

## PHOTOGRAPHY IN LAW ENFORCEMENT\*

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PHOTOGRAPHY in law enforcement is, in comparison to your long usage of the camera, a relatively new innovation. Less than forty years ago, a detective with a gun, a blackjack, a pair of handcuffs, and a badge was considered fully equipped. And some of the police departments and Federal law enforcement agencies had little more in the way of equipment in their headquarters. But, today, though the service revolver is still considered a basic and necessary tool by American law enforcement officers, it is my well considered guess that 10,000 shots are made by police cameras for every one that is fired from a service revolver with deadly intent.

The camera came into popular law enforcement usage as a means of identifying criminals. Bertillion introduced the now familiar front-and-side view "mug" shot in connection with his system of physical measurements which then served as an identification system and which has now been supplanted by fingerprinting. Today, the taking of both photographs and fingerprints has become a standard procedure in cases of persons arrested for the more serious crimes. As the photographic files were built up, the practice of having victims of unsolved crimes view the Rogues' Gallery, containing photographs of persons previously arrested, became the backbone of the criminal detection procedure in many types of cases. In spite of many advances in law enforcement technique, this same procedure remains as a mainstay in the law enforcement effort. Many modern police departments have facilities for transmitting identification photographs and fingerprints by wire-photo to distant cities and to the Federal Bureau of Investigation to the end that, where such speed is required, identifications of suspects can be made or verified in a matter of minutes.

As in the case of your science, the development and popularization of a new mode of transportation gave police photography a necessarily broadened field. In your case, it was, of course, the airplane and, in law enforcement, the automobile. Good roads and millions of automobiles, put crime on a hit-and-run basis and, due to increased traffic accidents, many good citizens became police problems.

But the photography of crime scenes and the scenes of automobile accidents presented a more complex problem than simply equipping investigators with cameras. Courts, which once looked askance at the use of so simple an instrument as the ordinary magnifying glass in the examination of offered exhibits, were not prone to accept photographs in evidence without a most painstaking ground-work being laid for their introduction. In my own early experience, it has been necessary to canvass an area in an effort to locate a professional photographer who could unquestionably qualify in court as an expert. In modern practice, in most jurisdictions, the procedure has been simplified and courts will frequently admit in evidence photographs on testimony that they represent the scene as it actually appeared.

No criticism of the caution of the courts with respect to the acceptance of scientific innovations is intended. You, who deal in accuracy in photography, know how difficult it is to achieve and you appreciate the training, equipment, and effort necessary to produce a photograph that is equivalent to the scene desired. But the caution of the courts is touched upon for your consideration in connection with what I am about to say. It is my understanding, from a conver-

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sation with a man engaged in your profession, that certain of the European police are using the principles of photogrammetry to obtain necessary measurements from photographs made of crime and accident scenes. If this can be done with relatively simple equipment, and if the measurements derived through interpretation are of acceptable accuracy, the benefits to law enforcement would appear to be many fold. In a recent important case, the Secret Service prepared an excellent photograph of the scene of a crime for court demonstration but, to accurately portray the true dimensions, it was necessary to have a civil engineer make a survey and prepare a detailed drawing as a companion piece for the photograph.

In all cases in which the law enforcement officer makes photographs of the scene of a crime or accident, it is the approved practice for him to also do detailed sketching of the scene and physically make and record the pertinent measurements. Thinking in the realm of photogrammetry, if measurements of such dimensions are a proper subject for your science and, if the courts will accept interpretations in lieu of tapeline measurements, the present practices of law enforcement officers may be considered in the future as having been both inefficient and highly questionable as to accuracy.

The development of such a device, if the past serves as a guide, will be done by men such as yourselves who are not associated with law enforcement. In reviewing the specialized photographic equipment in daily law enforcement use, the fingerprint camera is the only piece of equipment which comes to mind as being primarily designed for the use of the police. The limited market for law enforcement equipment is one factor that retards the development of specialized equipment in this field. Presently, the Secret Service has need for a unique assembly of certain optical equipment but, to date, there is a dearth of interest on the part of a manufacturer of the component parts to undertake the task. This is understandable as a quotation within reason as to cost might well lead, as it has in the past, to a substantial loss before the device is perfected to the point of acceptability. Too, in law enforcement, generous appropriations are the exception rather than the rule.

