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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Problems of Carbon Monoxide In Fires—Abel M. Dominguez, *Journal of Forensic Sciences*, 7 (4): 379-93 (Oct., 1962). Although the physiologic alterations produced by carbon monoxide have been of interest to investigators for many years, carbon monoxide continues to be one of the important considerations to those individuals associated with the American Academy of Forensic Sciences and similar groups. In this presentation, the emphasis has been upon the physiologic responses to carbon monoxide produced in conflagrations. The effects produced on an individual exposed to fire, collection of suitable material for laboratory examination, problems associated with the interpretation of the resultant laboratory data, and circumstances which do or might affect the character of the analytical findings have been discussed. In cases with relatively low levels of carbon monoxide, the laboratory studies must be complemented by a thorough autopsy in which particular attention is directed to air passages. Related, additional data are presented which are based upon the results of carbon monoxide studies at the Armed Forces Institute of Pathology. (WEK)

Suicide by Fire—Joseph H. Davis, *Journal of Forensic Sciences*, 7 (4): 393-397 (Oct., 1962). Five cases of suicide by fire, a method relatively infrequent in the United States, have been presented. In death involving fire, the psychiatric background of the victim should be carefully

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evaluated as part of the arson investigation. (WEK)

Legal Commentaries on Suicide by Fire—Robert J. Joling, *Journal of Forensic Sciences*, 7 (4): 397-403 (Oct., 1962).

1. One case of homicide has been presented.
2. One case of suicide resulting from industrial accident is reported.
3. One case of unquestionable suicide is presented.
4. One case of suicide of a questionable nature has been shown involving a transvestite.
5. One case of suicide with fetish overtones has been given.
6. In death involving fire, the Pathologist, the Criminalist, the Toxicologist, the Psychiatrist, the Document Examiner, the Immunologist, and the Lawyer all play an important role. None can be overlooked. Each discipline must play a part in the careful investigation of death by fire. (WEK)

Psychiatric Profile of the Firesetter—Louis H. Gold, *Journal of Forensic Sciences*, 7 (4): 404-17 (Oct., 1962). A person who sets a fire is committing an abnormal act, but this does not necessarily mean that he is not responsible. The roots of such perverse and aberrant behavior are deep within the personality and have some relationship to sexual disturbance and urinary malfunction. Other features are aggressive and destructive impulses as a reaction to twisted and bizarre psychologic conflicts, impulses which upon release bring some kind of symbolic realization and strange gratification to the perpetrator. It is also suggested that future research be directed toward possible unusual connections between the physical elements of fire and smoke and the sensory apparatus. Advances in neurobiochemistry and

in neurophysiology may one day reveal more intimately the effect of dancing flames and pungent air on the retina and nasal passages of an individual who likes fires pathologically.

The motives for firesetting vary from those designed to achieve money or to destroy incriminating evidence, even one's self . . . to an aggregate of hidden reasons which are most difficult to deliver and may even remain concealed from the culprit himself. Various students of the problem have observed certain recurrent findings which collectively have to do with the need for vengeance, magical power, primitive and archaic rite, intense and explosive excitement which released anxiety-ridden circuits abnormally and overflows into sexual channels which also open up. This peculiar method of dealing with tension is utilized more frequently by younger persons, and it has a quality all its own in that the potential for great destruction is enormous; its chief weapon is the matchstick, and there are no fingerprints or easily accessible pieces of evidence. In the ranks of such disturbed people may be found mental defectives, neurotic and psychotic personalities, psychopaths of various grades and all kinds of criminal types . . . including mixtures of these. Firesetting itself is not a disease but rather a complex symptom of inner disturbance. (WEK)

Arson and Fire Investigation: The Function of the Criminalist—David Q. Burd, *Journal of Forensic Sciences*, 7 (4): 417-30 (Oct., 1962). The scientific examination of arson cases frequently renders valuable information in both establishing that a crime has been committed and in connecting specific individuals with the criminal offense. The work of the criminalist in this type of case is closely related to that undertaken in connection with many other crimes, although problems may be encountered due to alteration or loss of evidence in the fire. If suitable care is taken in the search for evidence at the fire scene the laboratory is nevertheless frequently able to develop important information. This is primarily due to great progress in scientific instrumentation in recent years, although all standard and routine criminalistic work may be involved in the investigation of such cases. (WEK)

