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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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An Evaluation of the 0.5% Bromelin 9:1 Serum-To-Cell Ratio Technique—L. V. Milner, *The American Journal of Clinical Pathology, 48(6)*: 593–8 (December 1967). This article is written concerning mainly liquid blood samples. It demonstrates the sensitivity of the 9:1 serum to cell ratios using 0.5% bromelin. Also pointed out is the fact that more antibodies are demonstrable in pregnant women than in males or non-pregnant women. (CRT)

Pyrolysis Gas Chromatography Application to Life Detection and Chemataxonomy—Vance I. Oyama and Glenn C. Carle, *Journal of Gas Chromatography, 5*(3):151–154 (March 1967). Numerous bacteria are identifiable using pyrolysis gas chromatography on a Carbowax 20M capillary column. The method was also applied to the study of several types of fungi. (GDM)

Characterization of Mammalian Tissues and Microorganisms by Gas-Liquid Chromatography—Joseph MacGee, *Journal of Gas Chromatography, 6*(1):48–52 (January 1968). Gas chromatographic examination of blood, urine, fingernails, teeth, and many other tissues and microorganisms were successfully attempted. The procedure involves digestion with tetramethyl ammonium hydroxide, and the samples were run on a benzoylated Carbowax 20M column. (GDM)

Fly Identification by the Morphology of the Head and Head Appendages—N. Aubrey Carson and Edmund F. Martinez, *Journal of the A.O.A.C., 5*((5):1146–1193 (October 1967). Ten species of fly are identifiable using the descriptions and drawings included in this article. The identifications are based upon examination of the head and head appendages. (GDM)

Detection of Solvents by Infrared Spectrophotometry—George Schwartzman, Daniel Sullivan and Evelyn Sarnoff, *Journal of the A.O.A.C., 50* (5):1196–1197 (October 1967). A method is outlined for the identification of recrystallization solvents in solid materials. This method employs a gas cell for the infrared identification of the vapor driven from the solid material. (GDM)

Analysis of Preparations Containing LSD (NN-Diethyl d-Lysergamide)—Robert J. Martin and Thomas G. Alexander, *Journal of the A.O.A.C., 50*(6):1362–66 (December 1967). Five methods are listed for the identification of LSD in various forms as found on the illicit market. The methods outlined include TLC, infrared spectroscopy, ultra violet spectroscopy and column chromatography. (GDM)

Backward Fragmentation from Breaking Glass—D. F. Nelson, B. C. Revell, *The Forensic Science Society Journal, 7*(2):58–61 (April 1967). When a pane of glass is broken by a blow, small fragments fly in the direction of the assailant. Therefore, it should be routine to collect standards for comparison with suspects' clothing and, of course, to collect the clothing of a suspect. (JDN)

The Analysis of Felt and Fiber Pen Inks—(Die Analyse von Filz—und Faserschreiber Tinten)—

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W. Hofmann, *Kriminalistik, 21*(3):119–24 (March 1967). The recent bulk appearance of fiber tip pens motivated an examination of inks used by the classical methods of visible comparison, fluorescence, infrared, ultra violet as non-destructive tests and Fadometer, spot test, spectrophotometry, thin layer, chloride migration as destructive tests. Details of methods are given. (JDN)

Areas of Application of Criminalistics—(Anwendungsgebiete der Kriminaltechnik), E. P. Martin, *Kriminalistik, 21*(8):403–10 (August 1967). Points to the use of trace evidence to prove or disprove other suspicions. Author states that a combination of old and new methods must be used to determine the true situation. He also cautions that improper collection and preservation of evidence can seriously compromise the results of an analysis. (JDN)

Identification by Teeth—N. J. Knott, *The Police Journal, 40*(5):209–213 (May 1967). The author discusses the human dentition as a useful aid to identification in the event of a major disaster or an unidentified body. As an example the role of the dental expert at Aberfan is discussed. (PLC)

Detection and Estimation of Some Trace Elements by DC-Arc Excitation Using the Vacuum-Cup Technique—Eleanor E. Bevege and Robert E. Gallion, *Applied Spectroscopy, 21*(1):20–22 (January/February 1967). The spectrochemical analysis of solutions using a vacuum cup technique has been studied. Borax, mercury, tin, chromium, iron, aluminum, manganese, copper, and zinc in part-per million range have been determined. (PLC)

Coned Cathode for Stabilization of the DC Arc—J. W. Mellichamp, *Applied Spectroscopy, 21*(1):23–27 (February/March 1967). A coned cathode employing a mixture of $BaCO_3$ or Li_2CO_3 and graphite powder is described which has greatly increased the stability of the dc arc. (PLC)

