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Donald Doud

Ordway Hilton

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## THE DOCUMENT EXAMINER AIDS THE ARSON INVESTIGATION

DONALD DOUD AND ORDWAY HILTON

Donald Doud is an Examiner of Questioned Documents with offices in Milwaukee, Wisconsin, and Chicago. He has previously contributed to this Journal and has lectured on questioned document problems on such programs as the Seminar for Arson Investigators at Purdue University and the Short Course for Prosecuting Attorneys at Northwestern University Law School. Mr. Doud is a member of the American Society of Questioned Document Examiners and of the American Academy of Forensic Sciences.

Ordway Hilton is an Examiner of Questioned Documents in New York City and has served for a number of years as Police Science Editor of this Journal. He has published a number of articles in this and other professional journals; has served as a lecturer on questioned document problems at Northwestern University Law School, the Southern Police Institute, University of Louisville, and other university programs; is Secretary of the American Society of Questioned Document Examiners; and is Chairman of the Questioned Document Section of the American Academy of Forensic Sciences.—  
MANAGING EDITOR.

Many people think of the arsonist as a pyromaniac who, moving stealthily through the night, applies his torch for the thrill of seeing a building in flames. True, some arson fires are of such origin, but much more often the motivation is monetary gain and personal hatred. These acts are committed by the so-called "normal person." He may even own the business or the building or be a trusted employee.

Regardless of the motive for setting an arson fire the act is seldom observed by eye witnesses. Physical evidence at the fire scene and also in any way related to the fire must be carefully analysed and evaluated. The origin and cause of the fire can be discovered, and what is often much more important the motive may become apparent. If there is no act of arson, the natural cause, such as defective wiring, careless smoking, and the like, is to be ascertained, and innocent people freed from suspicion.

Documents are a significant source of evidence in cases of suspected arson—either as direct accessories to the crime or as secondary evidence in showing personal motives for the fire setting. Documents may also serve to vindicate the innocent when the fire is of natural origin and to provide information for management, insurance companies, or banks as to the assets or business affairs of those who suffer fire losses. It is in this sphere that the questioned document examiner with his specialized training and scientific instruments is of inestimable aid to the arson investigator.

Accounting or inventory records are frequently altered and falsified to increase insurance liability; letters or hotel and building registers in the suspect's handwriting may help to break down his alibi; the fire itself and methods used to extinguish it leads to another class of problems including the decipherment of burnt and water-soaked documents. This paper will deal with some of these typical applications of questioned document examination to the problems of arson investigation.

### AIDS IN GENERAL INVESTIGATION

In the course of an investigation of a suspicious fire, a professional arsonist was believed to have registered under an alias at a Miami Beach Hotel. The hotel records showed a phone call from his room to the owner of the property which a day or so

later was burnt. Investigators submitted the hotel registration card for technical examination together with various writings of this suspect—handwritten records made while serving time in a state penitentiary under an arson conviction. A study of these writings established that this individual had been registered on the date in question in the particular hotel room.

This case is not an isolated one. An arson investigation, like so many other phases of criminal investigation, often turns up handwriting, the source of which is unknown or in question, or the authenticity of which may be challenged. In such instances the document examiner can compare this questioned writing with that of various suspects to determine who wrote it. Handlettering is identified in a similar manner. It is not uncommon in criminal cases for a person to falsely deny his signature, or on the other hand, for the signature to be forged. With these problems it is only necessary for the investigator to gather a sufficient quantity of handwriting or signatures by the suspects and to submit these for examination and comparison with the questioned writings. The facts thus developed are definite and extremely convincing and have the advantage of not only serving during the investigation, but of forming a dramatic presentation in the courtroom.

With the extensive use of the typewriter today, typewritten documents are certain to be encountered in some arson investigations. It may be very important to know whether a paper was prepared in the office or home of a suspected arsonist or at some other place of business. Comparison with known typewriting from machines which belong to the suspect or which are found at other locations can establish the source of the questioned typewriting.

#### DETECTION OF FRAUD

Insurance frauds are the motive for some arson fires. In these cases the claims are often badly padded, and altered bills, receipts, or inventories are brought forward to substantiate these exaggerated losses. The altered documents may be typewritten, as in one case in which several bills were produced, containing significant additions. Here entries involving a substantial portion of the bill had been typewritten at a different time than the name and address and the balance of the items. These substitutions were disclosed by a study of the alignment of the various lines of typewriting. The added line was not parallel to the others. Likewise, with handwritten documents slight differences in pen or ink can disclose additions and substitutions. By these and other criteria many interlineations are disclosed.

The occasional claimant prepares an entire inventory especially to substantiate claims. These records are usually of a type that normally would be kept over a long period of time with various entries being made periodically. It is very difficult to duplicate the quality of such a document, and, furthermore, most arsonists do not know that this kind of fraud can be detected. Microscopic and other study of the document may reveal the true facts which gives an alert investigator a great advantage over his suspect.

#### WATER SOAKED DOCUMENTS

Documents involved in fires frequently are more seriously damaged by the water and chemicals used to extinguish the fire than by actual burning, and they present a challenging problem to the document examiner.