Trauma to the Spine and Spinal Cord and Its Medicolegal Significance—Cyril B. Courville, *Journal of Forensic Sciences*, 7 (4): 431-48 (Oct.,

1962). The most severe injuries of the spinal cord result from grossly evident fracture-dislocations of the spine, which occur most often in the lower cervical and lower dorsal segments of the spinal column. Most fracture-dislocations in the cervical region are the result of a fall on the flexed neck, while in the lower thoracic region they usually result from the impact of a heavy weight on the shoulders, transverse injury to the spine by a fall, or compression in an automobile accident. These lesions are associated with crushing of the cord, usually with complete transection resulting in permanent paraplegia. Penetrating injuries of the spine, with an acute onset of symptoms localized at the level of injury, may be due to stab or gunshot wounds. In such instances, the obvious relationship between the injury of the cord and the traumatic episode leaves little reason for doubting their etiology.

In minor injuries without symptoms or clean-cut neurological manifestations, any connection between the traumatic episode and the disease of the patient is most doubtful. When a subsequent, latent syndrome develops and simulates a known medical complex, such as that produced by posterolateral sclerosis, amyotrophic lateral sclerosis, tabes dorsalis, or delayed sensory dissociation (question of syringomyelia), it must be considered as a purely medical problem, not as a consequence of injury. When such complexes are encountered clinically, grave doubts of any traumatic etiology should be entertained.

Flexion-extension (whiplash) injuries of the cervical spine almost never produce cord damage, although occasionally they may injure the local nerve roots or cause herniation of the nucleus pulposus in this region.

A twisting-flexion injury of the lower back may produce an extrusion of a herniated disk, which is usually demonstrated by electromyography or opaque myelography as a typical localized and usually lateralized root compression syndrome. Since this is not ordinarily a fatal injury, the resultant lesion is not likely to be uncovered in a medicolegal examination.

Two rather characteristic clinical syndromes from traumatic injuries of the cord merit brief mention. A penetrating injury, particularly a stab wound, tends to produce signs of an atypical or typical hemisection of the cord (Brown-Sequard's syndrome). Dissociation of pain and temperature from tactical sensation, without associated para-

plegia may also follow a blunt injury to the back of the neck because of a hematomyelia of the cord, although such a lesion can be simulated by a spontaneous (nontraumatic) rupture of a vascular anomaly.

Trauma may accentuate certain medical diseases, such as tabes dorsalis, amyotrophic lateral sclerosis, multiple sclerosis, and tuberculous meningitis from Pott's disease. In these cases, the cause and effect relationship must be clearly established before one is entitled to attribute the cord changes to trauma. (WEK)

Application of Radio-Activation Analysis in Forensic Investigations—A. K. Perkins, and R. E. Jervis, *Journal of Forensic Sciences*, 7 (4): 449-64 (Oct., 1962). These investigations indicate that hair from any one individual has a unique microcomposition "pattern", compared with other individuals. This pattern does not change to any significant extent, neither depending on the exact location of origin on the scalp, nor on time change over a few months or a year. Even for longer time periods enough points of similarity can be found to make a positive identification likely. The practical significance of these conclusions for forensic applications cannot be over estimated. Positive identification of any individual by his hair is feasible without having to worry about the exact location from which the hair was taken, or how close to the root it was cut or torn.

A survey of thousands of hair samples is necessary to estimate the statistical probability of finding two individuals with the same microcomposition of hair, within limits of error. However, the present preliminary results indicate that, since there are at least 10 different components, and thus over 10 points of difference each covering a comparatively wide range, the probability is exceedingly small indeed. (WEK)

A Study of Hydrolysis of Heroin by Paper Chromatography—George R. Nakamura, *Journal of Forensic Sciences*, 7 (4): 465-73 (Oct., 1962). Illicit heroin samples were hydrolysed in 0.5 M Na₂CO₃ at room temperature for one to 180 minutes, and the resulting hydrolysates were examined by paper chromatography. Four different constituents were identified to be diacetylmorphine, 6-monoacetylmorphine, codeine, and morphine. When pure heroin was examined by the same procedure, the same compounds except for

codeine was found. Evidence was presented to indicate that acetylcodeine was present in the illicit heroin samples and that it was probably the source for codeine in the presence of morphine in urinary extracts.

