

1970

## Police Science Technical Abstracts and Notes

Follow this and additional works at: <https://scholarlycommons.law.northwestern.edu/jclc>

 Part of the [Criminal Law Commons](#), [Criminology Commons](#), and the [Criminology and Criminal Justice Commons](#)

---

### Recommended Citation

Police Science Technical Abstracts and Notes, 60 J. Crim. L. Criminology & Police Sci. 408 (1969)

This Criminology is brought to you for free and open access by Northwestern University School of Law Scholarly Commons. It has been accepted for inclusion in Journal of Criminal Law and Criminology by an authorized editor of Northwestern University School of Law Scholarly Commons.

## POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

Edited by

Joseph D. Nicol\*

Abstractors

William E. Kirwan†

Jan Beck‡

G. D. McAlvey§

P. J. Cardosi||

C. R. Turcotte, Jr.\*\*

S. M. Komar\*\*

S. I. Dillon††

Ordway Hilton‡‡

The Case Against Steven Truscott in Canada—Keith Simpson, *The Medico-Legal Journal*, 36(2): 58-71 (1968). Professor Simpson discusses the rehearing of the evidence in the Truscott case at which he testified for the prosecution. World wide interest generated in the rehearing which was heard by a tribunal of eleven distinguished jurists. The results supported the evidence used to obtain the original conviction. (GDM)

Use of Silicone Rubber for Casting Tool Mark Impressions—R. L. Wilder, *Identification News*, 19(3): 3 (March 1969). The use of dental silicone rubber in casting draw marks on plastic pipe used in an illicit still is discussed. The author's method for photographing these casts is also listed. (GDM)

Injury to a Single Ridge May Produce Obscure Change without Evident Scar—Parduman Shugh, *Identification*, 50(10): 3-6 (April 1969). Photographs are used to illustrate a change in a single ridge caused by injury prior to 1929 and evident for the first time in 1950. This could cause some doubt in the mind of the uninformed fingerprint technician. (GDM)

The Voiceprint—Thomas McDade, *The Aus-*

\* Professor, University of Illinois Circle Campus, Chicago, Illinois.

† Superintendent, New York State Police, Albany 1, New York.

‡ Examiner of Questioned Documents, Arctic Building, Seattle, Washington.

§ Acting Superintendent, Bureau of Criminal Identification and Investigation, Joliet, Illinois.

|| Crime Laboratory Analyst, Joliet, Illinois.

¶ Crime Laboratory Analyst, Joliet, Illinois.

\*\* Crime Laboratory Analyst, Joliet, Illinois.

†† Crime Laboratory Analyst, Joliet, Illinois.

‡‡ Examiner of Questioned Documents, 15 Park Row, New York, New York.

*tralian Police Journal*, 23(1): 5-12 (January 1969). A general history of the sound spectrograph. The techniques involved in voice identification are discussed and several court decisions involving this technique are listed. (GDM)

Determining Age by the Degree of Obliteration of the Cranial Sutures (Exocranian Surface)—E. Eliakis, C. Eliakis, and P. Ordanidis, *International Criminal Police Review*, (222): 238-245 (November 1968). This paper details a study which involved 246 skulls from varying age groups of both sexes. Using this method, the authors are able to determine age to within 3 to 5 years. The presence of other skeletal remains allows for an even closer determination with a fair degree of accuracy. (GDM)

A System for Identification of Compounds Present in the Microgram Range Utilizing Gas Liquid Chromatography in Combination with Simultaneous Fraction Collection and Separation by Thin Layer Chromatography—Kenneth Parker, James Wright, and C. Hine, *Journal of the Forensic Science Society*, 7(3): 162-170 (July 1967). A system uniting GLC, TLC, and a TLC densitometer is described. Discussed is the use of this system in the examination of extracts from biological specimens for toxicology purposes. (GDM)

Potentialities and Applications of Atomic Absorption Flame Photometry in Criminology—J. Ramirez-Munoy, *Journal of the Forensic Science Society*, 7(3): 151-161 (July 1967). The author proposes the use of AA in several areas of criminalistics. Included are poison cases, frauds, auto accidents, soils, blood, and primer residues.

