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Police Science Technical Abstracts and Notes

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Abstractors

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Nuts and Bolts—R. V. Jones, *Medicine, Science and the Law*, 3 (4): 289-98 (July, 1963). A study of testimony in a homicide investigation. The questionable statements concerned the physical basis for loose connections on threaded fittings following an intensive fire. Experiments indicate that the tightening of a fitting, when cold, distorts the threads short of the elastic limits. Therefore, pressure is exerted indefinitely. However, heating to a sufficient degree will cause the metal to lose its elasticity and leave the nut or fitting "finger loose." This creates the impression that the nut turned, whereas it is loose, but in its original position. (JDN)

The Application of Infra-Red Spectroscopy to the Examination of Nitroglycerin Explosives—C. F. Tippett, *Medicine, Science and the Law*, 3 (4): 282-8 (July, 1963). Methanol extracts of suspected explosives are examined by infra-red spectrophotometer, at 1,650 cm^{-1} and 1,270 cm^{-1} for nitroglycerin, and 3,500 cm^{-1} , 1,400 cm^{-1} and 835 cm^{-1} for ammonium nitrate. A ratio of nitroglycerin to ammonium nitrate combined with botanical components may help to identify the source of the explosive. (JDN)

Pseudo Air Embolism in Suspected Abortion—J. Zeldenhurst, B. Makkink, and M. Voortman, *Medicine, Science and the Law*, 3 (4): 277-81 (July, 1963). Gas in the right side of the heart may result from decomposition and not from air

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embolism during an attempt to interrupt a pregnancy. Even if a pregnancy exists, adequate signs of an attempt to abort should be present. (JDN)

Use of Positive Color Films for Production of Transparencies with White Line Copy Superimposed on Colored Backgrounds—C. A. Richins, *Journal, Biological Photographic Association*, 31 (2): 57-8 (May, 1964). Double exposure of line copy and background produces line copy on colored or descriptive background on 2 x 2 slides. The line copy is photographed in 35 mm, on High Contrast copy film. The negative transparency is photographed on Ektochrome using strobe flash. A second exposure is taken of color or background alone. (JDN)

Custom Conversion in Copy Cameras—John E. Withel, *Journal, Biological Photographic Association*, 31 (2): 113-8 (August, 1964). Conversion of copy cameras to wall mount and ceiling mount, increased their versatility. (JDN)

Miniature Pistol Identification—N. P. G. Schiml, *RCMP Gazette*, 25 (12): 15-6 (Dec., 1963). Tests made on 2m/m pin fire blank pistols show that painful burns result from close range firing. With finishing nails as projectiles, plywood is penetrated $\frac{3}{8}$ inch, indicating that a shot in the ear or eye would produce a serious wound. Cartridges fired in these weapons bear individual characteristics by which the weapon could be identified. (JDN)

Quantitative Pyrolytic Gas Chromatography by Internal Standard—G. G. Esposito, *Analytical Chemistry*, 36 (11): 2183-5 (October, 1964). Author suggests the use of a polymer, yielding a high percentage of monomer, as an internal standard in

pyrolysis of coating resins. He used polyethyl methacrylate as an internal standard yielding 98% ethyl methacrylate. As a semiquantitative method or as a means of identification the internal standard method can be used. (JDN)

Identification of Human Bloodstains by Means of the Mixed Antiglobulin Reaction on Separate Cloth Fibrils—W. McN. Styles, B. E. Dodd, and R. R. A. Coombs, *Medicine, Science and the Law*, 3 (4): 257-67 (July, 1963). The stain was cut into fibrils, 0.5 mm, and fixed in alcohol. After washing, the fibrils were treated with specific diluted anti-human globulin serum for overnight at +4°C. The fibrils are washed in diluent (heat-inactivated normal rabbit serum absorbed, diluted and buffered) and brought in contact with indicator cells. After centrifuging and resuspending, the fibrils are observed on a microscope slide. A reaction is positive if red cells are closely adhering to the fibrils. Stains up to 2½ years old show a reaction. (JDN)

