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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Race Identification from Cranial Measurements—Eugene Giles and Orville Elliot, *Journal of Forensic Sciences*, 7 (2): 147-57 (April 1962). Two pairs of discriminant function formulas, for males and females, are presented that permit the quick placement of a skull into white, American negro, or American Indian categories by means of 8 cranial measurements. On a sample of 551 males, 82.6% were classified correctly, and likewise 88.1% of 471 females, indicating the degree of reliability the technique possesses. An additional formula using 5 of the same measurements is given for sexing a specimen when this aspect of identification is also in question. (WEK)

Forensic Neuropathology III. Intracranial Hemorrhage—Spontaneous Versus Traumatic—Cyril B. Courville, *Journal of Forensic Sciences*, 7 (2): 158-88 (April 1962). The presence of gross effusion of blood in the intracranial space in case of death after trauma to the head always raises a single but important question—is the hemorrhage spontaneous or traumatic? From his knowledge of the manifold etiologic possibilities of such effusions the examiner is aware that it could be either. However, extradural hemorrhage is almost invariably traumatic. Subdural hemorrhage is very likely to be traumatic, except for occasional exceptions in infancy. Subarachnoid hemorrhage could also be either spontaneous or traumatic, but is much more often traumatic when the total factors in a series of cases are considered. Intraencephalic hemorrhage (including those of the brain stem and cerebellum), may also be spontaneous or traumatic but is statistically more commonly spontaneous (except for effusions in the brain stem); traumatic

hemorrhage can usually be identified by its distinguishing characteristics and concomitant lesions.

The problem of causation in all of these cases of intraencephalic hemorrhage can usually be decided by a careful analysis of the antecedent history, particularly as to the severity, the mechanism, and the location of the effusion. A gross and microscopic study of other lesions of the brain further serve to make the situation clear. In most instances, there is little excuse for misinterpreting the cause of the bleeding in any given case, assuming that all of these precautions are taken. (WEK)

Estimating the Time of Death—The Use of the Cooling Formula in the Study of Postmortem Body Cooling—Thomas K. Marshall, *Journal of Forensic Sciences*, 7 (2): 189-210 (April 1962). The formula which has been devised to express the cooling observed in naked corpses under experimental conditions can be used to construct theoretical cooling curves for any corpse cooling in still air of a uniform temperature, once the height, weight, and external temperature are known. These curves help in assessing the influence on postmortem cooling of the environmental temperature and body size; they show that the *rate* of cooling is influenced by both these factors and that no formula has value which fails to take both factors into account. The curves show by how much the real cooling of a naked corpse differs from that predicted by Newton's Law, and they demonstrate under what circumstances a delay in the fall of temperature is to be expected. The cooling formula can also be used to calculate the "virtual cooling time" of any size of body in any temperature, and these calculations underline the fact that in still air the time to cool to room temperature is independent of the air temperature; it is determined entirely by body size.

The formula was found to hold for cooling in the upper abdomen and comparison of the cooling

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factors with those of the rectum showed a rate of cooling slower, in the liver region, by about $0.01^{\circ}\text{F}/\text{hr}/^{\circ}\text{F}$. In some experiments, the onset of cooling in the upper abdomen was delayed, possibly due to metabolism continuing after death, and it seemed that this region was not the best place to study body cooling. In view of the accessibility of the rectum, there seemed little advantage in the use of any other site.

When the analysis used in the study of the cooling of naked bodies was applied to ten clothed bodies the applicability of the formula was once more demonstrated. The effect of clothing on cooling can be gauged from the graph relating the size, and cooling, factors. A formula was suggested whereby the cooling of a clothed body in still air of a uniform temperature can be calculated, but more experiments need to be done on clothed corpses in order to establish with greater accuracy the relationship between the cooling factor and body size. (WEK)

Estimating the Time of Death—The Use of Body Temperature in Estimating the Time of Death—Thomas K. Marshall, *Journal of Forensic Sciences*, 7 (2): 211–221 (April, 1962). Although it has been shown possible to reconstruct accurately the fall of temperature of corpses cooling under experimental conditions by means of the Cooling Formula, the Standard Cooling Curves constructed from it will not enable the time of death of a body found dead to be determined with a satisfactory degree of accuracy. This is due to the fact that average values were used for the constants employed in the construction of the Standard Cooling Curves. The use of the Cooling Formula itself, with constants determined specifically for the body, will give greater accuracy, and a method for doing this has been suggested. Considerable errors however will still be introduced by changes in the environment during cooling, and the persistent limitation in the calculation of the time of death of all methods employing cooling is ignorance of the body temperature at death. This can vary considerably.

