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Police Science Technical Abstracts and Notes

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Ballistics Problems: Ricochet and Stray Bullets—James Katsimaglis, *International Criminal Police Review*, No. 196: 76-83 (March 1966). The author discusses several cases involving stray and ricochet bullets. He says a study of the bullet hole will indicate whether the bullet struck directly or whether it ricocheted. (PJC)

Is It Possible to Determine to Which Hand a Thumb Print Belongs—Dewan K. S. Puri, *International Criminal Police Review*, No. 195: 49-53 (February 1966). The article presents the results of the author's work on this question. He concludes that an opinion can be given with near certainty for some types and with a certain percentage of certainty about other types of thumb prints. (PJC)

Identifying Paint Flakes in Evidence—L. Afroix, S. Pougheon, P. F. Ceccaldi, *International Criminal Police Review*, No. 195: 39-44 (February 1966), No. 196: 67-75 (March 1966), No. 197: 99-106 (April 1966).

This article, first in a series, describes two methods of comparing paint flecks. One method utilizes photography in making color comparisons. The authors conclude that two paints which appear similar to the naked eye but whose pigments are different will show different degrees of absorption when photographed under the same conditions. The second method described involves making thin sections of the paint flakes for microscopic examination. It includes a description of method of imbedding and slicing the imbedded paint.

The second article in this series discusses the use

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of reflection spectrophotometry, and x-ray spectrophotometry and diffraction in the study of paint flakes. It includes a description of the sampling techniques and instrumentation.

It concludes that reflection spectrophotometry can give information regarding paint surface (color). Emission spectrophotometry, absorption, fluorescence spectrophotometry, and diffraction spectrophotometry give information regarding the mineral composition of paints.

The last article discusses the use of gamma spectrophotometry (activation analysis) and infrared spectrophotometry in the study of paint flakes. It includes a description of sampling techniques and instrumentation. Gamma spectrophotometry is used to identify the atoms present (elemental analysis). Infrared spectrophotometry is useful in identifying paint binders. (PJC)

Analysis of Solvents in Lacquers by a Sealed-Capillary Gas Chromatographic Technique—J. A. Hudy, *Journal of Gas Chromatography*, 4 (9): 350-352 (September 1966). This technique allows the solvent in a lacquer to be run on the gas chromatograph with no interference from the vehicle or pigment. All parts of the apparatus are readily available which allows a "do-it-yourself" project. The two columns used are Apiezon N and Diethylene Glycol Succinate at a 180°C to 200°C temperature for the apparatus furnace. (GDM)

Pyrolysis Reaction Gas Chromatography—Morton Beroza and Raylene A. Coad, *Journal of Gas Chromatography*, 4 (6): 199-216 (June 1966). This article surveys the literature in this area up to the present. Included is an excellent section on pyrolysis which includes an extensive bibliography. Many of the references listed should be of value to the Criminalist. (GDM)

Annotated Bibliography of Programmed Temperature Gas Chromatography—W. E. Harris and H. W. Habgood, *Journal of Gas Chromatography*,

4 (6): 217-225 (June 1966). This is the third and final part in this series which surveys the literature from 1952 to 1964. It includes 426 references. Reprints of the entire series are available. (GDM)

Some Elementary Aspects of Fingerprint Photography—Alan C. Billingham, *The Police Journal*, 39 (2): 89-97, (February 1966). The author covers the various types of equipment used as well as the various types of surfaces on which fingerprints may be found. The use of contrasting powders and backgrounds is discussed along with the use of colored fluids to provide contrast in bottles and other similar containers. Also covered are prints found on soft surfaces, mirrors, multi-colored surfaces, and the value of fluorescent powders and ultraviolet light. (GDM)

Coming—"Routine" Chromatography of Evidence—A. D. Baitsholdts, *Law and Order*, 14 (11): 60-63 (November 1966). The development of flexible sheets for TLC has resulted in a low cost TLC system which any laboratory regardless of size can use. The low cost, ease of handling, and uniformity of coating all add up to a system which can be used for any TLC problem. Its use in criminalistics ranges from drug and narcotic identifications to the identification of inks, cosmetics, and paints. (GDM)

Scanning Electron Probe Microanalysis—P. W. Wright, *Journal of the Forensic Science Society*, 6 (1): 13-18, (January 1966). This paper presents an introductory discussion of the theory and operating procedures for an electron microprobe. Also included are applications for which the electron microprobe has proven to be capable of analyzing. Photographs of equipment and actual scans are also included in the article. (GDM)

The Application of Neutron Activation Analysis to Forensic Science—R. F. Coleman, *Journal of the Forensic Science Society*, 6 (1): 19-27 (January 1966). The author discusses the theory relating to this field and also outlines present methods. Possible applications in forensic science mentioned include establishing common origin of samples, toxicology, and firearms residue. A chart listing the sensitivity of the method for various elements is included. (GDM)

