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Police Science Technical Abstracts and Notes

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

Edited by

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Abstractors

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A Microscopic Examination of a Small Arms Propellant—J. B. Quinlan, *The Microscope*, 14 (10): 385-92 (May-June, 1965). By measuring the penetration of deterrents into the periphery of powder grain sections, batches might be differentiated. Carbol-fuchsin or crystal violet can be used as staining agents. (JDN)

X-Ray Quantitative Analysis by an Emission-Transmission Method—Jean LeRoux and Mazhar Mahmud, *Analytical Chemistry* 38 (1): 76-82 (January, 1966). The method described in this article is applicable to any type of sample if the element to be tested is homogeneously dispersed in the sample, and the sample does not absorb too much of the analyzed radiation. It describes theory and conditions involved. (PJC)

The Diagnosis of Death from Intravenous Narcotism—Henry Siegel, Milton Helpern, and Theodore Ehrenreich, *Journal of Forensic Sciences*, 11 (1): 1-16 (January, 1966). A presumptive diagnosis of death from intravenous narcotism can be made in many cases at the scene where the body is found. The positive diagnosis can be made on the basis of the investigation and the complete autopsy. There is a distinctive pattern of pathologic changes in intravenous narcotism which involves the lungs, liver, and lymph nodes, as well as the injection site. Some pathogenetic mechanisms for these alterations have been suggested. (WEK)

Breaking Strength of the Umbilical Cord—J. F. Morris and C. Hunt, *Journal of Forensic Sciences*.

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11 (1): 43-9 (January, 1966). The breaking strength of 38 umbilical cords was determined. The results show that the cord may readily be broken by hand. The broken ends have a characteristic appearance. (WEK)

Histochemical Distinction Between Antemortem and Postmortem Skin Wounds—Abdullah Fatteh, *Journal of Forensic Sciences*, 11 (1): 17-27 (January, 1966). Histochemical methods were employed to study antemortem and postmortem skin wounds with an aim to discover early vital reactions. The study of guinea pig and human skin wounds revealed that the enzyme reactions were the earliest detectable reactions in vital wounds. The histochemical method and the staining of nucleic acids did not reveal any detectable vital reaction in healing human skin wounds earlier than 8 hours, whereas acid phosphatase became histochemically detectable at 6 hours, alkaline phosphatase and leucine aminopeptidase at 4 hours, and nonspecific esterase as early as 30 minutes. These reactions, which were completely absent in the postmortem wounds, were not affected by the postmortem periods of up to 72 hours and are thus, of value for medicolegal distinction between antemortem and postmortem wounds. In human skin wounds the development of enzyme reactions was more delayed than in guinea pig. Therefore, it is suggested that the results of animal experiments must not be used for medicolegal purposes. (WEK)

The Comparison and Identification of Adhesives on Questioned Documents—B. B. Coldwell and M. Smith, *Journal of Forensic Sciences*, 11 (1): 28-42 (January, 1966). A paper chromatographic procedure is outlined which enables the detection of hexose, pentose, and protein containing material in adhesives. Infrared spectrophotometry, pyrolytic gas chromatography, and chemical spot tests

supplement paper chromatographic examination. (WEK)

Trace Elements in Human Head Hair—A. K. Perkons and R. E. Jervis, *Journal of Forensic Sciences*, 11 (1): 50-63 (January, 1966). Trace element concentration distribution data for 18 constituents found in human head hair has been presented. Concentration distribution histograms have been constructed for 12 of these constituents. Concentration ranges are reported for the other six. The probability of matching hair samples from one person, or distinguishing between the concentration characteristics of different hair donors is discussed, considering variations of trace element content with time. Empirical methods of comparison of gamma ray spectra of hair or the gamma peak-height ratios of different hair samples are outlined. (WEK)

Screening Tissues and Urine for Pesticides—Mark M. Luckens, *Journal of Forensic Sciences*, 11 (1): 64-74 (January, 1966). An efficient procedure applicable to the routine screening of diverse materials of biologic origin for the presence of insecticides is presented. Essentially, the method consists of partitioning a hexane refluxate of tissue, ingesta, or body fluid between hexane and DMF. The resulting extract is subjected to chromatographic or spectrophotometric analysis. Submicrogram quantities of pesticides are readily isolated, identified, and their concentrations estimated by the use of thin-layer chromatography. Where a gas chromatograph is available, nanogram amounts of pesticides may be readily identified and quantitated. Procedures for the application of thin-layer chromatography to tissue and urine extracts is presented in some detail. (WEK)

Tissue Levels of Some Poisoning Agents Less Frequently Encountered—Niels C. Klendshoj and Thomas A. Rejent, *Journal of Forensic Sciences*, 11 (1): 75-80 (January, 1966). A group of subjects exposed to compounds less frequently involved in accidental or suicidal deaths is reported with the tissue levels found after autopsy. No attempt has been made to correlate these levels to lethal doses of these compounds. It is hoped that this paper will stimulate other investigators to publish similar data which are much needed in respect to the less frequently encountered causes of death from poison. (WEK)

Congenital Rhabdomyoma of the Heart and Intrauterine Digitalis Poisoning—A. Potondi, *Journal of Forensic Sciences*, 11 (1): 81-8 (January, 1966). A case of intrauterine death is described. Postmortem examination revealed multiple rhabdomyoma of the heart. The mother attempted suicide by swallowing digitalis glycoside before the delivery. The death of the foetus is believed to have been due to the combined effect of cardiac rhabdomyoma and digitalis poisoning. Since the mother really wanted to die and did not take the drug with the mere view of inducing abortion, and since suicide is not a criminal offense under Hungarian law, no judicial proceedings were instituted. (WEK)