Prepared chromatograms of pure heroin hydrolysate showed that 6-monoacetylmorphine appeared within 5 minutes and was completely hydrolysed within two hours; morphine, in an amount apparently smaller than that of 6-monoacetylmorphine, was liberated within ten minutes. Complete hydrolysis of heroin was effected, then, in two hours. (WEK)

Prediction of Stature From Radiographs of Long Bones in Children—Antti Telkka, Arto Palkama, and Pekka Vertama, *Journal of Forensic Sciences*, 7 (4): 474-9 (Oct., 1962). A method for the estimation of stature from radiographs of long limb bones in children aged under fifteen years is presented. The material consisted of radiographs of 3848 pairs of long limb bones. The maximum length of the diaphysis was measured, and the results were expressed as regression formulae for three age groups. Boys and girls were treated separately. (WEK)

The Zymogram Method as a Tool for the Characterization of Unknown Blood After It Has Dried—Armando R. Samico, Helio B. Coutinho, Jacia T. Rocha, and Robert L. Hunter, *Journal of Forensic Sciences*, 7 (4): 480-5 (Oct., 1962). Dried blood from 12 species has been extracted with water, and the resulting protein solution has been used as the starting material for the preparation of esterase zymograms. The results indicate that remarkably different patterns are obtained and that the principle herein demonstrated is useful in characterizing and identifying unknown blood samples. It has also been shown that the technique is useful on dried human blood 310 days after the sample was obtained. (WEK)

The Coronary Aneurysm—J. F. Burton and E. S. Zawadzki, *Journal of Forensic Sciences*, 7 (4): 486-91 (Oct., 1962).

1. Dissecting aneurysms occurring in blood vessels other than the aorta have been discussed, with special emphasis on the coronary artery.
2. Reports of the frequency of this lesion in young

healthy adults, especially women in the post partum state, have been reviewed.

3. The common known etiologies do not suffice to account for a sizeable number of these lesions. The factors concerned in the development of dissecting aneurysms in this particular age group of the population still remain obscure.
4. It is the opinion of the authors that this case, in addition to a few similar but unpublished cases in the medical examiner's experience, may serve to point out the existence of this lesion as a cause of sudden and unexpected death in the post partum state. (WEK)

Test Bullet Recovery—W. W. Sutherland and V. Krcma, *Journal of Forensic Sciences*, 7 (4): 493-8 (Oct., 1962). This paper is a discussion of test bullet recovery methods and equipment which the forensic firearms examiner can depend on as reliable and efficient in securing the required fired standards.

Bullet recovery methods discussed are water recovery and waste recovery (cotton, oiled sawdust). No mention made of the polyurethane foam as used by the Winchester-Western Division, Olin Mathieson Chemical Corporation. (WEK)

On a Rapid Method of Spectrum Analysis—S. N. Garg and Shariq Alavi, *Journal of Forensic Sciences*, 7 (4): 504-6 (Oct., 1962). By projecting a marked "master plate" of R. U. powder spectrum together with the specimen plate, with their films in contact with each other, the need for reference to separate R. U. charts is avoided, and the process of analysis is speeded up considerably. (WEK)

Homicide by Electrocutation—Frederick P. Bornstein, *Journal of Forensic Sciences*, 7 (4): 516-19 (Oct., 1962). A case is reported in which a 22-month-old child was deliberately killed by electrocution by ordinary domestic electric current. (WEK)

Double Exclusion of Paternity by the A-B-O and M-N Systems—Giacomo Canepa, *Journal of Forensic Sciences*, 7 (4): 520-4 (Oct., 1962). The author describes an unusual case which he investigated under a court order, in which it was possible to establish beyond doubt the exclusion of paternity, on the basis of the results obtained

from blood group studies using the A-B-O and M-N systems. (WEK)