In most instances there are only suggestions as no research in these areas has been done. (GDM)

---

Identification Notes on the Gyrojet Weapons System—Duayne Dillon and John Thornton, *Journal of the Forensic Science Society*, 7(3): 146–150 (July 1967). The design, operation, ballistics, and identification notes on the Gyrojet handgun are listed. The only identifying mark found on spent rockets was the firing pin impression which can be matched to the launcher used. (GDM)

---

The Mathematical Evaluation of Numerical Evidence—J. B. Parker, *Journal of the Forensic Science Society*, 7(3): 134–144 (July 1967). Through the use of the “discrepancy indices” C & H, the author provides a method for the statistical analysis of such items of evidence as blood, hair, and glass. (GDM)

---

The Determination of Phosphoglucomutase (PGM) Types in Bloodstains—Bryan J. Culliford, *Journal of the Forensic Science Society*, 7(3): 131–133 (July 1967). The electrophoretic determination of phosphoglucomutase polymorphism is described. Readable results were obtained from 90% of all recent stains examined. Stains up to three months old produced readable results, but the percentage of unreadable results increased. (GDM)

---

Rhesus Antigens in Dried Bloodstains—M. Bagagna and Margaret Pereira, *Journal of the Forensic Science Society*, 7(3): 123–130 (July 1967). A preliminary study of the determination of Rh factors by absorption elution yielded promising results. While this study was only introductory, the authors achieved reliable results with several of the Rh phenotypes examined. (GDM)

---

The Distribution of Antimony, Arsenic, Copper and Zinc in Human Tissue—Hamilton Smith, *Journal of the Forensic Science Society*, 7(2): 97–102 (April 1967). Neutron Activation Analysis affords a very accurate technique for the determination of heavy metals in normal tissue specimens. This method allows the irradiation to be done in remote laboratories and then analyzed in the investigator's laboratory. (GDM)

---

Mercury in Human Tissue—R. A. Howie and

Hamilton Smith, *Journal of the Forensic Science Society*, 7(2): 90–96 (April 1967). The presence of elemental mercury constitutes a definite health hazard. A technique for the examination of biological specimens for mercury using neutron activation analysis is discussed. The results include twenty different tissues which were studied. (GDM)

---

Mercury Absorption by Fingerprint Officers Using “Grey Powder”—William J. Rodger and Hamilton Smith, *Journal of the Forensic Science Society*, 7(2): 86–89 (April 1967). The authors examined 13 fingerprint technicians who had been exposed to grey powders for long periods of time. Their conclusions are that grey powders offer no danger from mercury poisoning as long as normal care and precautions are followed. (GDM)

---

Problems and Pitfalls in Blood Grouping Tests for Non-Parentage—Alexander J. Weiner, *Journal of Forensic Medicine*, 15(3): 106–131 (July–September 1968). The complexity of the Rh-Hr system is discussed in great detail and the numerous problems to be encountered by the forensic scientist are also discussed. (GDM)

---

Attempted Theft from Banks Day-Night Deposit Box—G. W. Maltby, *International Criminal Police Review*, (221): 230–231 (October 1968). This method utilizes a plastic bag attached to a fake deposit slot which is inserted into the real deposit slot. Deposits are then held in the bag for recovery by the perpetrator. (GDM)

---

Ear Identification—Alfred V. Iannarelli, *International Criminal Police Review*, (221): 226–229 (October 1968). A system for the classification of ears for use in personal identification is described. The system uses the right ear which is photographed and then printed at a standard size used for classification. (GDM)