Method for Rapid Transfer of GLC Fractions into Infrared Cavity Cells—R. F. Kendall, *Applied Spectroscopy, 21*(1):31–32 (January/February 1967). An improved trapping procedure for the collection and infrared analysis of microliter samples obtained from GLC instruments is described. Transfer time is only 3 minutes, and no solvent is required for collecting GLC fractions reater than 0.6 μl. (PLC)

Purification of Analytical Grade Cation—Exchange Resin for Spectrochemical Applications—D. E. Warner and F. J. Conrad, *Applied Spectroscopy, 21*(3):177–8 (May/June 1967). A technique for purifying commercial cation exchange resin (AG50W-X8, 100-200 Mesh) which is to be used in spectrochemical analysis is given. (PLC)

Physico-Chemical Characterization of Some 5,5-Disubstituted-1,3-Dixanthyl Barbituric Acids—B. C. Flann and J. A. R. Clautier, *Applied Spectroscopy, 21*(4):225–31 (July–August 1967). Melting points, infrared spectra, and x-ray powder diffraction patterns of the purified dixanthyl derivatives of 21 barbituric acids are given. The x-ray diffraction data indicates sufficient variation from one derivative to another to allow unique identification of an unknown barbiturate specimen. (PLC)

The Flame Process—H. O. Medlin, *Identification News, 19*(10):4 (December 1967). Using pine heartwood for fuel, the author discusses a technique for the development of aged latent prints on hard surfaces. Excess soot deposits between ridges are removed by washing in water. (GDM)

Identi-Code Index—Eli Lilly and Co. (November 1966). This booklet correlates the code found on all Lilly products to the product itself. It provides a fast method for the identification of any Lilly product. (GDM)

Lying Down on the Job—Anonymous, *FBI Bulletin, 36*(8):23 (August 1967). Finger print powder revealed the impression of the face of a burglar on the couch of a doctor's office. Details were sufficient for a later identification. (JDN)

Autopsy Verification of Suicide by Digitalis—R. W. Jelliffe, *American Journal of Clinical Pathology, 47*(2):180–5 (February 1967). Digitalis glycoside, compared to non-poisoned, gastric contents, separated and identified by TLC. (JDN)

A Simple Electrophoretic Method for Quantitative Determination of Hemoglobin A2—Arnold H. Bierman and Alfred Zettner, *American Journal of Clinical Pathology, 48*(1):139–142 (July 1967). A method for quantitative determination of hemoglobin A_2 by vertical gel electrophoresis. (CRT)

The Importance of Time and Place in Crime Investigation—E. Guven, *International Criminal Police Review*, No. 207:118–120 (April 1967). The author describes three cases where thorough crime scene search proved fruitful. He stresses the importance of the crime scene examination being performed an by experienced investigator. (PJC)

Aspects of Motor Vehicle Theft in Spain—*International Criminal Police Review*, No. 207, 94–106 (April 1967). The techniques used in auto theft, the methods of disguising the stolen auto, and methods of detecting disguised autos are discussed. (PJC)

Identification by Dental Characteristics—D. C. Berry and A. C. Hunt, *Medicine, Science, and Law*, 7(2):67–9 (April 1967). Describes identification by use of occlusion or occlusal abnormalities. Application of orthodontic examination to photographs of suspected individuals can help eliminate suspects and may provide substantial identity data. (CRT)

Sub-Typing of Group A Bloodstains—Brian R. J. Morgan and Susan L. Richards, *Medicine, Science, and the Law*, 7(2):82–3 (April 1967). Describes the use of Anti-A_1 lectin prepared from seeds of Dolichos biflorus for differentiating Group A bloods. (CRT)

Determining Sex from Hair—E. Castagnoli and M. Frei-Sulzer, *Archiv fuer Kriminologie, 140*(1–2): 1–8 (July–August 1967). The determination of sex of unknown tissue by means of identifying the sex chromatin (M. L. Barr, 1949) is here extended to hair. Especially the head hair is rich in cells, particularly in the follicle and root area, and it is suggested that the examination of the hair replace the original method of taking sample cells from the mucous membranes of the mouth. Since the root portion of hair loses its cell nuclei due to the keratinization process, this method would seem limited to whole hairs torn from the scalp. But since some cells actually retain their nuclei even in the hair shaft, the method is also applicable to cut hairs.

