APPLIED POLICE AND FIRE PHOTOGRAPHY

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Second Edition

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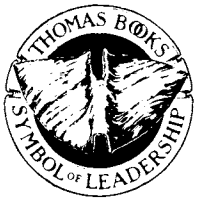

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This book is dedicated to
the many police officers and
firemen who have so diligently
served their fellowman.

FOREWORD TO THE SECOND EDITION

Photography is one of the cornerstones of contemporary police investigation and the technology continues to expand to meet demand. Criminal investigators, forensic scientists, attorneys, and other members of the criminal justice system rely on the accurate representation of specific factors in any investigation. These factors might include the conditions at a crime scene, the analysis and identification of evidence, the observations of a surveillance team, or a simple photo line-up.

Whatever the need, the photographic specialist has an increasing array of technological tools available to record vital information. Today, sophisticated cameras, a variety of film types, computer enhancements, and video techniques are all used in the investigation, reconstruction, and prosecution of criminal acts. The updated information in this revision will benefit everyone involved in this process.

DENNIS A. GARRETT
Chief of Police
Phoenix Police Department
Phoenix, Arizona

FOREWORD TO THE FIRST EDITION

Photography, especially that employed in law enforcement, is very highly diversified in methods, techniques, and the equipment used. Equipment varies from the most simplified and inexpensive to a wide selection of expensive, sophisticated pieces.

The technician is aware of his responsibility to photograph in a true, complete and accurate manner, whether the evidence involves a crime or accident scene, or human remains. A number of persons including the criminalist in the laboratory, the investigator, the prosecuting and defense attorneys and the court will rely on his results.

This text has been prepared to aid the experienced as well as the novice forensic photographer in this endeavor.

JOHN D. DOUTHIT
Identification Officer
Minnesota Department of Public Safety

FOREWORD TO THE FIRST EDITION

Each year there are an enormous number of fires in the United States and throughout the world, resulting in billions of dollars in losses and, more importantly, in an increasing number of injuries and deaths. Most of these fires are of accidental origin, but, in an alarming number, the figures and investigation into the causes show that, in too many cases, the fire was intentional. When this is found to be the case, it is then that the investigator is called upon to determine who set the fire and why, and to continue the investigation to a satisfactory conclusion.

There is no one type of person that commits the crime of arson, and the motives are many. Age is no determining factor, and the reasons or motives are many: hate and revenge, pyromania, fraud for insurance, covering up other crimes, or an arsonist trying to attract attention to himself.

The job of the investigator is not an easy one, and as many have stated, the crime of arson is one of the hardest to prove. For this reason it is necessary that every available tool and agency of science and technology be utilized at some point. Laboratories and photography play an important role in a successful investigation.

Most investigators take photographs at the scene and in many cases someone else may be called in to take photographs in preparation for a court case. In either case, both the photographer and the investigator must have an understanding, not only of photography, but also the reasons for a certain photograph. Nothing can depict the scene as well as a photograph; it is a visual aid for educating a jury. For these reasons it is necessary that the investigator have a knowledge of photography so he will be able to determine what he wants to illustrate and explain later what the photograph does depict. Photographs are permanent records of the scene and are most essential.

Photographs will enable other assisting investigators to better understand the scene as first viewed, many times observing overlooked items

that appear on the photographs. Many times the same faces appear among the spectators, such as that of a pyromaniac who enjoys watching his work. The photographs will also serve well in court to illustrate a number of key points and will be of great aid to attorneys as they prepare the case.

Having known the author for some time, having been involved with him on a number of fire situations, and having further examined the manuscript and illustrations of this book, it is apparent to me that this text will prove invaluable as a learning aid and reference book. It should be of great assistance to the novice and the experienced veteran in the fire and arson field whether he be a fireman or an investigator.