It is difficult to generalize regarding the possibility of successful decipherment and restoration, since so much depends upon the extent of damage and on the writing material originally used. For example, pencil written and typewritten documents, in which a record or permanent typewriting ink was used, are not apt to suffer very seriously from water damage. This is also true of better grades of ball point pen inks. Only when the paper itself is destroyed or badly deteriorated will such documents become illegible.

At the other extreme are the washable inks made of synthetic dyes. They include some blacks, reds, and blues and most purples, greens, and browns. Since the washable inks contain no mineral salts, such as iron, they are easily and almost completely removed from the paper after only a brief submersion.

Permanent inks and especially blue-black ink, which contains iron-tannates or -gallates in addition to coloring matter, when fully oxidized resist water damage.

Here we are, however, at the fire scene. Records had been kept, but they are a soaked mess of almost illegible papers. Can they be deciphered? Well, yes and no. Success cannot be assured, but many times the legibility can be improved and upon occasion the writing can actually be restored.

Methods vary, depending upon which class of ink had been used. A rule of thumb might be that the easier the ink comes off the paper the harder it is to put it back. That is, washable ink is harder to decipher than permanent inks. Generally, it is not actually put back except for the chemical restoration of iron base inks (blue-black). But photographs, ultraviolet examination, and very careful study under controlled lighting may lead to decipherment. This is tedious work but far from hopeless.

#### BURNT DOCUMENTS

It is not difficult to see why the decipherment of charred documents often plays an important role in arson investigations. Burnt business records may indicate motives for the crime, diaries or correspondence may reveal clues as to possible suspects, and the arsonist himself is prone to leave tell-tale clues behind leading to his apprehension. Witness, for example, the story of the debt-ridden Detroit executive who carefully planned an "accidental" fire in his small manufacturing plant in order to collect on insurance. Unfortunately for him, he touched off the fire by lighting an intimate bit of correspondence from his latest femme fatale. Destruction of the property was not as complete as planned, and, when the focal point of the fire was discovered by arson investigators, there lay the incriminating letter. The decipherment of this "hot document" sent our executive to prison and his wife to Reno.

Surprisingly enough, charred documents are often more easily deciphered than badly watersoaked documents, especially where synthetic dye inks are concerned. Details of the various decipherment methods in common use today are found in an earlier article titled, "Charred Documents, Their Handling and Decipherment."<sup>1</sup> Generally speaking, however, two principal methods of decipherment are available to the document examiner: (1) visual—those procedures which are carried on through visual observations and recording of the examination results—and (2) photographic

<sup>1</sup> DONALD DOUD, Charred Documents, Their Handling and Decipherment, this Journal, vol. 43, no. 6, pp. 812-26 (March-April, 1953).

—those methods such as infrared photography and contact photography which result in a photographic reproduction of the decipherment.

In a Chetec, Wisconsin, case John F. Tyrrell of Milwaukee was able to decipher over 85% of the contents of a burnt strong box using both visual and photographic methods—an almost unbelievable feat in view of the twisted, blackened state of the bonds, certificates, and other valuables in the box.<sup>2</sup> Most of the remaining documents were so badly broken as to preclude successful decipherment.

No rule of thumb is applicable to all charred document problems nor do all types of writing or paper respond the same way to treatment. In the writers' experience certain dense inks such as iron-gall, typewriting, and printing inks remain most visible after burning, while others tend to oxidize more completely. Heavy rag-content paper generally hold together and resist warping more than wood pulp papers. Newspapers frequently burn to the thinness and frailty of tissue paper.

The arson investigator bears great responsibility in cases involving charred paper since he is often called upon to remove the evidence from the scene of the fire. Certain common sense precautions, however, will prevent undue breakage of the fragments and enable the investigator to transport them safely to the document examiner's laboratory.

The most desirable and safe procedure is to transport intact the charred documents and container in which they are enclosed. When this is not possible, the documents can be removed carefully from the container by means of a thin sheet of metal slipped underneath and gently lifted and withdrawn. Bundles of documents should first be taken from the top of the pile. In cases of single documents found near the scene of the fire, or elsewhere, a thin piece of paper can be slipped underneath the fragment, and both immediately placed in a closed container. Burnt documents are almost completely dehydrated and take very little motion of air to break apart. In transporting for any distance, cotton wool or other protective material should be packed lightly around the fragments. A wise motto to follow in all cases involving burnt documents is: "Observe Carefully—Preserve Carefully."

#### CONCLUSION

With modern life so dependent upon written records it is little wonder that the document examiner is a decided aid to the arson investigator. Persons who commit arson for their own personal gains are not above manipulating documents if they feel that it will be to their interest. Every investigator knows that the criminal makes mistakes, and some of these in the case of arson may be the mistake of leaving behind some document which links him to the crime scene. Even the attempt to destroy papers by assuring that they are near the center of the fire or where they will suffer the most from water damage may not be successful if the remains are carefully preserved and subjected to expert study. The successful arson investigation is closed by accumulating and interrelating bits of circumstantial and physical evidence. Documents properly interpreted can assist in reaching this successful conclusion.

<sup>2</sup> JOHN F. TYRRELL, *The Decipherment of Charred Documents*, this Journal, vol. 30, no. 2, pp. 236-42 (July-August, 1939).