham Lincoln

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The Cover
Lincoln Memorial photograph courtesy the National Archives. Quote from address before the Young Men's Lyceum of Springfield, Ill., Jan. 27, 1837.



**Federal Bureau of Investigation
United States Department of Justice
Washington, D.C. 20535**

William H. Webster, Director

The Attorney General has determined that the publication of this periodical is necessary in the transaction of the public business required by law of the Department of Justice. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through December 28, 1983.

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The multitude of problems an investigator faces at the scene of an "open" or "mystery" type murder case is compounded when the unfortunate victim has been buried. These cases are not common, but neither are they so rare as to preclude specialized training and instruction in their proper handling. It is a well-recognized fact that mistakes made during preliminary investigations, especially in murder cases, may well prove fatal to the successful conclusion of the investigation. Although no two murder cases are exactly alike, the basic facts remain the same: The main and possibly the ONLY witness is dead, and the investigation of the case forces investigators to make use of all their talent and training. Part of this talent and training should be directed toward preplanning for crises and recognizing the existence of specialized expert assistance which may be available to provide support.

This article is intended to provide an investigator with useful guidelines and procedures, so that the case of a buried body may be pursued confidently and successfully to the identification and arrest of the perpetrator. Specific attention will be devoted to such critical areas as preplanning, availability of expert assistance, surface processing and excavation of a grave site, removal and examination of a body, visual and aerial techniques in searching, and the use of mechanical aids.

Preplanning

One important facet of major case investigations is administrative preplanning, an area that is frequently and unfortunately neglected.

The case supervisor usually is confronted with a series of problems in the initial stage of the investigation, most of them requiring immediate decisions and actions. Quite often, the result is a great deal of confusion, which can hinder the successful completion of an investigation. However, this on-scene confusion can be avoided by good commonsense preparation covering many aspects of the investigation—from having the wherewithal to run a command post in a wooded area to an established written policy dealing with written confessions.

In the instance of buried body cases, this preplanning should include having on call all the various and necessary forensic experts. Such specialists include:

A forensic pathologist—one who can interpret and diagnose changes caused by disease and injury and apply them in a court of law (hopefully available to most departments as a medical examiner or coroner's assistant);

A forensic archeologist—one who can make a scientific study of material remains (fossils, artifacts, and monuments) and cultures of past human life and activities;

A forensic anthropologist—one who can assess skeletal remains and study man in relation to his origin, classification, relationships of races, physical characteristics, social relations, and cultures;

A forensic odontologist—one who is involved in the medicolegal system, providing assistance in the

Buried Buried Buried Body Cases

By ROBERT M. BOYD*

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identification of bodies through dental record examination and also evidence in cases of human bite mark interpretation;

A forensic toxicologist—one who deals primarily with poisons and their effect on organs;

A forensic psychiatrist—one who can deal with and treat mental, emotional, or behavioral disorders;

An entomologist—one who studies insect life; and

A botanist—one who deals with the study of plant life.

(The use of "forensic" applied to these medical specialties means the relation and application of medical facts to legal problems or "suitable for a court of law"—simply, legal medicine.)

Obviously, the evidence or crime scene technician, backed up by the criminalistics laboratory, is also a vital member of the team.

By now, it should be evident the investigator does not stand alone in his quest to answer the questions of who, where, when, what, why, and how.

In all murder cases, the investigator (or detective) is and should be in complete charge of the case, fully bearing the responsibility for any success or failure of the investigation. Notwithstanding this fact, however, the

case should be a joint effort, with all those specialists mentioned being involved and sharing equally in the successful conclusion.

Discovery

A number of cases involving buried bodies develop as the result of a body being accidentally found without prior knowledge or a suspicion that a body existed at that location. Occasionally, information is received that a body is buried and a location is given; these cases will be considered later.

The first duty of an officer responsible for such a case is to establish a list of priority items, despite pressures from both within and without the department. Do not allow yourself to be rushed or misdirected away from the proper and orderly procedures that should be followed. Upon notification of a body's discovery, attempt to ensure the entire scene is safeguarded, before your arrival if possible.

Generally, a hunter, passer-by, or construction worker will find the buried body and notify a police agency, whose representatives will respond to the scene. The entire area should be cordoned off, as with any scene, and access refused to *anyone* prior to the arrival of the investigator in charge, who can appraise the situation before any damage is done.