MEL HARDY
Assistant State Fire Marshal
Minnesota Department of Public Safety

INTRODUCTION TO THE SECOND EDITION

This Second Edition of APPLIED POLICE AND FIRE PHOTOGRAPHY represents a major emendation of an excellent book. Some old material has been deleted with the addition of a great deal of new material. Notable changes include a tremendously expanded chapter on surveillance photography with the inclusion of video. A great deal of new material is provided on photographic film. The chapter on flash photography is expanded, as is the section on camera types to include newer features such as automatic exposure control, auto focus, and automatic film advance. The chapter on identification photography, although still brief, was expanded and is exciting. It begins with a brief overview of the history of civil and criminal identification and goes on to illustrate how the basic format of the traditional identification photo, the so-called *mug shot*, has remained the same over the years. That is apparent when comparing a modern identification photograph with the identification photo taken of the infamous Alphonse Capone in 1929. The regrettable weakness of identification photography is well illustrated by the startling difference apparent when examining photos of the same individual taken 22 years apart. Indeed, one does not look like the other. Some chapters have been combined so that unrelated but relevant information can be presented each in light of the other, and the order of some chapters has been changed to improve the sequential flow of information.

INTRODUCTION TO THE FIRST EDITION

When an offense has been committed, the information and evidence sometimes left behind by the perpetrator can be very delicate and perishable in nature. It is essential, therefore, that the scene be quickly secured and thus protected from damage by unauthorized persons. Similarly, it is of utmost importance that the scene and any information and evidence contained therein be photographed as soon as it is possible or practical. It is also important that the photographing take place prior to a detailed examination of the scene.

When photographing a crime, fire or traffic accident scene, it is not essential that the photographic equipment be expensive or of professional quality. For general field applications, almost any moderately priced camera will usually suffice; however, inferior quality equipment will not accomplish the task. What is important, however, is that the person using the equipment *know it well.* The owner's manual that accompanies the purchase of a new camera should be studied until the person is familiar and proficient in its use. It should not be necessary to dwell upon this point, as it stands to reason that any tool, to be used to its greatest advantage, must be used properly.

The individual concerned with forensic photography should understand that the purpose of evidential photographs is to document an act or a condition, or to clarify some specific point in a matter that is under investigation. Therefore, each photograph has a specific purpose. Generally, in order to ensure thoroughness, a scene is photographed in a somewhat systematic manner. Be sure always to utilize the camera to *document* things rather than attempt to create photographs that offer little more than a pleasing artistic quality. Leave the latter to the press photographers, for the forensic photographer must seek evidence, not a creative work of art.

The investigative photographer will also be called upon to photograph under adverse conditions: in attics and basements, burned buildings,

in the rain, snow and cold or at night. All these things, although a bit undesirable on the surface, lend themselves to a general feeling of satisfaction and accomplishment when a day's work has been completed.

On the opposite extreme of field photography are the more specialized photographs which are taken in a laboratory setting. This area of photography ranges from general copy work to some very technical applications involving infrared and ultraviolet materials, photographing minute specimens through a microscope, etc. While these laboratory applications of forensic photography exist under controlled conditions which are generally more desirable than those encountered in the field, they are no more or less important than field photography.

Over a half century ago, Charles C. Scott, in his book, *Photographic Evidence,* made the statement that "Photographic evidence is not treated adequately in law schools; hence, the embryo lawyer rarely is impressed with the importance of photography. The active attorney, however, soon discovers that a knowledge of the principles of photography is necessary for the general practitioner. Indeed, whether he realizes it or not, the modern lawyer would be as handicapped should he be deprived of the use of photographs as evidence as would the physician were he forced to practice without his clinical camera and X-ray apparatus. Photography, therefore, is not merely one of those subjects every lawyer should understand but probably does not; it is an essential medium for the presentation of evidence that all lawyers should master."*

What Scott has stated applies just as strongly to law enforcement and fire personnel, for it is with the evidence compiled by these people, much of it photographic in nature, that the prosecutor will try a case. If the officer or investigator responsible for taking photographs, whether it be at the scene or in the lab, is found to be lacking insofar as photographic knowledge and ability are concerned, it is doubtful that the photographs will serve their intended purpose to the degree they could if taken by someone reasonably knowledgeable in photography. It was stated that an attorney, to be effective, must possess a good understanding of photographic evidence. Police and fire personnel, however, must not only understand photographic evidence, they must be capable of producing it.