The nuclear sex chromatin is microscopically identified (800 X), after staining, as dark spots about 1 micron in size, that appear in about 80% of cells from a female but only in .4% to 3% of male cells. The diagnosis should be based on at least 100 cells, preferably 200. When more than 4% show the dark chromatin bodies, the hair can reliably be diagnosed as female.

A staining technique is described, but any standard cell staining technique, properly carried out, will serve this purpose.

The method has obvious value in criminalistics, not only as an additional identifying feature of hair, but also in providing clues to the sex of an unknown assailant or otherwise connecting assailant, weapon, and victim. It is also applicable to soft tissues and bone fragments in the investigation of violent deaths and accidents. Research is also carried out in the authors' laboratory into the possibility of identifying animal species from hair by means of the chromosome count in hair follicle cells. (JB)

Abrasion Marks on Shoes—M. Feldmueller, *Archiv fuer Kriminologie, 140*(3–4):72–83 (September–October 1967). The soles of shoes worn by pedestrian victims of traffic accidents often carry abrasive marks in definite patterns that help in reconstructing the position of the victim and the direction of the vehicle's impact. But since all shoes are normally abraded on the soles, a study was undertaken to assess the characteristic markings of abrasion from accidents. Of 100 pairs of shoes selected at random, 90 had no patterned abrasions, 9 had some unusual abrasions which, however, could be explained by the wearer's home or work environment, and only one pair had markings that were similar to those observed on accident victims' shoes. Typical of the accident abrasions is that they contain several, parallel striations that are deeper than from ordinary wear; these are straight when the victim was struck squarely (front, rear, side), or sometimes curved when the victim was spun by the impact. Characteristically, the markings on one shoe are more pronounced than on the other, i. e. on the foot carrying the body weight at impact. It was also found by experiment that even deliberately produced, directional abrasions disappear after about five minutes of normal walking. Several cases are described with photographic illustrations. (JB)

Determining the Age of Blood Stains—E. Kleihauer, G. Stein, and G. Schmidt, *Archiv fuer Kriminologie, 140*(3–4):84–94 (September–October 1967). Two methods to determine the age of dried blood stains are reported. The first method is

based on changes in the spectral characteristics of cyanmethemoglobin eluates from experimentally aged stains on cloth. The quotient of the extinctions 540-500 mu. decreases with increasing age of the stain; the difference in the quotients of a control hemolysate increases proportionately.

Secondly, conclusions can be made about the age of a stain from the differential solubility of the hemoglobin in various solvents. This calculation is also based on the development of quotients from extinctions and concentrations of the eluted hemoglobin in the solvents. (JB)

Unusual Wound in Tragic Death—W. Holczabek, *Archiv fuer Kriminologie, 139*(5-6):174–179 (May–June 1967). The body of a pedestrian showed a wound across the full width of the throat, as if cleanly cut by a sharp edge. The location and appearance of this wound seemed to contradict the other evidence on vehicle and body—that the victim was struck from the rear, landing supine on the hood, with the back of the head completely breaking the windshield (European, pre-stressed glass). The victim had fallen off the car and had been found on the pavement.

The explanation was found during autopsy examination of the wound and the spinal column, as well as in the car's interior. The handle of the dash (Volkswagen) was bent downward and the bottom edge of the glove compartment was dented. The following reconstruction was therefore made: the victim's head snapped backwards so violently when the upper back struck the hood that it broke the windshield and continued pivoting downward until the skin of the throat stretched beyond the breaking point, causing a clean-edge wound, as if from an incision. (JB)

Cruelty to Animals as Prelude to Sadistic Crime—I. Krumbiegel, *Archiv fuer Kriminologie, 140*(1-2):22–27 (July–August 1967). The author calls attention to the apparently neglected fact that many sadistic killers and butcher-murderers have an early history of having tormented animals. He suggests that a child or adolescent who enjoys torturing or killing defenseless animals may well develop into a sadistic killer of humans in adulthood. In growing up, the basic sadistic urge remains, only the object changes. The author, a former zoo director, recommends that criminologists and investigators pay closer attention to recording such instances of juvenile cruelty. (JB)

Significant Diagnostic Errors in Workmen's Compensation Medicine—Irving I. Lasky, *Journal of Forensic Sciences, 12*(4):387–420 (October 1967). Workmen's compensation is an integral part of our social and economic system. Commensurate with the increase in life expectancy, there is a higher incidence of non-traumatic disorders which cause disability or death. This incidence may be a correlate of the increase in the number of cases of degenerative diseases receiving workmen's compensation benefits.