---

Automatic Fingerprint Search Techniques Employing the Videofile System—Gerald O. Bradley, *Police*, 13(3): 52–57 (January–February 1969). The Videofile System allows a fast automatic search through a master fingerprint file yet allows the final identity of a set of prints to be made by a fingerprint technician. The system uses a magnetic tape storage and video viewer for comparison purposes. The author claims a single

print can be searched through a file of 50,000 having similar characteristics in a period of three hours. Further classification could greatly reduce this time. The system allows hard copies to be made from the tape file of fingerprints, photographs, and criminal records. The system will also accept for comparison facsimile copies. (GDM)

**Olfactronic Detection of Narcotics and Other Controlled Drugs**—B. K. Kroloszynski, J. M. Mullaly, and A. Dravnieks, *Police*, 13(3): 20-25 (January-February 1969). The authors describe a gas chromatographic method for the detection of airborne LSD, heroin, and marijuana. Also described are methods undergoing research to provide an automatic sensing system for drugs and narcotics. (GDM)

**Pressurized Cans as Flamethrowers**—P. G. Rodgers, *R.C.M.P. Gazette*, 31(1): 12-13 (January 1969). The author experimented with 26 commercial spray cans. Sixteen of these threw flame. Ether formulas were found to be the most dangerous as they operated as a true flamethrower. (GDM)

**Skull Comparison by Photography**—E. A. Bruch, *R.C.M.P. Gazette*, 30(7 & 8): 15-17 (July-August 1968). A technique of skull identification is described which involves the superimposition of photographs of suspects over those of the skull. (GDM)

**New Technique for Bringing Out Latent Fingerprints on Paper: Vacuum Metallization**—P. Theys, Y. Turgis, A. Lepareux, G. Chevet, and P. F. Ceccaldi, *International Criminal Police Review*, (217): 106-108 (April 1968). The method involves the deposition of metallic particles on the latent fingerprint in a vacuum evaporator. The metallic developer is placed in tungsten cup electrodes. (GDM)

**The Inflammability of Modern Textile Fibers**—E. P. Martin, *International Criminal Police Review*, (217): 91-100 (April 1968). The author discusses several examinations performed to determine the flammability of various fibers. Included in these examinations are TLC and emission spectroscopy. (GDM)

**tional Criminal Police Review**, (217): 101-103 (April 1968). This article lists the results of a survey of forty forensic laboratories around the world who were polled regarding the types of examinations used for blood and semen. (GDM)

**Forensic Pedology**—Michael Brooks and Kenneth Newton, *The Police Journal*, 42(3): 107-111 (March 1969). The geological properties of soil offer the forensic scientist a means of making a more definitive comparison between soil samples. Research will likely show this to be a valuable tool in aiding in criminal investigations. (GDM)

**The Use of Fluorescent Powders in Police Work**—Grahame Devonport, *The Police Journal*, 42(3): 131-133 (March 1969). The use of fluorescent dyes in theft detection has been long used. However, other applications are possible through the use of oils and other viscous fluids as carrier vehicles. Inert powders may also be blended into the mixture to provide a color similar to the object being tagged. (GDM)

**The Status of the Handwriting Expert and His Experiences in Court**—William A. H. Degen, *International Criminal Police Review*, (219): 152-158 (June-July 1968). Document examiners have long suffered in court due to the "self-proclaimed, untrained expert" and the association of document examination with graphology. The author attempts to inform judiciary and legal professions of the training and types of experience required for qualification as an expert. (GDM)

**The Examination of "Forgeries"**—Alwyn Cole, *Identification News*, 19(1): 3-4 (January 1969). Author suggests that the designation of "forgery" is more than a document examiner can properly state. "Spurious" or "genuine" is recommended, since these terms can be used without suggesting malice or intent. (JDN)

**Manual for the Determination of Narcotics and Dangerous Drugs in the Urine**—K. D. Parker and C. H. Hine, *U.N. Bull. on Narcotics*, 19(2): 51-7 (April-June, 1967). Method uses a liquid-liquid extraction, solvent concentration and identification, and semi-quantitative by thin-layer chromatography. Two tests are used for identification; A identifies morphine, codeine, nalorphine, oxycodeine, methyldihydromorphine, dihydromor-