If the body has not already been removed from the burial site, an archeologist should be called to the scene, as well as a forensic pathologist and evidence technician.

This example of preplanning is a critical element; these experts should have been contacted previously and contingency plans formulated so they will be on call when the need arises. Generally, these doctors look with enthusiasm toward such an opportunity, especially when the crime scene remains undisturbed.

The archeologist is proficient in the careful and systematic excavation of a burial site. Most of this phase of the investigation—the excavation—should be left to his direction, while others of the team assist as necessary.¹

The forensic pathologist is the expert most familiar to law enforcement officers, and his work is becoming more prevalent throughout the country as a replacement for the coroner. He can provide valuable and impartial expertise when investigating the various forms of death.

Unless some extremely unusual or exigent circumstances exist, there is generally no need to hurry at this stage. If, for example, the weather is inclement, post guards about the area and wait for proper conditions. If there

is a need for immediate excavation, the erection of a tent over the site should be adequate. (This item should be included in preplanning equipment.) The same rule would apply during hours of darkness. Nothing is to be gained and all may be lost by a premature excavation. After the area is secured, all team members assembled, and plans completed, then the actual work may commence. The golden rule of homicide—"Never move, touch or alter anything until it has been noted, sketched and photographed"—is especially applicable in this type of case.

Prior to a thorough search and processing of the area, the entire site should be mapped. This would usually be done by the crime scene examiners who would draw plan views of the area to a workable scale with tie-ins to permanent landmarks. Then the search may continue, both visually and with mechanical assistance (metal detectors, etc.), and any items noted, sketched, and photographed.

Photographs should be taken of the entire area, including aerial views if possible. The team can then move in slowly to the actual site. Photographs, in both black and white and color, are to be taken at intervals up to and including the actual burial site. If possible, as with any discovered body, determine the path taken to the site by

the finding party, mark it, and then use *only* this way in for the initial investigation in order to preserve as much of the general area as possible. The photographer should be accompanied by the crime scene technician or investigator who can note and preserve any item of evidentiary nature on the way to the site—tire tracks, articles of clothing, possible weapons, or *anything* that might possibly be connected to the crime.

Photographs should *not* include any persons standing around the scene, or any items not originally located there, such as camera boxes, etc. At the same time, any item of evidence that has been moved, either accidentally or by mistake, must never be replaced for purposes of photographing. It can never be put back exactly the same way as found, and the fact it was moved and replaced for photographing could be damaging in subsequent court testimony. Items should be photographed with and without identifying numbers, a scale, and an arrow pointing to magnetic north.

The definition of the term "site" is important in the buried body case. When a grave is dug and the excavated soil is placed near the grave, the surface of the soil is disturbed, so that

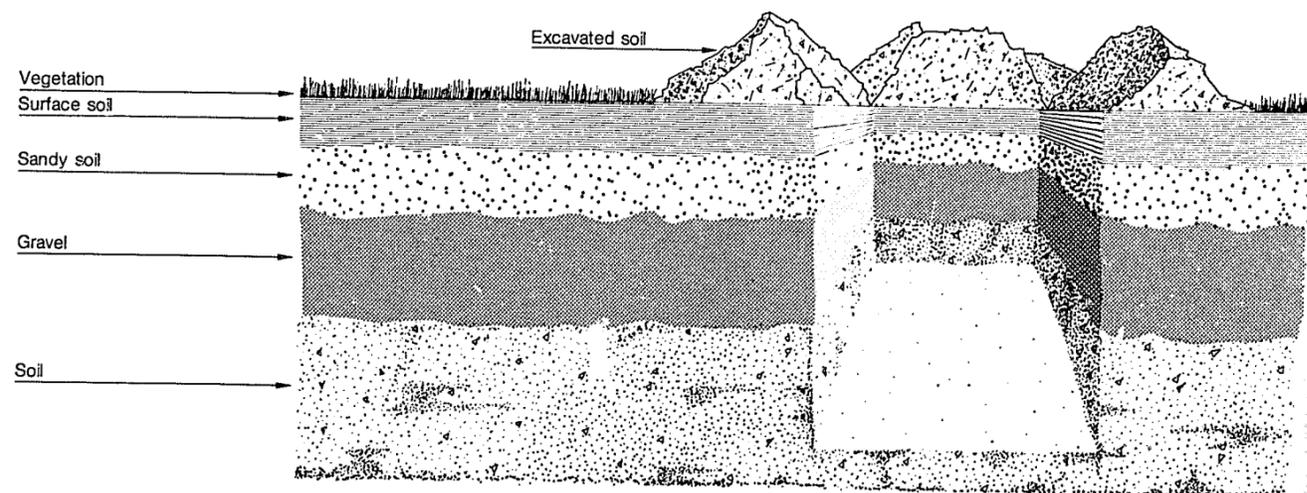
the grave "site" is considered to be the entire disturbed area. Thus, if an average-size body were to be buried, the entire site of grave and disturbed section would easily measure 6 feet wide and 8 feet long. The depth of the excavation is generally dependent on the soil composition and the amount of time the subject had to spend at his task.