But, though law enforcement generally has far to go before it will have utilized the full potential benefits of photography, the camera has long ceased to be merely a device to photograph criminals and the scenes of accidents and crimes. In the small section of the Secret Service to which I am assigned, wherein photography is an integrated and necessary function but far from the primary mission, seven types of cameras are regularly used:

- 8×10 document camera
- 35 mm. Recordak and photorecord
- 2¼×3¼ fingerprint camera
- 4×5 press camera
- 35 mm. miniature cameras
- 16 mm. motion picture camera
- X-ray

In questioned document cases and cases wherein developed latent fingerprints are factors, the use of photographic enlargements has become standard practice. They enable the preparation of comparison charts through which the layman may be shown the points of identification or similarity upon which the expert has based his opinion. Some experts, particularly in the questioned document field, have reached the point where they believe that, if they cannot convincingly demonstrate their findings to a jury of laymen, the findings are not of sufficient weight to be presented. It is not an uncommon practice for such ex-

perts to have enlargements prepared in quantity for distribution to the Court, the defense counsel, the prosecutor, and the members of the jury, so that all who are vitally interested in the issue may be able to follow and understand the expert's testimony.

In questioned document work, larger cameras are usually used in the preparation of court exhibits and whenever precise results are required. But the 35 mm. cameras, on which 800 or more exposures can be made on a single roll of film, are very useful when it is necessary to photograph a large number of documents either hurriedly or inexpensively, and the resultant photographic enlargements are generally satisfactory for most investigative purposes.

The press-type camera serves as an all-around work-horse in the field. Used with or without flash equipment, it is generally used to photograph crime and accident scenes. It is useful in taking photographs of persons and serves the purpose of a document camera when necessary. But, in Metropolitan areas, it serves the investigator as both a deterrent and a cover in the surveillance of troublesome crowds which are believed likely to become a mob. Persons of normal intelligence are less likely to be swayed into riotous action by hot-headed leaders when they know that their presence on the scene has been recorded on film. Too, they are so familiar with the press-type camera being on the scene of any newsworthy occasion that they sometimes accept them as part of the scene. In some types of demonstrations, the purpose seems to be to get themselves photographed and, once enough bulbs are burned, they depart peacefully. The 35 mm. miniature camera and the motion picture camera are also very useful in cases of this kind as, in the space of a few minutes, recognizable photographs may be obtained of a large number of demonstrators.

Surreptitious photography, or sneak photography as it is popularly called, is, especially when dealing with the criminal element, a field in which there is a great deal of room for improvement. Fixed installations are, of course, a relatively simple matter. One effective device for a fixed installation, utilizes a motor driven miniature camera operated by remote control which, if necessary, can be activated by radio. Such a device is readily screened and, in practice, one such device has been used on many subjects without the slightest suspicion being aroused. But photographing a suspect on his own grounds or on the street, without attracting his attention, becomes quite a task unless it is possible to use a so-called telephoto lens. You, being familiar with the history of photography, know that in the early days of popular photography many detective cameras were devised and they enjoyed a great deal of popularity except with detectives. Today, there is on the market and in rather widespread use an excellent 8 mm. camera not much larger than a package of chewing gum but, at close range and with eye-level operation, most wary criminals would not be photographed unawares. I should like to see a camera of this same excellence made up in the guise of a cigarette lighter and I have used a Japanese product in this design.

Ultra-violet and infra-red techniques are commonly used in law-enforcement to restore eradicated or obliterated writing and printing. The results achieved are often as startling as they are unpredictable. In practice, the proper developing agent seems to be patience and sweat in equal proportions. In one recent case, utilizing ultra-violet with various filters, exposures were increased gradually with success finally achieved on a four hour exposure. With infra-red technique, it is sometimes possible to photograph the writings within a sealed envelope.

A problem somewhat allied to the restoration of obliterated writing is fre-



quently encountered in cases where a tablet or pad is found and it is desired to know what was written on the last sheet removed. Indentations caused by the pressure of a writing instrument are frequently discernible on the otherwise blank top sheet of the pad even under ordinary lighting conditions, but the legibility is usually found to be almost nil. In such cases, cross-lighting is employed in photographing the subject and, sometimes, the resultant print can be read. Such photographs, particularly when enlargements, always remind me of a relief map of mountainous terrain and the thought occurs that, within the realm of photogrammetry, there may be some technique that would improve the results we presently obtain. If such should be the case, I would be grateful indeed for your helpful comment.

I have touched but sketchily on details of the use of photography in law enforcement. It has been my intention to inform you that we, in law enforcement, are cognizant of photography as a valuable ally. But, in the Secret Service, photography is also our enemy. This statement requires a little background information, perhaps, as to our duties.