Determination and Distribution of Doriden—L. R. Goldbaum, M. Williams, and E. H. Johnston, *Journal of Forensic Sciences*, 7 (4): 499-503 (Oct., 1962). A method for the determination of Doriden in tissues has been described. The method can reveal the amount of Doriden in 0.5 mg./100 Gm of tissue. Distribution studies in two cases of fatal human poisoning and an experimental study in a dog show that the Doriden concentrations in some tissues are much higher than those in the plasma. Fat appears to be the best tissue sample for determination of Doriden for the toxicologic analysis of suspected Doriden ingestion. (WEK)

Pretrial Conference Between Expert and Attorney—George J. Lacy, *Journal of Forensic Sciences*, 7 (4): 507-15 (Oct., 1962). The pretrial conference between the document examiner and his attorney is for the purpose of acquainting the attorney with the examiner's method of presentation of his testimony, and in general the matters about which he intends to testify. It is much better for the examiner to know what questions the attorney will ask him, and for the attorney to know what the answers to his questions will be.

He should furnish the attorney with a list of specific qualifying questions, and the complete answers thereto. These questions should be so worded that the lawyer inquires about only one of the examiner's qualifications at a time, and the examiner's answer should give only his qualifications on that particular question. The examiner should never volunteer his qualifications.

During the pretrial conference it is also well for the examiner to give his attorney a list of pre-planned direct examination questions together with the answers thereto. This series of proper direct examination questions tends to expedite the testimony of the expert witness and often prevents unnecessary objections by the opposing attorney.

One of the most important matters which should be discussed during the pretrial conference is the introduction of the photographic exhibits. Proper "timing" is a prime factor.

A competent and experienced document examiner naturally anticipates probable cross-examination questions, and in the rare cases where

the opposing attorney says "No questions" he feels at least let down—if not insulted. Some of the matters which could arise and which should be discussed are: the cross-examiner who asks a question that requires the stating of an opinion by the witness, and then will not allow him to give the *reasons* for that opinion; or the insistence of the cross-examiner on a "yes" or "no" answer, where either answer can be used to his advantage; or the habit of a cross-examiner to interrupt the witness by asking another question, when he sees that the answer he is getting is not the answer he desired.

If the examiner's testimony is to include evidence such as typeface design, or matters involving the manufacture of ink, paper, printed forms, watermarks and the like, plans should be made to present auxiliary evidence on these subjects. When it is necessary to establish by whom the typeface, ink, or paper, or printed forms or watermarks were made, or dating information pertaining thereto, it is advisable to have auxiliary testimony by someone employed by the manufacturer. He will be in a position to testify from his own knowledge as to the records of the manufacturer.

The truly professional document examiner is always a non-partisan witness. He appears at a trial only to explain to the court and jury the facts as he sees them regarding a subject in which he has more than the average knowledge and experience. When he has completed this duty, he should exhibit no further interest in the case.

The author concludes by quoting Albert S. Osborn: ". . . it often takes the best-combined efforts of a capable attorney and a skilled and experienced specialist to discover and expose in court ingenious and presumptuous fraud . . ." (WEK)

A Convenient Apparatus for Vertical Gel Electrophoresis—Samuel Raymond *Clinical Chemistry*, 8 (5): 455-470 (October, 1962). The article describes (with a number of figures) an apparatus incorporating gel mold, electrode chambers, and direct contact cooling plates. Even though the use and results presented are of hemoglobins and serum proteins the possibilities are that use of the apparatus can be adapted to forensic and criminalistics laboratories. (JDC)

New Series of Monographs on Criminalistics.

The publisher of the *Archiv fuer Kriminologie*, Max Schmidt-Roemhild, Luebeck, Germany, recently announced a series of monographs on criminalistic subjects. The first of these is entitled *Hemoglobin and its Principal Derivatives* (Der Rote Blutfarbstoff und seine wichtigsten Derivate) by Dr. med. Wolfgang Schwerd. Future titles include *The Diagnosis of Asphyxia by Morphological and Chemical Methods*, *Fundamentals of Handwriting Comparison*, and *Comparative Analysis of Microscopic Evidence—its Criminalistic Significance*. The titles announced are all in the German language. (JB)