**Blood and Sperm Stains**—Jean Rozin, *Interna-*

phinone, and dihydrocodeinone, B identifies methadone, pethidine, cocaine, amphetamine, methamphetamine, and D-propoxyphene. 60 ml of urine is required. (JDN)

---

Some Technical Aspects of the Demonstration and Visualization of Fingerprints on Human Skin—Daniel Graham, *Journal of Forensic Sciences*, 14(1): 1-12 (January 1969). A procedure has been presented whereby the fingerprints from an assailant left on the skin of a victim can be visualized and recorded by the technique of electronography. Examples of fingerprints on skin are demonstrated over a period of 48 hours after deposition have been shown. It is believed that in suitable circumstances fingerprints will be left on a body and these can be demonstrated after a considerable time, even after exposure to unfavorable external weather conditions. Major advantages of the method are that a print with little background may be always obtained, that the color and other visual aspects of the background of the fingerprint are irrelevant, and that weak prints can be intensified. (WEK)

---

Cardiac Injuries Incurred by Drivers in Automobile Accidents—Irving I. Lasky, Alan M. Nahum, and Arnold W. Siegel, *Journal of Forensic Sciences*, 14(1): 13-33 (January, 1969). The difficulty in the diagnosis of nonpenetrating cardiovascular trauma in automobile accident victims centers on the fact that on initial examination the patient may have none or only a few signs or symptoms suggesting a cardiovascular disorder.

The findings of cardiac injury may be apparent on superficial examination, or they may be so obscure that many of the recognized methods of study may be needed to establish the diagnosis. An engineering knowledge of some of the circumstances of the accident can supply helpful clues to the examining physician.

Cardiovascular injury may occur far more frequently than current medical statistics indicate. The lack of symptoms and the unfamiliarity of the physician with the prevalence of such problems, plus the fact that the patient usually survives, may account for this lack of information. (WEK)

---

Chemical Mace: Ocular Effects in Rabbits and Monkeys—Ian F. MacLeod, *Journal of Forensic Sciences*, 14(1): 34-47 (January 1969). Reactions of the rabbit and monkey eye to Chemical Mace, a

new and controversial police weapon, indicate that direct corneal contact with liquid Mace produces lasting opacities and melanosis. On the other hand, spray exposure resembling that anticipated for actual use of a Mace weapon causes only transient inflammatory lesions of the face and eyes with possible sunburnlike sequelae. (WEK)

---

Classifying, Indexing, and Searching Typewriter Specimen Files—Linton Godown, *Journal of Forensic Sciences*, 14(1): 48-58 (January, 1969). Several mechanical aids described as applied to searching typewriter specimen files are of potential utility. Of these the simple form of Peek-A-Boo cards, making use of hand punched UNIVAC cards and standard filing equipment, is advanced as a superior system for use for typewriter identification. Applied to practical typewriting identification the Peek-A-Boo System offers desk-top speed and accuracy equal to or superior to that of electronic computing equipment and at modest cost. (WEK)

---

Age Determination of Bone Fragments—Ellis R. Kerley, *Journal of Forensic Sciences*, 14(1): 59-67 (January 1969). Several methods of estimating the age at death in human skeletal material by microscopic examination have been reviewed briefly. These range from the simple direct low-magnification examination of the resorptive patterns of diaphyseal bone to the more complex procedure of counting certain basic structural components and comparing them with a known age sample to determine as limited a range of possible ages as can be derived by overlapping of the possible ranges for each of the four age factors.

The practical application of these methods to the determination of age in forensic cases has been demonstrated and discussed. They make possible an accurate and reliable estimation of age in cases where otherwise uninformative fragments of diaphyseal bone are all that remain of an unidentified person.