When the excavated soil is placed on the surface, vegetation may be compressed and/or broken off. When the grave is refilled, some of this surface vegetation will go back into the grave. (See fig. 1.) Here another expert may come to your aid—the botanist who can provide estimations as to how long the vegetation has been damaged by observing the height, distribution, and depth of root systems involved at the site. If a botanist is not available, measurements and samples should be taken for later study. Damage done by digging and refilling a grave may be visible and measurable for years, when compared to adjacent normal and undisturbed growth. If any dead insects are recovered from the grave, an entomologist may give information to their life span, activities, etc. Maggots, if present, will be included in this examination. An examination of their type, life cycles, etc., may enable the entomologist to give a minimum time span

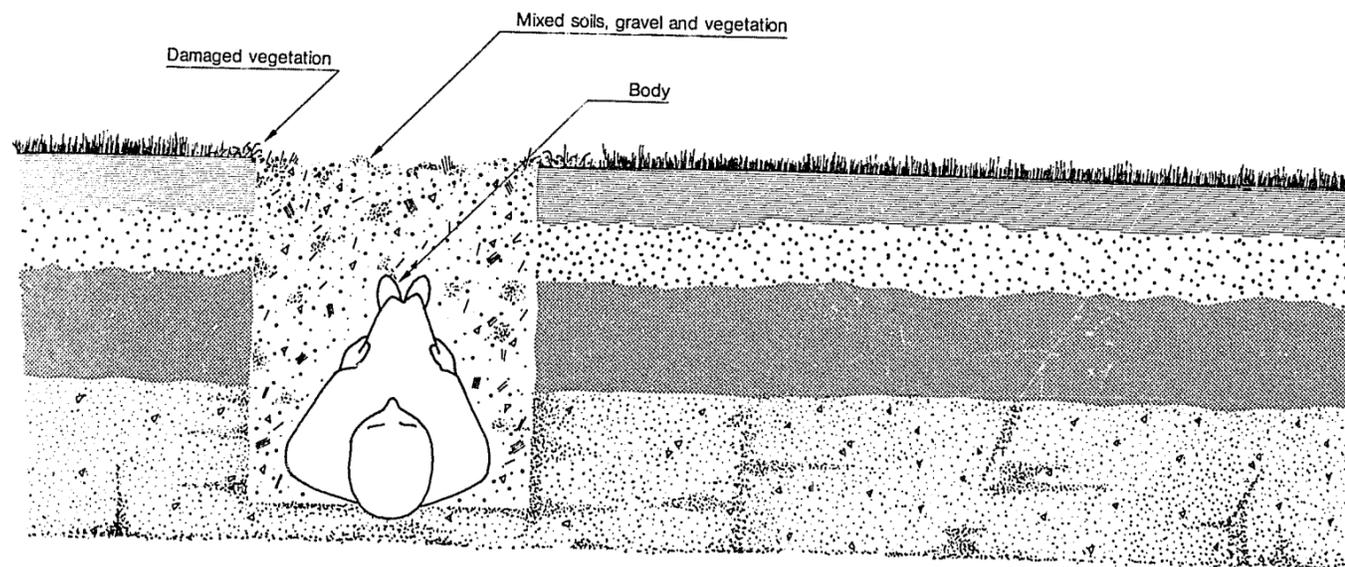
Figure 1.