The Reliability of Corroborated Police Evidence in a Case Flagrante Delicta—L. R. C. Haward, *Journal, Forensic Science Society*, 3 (2): 71-8 (March, 1964). An experiment using pictures with variations in exposure, light, and setting indicates that errors of observation, as high as one in four, will occur if the perceptual conditions are less than ideal and if the witness has some preconceived expectancy. (JDN)

"Laicil"—A New Marking Material—B. R. J. Morgan, *Journal, Forensic Science Society*, 3 (2): 105-6 (March, 1963). A marking paste consisting of a lanolin base, a liquid fluorescent dye, and a fluorescent powder not soluble in lanolin, is spread on money or objects used as a plant. UV is used to detect stain. The paste is made further distinctive by using small quantities of starches, infusorial earth, or other ingredients. The paste is made specifically for each application. (JDN)

Vital Reaction in the Central Nervous System—H. V. DeCarvalho, *Medicine, Science and the Law*, 4 (2): 111-2 (April, 1964). Wounds were inflicted in the frontal lobes of dogs, and the dogs were permitted to live from 5 minutes to 23 hours. After killing, the brain was examined for changes. Antemortem changes give some chronological scale for the forensic pathologist. Since changes

begin within 5 minutes after wounding, post mortem and antemortem wounds could be distinguished. (JDN)

The Use of Larval Infestation in Determining Time of Death—F. Lothe, *Medicine, Science and the Law*, 4 (2): 113-5 (April, 1964). Eggs are not deposited until decomposition begins. This may provide an interval of 12 to 72 hours, depending on weather, before the process begins. Although the larval method does not provide an accurate scale of time of death, it may provide a minimum period. The insect must be identified and its cycle known. (JDN)

The Immunological Diagnosis of Pregnancy with Specimens of Blood Stains—G. Abelli, B. Viterbo, and M. Falagario, *Medicine, Science and the Law*, 4 (2): 115-8 (April, 1964). An immunological test is described using red cells sensitized with liophilised chorionic gonadotrophin and antigonadotrophinic serum. Tests on aborted women indicated a possible positive test on blood stains for as high as 18 days after abortion. (JDN)

Car Distribution Statistics and the Hit-and-Run Driver—C. F. Tippett, *Medicine, Science and the Law*, 4 (2): 91-7 (April, 1964). After a study of the distribution of 57 models divided into eight colors, the author concludes that a strong opinion of common source can be expressed where an exchange of paint shows similarity and where the distribution factor is low. Repaint cars and multi-layer paints further strengthens identity. (JDN)

The Determination and Significance of Low Blood Carboxyhaemoglobin Levels—C. H. Bowden and W. R. Woodhall, *Medicine, Science and the Law*, 4 (2): 98-107 (April, 1964). The procedure of Whitehead and Worthington was modified and used to determine low levels of COHb in smokers. After smoking, a mean value of 2.7% was obtained. Only an exceptionally heavy smoker, heavy inhaler, will reach 8% of saturation. (JDN)

Two Cases of Addiction to Heroin by Smoking—A. A. Bartholomew and D. W. Bruce, *Medicine, Science and the Law*, 4 (2): 108-11 (April, 1964). Heroin is smoked by placing a small quantity of crystals in the apex of a cone of "silver foil" from a cigarette package. A soda straw is held over the crystals, and the vapors are inhaled as the crystals are heated by a flame. (JDN)

Determination of the ABO Group from Fingernails—R. A. Outteridge, *Medicine, Science and the Law*, 3 (4): 275-6 (July, 1963). Fingernails can be typed by the absorption-elution method. Thirty-six hours are needed for the absorption phase. (JDN)

Note on the Possibility of Demonstrating the GM-Factors in Semen—J. C. Nielsen and K. Henningsen, *Medicine, Science and the Law*, 3 (4): 272-4 (July, 1963). The absence of GM group in semen indicates that a mixture of semen and blood can be investigated by the method previously reported by the authors. (JDN)