The Role of Radiology and the Identification of Foreign Bodies at Post Mortem Examination—

D. A. L. Bowen, *Journal of the Forensic Science Society*, 6 (1): 28-32 (January 1966). The importance of radiology in firearms wounds, strangulations, battered babies, and as a means of identification is discussed. It is suggested in the article that all films be placed on microfilm before they are destroyed. This would allow their use in the future as a means of identification of unidentified bodies. (GDM)

Identification of the Opium Poppy—John I. Thornton and Duayne J. Dillon, *Journal of the Forensic Science Society*, 6 (1): 42-43 (January 1966). Thin-layer chromatography offers a fast method for the identification of the opium poppy. Using hot water to extract the alkaloids and a 50:40:5:5 benzene, dioxane, ammonium hydroxide, and ethanol solvent system, fine alkaloids may be separated in twenty minutes. The resolution is sufficient for accurate identification. (GDM)

Smoke Damage to Textiles—J. Murphy, *Journal of the Forensic Science Society*, 6 (1): 45 (January 1966). A method is outlined which uses thin-layer chromatography to identify pyrolytic decomposition products present in fabrics. Several aldehydes and phenols were identified by this method. (GDM)

Secondary Outbreaks of Fire Due to Molten Acrylic Plastics—O. H. Keys and D. F. Nelson, *Journal of the Forensic Science Society*, 5 (4): 180-181 (October 1965). A case is cited in which arson investigators found evidence of several individual fires. Further investigation showed that hot gases had melted the plastic skylights which dropped onto lumber below. The plastic was hot enough to ignite the lumber upon which it landed. (GDM)

The Beam Focus Fingerprint Camera—John E. Londesborough, *Journal of the Forensic Science Society*, 5 (4): 181-182 (October 1965). A camera is described which is hand held and uses convergent beams of light to focus at a working distance of about 6 inches. The focus lights and built in strobe lights are powered by a portable rechargeable power supply. The unit has a 2½ x 3½ format and a 3" lens which gives a depth of field from ½" to 1½". Total weight of camera and power pack is 12 pounds. (GDM)

Examination of Damaged Motor Car Wheels and Tires—W. H. D. Morgan and R. A. Hall,

Journal of the Forensic Science Society, 5 (4): 192-195 (October 1965). Outlined is method for the examination of wheels and tires taken from cars involved in accidents. The results of these examinations often show the sequence of events which led to the accident. (GDM)

Examination of Very Small Samples Using Emission Spectrography—D. M. Ellen, *Journal of the Forensic Science Society*, 5 (4): 196-198 (October 1965). The use of a modified infrared pellet press to press graphite pellets allows samples as small as 50 μg to be examined on an emission spectrograph without the sample being knocked out of the arc before it is completely consumed. (GDM)

Firearms Discharge Residues on Hands—George Price, *Journal of the Forensic Science Society*, 5 (4): 199-200 (October 1965). The author uses a saturated solution of sodium rhodizonate to detect lead on swabs from the hands of persons suspected of firing a weapon. His findings were positive in 90% of the cases run. While jacketed projectiles resulted in less lead being deposited on the hands, he was, however, able to detect the lead which was present. The swabs consist of cotton squares containing a pea of absorbent cotton saturated with 1% HCl twisted into the center. (GDM)

Fragmentation Pyrolysis: A Technique for Confirmatory Identification—Richard C. Cavenah and Theron Johns, *The Analyzer*, 7 (3): 3-7 (April 1966). The use of an electrical discharge which fragments results in a method of pyrolysis which gives excellent reproducibility. The resulting chromatograms show a characteristic fingerprint for each substance. The electrical source may be varied from 1 to 100 milliamperes and up to 3500 volts. Excellent results have been obtained on barbiturates, heroin-lactose mixtures, plastics, and also on gas chromatography effluents to confirm their identification. (GDM)

Specimen Preparation—A New Briquetting Technique—Charles K. Matocha, *Applied Spectroscopy*, 20 (4): 252-3 (July-August 1966). A briquetting technique using the new Alcoa Spec-Cap is explained. The pellet obtained is recommended for x-ray fluorescence, but should also be usable for x-ray diffraction. A press of 25 ton capacity is needed. (EMB)

Investigation of Cleaning Procedures for Agate Mortars and Plastic Tubes with the Aid of a Radioactive Tracer—Gustav N. Havre, *Applied Spectroscopy*, 20 (4): 244-6 (July-August 1966). The important problem of sample contamination from mortars and Wig-L-Bug mixers is investigated. For agate mortars, cleaning with alumina and HCl is adequate, but plastic vials used in Wig-L-Bugs can hardly be reused. (EMB)