Site Prior to Excavation

Burial Site



Refilled Site



on the time of death. Samples of the fly larvae should be taken at each life stage found. These specimens can be placed in a solution of 85 percent alcohol for preservation while they are transported to the examiner.

Excavation

The surface of the grave should now be carefully cleared of extraneous material so that the boundary of the actual grave may be visible. This should be done with tools such as a flat-bladed spade or hand trowel. Then the dimensions should be recorded on the map and excavation begun.

Extreme care should be taken to preserve the exact limits of the original grave or the undisturbed remains, if part of the site had been damaged during the discovery. When the soil had been removed originally and then thrown back into the grave, the various layers and compositions of soil and vegetation became mixed or mottled (as illustrated). Slow and careful removal of this material may reveal the toolmarks made on the outside edges; it may even show the type of blade involved, whether curved or straight, with enough definitions to make toolmark identification later on a suspected shovel or other tool.

Prior to actual excavation, and after the photographs have been taken of the burial site in original condition, additional maps should be made of the site to show both plan and elevation views of the grave and to tie in items found both by horizontal location and depth. (See figs. 2 & 3.) Expert help may be available through a county or State highway department engineer or surveyor, who would have all the tools necessary to do the job properly. (Items such as a compass, plumb bob, string, protractor, and string level are necessities.)

The soil should be removed in somewhat even layers, such as 4 to 6 inches, and all removed material sifted through two screens. The first screen should have ¼-inch squares; the second should be a standard window screen. As items are located and recovered, they should be plotted on the elevation or side view of the drawings.

The completed drawing can then accurately reflect the various vertical levels of such items in the grave, as the plan view will indicate their horizontal distances apart. For comparison, soil samples should be taken where each item is recovered, and each should be accurately documented. Keep in mind items recovered may still bear latent fingerprints.

Body

When the body is uncovered and has tissue remaining on it, the forensic pathologist may make a cursory examination on the scene. When this examination is completed and photographs taken, a freshly laundered or new sheet should be available and the remains carefully placed in it so as to preserve any evidence not immediately visible but which might be lost in transit. Next, fold the edges over and place the sheet in a body bag or container for removal to a proper place of autopsy (hopefully a well-equipped and lighted morgue). The sheet, together with any other physical evidence, will be separately marked for identification, packaged, and handled following proper and proven procedures, as outlined in Part IV of the FBI Handbook of Forensic Sciences.²

After removal of the body, the grave should again be photographed and the area under the body carefully searched and excavated several more inches. A metal detector will be useful here if bullets were fired into the body after it was placed in the grave or if other metal objects are hidden in the soil.

As previously mentioned, if a body is recovered with soft tissues present, the forensic pathologist should conduct an autopsy. This post mortem examination, using blood and body fluid analysis, stomach contents, X-rays, and other routine procedures, may reveal the cause of death, an estimation on the time of death, antimortem and post mortem wounds, possible weapons used, identification of the decedent, and other essential information necessary to successfully investigate the case. The pathologist may be

joined in his efforts by the odontologist and toxicologist, plus the resources of the crime lab and records section.

A badly decomposed body is no reason for despair, as many things can be learned from what appears to be the hopeless caricature of a human being.

If the remains are primarily human skeletal, then a forensic or physical anthropologist is needed. The anthropologist is best equipped to provide the following information:

Sex—Critical bones for sex determination are the pelvis, skull (85 percent accurate), femur, and sacrum;

Age—Critical bones are the pelvis, teeth, skull, and long bones (age determination becomes difficult once a person is past 25 years);

Ethnic group/race—Skull and teeth are good indicators; and

Stature—Critical bones are the femur, tibia, fibula, humerus, radius, and ulna.

It should be noted there are certain limitations in assessing skeletal remains. Primarily they are as follows:

Estimated time of death—With so many variables, it is generally possible to set only broad time limits;

Cause of death—Not generally registered on skeleton, but signs found may be post mortem;

Reconstruction of facial soft tissue—An area under study today, which shows promise but is not yet fully developed;³ and

Medical histories—May show old fractures, dental work, back problems, etc., but this source of information is limited. It is important to remember an anthropologist *cannot* date *time* of death within a useful time frame, or give *cause* of death.

It is obvious that law enforcement personnel cannot receive the extensive training in skeletal anatomy necessary to make expert analyses of suspected human bones. But some instruction may be provided by physical anthropologists so as to enable officers to screen out animal remains from human. Many cases are reported to agencies in which the finder of some bones incorrectly believes them to be

Figure 2.