A Court Case of Consequence (Mc Cormick v. State, June, 1962, 34 Misc. 2d 806, 229 N of S.2d 441)—B. Rummel, *The American Rifleman*, 112 (9): 44 (Sept., 1964). A case of negligence by a police officer causing the death of a man. \$25,000 damages awarded. (JDN)

Federal Firearms Controls—J. J. Basil, Jr., *The American Rifleman*, 112 (9): 54-5 (Sept., 1964). A general discussion of Federal laws and taxes pertaining to the possession and transfer and sale of firearms and explosives. (JDN)

Determination of Narcotic Analgesics in Human Biological Materials—S. J. Mulé, *Analytical Chemistry*, 36 (10): 1907-14 (Sept., 1964). Morphine derivatives (iminoethanophenanthrofurans) are separated and determined by ultraviolet spectra, thin layer chromatography and gas liquid chromatography. Spectra, reagents, and retention times are given. Data on analgesics of the following classes is also reported; iminoethanophenanthrenes, diarylalkoneamines, arylpiperidines, and benzomorphans. (JDN)

Specific Spot Test for Aldehydes—M. H. Hashmi, A. A. Ayaz, and H. Ahmad, *Analytical Chemistry*, 36 (10): 2029 (Sept., 1964). Aldehydes react with 0.5% solution of sodium chlorite plus a drop or two of 0.1N HCl to produce a yellow color. Ketones, alcohols, ethers, haloforms, phenols, amines, and inorganic compounds do not interfere. (JDN)

Interviewing—W. D. Crowley, *The Australian Police Journal*, 18 (3): 181-5 (July, 1964). A discussion of the principles of interviewing (Aim, Subject, Interviewer, Preparation for the Inter-

view, Venue, Conducting the Interview, and Questioning Technique) and some suggested modes of questioning. (JDN)

Christmas Road Casualties—Anon, *The Police Journal*, 37 (8): 357 (Aug., 1964). The Road Research Laboratory reports that a high proportion of fatal accidents are directly attributable to alcohol. (JDN)

The M. 6 Experiment—G. Gates, *The Police Journal*, 37 (8): 366-74 (Aug., 1964). A study of the effectiveness of combined traffic control, helicopter, communication and electronic aids. No conclusion published as yet. (JDN)

Intoxication and Motor Vehicles—D. E. G. Saunders, *The Police Journal*, 37 (8): 388-95 (Aug., 1964). A general discussion of the handling of suspected intoxicated drivers under the Road Traffic Act, 1962. Clinical observations and urine or blood tests are discussed. (JDN)

Fatal Phosphorous Poisoning Elucidated by Exhumation Three and a Half Years After Burial—J. Zeldenrust and D. D. Boer, *Medicine, Science and the Law*, 4 (2): 120-1 (April, 1964). Substantial quantities of elemental phosphorus were found in the stomach, intestines, and muscles of a body buried for 3½ years. No other cause of death could be found. (JDN)

Individualizing Dry Blood Samples by Demonstration of the Rhesus Antibody—J. I. Thornton and P. L. Kirk, *Journal of Forensic Medicine*, 10 (3): 123-127 (July-Sept., 1963). Fifty experimentally dried blood specimens were examined for Rh antibody by a microscale indirect Coombs test. This consisted of eluting the dried material with 22% bovine serum albumin, 5 mg in 50 µl, for 30 min. The eluate was filtered through a cotton pledget and treated with 3 µl of 1% suspension of Rh + Group O cells. After one hr. incubation at 37°C, the cells were washed with isotonic saline, resuspended in 40 µl of 22% bovine albumin and transferred to wells of an agglutination plate. 20 µl of Coombs anti-globulin serum was added, rotated for 10 min. at 120 RPM and agglutination read at 100×. The Rh antibody could be detected for two weeks. 2½ hours are required for the test. (JDN)

