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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Racial Differences in Finger Patterns—Ogden L. Glason, *Finger Print & Identification*, 53(9): 3-4 (March 1972). The study of differences in fingerprint patterns between Caucasians and Negroes reveals significant differences. Caucasians were found to have larger numbers of ulnar loops, radial loops, and all loops, while Negroes were found to have larger numbers of arches and whorls. (GDM)

The Application of Electronic Data Processing to Fingerprint Comparison—W. E. Angst and K. Frieden, *International Criminal Police Review*, (252): 230-245 (November 1971). Presented is a system for the EDP processing of ten finger, single, and palm prints. The system utilizes two formulae for classification. Forms, printouts, and flow charts are included. (GDM)

Forensic Odontology—John Forness, *International Criminal Police Review*, (252): 226-229 (November 1971). A discussion of forensic odontology, its application to civil and criminal cases, and specific examples are presented. (GDM)

Recent Developments in Forensic Science—A. S. Curry, *Nature*, 235 (5338): 369-371 (February 18, 1972). This article provides a survey of the current status of the forensic sciences in England and Wales. Particular attention is paid to HOCRE (Home Office Central Research Establishment). (GDM)

A Chemical Composition of Palmar Sweat—Robert D. Olsen, Sr., *Finger Print & Identification*,

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tion, 53(10): 3-7 (April 1972). The research and analysis done by the author resulted in a complete qualitative analysis of eccrine sweat. Two tables provide a listing of both inorganic and organic constituents. (GDM)

Identification of "Parabellum" Pistols—Christian Clanet, *International Criminal Police Review*, (254): 20-26 (January 1972). The author identifies the numbering system used by the many manufacturers of Parabellum pistols. A table of identification particulars is of significant value to the firearm identification expert. (GDM)

A Bullet in the Back of the Neck—Murder or Suicide—E. P. Martin, H. Schwander, W. B. Stern, *International Criminal Police Review*, (254): 9-19 (January 1972). A case study of a death investigation in which firearms discharge residue analysis is used to prove the death a homicide rather than a suicide. (GDM)

What the Bones Tell—Today—T. D. Stewart, *FBI Law Enforcement Bulletin*, 41(2): 16-20 (February 1972). The use of physical anthropology in law enforcement cases is presented. Also discussed are new techniques which evolved out of work done identifying military dead in World War II and the Korean War. (GDM)

Ballistic Characteristics and Wounding Effects of a Tear Gas Pen Gun Loaded with Ortho-chloro-benzalmalononitrile—K. M. Ayers and C. J. Stahl, *Journal of Forensic Sciences*, 17(2): 292-297 (April 1972). This report describes the ballistic characteristics of a tear gas pen gun loaded with CS and

the pathologic effects it has when fired at experimental animals. (PJC)

Untoward Effects of Exogenous Inhalants on the Lung—J. T. Weston, A. A. Liebow, M. G. Dixon, and T. H. Rich, *Journal of Forensic Sciences*, 17(2): 199–279 (April 1972). The authors discuss a number of cases involving the interrelationship of injury or disease and subsequent litigation. Some of the conditions discussed are chlorine gas poisoning; paraquat poisoning; pulmonary carcinoma following uranium exposure; analogue of Caplan's Syndrome in sandblaster with scleroderma; pleural mesothelioma developing in association with asbestosis; diffuse alveolar damage (oxygen toxicity) and possible earlier fat embolism; Interstitial Pneumonia, Pulmonary Burn Injury; Diffuse Alveolar Damage and Chronic Interstitial Pneumonia in Respiratory Distress Syndrome; Diffuse Alveolar Damage, and other complications following cardiac arrest; and Silo-Filler's Disease. (PJC)

The Gas Chromatograph-Mass Spectrometer as a New and Important Tool in Forensic Toxicology—R. F. Skinner, E. J. Gallaher, J. B. Knight, and E. J. Bonelli, *Journal of Forensic Sciences*, 17(2): 189–198 (April 1972). A method for the application of combined gas chromatography-mass spectrometry to analytical toxicology is presented. The column used for acidic, neutral, basic, and amphoteric drugs was a 5 ft. by 2 mm. inside diameter column packed with 3% OV-1 on 100/200 mesh Gas Chrom Q. The column used for organic volatiles was a 3 ft. by 2 mm. inside diameter column packed with 80/100 mesh Poropak Q. Temperature programmed runs were from 120 to 220° C. at 8° C/mm. Procedures for various runs (sample preparation, etc.) are given. (PJC)