Plan View of Site

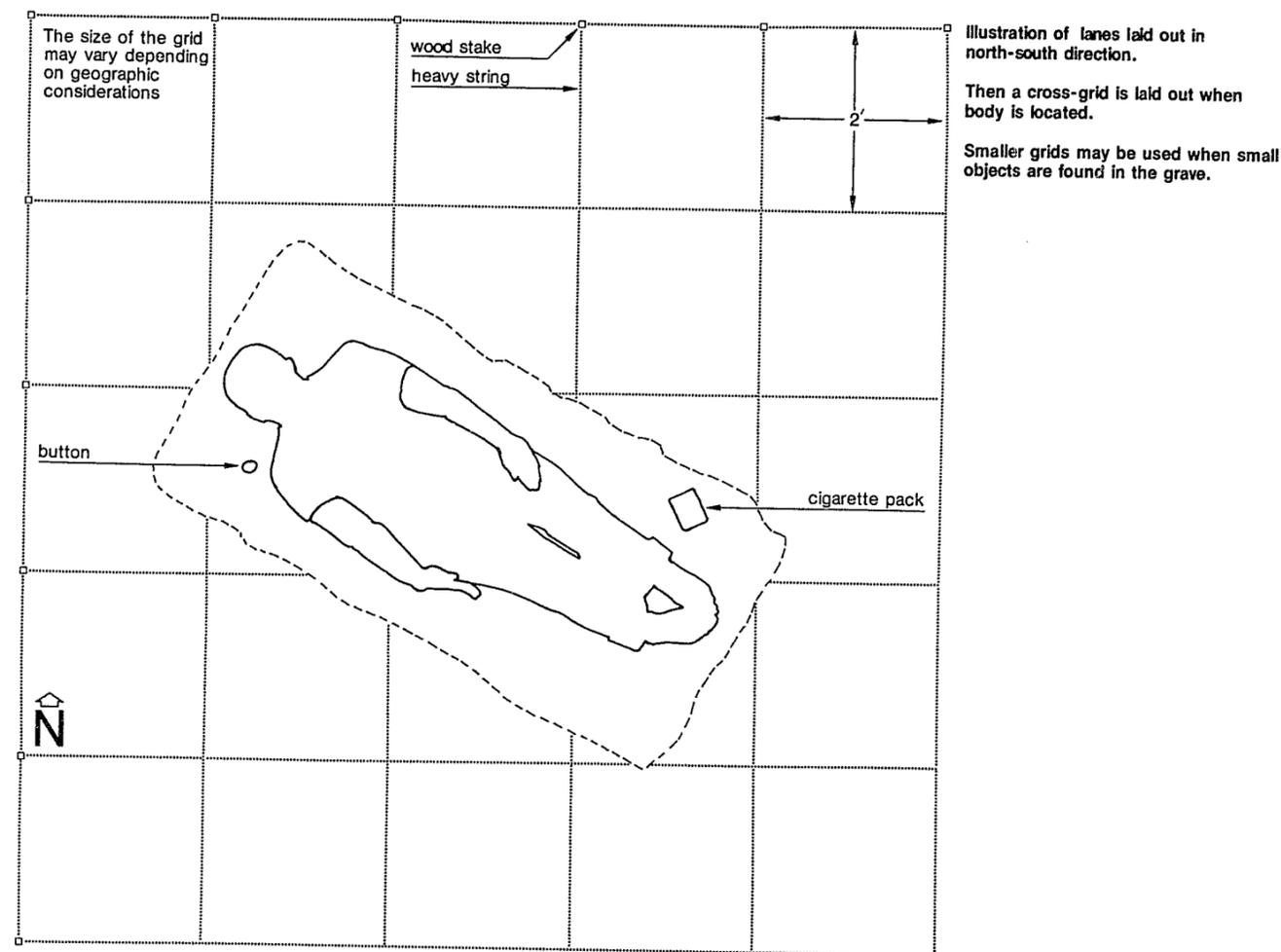
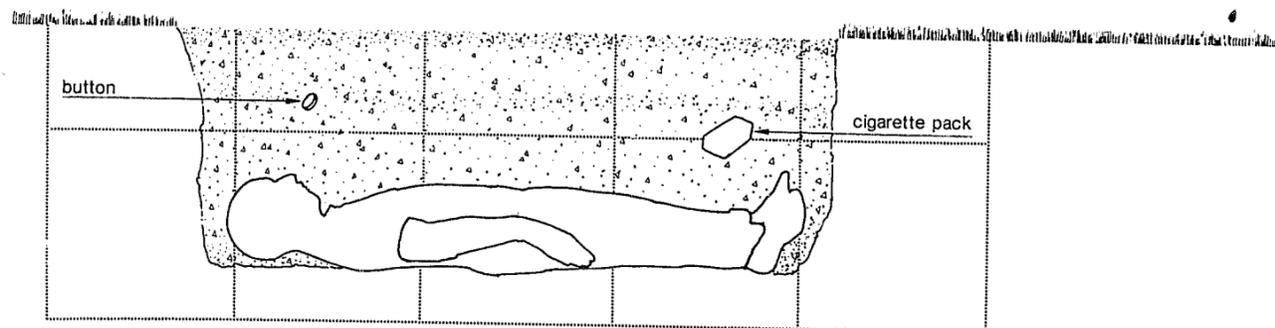