The critical evaluation of disorders, which may or may not prove compensable, is in order. The need for expertise in this area is made quite evident by the above case reports. With such expertise the desirable "rule of reason" may then be more objectively applied, and it is to be hoped that more critical parameters may be applied to diagnostic problems in workmen's compensation medicine. (WEK)

Pediatric Forensic Pathology I. Death by Homicide—James L. Luke, Michael M. Lyons, and John F. Devlin, *Journal of Forensic Sciences, 12*(4):421–430 (October 1967). Unless every case of unexpected death in children is autopsied by a pathologist acquainted with forensic pathologic material, a significant number of cases of homicides will go undetected. In 7 cases included in this report, there was no external evidence of trauma on careful examination. The history elicited by those responsible for the child is often confabulated in an effort to make the death appear as if it were an accident. (WEK)

Relationships of Social Activity, Work Capacity, Responsibility and Competence to Drug Effects—Douglas Goldman, *Journal of Forensic Sciences, 12*(4):431–43 (October 1967). The relationship of human activity, particularly in the areas of social interaction, responsibility and competence, and working relationships and efficiency to the effect of drugs, has been discussed. The individual properties of the more important groups of drugs affecting such activity have been described. Beneficial effects which improve human functioning are the most important aspect of drug use. The adverse effects of drugs on human functioning in the social, industrial and legal sense, have been outlined. Total generalization is not possible, but individual drugs have specific kinds of adverse as well as beneficial effects that must be understood to avoid

improper confusion between drugs. The specific drug groups most frequently involved in illicit activity have been listed. (WEK)

A Study of the Accuracy of the Breathalyzer as Operated by Police Personnel—J. R. Howes, R. A. Hallett, and D. M. Lucas, *Journal of Forensic Sciences*, *12*(4):444–53 (October 1967). The results of 1,172 Breathalyzer tests made by police officers during training courses have been presented and compared with the results of 114 blood tests taken within 15 minutes of the breath test. When two Breathalyzer tests are properly made, it may be concluded that the possibility of a result prejudicial to an accused person being presented to a court is virtually nonexistent. (WEK)

Concentrations of Alcohol in Samples of Blood and Urine Taken at the Same Time—Herman A. Heise, *Journal of Forensic Sciences*, *12*(4):454–62 (October 1967). The findings of Morgan regarding the results of "simultaneous" blood and urine alcohol determinations have been discussed. It is concluded that such discrepancies as reported would not have been prejudicial to the defendants involved had the urine values alone been used in connection with disposition of their cases. The results of 20 correlation tests in which the results of the urine concentrations X 0.7 were compared with the results of blood tests and various breath tests made following collection of the urine have been given. In no case would the blood concentration calculated from the urine concentration have been prejudicial in its legal interpretation compared with the average of either blood test or breath test values. The concentration of alcohol in urine in the post-absorptive phase is suitable for the making of a judgment regarding impairment of the individual providing the specimen. (WEK)

Diffusion of Stomach Alcohol and Heart Blood Alcohol Concentration at Autopsy—V. D. Plueckhahn and B. Ballard, *Journal of Forensic Sciences*, *12*(4):463–70 (October 1967). 1. Ethyl alcohol in varying quantities were instilled into the stomachs of 20 cadavers. Multiple samples were taken from 6 to 50 hours later at autopsy. 2. The results showed (a) the diffusion of alcohol from the stomach to the blood present in the intact heart chambers occurring after death is minimal, (b) heart blood alcohol concentrations are seldom significantly elevated by postmortem diffusion of stomach alcohol even when markedly adverse conditions are present, and (c) significant diffusion of alcohol from the stomach to the pericardial and pleural fluid frequently occurs after death. 3. Blood alcohol concentrations in samples correctly taken from the intact chambers of the heart are as valid as concentrations in samples taken from the femoral vessels. 4. Samples of autopsy blood taken from pooled blood in the pericardial sac or pleural cavities are unsatisfactory for estimation of alcohol concentrations. (WEK)

Firing Distance Determination by Neutron Activation Analysis—S. S. Krishnan, *Journal of Forensic Sciences*, *12*(4):471–83 (October 1967). The method of determination of firing distances using neutron activation analysis has now been developed for routine use. The method consists of (1) firing test shots using the same target, ammunition, and weapon, as far as possible, as in the case; (2) removal of concentric circular sections of target material at various distances from around the bullet hole; (3) activation of these sections in a nuclear reactor; (4) waiting a few days so that the radioactivities interfering with the antimony activity measurement have decayed; (5) quantitative estimation of antimony by gamma ray scintillation spectrometry; and (6) estimation of firing distances by comparison with test shots. An empirical relationship between the antimony concentration around the bullet hole and the shooting distance has been derived. (WEK)