New Method for Preserving Toolmarks—H. Gansau and K. Roschek, *Archiv fuer Kriminologie*, 129 (5-6): 123-135 (May-June 1962). A new method is proposed for the preservation of toolmarks by means of reproduction in metal. Pre-cut discs of soft lead are used in conjunction with a simple striker consisting of a spring-loaded plunger inside a barrel. The lead disc is placed on the toolmark and the plunger is released, allowing the hammer to compress the lead into the mark. The replicas thus obtained are said to be superior to other methods in that they can easily be made by any personnel investigating crime scenes, can be easily stored, are dimensionally stable and can be made in several duplicates. Moreover, the comparison process is simplified since the lead replicas, made by compression, do not exhibit the troublesome specular reflections of sliding toolmarks on metal (original as well as comparison marks). This technique is of course designed for marks in metal harder than lead and for marks of not too great depth and area. (JB)

Identification of Freak Bullets—K. Lamprecht, *Archiv fuer Kriminologie*, 129 (5-6): 136-143 (May-June 1962). A discussion of the special problems connected with the identification of bullets fired from weapons with a damaged bore. The effect of a bulge on the shape of the projectiles is illustrated from actual cases. Potential sources of error in interpreting class or individual characteristics are also discussed. (JB)

A New Alarm System for the Fire Brigade and Police—F. Trachsel Jun., *International Criminal Police Review*, No. 158: 145-8 (May 1962). The article describes a means of preparing perforated plates with different groupings of persons to be

called which can be inserted into a telephone system so that members of the fire and police department can be simultaneously contacted at their homes in the case of emergency. (OH)

The Criminal Police Training Museum—Rene Lechat, *International Criminal Police Review*, No. 158: 154-64 (May 1962). The article describes the police training museum which is used by the Belgium Police. Illustrations show a number of typical exhibits. (OH)

The Case of Teeth Marked Bottle Tops—Det. Sgt. Lamb, *International Criminal Police Review*, No. 157: 129-31 (April 1962). The article describes the successful solution of a murder through the investigation of teeth marks on the bottle tops. (OH)

Traced Forgeries and Infrared Photography—Ordway Hilton, *International Criminal Police Review*, No. 159: 195-7 (June-July 1962). The article describes the use of infrared photography in penetrating the ink line of traced forgeries and revealing the hidden carbon outline or skeleton. (OH)

X-rays and Police Science—A. Neiss, *International Criminal Police Review*, No. 160: 202-5 (August-September 1962). The author describes the use of x-rays in connection with post mortem examinations for identification purposes. Two methods are described, that attributed to Singleton in which previous x-rays of suspected disaster victims are obtained and compared with post mortem x-rays, and that of the author in which x-rays are made and then compared with medical histories of suspect disaster victims. The use of x-rays of soft tissue to disclose foreign objects in murder victims and plane crashes is described. (OH)

Photographic Separation of Colored Imprints by Masking Techniques—J. W. Gosling, *Identification News*, 4-10, (May 1962). The author describes methods of combining photographic negatives made with different types of filters in order to eliminate portions of a document where there are overwritings or stamp impressions which need to be eliminated. The article is illustrated with several different types of problems, and the techniques involved and illustrated include photography through red, green, and blue photographic filters,

infrared and ultraviolet negatives, and infrared luminescence negatives. (OH)

How to Measure With a Camera—W. G. Hyzer, *Photo Methods for Industry*, 6 (1): 34-7, 48 (Jan., 1963). Author presents system by which an ordinary camera can be used to estimate object dimensions in a scene. (JDN)

Zip Guns—Leslie L. Smith, *Police*, 7 (3): 10-2 (Jan.-Feb., 1963). A discussion of the various zip guns commonly encountered in a firearms laboratory. These include City, Rural, Custom Conversion, Altered Blank, Pipe and Altered Factory types. (JDN)

The Role of Alcoholism in Motor Vehicle Accidents—Wolfgang Schmidt, R. G. Smart, and R. E. Popham, *Traffic Safety*, 61 (6): 21-7 (Dec., 1962). Suggests that the problem of alcohol and traffic accidents is a problem of alcoholics and not casual social drinkers. Alcoholics contribute a "high risk group". (JDN)

Abortion—W. K. Quennell, *R C M P Gazette*, 24 (12): 3-7 (Dec., 1962). A general discussion with suggested procedure for investigation of suspected abortions. (JDN)