Investigative Powers of the Medical Examiner in the Light of Rupp vs. Jackson—J. H. Davis, F. A. C. Siever, and J. R. Feegel, *Journal of Forensic Sciences*, 17(2): 181–188 (April 1972). The authors discuss the question of independent power of autopsy by the medical examiner in the light of Florida case Rupp vs. Jackson. In this case the decedent's surviving son brought a civil action against Joseph E. Rupp, M.D., and associate county medical examiner of Broward County. (PJC)

Identification of Arson Accelerants by Gas Chromatographic Patterns Produced by a Digital Log Electrometer—W. J. Chisum and T. R. Elzerman, *Journal of Forensic Sciences*, 17(2): 280–291 (April 1972). The authors discuss the use of the digital log electrometer in the gas chromatographic examination of accelerants. The minimum detectable signal with a four decade logarithmic electrometer is 0.01% of full scale. The minimum detectable signal height with a linear electrometer is about 2% of full scale. Equipment, operating conditions, procedures, and results of analysis of samples are discussed. (PJC)

Sulfuric Acid Concentration in the Catalyzed Breathalyzer Ampules—A. K. Bergh and P. C. Rodgers, *Journal of Forensic Sciences*, 17(2): 298–308 (April 1972). The authors of this paper discuss the results of a study to determine, for catalyzed ampule reagent, the range of acid normalities which produced (a) oxidation within 90 seconds at 34° C, and (b) stoichiometric conversion of ethanol to acetic acid in the Breathalyzer. (PJC)

Identification of Phytosterols in Red Oil Extract of Cannabis—Catherine Fenselan and Gary Hermann, *Journal of Forensic Sciences*, 17(2): 309–312 (April 1972). The authors describe a procedure used to identify the phytosterols in red oil extract of cannabis. The procedure involves extraction followed by G. C. and mass spectrometry. (PJC)

The Examination of Color—Alwyn Cole, *Journal of Forensic Sciences*, 17(2): 313–317 (April 1972). The author describes a photographic method for comparing colors in questioned document examinations. (PJC)

A Gas Chromatographic Method for Ethanol Determination in Vapors of Biological Fluids—L. Karnitis and L. J. Porter, *Journal of Forensic Sciences*, 17(2): 318–322 (April 1972). A method is described for the gas chromatographic determination of ethanol in the blood. It consists of equilibrating blood with n-propanol as an internal standard and injecting the vapors. The type of column used was a 6 ft. by 1/8 inch stainless steel column containing Poropak S, 100–120 mesh. (PJC)

Detection of Dynamite Residues on the Hands of Bombing Suspects—C. R. Kempe and W. K.

Tannert, *Journal of Forensic Sciences*, 17(2): 323-324 (April 1972). A thin layer chromatographic method for the detection of nitrated ester type explosives in samples removed from persons handling these explosives as described. Removal of nitrated esters from the hands was accomplished by rubbing cotton swabs soaked in acetone over the suspected areas. The authors conclude after testing a number of persons who handled explosives that it is unlikely that nitrated ester residues from the hands can be detected by TLC if more than 24 hours have elapsed between handling and removal of samples from the hands. (PJC)

Readable Fingerprints from Mummified or Putrified Specimens—Leo Richardson and Harold Kade, *Journal of Forensic Sciences*, 17(2): 325-328 (April 1972). A technique for restoring decayed or mummified fingers of deceased persons to a condition making fingerprinting possible is described. It involves the use of a tanning solution consisting of two ounces of saturated salt solution with two drops of 50% sulfuric acid. (PJC)

3,4-Methylenedioxyamphetamine (MDA): Analytical and Forensic Aspects of Fatal Poisoning—George Cembura, *Journal of Forensic Sciences*, 17(2): 329-333 (April 1972). Analytical aspects of MDA pertaining to routine toxicological analysis is presented. A routine procedure for the analysis of MDA in body materials is described. Results of recovery and reproducibility studies are also given. (PJC)

Duplicate Analysis of Blood Ethanol by Injection onto Two Parallel Gas Chromatographic Columns in Rapid Succession—T. J. Siek, *Journal of Forensic Sciences*, 17(2): 334-339 (April 1972). A G. C. method for determining blood alcohol is described. It involves the use of vapor phase or "headspace" injection in duplicate onto two parallel gas chromatographic columns using n-propanol as an internal standard. The columns employed were paired 6 ft. by $\frac{1}{8}$ inch outside diameter stainless steel columns packed with Hallcomid 18 (3.8%) and Carbowax K-600 (0.5%) on Teflon 6 H C. (PJC)

A Deformed Cartridge Case—Kaushalendra Kumar, *Police Research and Development*, 16-17, (Quarter IV 1970). Relates a case in which the

firing pin impressions from a test cartridge and that recovered from the scene of a crime have taken imprints from the same breechface at the time of firing. This shows that a mutilated shell can still help in the identification of a weapon and furnish a valuable piece of evidence. (SID)