It would seem that the timing of death by means of temperature can never be more than an approximation. (WEK)

The Simultaneous Detection of Alkaloid, Neutral, and Acidic Poisons in Human Tissues by High Temperature Reversed Phase Paper Chromatography—Harold V. Street, *Journal of Forensic*

Sciences, 7 (2): 222–30 (April 1962). A chromatographic process in which all fractions are put on a single sheet of paper and chromatography carried out with one solvent. The author describes the use of tributyrin—impregnated paper in an oven at a temperature of $80\text{--}90^{\circ}\text{C}$ and the use of M/15 phosphate buffer, pH 7.4, as the solvent.

The most useful practical advantage of the procedure is that only 20 minutes are needed to effect the chromatographic resolution of very many compounds. This represents an enormous saving of time, and in actual fact gives improved resolution and more compact spots than conventional chromatography. Furthermore, the chromatography of all fractions can be done at the same time in the one solvent on one sheet of paper. The technique should, therefore, prove to be of value not only as a screening technique for the basic alkaloids and the neutral groups but also for actual identification in the case of the morphine group and of the weak acid group. (WEK)

Chemical Post-Mortem Changes in the Intra-Ocular Fluid—Frederick A. Jaffe, *Journal of Forensic Sciences*, 7 (2): 231–37 (April 1962). The chemical postmortem changes in the vitreous fluid of the eye were investigated in an attempt to find an alternative to the use of cerebrospinal fluid. It was found that there was a consistent rise in the level of potassium, commencing shortly after death and continuing for 125 hours. The advantages of the use of vitreous fluid appear to be its easy accessibility and freedom from blood contamination.

The levels of lactic acid, pyruvic acid, ascorbic acid, non-protein nitrogen, sodium, and chloride were also studied but were found to be of less use than measurements of potassium. (WEK)

A Reference Library of Pharmaceutical Solid Dosage Forms—G. E. Brooks, W. H. Widdifield, and R. C. Gupta, *Journal of Forensic Sciences*, 7 (2): 238–47 (April 1962). A system of cataloguing American pharmaceutical products according to their physical characteristics such as:

- (a) Type of coating
- (b) Top view
- (c) Side view
- (d) Type of coloring
- (e) Outside color
- (f) Markings
- (g) Number of inside colors
- (h) Inside colors

- (i) Scoring
- (j) Diameter
- (k) Thickness

The reference library was developed as an aid in forensic toxicology to provide for rapid preliminary identification of solid dosage forms of pharmaceuticals. Possible applications of the library in assisting poison control centres and police agencies are described. (WEK)

Silver Nitrate Paste as a Thief Detection Aid—A. Schoentag, J. Roth, and M. Lechner, *Archiv fuer Kriminologie*, 128 (3/4): 88-98 (Sept.-Oct. 1961). When a silver nitrate-paste thief trap has been set and a person with incriminating stains is found, he is often able to present some fairly convincing explanations for the legitimate presence of the stains. To make the transfer to a thief's hands more specific it is suggested that the paste (vaseline) be deposited on the bills, cashbox lid, etc. through a template or stencil which would leave a distinctive pattern on the skin. This stencil can be made from a piece of wire screen or a sheet of paper which has been patterned with a paper punch. Presumably, the proposed method would also work with other thief-trapping substances in paste form. (JB)

An Unusual Suicide Attempt—K. Franke and G. Hesse, *Archiv fuer Kriminologie*, 128 (5/6): 169-172 (Nov.-Dec. 1961). While suicides with cutting or stabbing instruments, including axes, are relatively rare, the method of driving a cobbler's awl into the head with a hand axe should be unique. Such a case came to the authors' attention. A 54-year-old man with a psychiatric history and one previous suicide attempt selected this instrument, the point of which he drove into the brain to a depth of about $2\frac{1}{4}$ inches from near the top of the head. He quickly became unconscious but awoke and was discovered. After removal of the instrument the would-be suicide recovered and was placed under psychiatric and neurological care. (JB)

Blood Grouping Substances in Teeth—E. Scheibe, B. Gibb, and E. Ulrich, *Archiv fuer Kriminologie*, 128 (5/6): 155-163 (Nov.-Dec. 1961). A simplified method for determining blood group from teeth is presented. A single tooth was extracted from cadavers with known blood groups and subjected to a drying, pulverizing, and ex-

traction process. The results were clearly positive for all the secretors and negative for all the non-secretors in the A and B groups. The agglutination test is specific and overcomes the disadvantages of group determinations from decomposed tissue or bone specimens. (JB)

Detection of Metallic Poisons by Paper Chromatography—S. N. Tewari, *Archiv fuer Kriminologie*, 128 (1/2): 30-32 (July-Aug. 1961). A paper chromatography technique is described for the detection of arsenic, antimony, and tin in specimens submitted for toxicological analysis. The sensitivity of detection was 2.0 micrograms by this technique, said to be less cumbersome and easy to perform than the Marsh test. (The author notes that arsenic is used homicidally more frequently in his country, India, than in any other country. Accidental deaths also occur from overdoses when arsenic is taken as an aphrodisiac.) (JB)