A Study of Barbiturate Estimation in De-

composing Samples of Post-Mortem Whole Blood—L. K. Turner, *Journal of Forensic Medicine*, 11 (1): 24-30 (Jan.-March, 1964). Two methods are given for the determination of barbiturates in whole blood. Method 1. is a Free Barbiturate Assay; Method 2. determines both Free and Protein-bound Barbiturates. Method 1. uses perchloric acid for protein precipitation, followed by chloroform extraction and purification. Method 2. uses pepsin to liberate the protein-bound barbiturate, after which Method 1. is followed. (JDN)

Individualization of Dry Blood Samples—Demonstration of Syphilis Antibody—C. I. Leister, Jr., J. I. Thornton, and P. L. Kirk, *Journal of Forensic Medicine*, 11 (1): 31-5 (Jan.-March, 1964). Dried blood stains yielded positive results for syphilis antibody for a period of forty days. (JDN)

Agar Gel Electrophoresis of Antemortem and Postmortem Serum Proteins—J. F. Bigger, Jr., and J. L. Silverman, *Medicine, Science and the Law*, 4 (3): 148-8 (July, 1964). Thirteen serum specimen sets were drawn from terminal patients within twenty four hours post mortem and antemortem. These specimens were processed by agar gel electrophoresis, using the Wieme Technique III. The serum fractions matched well with the exception of beta₂ globulin. (JDN)

The Use of Scientific Evidence and its Legal Limitations—Myron L. Gordon, *Journal of Forensic Sciences*, 9 (3): 301-13 (July, 1964). Scientific proof cannot always be admitted into evidence. It is suggested that courts should be receptive to such evidence when its professional acceptance by men of science is adequately established. If there is a real doubt about the accuracy or acceptability of the proposed proof, the court would be warranted in rejecting the evidence unless the policy of the state is expressed to the contrary by the legislature.

If admissible, scientific proof can have salutary results for the administration of justice in regard to avoiding trials, shortening trials, producing greater accuracy in the results of trials, and improving the public's confidence in the courts. (WEK)

The Effect of Postmortem Changes of Carboxy-

hemoglobin Results—Abel M. Dominguez, James R. Halstead, and Thaddeus J. Domanski, *Journal of Forensic Sciences*, 9 (3): 330-41 (July, 1964). A study concerned with the interpretation and the significance of carbon monoxide findings in cases associated with decomposition. The evidence presented indicates that the percentage of carboxyhemoglobin is not markedly altered during postmortem decomposition when (1) the specimens are properly preserved (i.e. upon collection, the specimens are rapidly frozen and maintained in a frozen state until examined for carbon monoxide), and (2) the blood extracted from tissue is examined as soon as possible for the presence of carboxyhemoglobin. It appears possible to obtain carboxyhemoglobin values, utilizing blood extracted from tissue, in the presence of postmortem decomposition, that are similar to the antemortem levels. Unreliable carboxyhemoglobin saturation values may occur, and the possible contributory factors responsible for a spurious increase of carboxyhemoglobin are discussed, along with corrective measures. (WEK)

A Rapid and Specific Method for Determining Ethchlorvynol—Jack E. Wallace, William J. Wilson, Jr., and Elmer V. Dahl, *Journal of Forensic Sciences*, 9 (3): 342-51 (July, 1964). A rapid, specific method for the quantitative determination of ethchlorvynol (a non-barbiturate hypnotic) in biological materials has been presented. The method involves formation of a carbonyl derivative of ethchlorvynol in acid solution, steam distillation of the carbonyl compound and formation of its semicarbazone and final spectrophotometric determination of its absorbancy, which follows the Beer-Lambert law over a wide range.

The method is sufficiently sensitive to permit determinations of the drug in blood and urine after ordinary, therapeutic doses. (WEK)

The Identification of Some Non-Phenothiazine Derivative Tranquilizers—Cecile Korczak-Fabierkiewicz and George H. W. Lucas, *Journal of Forensic Sciences*, 9 (3): 353-9 (July, 1964). Color, crystal, and chromatographic tests are reported for the non-phenothiazine tranquilizers—meprobamate, reserpine, hydroxyzine, chlormezanone, and azacyclonol. (WEK)