Camera Identifies Human Skull—George Webster, *Finger Print and Identification Magazine*, 44 (6): 3-7 (Dec., 1962). An identification was made by superimposition of photographs of a skull on available photographs of the suspected deceased. Angle and magnification of skull photographs must be carefully chosen for maximum registry. (JDN)

Camden Police Mobile Crime Unit—M. J. Ferrari, *Police*, 7 (2): 72-3 (Nov.-Dec., 1962). The Camden, N. J., Police Mobile Crime Unit is described. This unit is designed around a 1961 Corvair Chevrolet and contains essential tools and containers for crime scene work and preservation of evidence. (JDN)

Atmosphere in the Interrogation Room—A. P. Bristow, *Police*, 7 (2): 59-61 (Nov.-Dec., 1962). A discussion of the effect of color and ion charge on attitude of individuals under interrogation. The ideas presented remain to be tested. (JDN)

Firearms Identification—W. J. Howe, *The*

American Rifleman, 111 (1): 42-5 (Jan., 1963). An interview with Dr. J. H. Mathews on the present state of firearms identification. (JDN)

Rifle Caliber Explosive Cartridges—Charles H. Yust, Jr., *The American Rifleman*, 111 (1): 22-4 (Jan., 1963). An illustrated discussion of explosive rifle cartridges available during World War I. (JDN)

Some Legal Aspects of Arson—Joseph A. Sullivan, *Police*, 7 (1): 32-6 (Sept.-Oct., 1962). A discussion of the basic legal needs in developing a case of arson. These include Corpus Delicti, repeat fires (similar acts), circumstantial evidence. The bulk of the article deals with the "similar acts" rule. Although this legal device is difficult to use, no effort should be spared in determining previous fires involving the suspect. (JDN)

Personnel Management Practices at the Area Level in the Department of the California Highway Patrol—R. O. Hankey, *Police*, 7 (1): 27-31 (Sept.-Oct., 1962). Second article in series dealing with personnel problems; performance rating, promotions, human relations, morale and discipline, and obstacles to a comprehensive program. Much of the material reports area commanders' views on particular problems. The author places responsibility for guidance to lower echelon on top management. Furthermore, incentives through good promotional procedures and compensation are essential. (JDN)

Training Police Through Motion Picture Films—A. Z. Gammage, *Police*, 7 (1): 23-26 (Sept.-Oct., 1962). Since training films are so frequently used in police instruction, all Training Officers will welcome this discussion of the subject of advantages, cautions, source of supply, selection and presentation of training material by motion picture films. (JDN)

Coded TV—A New PD Weapon—Ira Kamen,

Police, 7 (1): 17-20 (Sept.-Oct., 1962). A new concept in line-up identification in the form of scrambled TV broadcasts of suspects, will enable New York City Police Department detectives in every Borough to witness the show-up of suspects. The transmissions will be scrambled so that special encoders and decoders will be necessary. No home TV will be able to receive and unscramble the broadcast. (JDN)

Hypnotism and Crime—Simeon Edmunds, *Police*, 7 (1): 11-16 (Sept.-Oct., 1962). The author states that crimes can be committed by hypnotic suggestion and cites several experiments and cases to prove this hypothesis. (JDN)

Explosives and the Police Officer—J. F. Stoffel, *Police*, 7 (1): 6-10 (Sept.-Oct., 1962). A general survey of the police problem relating to handling explosives and accidents, fires involving potential explosives. (JDN)

Edgeoscopy—S. K. Chatterjee, *Fingerprint and Identification Magazine*, 44 (3): 3-7, 11-13 (Sept., 1962). As an extension of identification possibilities in instances of partial impressions, the author describes the individuality of ridge edges. These, like pores in poroscopy, persist through life and are characteristic of an individual. Shapes of edges may be convex, peaked, table, pocket, concave, angle, and straight. This further extension should be a welcome addition. (JDN)

Polygraphic Tests for City Employees—G. J. Washnis, *Public Personnel Review*, —: 192-8 (July, 1962). A discussion of pre-employment testing of police, fire, and other municipal personnel. (JDN)

Grip Marks on American Handguns—H. C. Logan, *The American Rifleman*, 110 (10): 55-6 (Oct., 1962). An illustrated catalog of decorations on handgrips between 1870 and the present day. (JDN)