Figure 3.

Elevation View of Site

Photograph items of evidence with ruler and north indicator



“The ultimate goal is to recreate as accurately as possible the circumstances of the crime . . . and successfully guide the case through the criminal justice system.”

human, either of historic interest or a murder victim. For example, the paw of a bear in skeletal form closely resembles a human hand, but with some training the difference is readily apparent even to a layman.

Search For A Buried Body

In some cases, information is received through an informant, citizen, or by means of a confession that a body has been buried and an approximate location is given. The grave site may be identified precisely, or an area as small as a city lot or as large as several hundred acres indicated. In either case, again, it is critical to establish quickly security around the entire suspected area to prevent access by unauthorized persons.

Good planning is vital. The more known about the circumstances of the crime and burial, the greater your chances are of locating the site. For example, if it is known or believed the victim was killed elsewhere, then the grave may not be too far from a road. However, if the killing was alleged to have taken place at the site, then the victim could have been made to walk a considerable distance. The time interval since the killing occurred will have a bearing on the condition of vegetation around the site, as well as the actual grave itself, as the grave may have sunk or the surplus dirt may still be in a mound. Again, a botanist can give approximations on damaged plant life which had revived and started growing again. Areas of sparse vegetation will be difficult to estimate due to the lack of growth, but buried insect life may still be useful. A similar problem may be encountered where the surface has been cultivated; the only visual indicator of a grave may be a depression in the surface after some time has passed.

An aircraft, especially a helicopter, may be used prior to a foot search to observe visually a sign of soil or vegetation disturbance. Much progress has been made in the use of thermal infrared photography, which may be of some aid in these cases. Infrared film detects heat—a decomposing body emits heat as tissues begin to rot. However, if the infrared photography is used very soon after a body has been buried, or an extended period of time has passed, then heat is no longer being generated and nothing would be shown on film.

Aerial photographs should be taken of the area both prior to a search, and if the search is successful, at the conclusion.

When it becomes necessary to conduct a foot search in a suspected area, mechanical aids become essential, especially if a visual search has been negative. Probing is the first step. This is done with a steel rod, preferably stainless steel, approximately 5/16 inches in diameter and 4 1/2 to 5 feet long. A “tee” handle is welded to one end, the other end ground to a sharp point; the success of probing depends on an ability to detect the difference in the disturbed and undisturbed subsurface soil. Some practice is desirable in the immediate area by the persons probing to get a “feel” for the type of soil in that region.

Prior to the start of actual probing, the coordinator of the search must formulate his plans carefully by having a map of the area, making a grid overlay tied into known landmarks, and preparing lanes with stakes and string for the searchers. In areas of woods or heavy underbrush, the establishing of grids is more difficult, and the case coordinator/supervisor will have to be especially

watchful so as to avoid any locations not being checked properly. The area should be probed in not more than 2-foot squares and done in a staggered pattern.

As probing is difficult and requires the use of “new” muscles, care should be taken to plan for shifts of searchers and frequent rest periods. (The coordinator must also keep his map posted on the search area that has been completed.)