This book does not attempt to illustrate how every individual piece of evidence must be photographed, since each case, just as the evidence,

*Scott, Charles C., *Photographic Evidence,* Kansas City, Vernon Law Book Company, 1942, p. v.

will differ. This book will, however, provide the reader with the necessary information to make him or her capable of photographing the various types of evidence. The reader will become aware that there are certain photographic techniques that have proven, over a period of time, to be effective when dealing with certain types of evidence. This is not to infer, however, that the methods discussed here are the only methods which will work well. One should always be open to new ideas and techniques if growth in this field is to be realized.

Finally, this book, which deals with investigative photography, discusses techniques which lend themselves to both field and laboratory applications. The reader is carefully led through the basic principles of photography and gradually into the more advanced applications involving the use of such things as infrared and ultraviolet materials, close-up lenses and a number of special accessories. Whether the reader is an amateur with little or no previous photographic experience, an advanced photographer, a policeman or a fireman, this book was written and is intended to serve as a learning tool and a reference manual.

RAYMOND P. SILJANDER

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R.P.S.
D.D.F.

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R.P.S.

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APPLIED POLICE AND FIRE PHOTOGRAPHY

Chapter 1

CAMERAS AND LENSES

How a Camera Works

Certain basic principles are applicable to *all* cameras, whether they are still or motion picture, a $10 box camera or an expensive professional quality view camera.

To better understand how a present-day camera works, it is helpful to examine the functions of a pin-hole camera. Figure 1-1 shows light rays reflecting off of a subject. Notice that the light rays striking any given point will reflect in many directions. Also note that the light rays striking the film are in confusion and will do nothing more than expose the film without producing any kind of image. If, however, the film was to be placed at the rear of a box with a very small hole in the front of the box, the light reflecting from the subject and traveling to the film could be controlled and an image of the subject would result (see Figure 1-2).

The image formed by a pin-hole camera is always in focus and in no way limited by depth of field. It should not be difficult to understand, however, why the necessary exposure time will be very long since the hole size must be very small for a sharp image to result. If the size of the hole were increased in an effort to shorten the exposure time, the sharpness of the image would decrease remarkably because the light being reflected from any given point on the subject would not strike just one fine point on the film, but a larger portion of the film (see Figure 1-3). The only way the size of the hole can be increased to let in more light and yet maintain the sharpness of the image is to place a lens in the opening to control the light.

If one were to take a common magnifying glass and a piece of white paper, position the magnifying glass between a light bulb and the paper, and then vary the distance between the lens and the paper, at some given point an image of the light bulb would appear on the paper (Figure 1-4). The lens is projecting an image of the light bulb onto the paper. If the lens and the piece of paper were enclosed in a light-tight box and then a