Ninhydrin Combats Bank Frauds—Olle Rispling, *The Criminologist*, 6(22): 30-46 (Autumn 1971). An introductory history of the ninhydrin method is given. The technique of developing fingerprints with ninhydrin is given in detail, as are several case histories. (SID)

Tyres and the Law—R. J. Grogan, *The Criminologist*, 6(22): 21-29 (Autumn 1971). Discusses the true role of tires in crime today and also dispels the idea that the majority of road accidents are caused or induced by the tire. (SID)

Class Characteristics of Shotguns from Shell Markings—S. A. McKay, *Canadian Society of Forensic Science Journal*, 4(1): 11-17 (March 1971). Discusses the interpretation of class characteristics in determining the probable make and type of shotgun in which an expended shotshell was fired. The author states that the probable make and type of a single barrel repeating shotgun can be determined when good extractor, ejector, and breech-face markings are present. The direction which the breech-face markings take on the bolt when read in conjunction with the positions and forms of the extractor, ejector, and ejector slot markings will eliminate very many makes and models of shotguns and with proper reference material may identify a particular model in which the shotshell was fired. (SID)

Marijuana: A Realistic Approach—George Chun, *The Criminologist*, 6(22): 62-74 (Autumn 1971). The author relates the facts about marijuana from what it is to its subjective and objective effects. (SID)

The Effect of Washing on the Detection of Blood and Seminal Stains—J. Spector and D. Von Gemmingen, *Canadian Society of Forensic Science Journal*, 4(1): 4-10 (March 1971). The authors give the method and results of a study to determine the degree to which blood and/or semen are removed from fabric which has been subjected to

a variety of washing procedures. The results show that detectable traces of blood and/or semen are not readily removed by washing and that blood or semen stains are easier removed from acetate material than from cotton. (SID)

An Identification by Means of Forensic Odontology: The Mearns (Garvie) Murder—N. W. Kerr and J. M. Murray, *The Journal of the Forensic Science Society*, 11(4): 223-225 (October 1971). Describes a Scottish murder case and the events which lead to the discovery of the body. The article mentions the method of identification and describes the outcome of the evidence that was submitted, stressing the importance of dental evidence in identification and bite marks. (SID)

A Case of Safebreaking Involving Diatomaceous Safe-Ballast—A. J. Peabody, *Journal of the Forensic Science Society*, 11(4): 227 (October 1971). In some instances of safe breaking, the safe concerned is packed with a diatomaceous safe-ballast. In one particular case, 20 species of diatoms were identified in the ballast and the material from the car including *achnanthes ostrupi* which is an uncommon diatom, but often occurs in safe-ballasts. The author stated that the possibility that the car and safe were not connected was extremely remote. This enabled the officer to say beyond any reasonable doubt that the white material found in the car originated from the safe. (SID)

A Case Involving the Administration of Known Amounts of Arsenic and Its Analysis in Hair—E. F. Pearson and C. A. Pounds, *Journal of the Forensic Science Society*, 11(4): 229-234 (October 1971). Neutron activation analysis is used to study the uptake of arsenic over a period of about one year in the head hair of a person taking known therapeutic amounts of Fowler's solution. The work supports the view that where arsenic is administered over a period of time, it grows into the hair from the root, and its presence in centimeter sections is an indication of the uptake of arsenic by the body over a period of time. There is no evidence to support arsenic being absorbed into hair from sweat. (SID)

The Nature and Evidential Value of the Luminescence of Automobile Engine Oils and Related Materials, Part III, Separated Luminescence—

J. B. T. Lloyd, *Journal of the Forensic Science Society*, 11(4): 235-253 (October 1971). Luminescent components of automobile engine oils, petrols, and exhaust soots have been separated and identified by gradient elution liquid chromatography in narrow bore columns and by spectroluminescence techniques. The compounds of evidential importance in these materials are mainly polynuclear aromatic hydrocarbons, for a number of which these are previously unknown occurrences, and alkylated benzologues of thiophene. (SID)

The Rapid Identification of Frequently Abused Drugs—C. L. Hider, *Journal of the Forensic Science Society*, 11(4): 257-262 (October 1971). Relates a systematic scheme for the rapid identification of unknown drugs. The methods employed and the necessary reagents are discussed in detail. (SID)

A Quantitative Gas Chromatographic Method for Alcohol Determination—Dwight Reed and Robert H. Cravey, *Journal of the Forensic Science Society*, 11(4): 263-265 (October 1971). A gas chromatographic method for alcohol analysis is presented which employs a vapor phase technique and utilizes 1:4-dioxane as the internal standard. Results compare favorably with those derived from duplicate analysis by distillation-oxidation methodology. (SID)