When a “soft” spot is located, indicative of a possible grave, the probe should be left in the ground, and no further probing done to the area since damage to the body could result. At that point a second mechanical aid is employed—an instrument which is capable of verifying the presence or absence of a body without the need of excavating. One such instrument, using methane gas as a primary source of verification, operates on the detection of hydrogen sulfide, hydrogen phosphide, carbon dioxide, ammonia, and methane gases formed by a decomposing body.

The gas formation is minimal at low temperature, 32 degrees to 35 degrees, but as the ground would be frozen also, probing would not likely be attempted. In warmer temperatures, the gas forms and may be detected by the gas-sensing probe.

After a suspected site is located, a temperature-sensing probe is inserted in the site and a reading taken so as to set the gas instrument to the correct sensitivity. The vapors from the gases of a buried body will penetrate the soil upward in a V-shape, with the greatest concentration directly over the body. A probe inserted beside a body or too

deeply could therefore miss the gas area. Consequently, several probings are made at different depths to ensure complete coverage. (See fig. 4.) This probe can be an invaluable aid in checking suspected areas without an excavation at each one. It can also be used to check under concrete—roadways, patios, floors—after a small hole is drilled through the concrete. This instrument or one of similar design and/or capabilities should be a part of a crime lab’s equipment, especially where rural areas are included in the jurisdiction.

The discovery and excavation of a buried body is a challenge to law enforcement, taxing abilities and patience and requiring a firm control over the entire investigation. There is no place in these cases for the investigator who wants to be the “whole show,” lacks training, and is ignorant of available resources. Expert help should be utilized if at all possible. Generally, a delay in initiating the crime scene processing in order to marshal necessary resources may insure a more successful investigation.

Remember that the ultimate goal is to recreate as accurately as possible the circumstances of the crime committed, identify and apprehend the perpetrator(s), and successfully guide the case through the criminal justice system.

FBI

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Footnotes

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²Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (Price \$2.00).
³Donald G. Cherry and J. Lawrence Angel, Ph. D., “Personality Reconstruction From Unidentified Remains,” *FBI Law Enforcement Bulletin*, Vol. 46, No. 8, (August 1977) pp. 12-15.

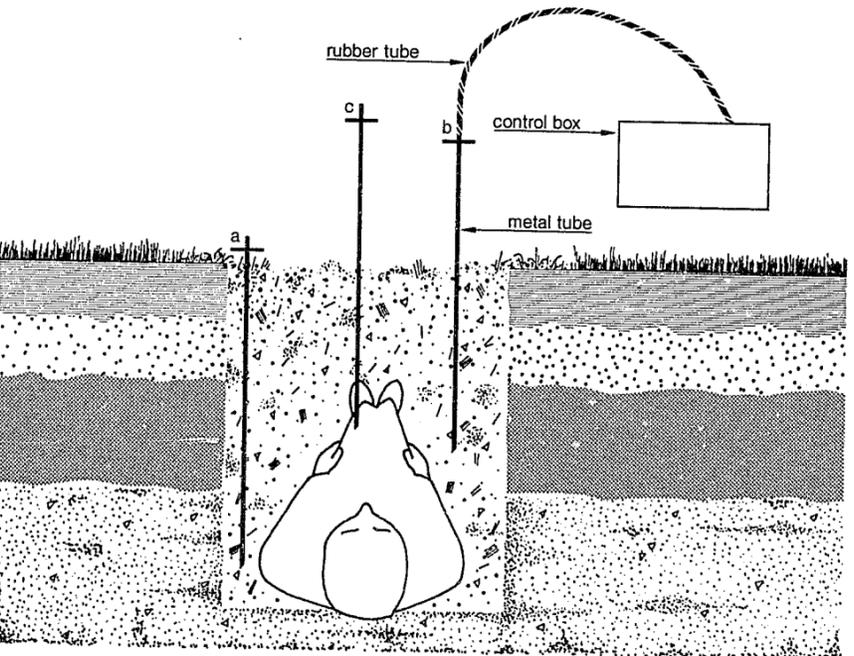
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 Scott, Dr. G. Richard, Anthropology Program, University of Alaska.

Figure 4.

Vapor Detector

- (a) Missed vapors — too deep
- (b) Not directly over body but shallow enough to catch vapors
- (c) Directly over body — strongest vapors



END