Attention is called to the need for follow-up data on remains that have been identified. This information to evaluate the reliability and applicability of any new method to specific circumstances of age determination of identification of skeletal remains. (WEK)

---

Forensic Psychiatry in the United States and West Germany—Werner Tuteur and Ulrich

Venzlaff, *Journal of Forensic Sciences*, 14(1): 69-98 (January 1969). Similarities and differences regarding the practice of forensic psychiatry in West Germany and the United States, particularly in Illinois have been discussed. Special emphasis has been placed on the issue of mental illness and legal competence and its determination, on the significance of alcoholic intoxication in connection with criminal acts, and on similarities and variances of commitment procedures to mental hospitals. The issue of divorce as it relates to mental illness in both cultures has been also dealt with. (WEK)

Fatal Motorcycle Accidents—J. Wallace Graham, *Journal of Forensic Sciences*, 14(1): 79-86 (January 1969). The records of 352 motorcycle operator and/or passenger fatalities occurring over a five-year period have been reviewed. The distribution of injuries and the mortality rate per body segment in terms of the total mortality rate have been determined. The role of alcohol as a causal factor in motorcycle accidents is evaluated. (WEK)

Massive Transfusion of Incompatible Blood—A. S. Wiener, E. B. Gordon, and E. M. Gross, *Journal of Forensic Sciences*, 14(1): 87-92 (January 1969). Described is a case of death following transfusions of group A blood to a group O patient while undergoing surgery. The case is unusual due to the large amount of incompatible blood transfused, bringing about almost a complete exchange of the patient's blood group reaction from group O to A. The problem of determining the patient's blood group at the post-mortem examination was resolved by testing seminal fluid from his seminal vesicles. The original error was proved to be a clerical one caused by the placing of a different patient's blood in the tube labeled with the patient's name at the time of admission to the hospital. (WEK)

Comparative Studies of Postmortem Ethyl Alcohol in Vitreous Humor, Blood, and Muscle—S. Felby, and J. Olsen, *Journal of Forensic Sciences*, 14(1): 93-101 (January 1969). Comparative studies of postmortem ethyl alcohol concentration in vitreous humor, femoral vein blood, heart blood, and muscle tissue showed good correlation between the values found. When diffusion equilibrium has occurred before death, the ratio between blood and vitreous humor alcohol concentrations would be

expected to be 0.79, which is in keeping with the ratio between the amounts of water contained in the two fluids. A somewhat lower ratio of 0.73 was observed in the cases studied, probably due to hemoconcentration. In cadavers the blood alcohol concentration can, within safe limits, be estimated from the vitreous alcohol concentration, using the equation:

Blood alcohol concentration =  $0.73 \times$  Vitreous alcohol concentration. If on the other hand the ratio between blood and vitreous alcohol concentrations exceeds 1.0, it is most likely that death occurred rapidly and before diffusion equilibrium had been attained. This sometimes may be of forensic significance. (WEK)

Statistical Features of Rape—Arthur Frederick Schiff, *Journal of Forensic Sciences*, 14(1): 102-110 (January 1969). An analysis of 100 consecutive cases of alleged rape seen in the Dade County Medical Examiner's Office has been presented. These have been considered from the standpoint of age, marital status, assailants, location of crime, injury to victim, credibility of charges made by victims, and apprehension and punishment. (WEK)

Reye's Disease: A Syndrome of Unexplained Death in Childhood—Philip R. Severy, *Journal of Forensic Sciences*, 14(1): 111-9 (January 1969). A report of a case of encephalopathy with fatty degeneration of the viscera (Reye's Disease) diagnosed at autopsy is submitted with a brief summary of the literature. This rapidly progressing and usually fatal syndrome follows a viral illness associated with severe vomiting. Patients show profound hypoglycemia, convulsions, and coma. Autopsy findings include massive fatty change in the liver and variable fat deposition in the kidneys and heart with cerebral edema. Suggested etiologic factors include various viruses and toxic agents, but no common cause has been identified. More such cases may be identified and investigated by the forensic pathologist to whom both viral and toxicologic facilities are readily available. (WEK)

