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Police Science Technical Abstracts and Notes

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Photography and the Police—Jacques Mathyer, *International Criminal Police Review*, (255): 39-53 (February 1972). Part 1 of a two-part article begins a discussion of photography in all areas of law enforcement. The author presents a comprehensive survey of the many applications of photography in the police, legal, and criminalistic professions. (GDM)

Photography and the Police—Jacques Mathyer, *International Criminal Police Review*, (256): 73-82 (March 1972). In the concluding part of this two-part series, the author covers various aspects of investigative criminalistic photography. Various light sources and lighting techniques are presented along with illustrative examples. (GDM)

On the Side of Truth—J. Kirk Barefoot, *Security World*, 9(6): 21-29 (June 1972). This presentation of polygraph history and techniques is presented as a position paper by the American Polygraph Association against anti-polygraph legislation in the United States. (GDM)

On the Side of Truth—J. Kirk Barefoot, *Security World*, 9(7): 50-60 (July-August 1972). Part two of this two part series discusses the use of the polygraph with regard to the profession and the test. The various techniques used are included along with test procedure and question formulation. (GDM)

The Police Candidate Polygraph Examination: Considerations for the Police Administrator—Frank Horvath, *Police*, 16(10): 33-39 (June 1972).

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A discussion of the use of the polygraph as a means of pre-employment screening is presented. The polygraph is useful in obtaining data not uncovered by conventional background investigations. (GDM)

Transparent Bullet Resisting Glazing Materials Separating Fact from Fiction—Robert W. Martin, *Police*, 16(10): 28-32 (June 1972). Included are a series of photos and tables presenting the results of firing various weapons at varying thicknesses of bullet resisting glass, polycarbonate and heavy gauge acrylic. (GDM)

The Recognition of Burglary Tools—Andrew J. Brooks, Jr. and Richard A. Meyers, *Law and Order*, 20(7): 14-18 (July 1972). An excellent presentation of the various type tools used by the burglar who specializes in gaining entry by "lock picking". Each type of device is illustrated photographically. (GDM)

Latent Impressions on Questioned Documents—Hans M. Gidion and Gideon Epstein, *The Police Chief*, 39(8): 30-31 (August 1972). The authors stress the importance of including a latent fingerprint examination as a routine part of all document examinations. Latent prints found on documents often add strength to the remainder of the document examiner's results. (GDM)

Identification of Skeletal Remains—B. R. Sharma and S. N. Rampal, *International Criminal Police Review*, (256): 83-85 (March 1972). A case is described in which a variety of personal items such as bank notes, papers, and diary fragments were instrumental in the identification of skeletal remains. (GDM)

Criminalistic Applications of Laser Spectral Micro-Analysis—Heinrich Neuninger, *International Criminal Police Review*, (256): 66-71 (March 1972). Laser Spectroscopy offers a means of non-destructive micro analysis to the criminalist, consistent with the type of evidence often encountered in the crime laboratory. This paper presents several successful criminalistic applications of laser spectroscopy. (GDM)

Forensic Odontology Today—A "New" Forensic Science—Lowell J. Levine, *FBI Law Enforcement Bulletin*, 41(8): 6-9 (August 1972). Forensic odontology has arrived as a specific forensic science discipline. Its use in legal medicine opens a wide area of possible assistance to the investigator and the evaluation of his evidence. (GDM)

Raman Spectrometry of Some Common Barbiturates—J. N. Willis, Jr., R. B. Cook, Robert Jankow, *Analytical Chemistry*, 44(7): 1228-1234 (June 1972). The article focuses on Raman spectrometry of barbiturates because of the ease of sample preparation and the ability to work in aqueous solutions. Included is a possible identification scheme to be used in conjunction with spectra and comparison tables for analysis of the following: phenobarbital, barbital, secobarbital, amobarbital, pentobarbital, butobarbital, mephobarbital, and hexobarbital. Initial classification as a barbiturate is based on bands representing carbonyl stretching and "breathing" vibrations of the pyrimidine ring. Individual distinctions depend on either the presence or absence of bands or, more frequently, on differences in band intensities. (MMS)

Blueprint for Disaster—The Role of Dental Identification—James D. Purves, *Canadian Society of Forensic Science Journal*, 5(2): 45-50 (June 1972). The author presents an outline of the methods and processes to be considered in the event of an emergency involving mass homicide or multiple sudden deaths with special emphasis on odontological priorities applicable to identification. (SID)

Automated Fluorometric Method of the Determination of Morphine in Urine—M. Sansur, A. Buccafuri, and S. Morgenstern, *Journal of the Association of Official Analytical Chemists*, 55(4): 880-887 (July 1972). Relates the development of a

sensitive and specific automated method for the fluorometric determination of morphine in urine. The method easily detects concentrations as low as 0.2 mg. free morphine/ml. urine. Five hundred subjects from a Methadone Maintenance Program have been tested. Excellent agreement with determinations on the same samples by thin layer chromatography is shown by the results. (SID)