Estimation of Arsenic in Biological Materials by Neutron Activation Analysis—S. S. Krishnan and N. E. Erickson, *Journal of Forensic Sciences*, 11 (1): 89-94 (January, 1966). A rapid ion-exchange separation technique has been developed and incorporated in the neutron activation method of the determination of arsenic in biological samples. The method consists of irradiating the sample, digesting it in a mixture of sulphuric-nitric-perchloric acids, and evaporating to dryness. The residue is taken up in 0.0005 M sulphuric acid, passed through a cation exchange column, and the As (76) determined in the eluent by scintillation counting. A tenfold increase in speed over the existing methods for the separation of arsenic after acid digestion has been obtained. The apparatus is simple and interference due to incomplete destruction of organic matter does not introduce any appreciable error in this method. (WEK)

Quantitative Determination of Morphine in Alkaline Solutions by Differential Spectrophotometry—R. C. Gupta, *Journal of Forensic Sciences*, 11 (1): 95-100 (January, 1966). Differential absorption technique, using monobasic ammonium phosphate as a buffer, has been employed for quantitative determination of morphine. The method provides an accurate spectrophotometric method for estimation of morphine. (WEK)

Quantitative Determination of Cyanide in Toxicological Analyses—R. C. Gupta, *Journal of Forensic Sciences*, 11 (1): 101-4 (January, 1966). A method for quantitative determination of milligram amounts of cyanide in stomach contents and tissues has been described. Macerated tissue mixed

with sufficient water is placed in a flask, and concentrated sulfuric acid added. Nitrogen, bubbled through the flask, carries the hydrogen cyanide produced through a silver nitrate solution. Silver cyanide is formed, and excess silver nitrate is titrated with standard potassium thiocyanate solution. The amount of cyanide in the sample is calculated from the amount of silver nitrate consumed to form silver cyanide. (WEK)

Further Studies on Chelation as a Method of Exclusion Screening for Drugs—S. K. Niyogi and F. Rieders, *Journal of Forensic Sciences*, 11 (1): 105-8 (January, 1966). The present report is a continuation of a previous investigation covering 15 additional, toxicologically important drugs of various pharmacologic classes (refer *J. Forensic Sci.* 10, 217-224, 1965). The method consists of complexing the drug with a transition metal, extracting the complex and detecting the metal moiety of this extracted drug-metal complex with a metallo-chromic indicator. The present tabulation points to the beginning not only of a broad exclusion-detection test but also of a method for differentiating groups of drugs and of identifying some individual agents. Furthermore, such drugs as morphine, amphetamine, and carbromal frequently escape detection in general schemes of exclusion screening, especially when their specific presence is not suspected and thus not looked for by specific methods. The present approach would tend to reveal their presumptive presence. The potential toxicologic adequacy of the sensitivity of the test was studied on amphetamine sulfate. It was found that by the present procedure, the detection limit for this drug is 0.5 gamma at a dilution of 1 part/million in water, while in raw urine a detection limit of 50 gammas at a dilution of 100 parts/million was found. (WEK)

Some Statistical Aspects of Pyrolysis-GLC in the Identification of Alkaloids—Charles R. Kingston and Paul L. Kirk, *Bulletin on Narcotics*, XVII (2): 19-26 (April-June, 1965). Alkaloids are from lower hydrocarbon products and trimethylamine using pyrolysis-GLC. Methods, equipment and a statistical study of the results are outlined in the article. (GDM)

Comments on a Bite on a Breast in a Murder Case—W. Can Hecke, *Medicine, Science and the Law*, 6 (1): 47 (January, 1966). The use of marks

on the victim's breast is described by the author in obtaining an accurate description of the assailant. A method is also described to simulate the region involved using wood, foam rubber, and dough. This allows a comparison between the actual mark and standards made by the suspect. (GDM)

The Stereometric Detail—John N. Schernhorst, *Police*, 10 (3): 6-13 (January-February, 1966). The functions of the stereometric camera are described in some detail. Uses in criminalistics and related fields are mentioned. A German designed stereometric vehicle is also illustrated and discussed. (GDM)

The Nuclear Witness: Activation Analysis in Crime Investigation—The General Atomic Division of General Dynamics Corporation has produced a 28 minute, color, motion picture film for the AEC dealing with the application of activation analysis in crime investigation. The film has an accompanying sound track and is available on loan from the AEC's domestic and overseas film libraries. It is designed to be shown to the general public, law enforcement officer, the legal profession and others (OH).

New Passenger Tire Handbook—The Rubber Manufacturers Association has released a 28 page manual "Passenger Car Tires, Their Care & Service." It provides information on injuries to tires, methods of repair, mounting and de-mounting, and tips on tire care, maintenance, and use. Law enforcement agencies will undoubtedly find information of value in this publication, which is available from the Association at 50¢ a copy and up to 50 copies, and at a reduced rate for larger quantities. (OH).

The Police and Race Relations—A selected bibliography prepared by the Institute of Human Relations of the American Jewish Committee, New York City. The 14 page bibliography contains list of books and pamphlets and also magazine articles under the headings of General Reading, Race Tensions, Training Programs, and Civilian Review Boards. Copies can be obtained from the American Jewish Committee, 165 E. 56th St., New York City 10022, at a cost of 25¢ per copy. (OH)