A Method of Producing Sturdy Specimens of Pressed Powders for Use in X-Ray Spectrochemical Analysis—Leonard Bean, *Applied Spectroscopy*, 20 (3): 191-3 (May-June 1966). A method of making pressed powder specimens on boric acid is discussed. Moulding pressures from 5,000 to 70,000 psi can be used. The samples may be used for x-ray fluorescence or diffraction. (EMB)

Review of the Forensic Science Examinations Embodied in the Warren Commission Report—(A Panel Discussion)—18th Annual Meeting of the American Academy of Forensic Sciences, *Journal of Forensic Sciences*, 11 (3): 259-329 (July 1966).

1. *Introductory Remarks*—Charles A. McInerney, A.B., Moderator, Pittsburgh, Pennsylvania. This is a critique by panelists, all of whom are well qualified in the areas explored in their discussions. The nature of this symposium is not appreciably different than some presented in former years where real case situations provided the basis for panel discussions and mock trials.

2. *The Warren Commission: Report and Hearings—A Commentary on Issues of Importance in the Study of Investigation and Criminalistics*, James W. Osterburg, MPA. The investigative procedure of the Warren Commission in some areas of criminalistics has been discussed in terms of stated objectives and the means employed to achieve them. Examination of testimony, especially in instances illustrating dichotomy of interpretation, emphasizes the need for great expansion of applied research in criminalistic matters. There is little doubt that the archival material now assembled in the form of records and reports of the agencies involved in President Kennedy's assassination provide the basis for further study into the question of investigative practice and theory.

3. *Assassin Forger*—(Documents related to the purchase of the murder weapons, and other aspects of the investigation by the President's Commission on the Assassination of President Kennedy), Alwyn Cole. The documents related to the assassination

of President John F. Kennedy are unusual in the large quantity and variety of standard and questioned writings. Their detailed similarity warrants the belief that all of the standard and questioned handwriting is by Lee Harvey Oswald. Beyond the identification thus shown, the documents give information about the temperament, problems, and movements of their author, and they point to the need for early detection of forged and counterfeit documents to forestall more serious crime.

4. *Psychiatric Observations on the Warren Commission Report*—Maier I. Tuchler, M.D. This study involves a review of the Warren Report and a more detailed study of the unique personality of Lee Harvey Oswald. Although the Warren Commission, a body of outstanding attorneys, appeared to follow that practice common to a group of intellectuals of functioning as "lay" psychiatrists, this writer is appalled at conclusions reached which involve psychiatric evaluations and judgments without the benefit of trained professional thinking. A study in depth of those individuals significant to the emotional growth of Lee Harvey Oswald is indicated in order to better understand his motivation.

5. *A Critique of the Medical Aspects of the Investigation into the Assassination of President Kennedy*—Cyril H. Wecht, M.D., LL.B., Pittsburgh, Pennsylvania. A critique of the medical circumstances and events associated with the assassination of President John F. Kennedy are considered to be essentially correct, several deficiencies and gaps in the overall medical investigation are commented upon. The failure of the commission to have called upon the American Academy of Forensic Sciences in a consultant capacity during the compilation and evaluation of its findings is noted.

6. *A Legal Demurrer to the Report of the Warren Commission*—Jay Schwartz, B.S., J.D. The author states "The Warren Commission has failed to establish that Lee Harvey Oswald singly assassinated the President of the United States, on November 22, 1963. The commission's failure grew out of weaknesses which are typical rather than atypical in the administration of criminal justice in our society." (WEK)

Historical Research, Document Examination and Crown Prince Rudolph of Austria—David A. Crown, *Journal of Forensic Sciences*, 11 (3): 330-57 (July 1966). An interesting review and study of the documents of the historical past. In the

author's considered opinion, there is no doubt as to the authenticity of the farewell letter to Stephanie. Utilizing the last known physical evidence involved in the melancholy melodrama of Mayerling, it can thus be concluded that Crown Prince Rudolph's death was clearly a suicide. (WEK)

General Criminalistics in the Courtroom—Lowell W. Bradford, *Journal of Forensic Sciences*, 11 (3): 358-472 (July 1966). The role of the criminalist in the presentation of evidence in the courtroom has been discussed. The use of photography in scene orientation has been emphasized. The logical sequential presentation of photographic evidence in firearms cases and in hit-run cases has been described. The nature and presentation of evidence regarding "On-Off" lights has been summarized. (WEK)