Gas Chromatographic Determination of Traces of Accelerants in Physical Evidence—Charles R. Midkiff, Jr. and Willard D. Washington, *Journal of the Association of Official Analytical Chemists*, 55(4): 840-845 (July 1972). Discusses techniques developed for use with gas-liquid chromatography for the examination of evidence collected at the scene of suspected arson, fires, and fire bombings. Employs both solvent extraction and vapor phase examinations. Internal standards are used for the identification of specific components in actual samples to allow confirmation of hydrocarbon type, e.g. gasoline and kerosene. Includes operating parameters and solvent selection criteria. Compares results obtained from known materials and residual hydrocarbons in actual samples. (SID)

Rapid Method for the Quantitative Measurement of Numerous Pharmaceutically Important Amines—W. Richard Matthew, Howard C. Browne, J. Ben Weber, *Journal of the Association of Official Analytical Chemists*, 55(4): 789-793 (July 1972). A simplified variation of the bromothynol blue method has been used to analyze numerous pharmaceutically important amines successfully. By buffering the dye solution at pH 7.0 and by maintaining the organic-to-aqueous ratio at not less than 3:1, a single benzene extraction of the yellow amine-dye complex is made possible. Analysis time is reduced and numerous aromatic amines may be analyzed by a simple single extraction method. The simultaneous determination of a known standard of equal volume compensates for any variation in the solubility of the amine-dye complex. Approximately 15 minutes is the total analysis time for a dissolved sample. These factors make the method especially useful. (SID)

The Law Enforcement Standards Laboratory—Robert Mills, *Journal of the Association of Official Analytical Chemists*, 55(4): 874-875 (July 1972). The primary purpose of the Law Enforcement Standards Laboratory i.e., the development of

national voluntary standards for law enforcement hardware, is described. LESL projects of interest to forensic scientists, such as blood and breath-alcohol testers and evidence gathering kits are emphasized. Discussion of plans for future work and studies on the need to develop recommended practices for test procedures, certified reference materials, and standard reference data for use in forensic laboratories follows. (SID)

Methods for the Development of Latent Fingerprints—Charles M. Connor, *Journal of the Association of Official Analytical Chemists*, 55(4): 827-831 (July 1972). Describes available methods for the development of latent fingerprints and some problems that arise during fingerprint examinations that affect document examination and chemical analysis. The author suggests that the fingerprint and document examiners work together with the analytical chemist to develop methods which are most suitable for certain items so that an analysis conducted by one examiner will not prevent examination of the same item by analysts of other disciplines. (SID)

Systematic Approach to Ink Identification—Richard L. Brunelle and Maynard J. Pro, *Journal of the Association of Official Analytical Chemists*, 55(4): 823-826 (July 1972). The authors present a systematic approach to the identification of writing inks. The approach uses a multiple technique method for analysis of the inks to develop a large number of identifiable points for comparison. TLC, spectrophotometry, and gas-liquid chromatography are used for the analysis of inks in addition to traditional methods for comparison which use ultraviolet and infrared light. The inks are identified by comparing the results of the questioned inks with results obtained from a collection of writing inks maintained in the laboratory. Most inks can be identified with a high degree of certainty by using the described approach, according to the authors. (SID)

Microscopical Characterization of Glass Fragments—Walter C. McCrone, *Journal of the Association of Official Analytical Chemists*, 55(4): 834-839 (July 1972). Describes methods which involve the double variation method of Emmons which uses the optical microscope and measures dispersion of refractive index. Determination of the refractive index of match of the glass and one

of a known set of carefully standardized liquids is by (1) measuring the temperature of index match of the glass-liquid combination to obtain the refractive index as a function of wave lengths; and (2) measuring the wave length of index match of the glass-liquid combination to obtain the refractive index as a function of temperature. A hot stage microscope and monochromator are utilized in Method 1. Method 2 uses a hot stage microscope and dispersion staining objective. (SID)

Fiber Analysis: An Evaluation of Existing Methods—Robert C. Shaler and William W. Prichard, *Journal of the Association of Official Analytical Chemists*, 55(4): 832-833 (July 1972). A literature search was made concerning methods of analysis of fibers for forensic purposes. The results suggest that combined pyrolysis-gas chromatography meets all the requirements for use in forensic analyses. This article presents data from a collaborative study conducted by the Institute of Petroleum, Gas Chromatography Discussion Group, concerning the use of PGC for polymer analysis. Their results suggest that with standardized techniques, PGC would provide inter-laboratory reproducibility. (SID)