Homicide by Pepper—Lester Adelson, *Journal of Forensic Sciences*, 9 (3): 391-5 (July, 1964). An

unusual form of homicide. A child died of asphyxia following the pouring of the contents of a pepper shaker into her mouth and throat by her mother. Death resulted from occlusion of her air passages by the pepper. (WEK)

The Development of Pulmonary Edema During the Agonal Period of Sudden Asphyxial Deaths—Henry E. Swann, Jr., *Journal of Forensic Sciences*, 9 (3): 360-73 (July, 1964). Pulmonary edema and other conditions in the lungs similar to those in human sudden asphyxial deaths were observed in laboratory animals when breathing was stopped by similar methods. Breathing was stopped in these animals by drowning, brain injury, strangulation, Nembutal, ether, nitrogen, and carbon monoxide. Autopsy was performed within five minutes after cessation of breathing and the lungs were placed in formalin before the heart had stopped beating. One hundred of the 133 animal lungs had edema.

It is concluded that pulmonary edema develops during the agonal period in sudden asphyxial deaths. The presence of edema in the lungs of animals during the agonal period indicates that consideration should be given to this factor in artificial respiration procedures. The results of this study indicate that in assessing the pulmonary pathology of a drug or toxic agent, consideration must be given to how the animal was sacrificed. (WEK)

Chloracetophenone (Tear Gas) Poisoning: A Clinico-Pathologic Report—A. A. Stein and William E. Kirwan, *Journal of Forensic Sciences*, 9 (3): 374-82 (July, 1964). A 29-year-old man barricaded in a small room was exposed to chloracetophenone (tear gas) from a single #112 grenade for approximately 30 minutes. Thereafter he was subdued and brought to the hospital for therapy. He died in acute pulmonary edema 12 hours after admission. The pathology observed was described. Caution in the use of tear gas grenades should be tempered by a number of factors including knowledge of the lethal exposure dose, the contents of the grenade, volume estimation of the physical enclosure, the mental status, and the weapons available to the individual. (WEK)

Accidental Death Due to Hydrofluoric Acid—Robert M. Greenyke and Harold C. Hodge,

Journal of Forensic Sciences, 9 (3): 383-90 (July, 1964). Case reports are presented of two instances of acute hydrofluoric acid poisoning with severe dermal exposure but in which inhalation of gaseous HF presented a major feature. Pulmonary findings dominated both the clinical course and autopsy examination in each instance. Significant, however, was the demonstration of blood fluoride levels in both patients comparable to those found in persons dead of ingested fluorides. (WEK)

Congenital Tricuspid Insufficiency—Report of an Asymptomatic Case with Sudden Death—Clifford H. Urban, *Journal of Forensic Sciences*, 9 (3): 296-402 (July, 1964). The patient reported here had tricuspid insufficiency due to short chordae tendineae anatomically comparable to those previously described. She was asymptomatic and died suddenly and unexpectedly. Only one previously reported patient was asymptomatic during the adolescent period. No other reported case died suddenly. (WEK)

The Benzidine Test, A Critical Review—B. J. Bulliford and L. C. Nickolls, *Journal of Forensic Sciences*, 9 (1): 175-91 (January, 1964). As a result of a number of tests for the detection of blood by the benzidine reagent, the authors concluded that the test is the most positive of the various tests available, but it is not specific for blood. Under normal crime conditions, interferences usually attributed to this test are absent. Most chemical interference can be eliminated by inspection or a two solution test. Vegetable peroxidases will disappear on standing or by heating. Although other body secretions may show a reaction, this can be attributed to admixed blood. If used in conjunction with electrophoresis, the authors feel that an experienced worker may report a positive reaction as indicative of the presence of blood. (WEK)

Forensic Neuropathology XI. The Asphyxiant Gases—Cyril B. Courville, *Journal of Forensic Sciences*, 9 (1): 19-46 (January, 1964). Noxious gases or vapors which produce untoward manifestations in man may be divided into the direct asphyxiants, whose toxic effects are due mainly to replacement of oxygen, and the indirect asphyxiants, whose toxic effects result from absorption of poison through the air passages. There are three types of direct asphyxiants: simple