The Identification of Ibogaine in Biological Material—H. I. Dhahir, Narest C. Jain, and John I. Thornton, *Journal of the Forensic Science Society*, 12(1): 309-313 (January 1972). A reliable method is described for the extraction of unchanged ibogaine from biological materials such as blood, urine, and tissue homogenates of liver, kidney, and brain by a simple extraction for basic drugs. Precise identification of the alkaloid may be achieved through the use of TLC, UV, and IR. (SID)

The Effect of Tyre Deflation on Vehicle Behaviour—R. J. Grogan, *Journal of the Forensic Science Society*, 12(1): 285-302 (January 1972). Three investigations into the effects of tire deflations on vehicle behavior are detailed. It is concluded that the behavior of the vehicle, and the path taken after a tire deflation is predictable within broad limits. (SID)

The Identification of Vaginal Epithelial Cells by Lugol's Stain and Its Importance in Semen Stained Exhibits—A. K. Bhattacharya and A. K. Mitra, *Police Research and Development*, 12 (Quarter IV 1970). Stresses the importance of establishing the presence of vaginal epithelial cells in a male garment. Lugol's stain is recommended for this identification. (SID)

The Effect of Crowning on Gun Barrel Individuality—John E. Murdock, *Journal of the Forensic Science Society*, 12(1): 305-308 (January 1972). The effect of crowning on gun barrel individuality is examined by comparing test firings from four button rifled .22 caliber rifle barrels. All barrels were test fired, recrowned, and test fired again. Three of the four barrels were recrowned a second time and test fired. A comparison of test bullets from each barrel with bullets from the same barrel following recrowning revealed that although some changes in stria pattern were observed, sufficient agreement was noted to enable an identification to be affected. (SID)

Precise Refractive Index Determination by the Immersion Method, Using Phase Contrast Microscopy and the Mettler Hot Stage—S. M. Ojeda and P. R. De Forest, *Journal of the Forensic Science Society*, 12(1): 315-329 (January 1972). An improved immersion method for refractive index determinations on small transparent particles such as glass fragments is described. The method features accurate match paint determinations coupled with accurate and convenient control of the refractive index of the immersion liquid. A Mettler Hot Stage is utilized to vary the refractive index of the liquid by changing its temperature. The point at which the liquid and particle match is sensitively determined using the phase contrast microscope. This technique is discussed in relation to older immersion methods. (SID)

Examination of Clothing in Shooting Incidents—M. Jauhari, S. M. Chatterjee, and P. K. Ghosh, *Police Research and Development*, 8-10 (Quarter IV 1970). The examination of clothing in shooting cases is of value not only in determining the range of firing but also from the point of view of determining the direction of path taken by the bullet. The authors point out various factors which should be evaluated. (SID)

The GC/MS Reference Data System for the Identification of Drugs of Abuse—Bryan S. Finkle and Dennis M. Taylor, *Finnigan Spectra*, 2(2) (May 1972). The article is primarily concerned with the identification of drugs of abuse using a reference library of their mass spectra. The coding and identification system used in developing the reference library is discussed. The type of GC/MS system used is described as well as the sample preparation. Finally, the applications of such a reference library are described. (REC)

Applications of Gas Chromatography in Forensic Toxicology—R. H. Cravey, D. Reed, and P. R. Sedgwick, *American Laboratory*, 4(5): 63-71 (May 1972). The authors describe the gas chromatograph as singularly the most useful instrument in the forensic lab, listing uses such as the determination of alcohol (by four methods), toxic high molecular weight compounds, and also drugs and their metabolites in the body. They suggest detectors and specific columns dependent on the particular need. Derivatization, which may also be advantageous, is also generally explained. The combination of the gas chromatograph with other instruments is briefly discussed as becoming a more acceptable technique for the modern lab. (SDR)

A Thermal Apparatus for Developing a Sensitive, Stable, and Linear Density Gradient—Wilkaan Fong, *Journal of the Forensic Science Society*, 11(4): 267-272 (October 1971). The author illustrates the non-linearity of a density gradient when the gradient is established by upper end heating of a liquid filled tube. He subsequently describes a new apparatus which will give linearity of temperature decrease in the tube. This new apparatus is reported to have an estimated thirtyfold increase in sensitivity when compared to the method of establishing a density gradient by gradual layering. (JFC)

Spectrographic Determination of Lead in Blood—R. L. Steiner and D. H. Anderson, *Applied Spectroscopy*, 26(1): 41-44 (January-February 1972). The authors describe a method of detecting from 5 to 100 micrograms of lead per 100 grams of blood (0.05 to 1 PPM). The method includes extracting the lead from the uncoagulated blood with a trichloroacetic acid (TCA) solution. A two drop portion of the supernatant liquid is then analyzed