The Prosecutor and the Forensic Scientist—Thomas A. Flannery, *Journal of the Association of Official Analytical Chemists*, 55(4): 860-865 (July 1972). The role of the forensic scientist in the courts is reviewed from the viewpoint of the prosecutor since it is in court, as an expert witness, that the forensic scientist must prove his worth. Those areas which are considered vitally important, such as adequate preparation and courtroom demeanor are discussed. The criminal justice system must make full use of advanced scientific methods in the courtroom. The need for dialogue between the forensic scientist and the prosecutor to develop criteria on when and how to introduce these methods is reviewed. Several cases are reviewed showing the importance of the laboratory expert in obtaining a conviction. (SID)

Sexual Offenses in Copenhagen: A Medicolegal Study—J. Voight, *Forensic Science*, 1(1): 67-76 (April 1972). Presents a review of examinations performed over a 10-year period on victims of sexual offenses in Copenhagen and on a small number of the perpetrators of such offenses—a total of 710 subjects. (SID)

Factors of Importance in Dental Identification—Five Case Reports—Gisle Bang, *Forensic Science*, 1(1): 91-102 (April 1972). Five case reports illustrating some of the problems dealt with by the forensic odontologist are presented. The importance of obtaining a correct and detailed dental record as well as dental radiographs of a missing person is stressed. In special cases a dental age evaluation may furnish the only lead, while in others considerations of a dental anthropological nature combined with modern techniques may render valuable information. Finally, the type, structure, and composition of dental restorations could indicate the geographic origin of an unknown corpse. (SID)

Obscure Deaths: An Analysis of 103 Cases in Finland 1967—A. Pentila, M. Tenhu, and M. Virkkunen, *Forensic Science*, 1(1): 61-66 (April 1972). In 1967 there were 43,790 deaths in Finland. Medical autopsies were performed in 6,720 cases and medicolegal autopsies in 5,035 cases. The cause of death remains unclear in 103 cases. These cases have been analyzed, and the difficulties in settling the diagnosis of the mode of death after medicolegal autopsy are discussed. (SID)

Estimation of the Time of Death by Potassium Levels in the Vitreous Humour—G. Adejutantis and A. Coutselinis, *Forensic Science*, 1(1): 55-60 (April 1972). A method is proposed for estimating the time after death within the first 12 hours. Potassium is determined in samples of vitreous humour drawn separately from each eye at a known interval of hours. The values in mequiv./litre are plotted against the post-mortem interval (in hours). The line connecting the two points is extended to intersect the line of normal values of potassium in vitreous humour during life. The projection of the point of the intersection on the time axis gives the interval between death and the first sample within an approximation of 1.1 hours. (SID)

Histopathology of Healing Abrasions—I. Robertson and P. R. Hodge, *Forensic Science*, 1(1): 17-25 (April 1972). The histological examination of abrasions is of value in determining their age and the age of associated underlying subcutaneous bruises, provided multiple sections are examined

and special stains (commonly used in routine histological laboratories) are employed. (SID)

Estimation of the Age of Dried Blood Stains by a Spectrophotometric Method—S. S. Kind, David Patterson, G. W. Owen, *Forensic Science*, 1(1): 27-54 (April 1972). The visible absorption spectra of dried blood samples are examined and a time and temperature dependent quantity called "d ratio" derived. This parameter is independent of the amount of blood present and its determination can provide useful assistance in estimating the age of a bloodstain. The nature of the pigments and changes involved are discussed. (SID)

Homicidal Chronic Sodium Chlorate Poisoning—Hortense Jansen and Jan Zeldenrust, *Forensic Science*, 1(1): 103-105 (April 1972). Report of murder by the intermittent administration of weed killer (sodium chlorate) in beer. Describes autopsy findings and toxicological analysis and symptomatology. (SID)

A Bolt as a Projectile: Report of a Case—B. C. Chandra Gowda, *Forensic Science* 1(1): 107-109 (April 1972). Relates an interesting case of firearm injury reported because of its rarity. In an autopsy conducted on a woman who died as a result of multiple injuries, one of them was a fatal firearm injury caused by a bolt used as a projectile. Some authors have noted unusual objects such as kankar and marble used as projectiles in firearms in place of pellets or bullets. (SID)

Thin Layer Chromatography of Marihuana—James M. Parker and Harold L. Fiske, *Journal of the Association of Official Analytical Chemists*, 55(4): 876-879 (July 1972). Reviews the various TLC methods employed in the separation and identification of Cannabis products. Two solvent systems are recommended for rapid identification of marihuana: multiple development, semiquantitation, and wedge and loose-layer chromatographic techniques are discussed. (SID)

Ion Exchange Method for the Separation and Spectrophotometric Determination of Some Sympathomimetic Amines, Antihistamines and Phenothiazines in Pharmaceuticals—Donald J. Smith, *Journal of the A.O.A.C.*, 55(3): 596-609 (May