Casualty Criteria for Wounds from Firearms with Special Reference to Shot Penetration—B. N. Mattoo and A. K. Wani, *Journal of Forensic Sciences*, 14(1): 120-8 (January, 1969). The kinetic energy of a missile as a casualty criterion has serious limitations. Missiles with much lower

energies than the usually accepted standards can cause disabling or deadly injuries. Pellet penetration, which is an important consideration in evaluating the damage or injury inflicted by a missile, has been studied in terms of the physical quantities involved. (WEK)

---

**An Improved Rapid Method for the Determination of Glutethimide (Doriden) in Blood**—Marjorie Knowlton and Leo R. Goldbaum, *Journal of Forensic Sciences*, 14(1): 129-135 (January 1969). A simple rapid procedure for the determination of glutethimide in urine, blood, and dialysates from patients suspected of glutethimide intoxication has been described. (WEK)

---

**A Simple Method Using Head-Space Gas for Determination of Blood Alcohol by Gas Chromatography**—Blaine L. Glendening and Robert A. Harvey, *Journal of Forensic Sciences*, 14(1): 136-45 (January 1969). A head-space gas chromatographic method for the determination of blood alcohol on a routine basis is simple, convenient, specific, and reliable. Samples and reference standards are prepared by placing 1 ml. of blood in a serum bottle containing 20 mg. of sodium fluoride and closed with a sleeve-type rubber cap. After reaching equilibrium in a thermostatically controlled water bath at slightly above room temperature, 1 m. of head gas is removed and injected into the gas chromatograph using a dual hydrogen flame detector. No internal standards are necessary.

Reference standards are conveniently prepared from fresh bovine blood preserved with sodium fluoride and are stable as long as three months. The amount of blood sample placed in the vial before withdrawing the vapor is of little importance to the determination, and multiple withdrawals of head-space gas may be made. Salt concentration effects on small samples were eliminated by arranging the sample blood and the reference standards to contain at least 30 mg. NaF/ml. blood in the head-space vial.

The most critical parameter of the procedure is the equilibrium temperature of the sample from which the head-gas is drawn. At slightly above room temperature a deviation of 1° C between standard and sample could result in a difference of apparent alcohol content of as much as 0.03%, and the effect of temperature variation is even

greater at elevated temperatures. Other volatile compounds including alcohols can be differentiated from ethanol. Good precision is obtained, peak heights of standards are linear, and accuracy was proved by comparison with oxidation methods. The charts obtained are valuable records for court purposes. (WEK)

---

**University of Louisville, School of Police Administration**—effective July 1st, the Police Administration Program has been expanded with addition of a degree granting four year course. The Southern Police Institute will continue to function as the second of four divisions of the School of Police Administration. A planning and research division and a division for workshop type programs will round out the school activities which are under the administration of Dean David A. McCandless, former Director of the Southern Police Institute. (OH)

---

**The Study of Seminal Stains by Means of Ultrasonic Apparatus**—Jonathan Gluckman, *Journal of Forensic Medicine*, 15(4): 144-147 (October-December 1968). Ultrasonic apparatus is a valuable technique for dislodging spermatozoa from cloth material. The method involves 30 minutes in the generator followed by centrifuging and staining a portion of the centrifugate for microscopic examination. (GDM)

---

**Abnormality of Hair Shaft Due to Disease**—S. K. Niyogi, *Journal of Forensic Medicine*, 15(4): 148-151 (October-December 1968). Several diseases found in man have profound effects on hair. These disease produced abnormalities are discussed by the author. Because of the rarity of these diseases, they provide a means of individualization with regard to personal identification. (GDM)

---

**Blood Alcohol Levels in Patients Attending Hospital after Involvement in Traffic Accidents**—J. I. Tonge, *Journal of Forensic Medicine*, 15(4): 152-156 (October-December 1968). A study of 343 survivors of traffic accidents with regard to blood alcohol levels shows 135 to have alcohol in their blood. The levels ranged from less than .05 to more than .25. Several tables illustrate the various variables involved. (GDM)