The Determination of Amitriptyline by Ultraviolet Spectrophotometry—Jack E. Wallace and Elmer V. Dahl, *Journal of Forensic Sciences*, *12*(4):484–96 (October 1967). A quantitative ultraviolet spectrophotometric procedure has been developed for determination of amitriptyline and nortriptyline and their principal metabolites in biologic specimens. The drugs are extracted into n-hexane and oxidized with buffered permanganate to carbonyl derivatives which, in contrast to the original compounds, have characteristic ultraviolet absorption spectra. The method is highly sensitive and the ultraviolet spectrum of the oxidation products is sufficiently specific for most purposes in forensic toxicology. (WEK)

A Rapid Gas Chromatographic Method for the Determination of Chloral Hydrate and Trichloroethanol in Blood and Other Biological Materials—N. C. Jain, H. L. Kaplan, R. B. Forney, and F. W. Hughes, *Journal of Forensic Sciences*, *12*(4):497–

508 (October 1967). A specific and sensitive method for the determination of chloral hydrate and trichloroethanol in blood and other biological materials utilizing gas chromatography. The method eliminates the need for extraction or distillation of either compound from the biological medium. Either blood or the supernatant of a tissue homogenate, is mixed with a solution of chlorobutanol as an internal standard, and an aliquot of the mixture is then injected directly into the gas chromatograph equipped with an electron capture detector. (WEK)

The Identification, Quantitative Determination, and Distribution of Meprobamate and Glutethimide in Biological Material—Bryan S. Finkle, *Journal of Forensic Sciences*, *12*(4):509–28 (October 1967). A gas chromatographic-infrared method for the quantitation and identification of meprobamate and gluthethimide. The method is designed to be used as part of a routine screening procedure. Thirty-seven cases (both fatal and non-fatal) are detailed. The paper provides a method and information which permits better handling of emergencies involving these drugs and accompanying analytical results. (WEK)

A Gas Chromatographic Procedure for the Determination of Carboxyhemoglobin in Postmortem Samples—Clayton A. Ainsworth, Eugene L. Schloegel, Thaddeus J. Domanski, and Leo R. Goldbaum, *Journal of Forensic Sciences*, *12*(4): 529–37 (October 1967). Gas chromatographic procedure for the determination of carbon monoxide in blood. The mixed gases are extracted from blood in a modified Van Slyke extraction chamber prior to introduction into the column. When postmortem changes have occurred in blood specimens containing carbon monoxide the percentage saturations which existed prior to such changes are best determined by using the cyanmethemoglobin procedure to measure the total hemoglobin pigments from which the corresponding carbon monoxide capacities may be calculated. (WEK)

Infrared Identification of LSD and Related Compounds—Clifford C. Cromp and Francis G. Turney, *Journal of Forensic Sciences*, *12*(4):538–46 (October 1967). An infrared spectrophotometric method for identification of LSD, DMT, and related drugs. Methods of isolating the compounds make use of solvent extraction alone or in combination with thin layer chromatography. Examination of the infrared spectra of a number of related compounds indicate that the specific identification of the compounds is possible. (WEK)

Thin-Layer Chromatographic Detection and Quantitative Determination of Malathion in Biological Materials—A. Farago, *Journal of Forensic Sciences*, *12*(4):547–8 (October 1967). A rapid method employing thin-layer chromatography and ultraviolet photometry for the detection and quantitative determination of Malathion has been described. (WEK)

The Identification of Paraquat in Biological Material Using Thin-Layer Chromatography—G. S. Tadjer, *Journal of Forensic Sciences*, *12*(4): 549–53 (October 1967). A thin layer chromatographic procedure was used for identification of Paraquat and Diquat in tissue. 100–200 gm tissue samples were extracted with carbon tetrachloride and chromatographed with various developing solutions. (WEK)

The Identification of Seminal Fluid by Thin-Layer Chromatography—Donald W. Hessel, F. Rene Modglin, and Larry G. Webster, *Journal of Forensic Sciences*, *12*(4):554–7 (October 1967). A thin-layer chromatographic procedure for identifying seminal fluid. The test is based on the detection of the unique combination of choline and spermine in semen. Silica Gel G was used as the adsorbent, and development was accomplished by 1 N hydrochloric acid. For detection potassium iodoplatinate was used for spermine and Dragendorff's reagent for choline. The minimum detectable amount of semen was approximately 1 μl. (WEK)