Further Observations on Murdering Mothers—Werner Tuteur and Jacob Glotzer, *Journal of Forensic Sciences*, 11 (3): 373-83 (July 1966).
 1. In cases of filicide the suicidal attempt of the mother is primary, the act of filicide secondary.
 2. The prognosis of a mother who at one time has murdered her child or children is grave. There remains the possibility of repetition of this act.
 3. Discharges of such mothers from mental institutions by court or otherwise demand the greatest wisdom and involve considerable responsibility. Such mothers will probably require lifelong psychiatric care. (WEK)

Sudden Death Due to Endocardial Fibroelastosis: A Case Report—Brian D. Blackburne and Robert M. Failing, *Journal of Forensic Sciences*, 11 (3): 384-9 (July 1966). A case of endocardial fibroelastosis in an adult, resulting in sudden death is presented. Death is attributed to cardiac arrhythmia resulting from entrapment of Purkinje fibers by the fibroelastic proliferation. Various theories as to etiology are mentioned. (WEK)

Potassium Content of the Vitreous Body as an Aid in Determining the Time of Death—L. Hansson, U. Uotila, R. Lindfors, and K. Laiho, *Journal of Forensic Sciences*, 11 (3): 390-4 (July 1966). The potassium content of the vitreous body in relation to the postmortal interval was studied. Intervals of up to 310 hours were investigated. The values were distributed over a wide range, which decreases the validity of the method. Nevertheless

the determination of the potassium content of the vitreous body may be warranted in cases in which the secondary signs of death provide no help in determining the time of death. (WEK)

Injuries of the Vertebral Artery—A. Potondi, P. Rupnik, and N. Kapusz, *Journal of Forensic Sciences*, 11 (3): 395-403 (July 1966). Four cases are described in which the vertebral arteries sustained injuries. Two were industrial accidents, one was a sports accident, and one was a case of manslaughter. In one case the trauma of the vertebral artery was the direct cause of death. In the other three cases it was a secondary lesion. The anatomical features and technique of dissection of the vertebral arteries are described, and the pertinent literature is quoted. (WEK)

Trichloroethane Intoxication: A Report of Two Cases—F. B. Hall and C. H. Hine, *Journal of Forensic Sciences*, 11 (3): 404-13 (July 1966). 1,1,1-Trichloroethane, a relatively safe and widely used industrial solvent, possesses anesthetic and pulmonary irritating properties. Two cases are presented in which death occurred secondary to its abuse. The mechanisms involved were, respectively, chemical pneumonia and respiratory arrest. A method is described for detection of TCE in the blood. (WEK)

Poisoning by Volatile Compounds II. Chlorinated Aliphatic Hydrocarbons—R. Bonnichsen and A. C. Maehly, *Journal of Forensic Sciences*, 11 (3): 414-27 (July 1966). This paper deals with the halogenated aliphatic hydrocarbons and related compounds. A brief report of the results obtained during the period of 1956-66 in the analyses of biological material for chloroform, trichloroethylene, and in a few cases, for chloral hydrate; suggested qualitative and quantitative procedures for identification and assay of these compounds are mentioned. (WEK)

Identification of Therapeutically Significant Organic Bases by Thin-Layer Chromatography—Irving Sunshine, Winston W. Fike, and Halle Landesman, *Journal of Forensic Sciences*, 11 (3):

428-39 (July 1966). R_f data for 138 therapeutically significant organic bases were determined in each of seven chromatographic systems. If data are determined in only 4 systems, 113 drugs can be characterized. If all 7 systems are used the remaining 25 drugs can be separated into 19 individual and 3 paired entities. (WEK)

The Examination of Questioned Documents by the New South Wales Police—Paul F. Clark, *International Criminal Police Review*, No. 197: 117-22 (April, 1966). A survey article describing training and types of services performed. Specimen writing forms are illustrated. (OH)

Scientific Services in a Law Enforcement Agency—Henry L. Cuttenplan, *The Bulletin, Society of Professional Investigators*, 27-31 (October, 1966). The laboratory should be organized so that technical and scientific information is directly available to the investigative branch, any duplication or overlapping of services should be merged for greater efficiency, specialized services should be provided whenever the volume of work and sensitivity and complexity of the service requires them, field investigation services by specialists should be provided, scientific research units should be formed and located in the scientific research office or laboratory of the agency, personnel practices should provide appropriate classification and compensation for scientists and rotational training and sabbatical leave for graduate study should be provided. (OH)

The Los Angeles Police: A Critique—Paul Jacobs, *The Atlantic*, 218: 6, 95-101 (December, 1966). This critique of the Los Angeles Police Department was made considering the Watts Riots of 1965. The emphasis of the department has been on law enforcement as measured by arrests, traffic tickets, and the like. The author considers the lack of contact with the public and especially minority groups is due to this emphasis and the extensive use of patrol cars rather than officers afoot. Not all police officials will necessarily agree with the full analysis of this article, but the observations made in it have far wider applications than merely to the Los Angeles Police. (OH)