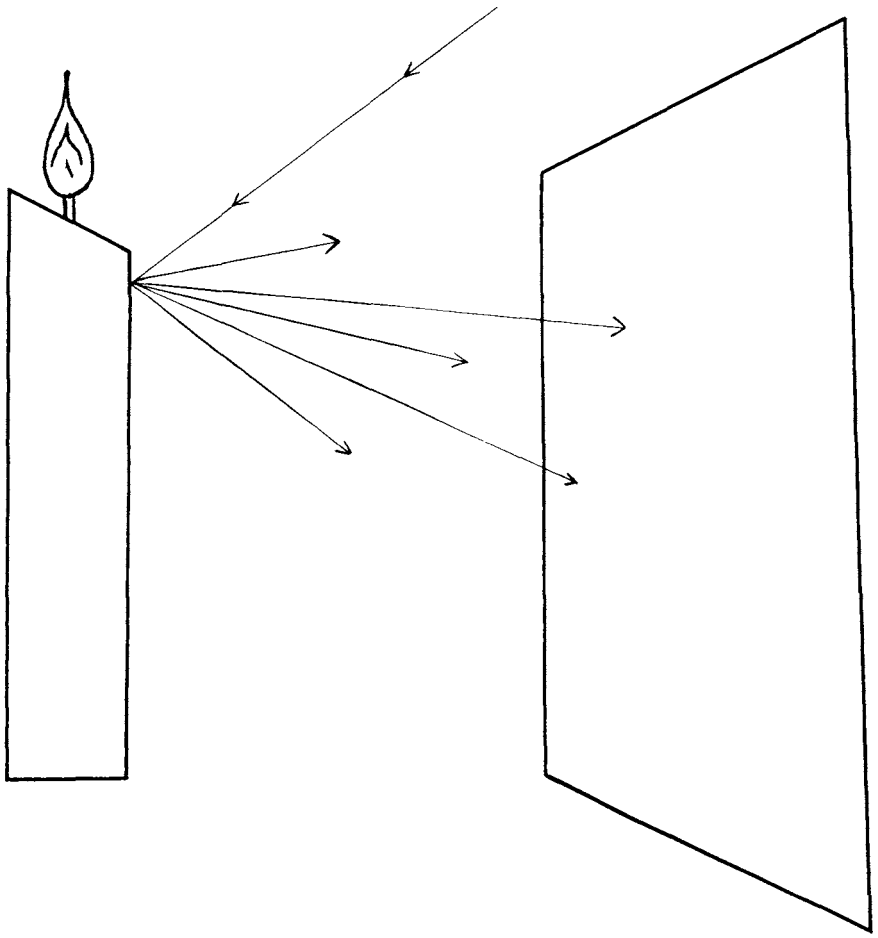

Figure 1-1. Light rays reflecting from any given point upon a subject will reflect in many directions. If no means of controlling the light rays is provided for, they will strike the film in a confusion and do nothing more than fog it without having created any kind of an image of the original subject matter.

piece of photographic film was substituted for the paper, the result would be a simple box camera. The only lack would be a shutter mechanism by which to control the time duration of the light entering the camera.

Based on the above example, observe that a camera is basically a light-tight box which utilizes some means of holding a piece of photographic film in position while a lens projects an image onto the film. The image that is recorded on the film is a latent image, as it is not visible

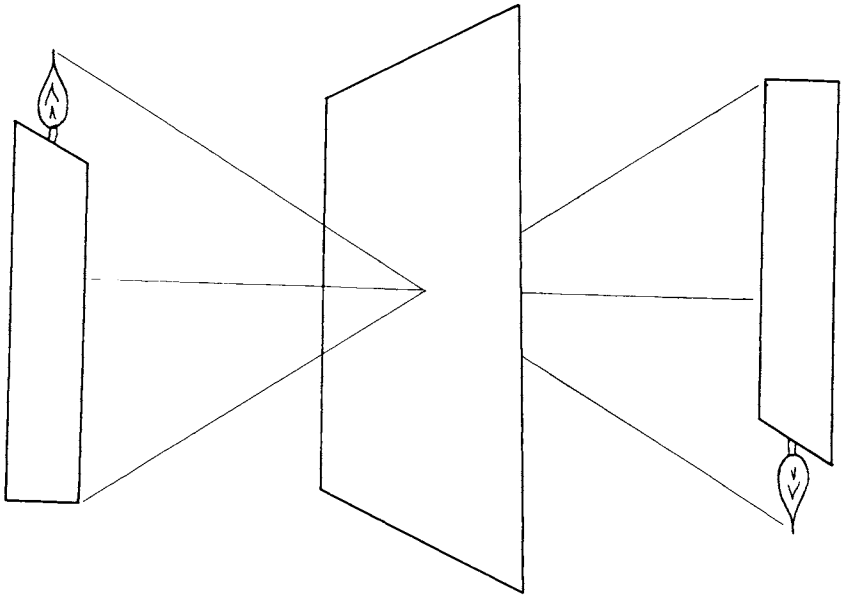

Figure 1-2. If the subject matter and the photographic film are separated by a barrier containing a small hole, the light rays reflecting from the subject will be controlled and produce an image of the subject on the film.

until after it has undergone the necessary chemical process. Again, the only other detail that is necessary in order to make our simple box camera complete is a means of controlling the amount of light that will be permitted to reach and subsequently expose the film in the camera. This is accomplished, as has already been stated, by means of a shutter mechanism. The shutter controls the duration of time that the light is permitted to expose the film, while the size of the lens opening will control how much light may pass during that given period of time.