The Secret Service is a Division of the Treasury Department. Our Chief is Mr. U. E. Baughman and we are commissioned "To protect The President of the United States, the members of his immediate family, and the President-elect; to detect and arrest persons violating the laws of the United States relating to the counterfeiting of the coins, obligations, and securities of the United States and of Foreign Governments and other laws relating to the Treasury Department, and to perform such other functions as the Secretary of Treasury may direct."

So, second only to our protective responsibilities, the suppressing of counterfeiting is our major concern. And the modern currency counterfeiter is, first of all, a photographer. Almost without exception, the present day currency counterfeiter uses photo-reproduction methods. Advancements in the graphic arts field, including developments in film and popularization of off-set printing devices, has resulted in some counterfeits of rather high fidelity when compared with the genuine. Some counterfeiters develop their own technique and procedures which, if not unique, are at least unusual applications of well-known processes, and their results range from crude to excellent. But, somewhere along his production line, the action of light on a sensitized material is the all important step on the counterfeiter's path to prison.

In speaking to a group such as this, it is a great pleasure to report the wholehearted cooperation which the Secret Service receives from persons commercially engaged in photography and the allied arts and trades. It is seldom indeed that a real professional is found on the wrong side of our fight against counterfeiters. When a counterfeiter is caught and it is disclosed that he has spent years in study and experiment in an attempt to perfect his product, it is not unusual to hear someone make a remark to this effect: "If he had devoted his time to a legitimate effort, he would have been successful." In most cases within my personal experience, that is not true. The questionable success achieved by the counterfeiter has usually been accomplished as the result of a reckless expenditure of time and effort by a mediocre workman who could not hold his own as a skilled workman in a first-class photoengraving plant. To be a counterfeiter, one *must* be reckless with his own time. One that I know, an escapee from a penal institution and again caught in the act, departed to begin twenty-seven years penal servitude with the wisecrack: "I'll make a five that will fool you fellows yet." And I might add, but not for his benefit, he will have to learn to handle a camera with a great deal more skill than he now possesses before he could fool even a rookie Special Agent.

As a former member of the Air Force, I have a real appreciation for the re-

sults which can be achieved through photo-interpretation. But, as a Secret Service man, I have a vital interest in another kind of photo-interpretation. Because of the nature of this work, it was with some misgivings that I asked Chief Baughman for permission to demonstrate this technique to you. But the Chief is photographically minded and deeply appreciative of the cooperation which this Service receives from organizations such as yours. I reminded him, too, that the principle involved was lifted bodily from your profession and if the author is present, he will recognize the following:

"To become a good interpreter of camouflaged objects or areas, one should gain familiarity with the practices employed by the camoufleur and tell what tell-tale signs to look for."\*

## POLYGONAL PATTERNS AND GROUND CONDITIONS FROM AERIAL PHOTOGRAPHS†

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### INTRODUCTION

**I**N UTILIZATION of land for agriculture, engineering projects, or other purposes, it is often desirable or necessary to determine whether permafrost is present, whether seasonal frost is destructive, and whether detrimental swelling and shrinking will accompany wetting and drying of the surface. Commonly, published reports and evaluation by aerial photographic interpretation techniques can provide the answers to pertinent questions. The microrelief features, particularly polygons, should not be overlooked as an aid in such interpretative techniques. With a knowledge of them in mind, it may be possible to obtain more complete answers, or to obtain the necessary answers more quickly.

### PURPOSES

The purposes of this paper are (a) to provide geographers with a bibliography of recent or comprehensive literature in which polygons are described and in which their significance in interpretation of their physical environment is appraised, and (b) to emphasize the widespread distribution of these features and their complexity. To emphasize their complexity and to interject a word of caution in their use, 1) the physical environments, multiplicity of forms in different environments, and their origins are pointed out, and 2) results of some recent research on ice-wedge polygons in northern Alaska are used to refute some statements occurring in the literature. The ice-wedge polygons are used as an example even though considered less complex than many other types. However, the differences of opinion prevalent in the literature about their origin and significance are typical. As polygons are easily recognized and their physical descriptions are recorded in the literature, only their origin and significance are treated.

### DEFINITIONS

A polygon is defined in Webster's New International Dictionary as: "Geom. A figure, generally plane and closed, having many angles, and hence many sides, esp. one of more than four sides." Such a figure, by definition, should lie between a square and a circle, but should never become either. In nature a wide

\* A movie film followed the reading of this paper—*Ed.*

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