By further examining Figure 1-4, notice why the image the lens projects is reversed. The image is reversed both left to right and top to bottom. Since this is a phenomenon that always occurs with lenses (Figure 1-5), the image in a camera is always recorded in reverse and upside down. The image, however, is turned around in the printing process so that the final image is the way the original scene was observed and photographed. In short, when an object is photographed, it is reversed in the camera and then righted when the image is projected with a slide projector or an enlarger. The final result is an image that is top side up and correct as far as left and right are concerned.

It has been previously stated that when the film in the camera is

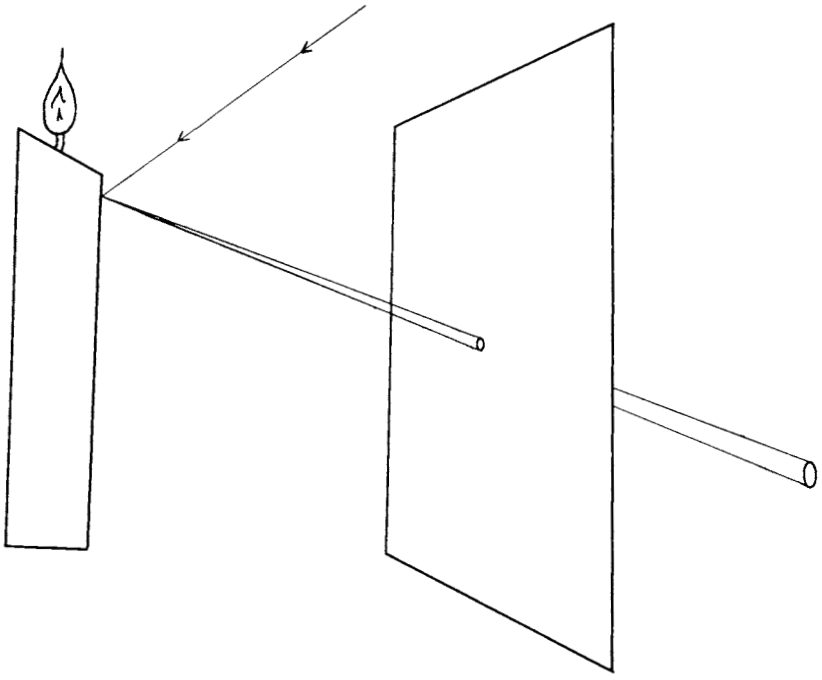

Figure 1-3. If the hole of a pin-hole camera is enlarged to allow a greater passage of light, the sharpness of the resulting image will suffer greatly.

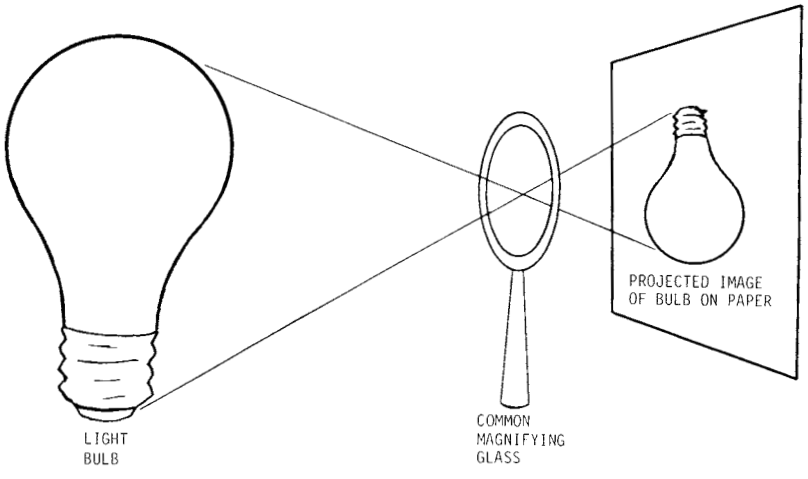

Figure 1-4. If a magnifying glass is positioned between a light bulb and a sheet of white paper, and then moved back and forth to achieve proper focus, a reversed image of the light bulb will appear on the paper.