Examination of Headlights in Automobile Accidents—G. Kremmling and A. Schoentag, *Archiv fuer Kriminologie*, 128 (1/2): 1-15 (July-Aug. 1961). A systematic analysis of the microscopic appearance of headlight lamps on automobiles involved in accidents at night. By noting specific oxidation deposits and evidence of melting, particularly on the filament, it is often possible to determine the condition of the lamp and whether it was on or off or on high or low beam at the time of the impact. While the determinations discussed are limited in scope to bulb-and-reflector lamps common in Europe some principles would also apply to the sealed beam type. (JB)

Genuine vs. Simulated Illiteracy—A. Naftali, *Kriminalistik*, 16 (1): 29-33 (Jan. 1962). An examiner of questioned documents is sometimes confronted with a suspect who, when asked to provide a handwriting specimen, claims that he cannot write. This problem can be a very real one, especially in underdeveloped countries where independent documentary proof of the suspect's writing ability may not be available. The author discusses his experience with genuine illiterates and presents a guide for differentiating their behavior and writing efforts from those of simulating illiterates. Illustrations also show how the two types manipulate the pen and the paper differently. What basically distinguishes the behavior of a

genuine illiterate is that, like a child, he actually learns to write before the eyes of the examiner. (JB)

A Complicated Suicide—H. Landmann, *Kriminalistik*, 16 (4): 169-171 (April 1961). In a case of suicide by gunshot the victim, a 28-year-old medical student who was under psychiatric care, went to some lengths to insure that the self-inflicted injuries would be fatal. In the basement of his home he had constructed a frame consisting of boards and two tables on which rested four .22 caliber rifles strapped to wooden supports. Two weapons on each table pointed to the suicide's head at each temple as he was seated in the center of the frame. The cocked triggers of all four weapons had been rigged to strings, and tension was provided by gathering the strings to a suspended, heavy vise. The victim apparently positioned his head between the four muzzles by means of a mirror and then used a pair of tin snips to cut the master string which held the weight, causing the four-gun barrage to fire simultaneously. (JB)

Photomicrographic Equipment for Criminalistics—C. Moretti, *Revue Internationale de Criminologie et de Police Technique*, 15 (4): 311-313 (Oct.-Dec. 1961). Describes a range of attachments for photomicrography and macrography with the 35 mm. camera, including illuminators and a Swiss-made extension objective capable of focusing from infinity down to 1:1. (JB)

Determining Police Training Needs: In-Service—H. L. Rogers, *Police*, 6 (4): 55-61 (March-April, 1962). The author states that before a sound and complete in-service training program can be developed, an adequate description of the trainee's job must be prepared. From a resume of the job description, the topics and their scope can be incorporated into a well rounded training program. (JDN)

The Third Dimension in Police Training—A. Z. Gammage, *Police*, 6 (4): 52-4 (March-April 1962). The author suggests the use of three dimensional models, mock-ups, and specimens to convey to police groups subjects difficult to describe. Advantages, limitations, and cautions are discussed. (JDN)

Sound Recordings as Police Training Aids—Allen Z. Gammage, *Police*, 6 (6): 15-18 (July-Aug.,

1962). Discussion of form, equipment, and presentation of slides, film strips, and other visual aids in police training programs. (JDN)

Intelligence File—T. F. Coon, *Police*, 6 (4): 26-7, 79 (March-April, 1962). A discussion of the growth and merit of intelligence files from the old system, whereby an investigator carried his information on the habitat of criminals in his head, to the combination of all observations, associates, vital statistics of criminals and suspect criminals into an orderly file. Contributions to this file cover a wide variety of sources.

A key to the success of each system may hinge on the fair distribution of credits when a good case is closed.

Suggestions are given concerning the broad concepts covering the operation of an intelligence unit. (JDN)

Traveling Thieves: The Problem and Some Techniques in Dealing with It—G. H. McLaughlin, *Police*, 6 (4): 28-30 (March-April, 1962). Due to the mobility and organization of burglary gangs, accurate, complete, coordinated lines of information exchanged between departments is necessary. The author suggests the following files: (1) Criminal History File, (2) Stolen Property File, (3) Burglary Briefs, and (4) Known Offender Information. (JDN)

Firearms Identification Problems—Anon., *R.C.M.P. Gazette*, 24 (7 & 8): 17 (July-Aug., 1962). A brief discussion of the scope of problems handled by a firearms identification laboratory. Mention is made of the instruments and reference collections needed. (JDN)

Examination of Footprints at Crime Scenes—C. D. Tiller, *R.C.M.P. Gazette*, 24 (4): 12 (April, 1962). Footprints on paper often can be improved if dusted (not brushed) with Willow Charcoal fingerprint powder. (JDN)

The Starch Powder-Steam Method of Fixing Iodine Fumed Latent Prints—Joergen K. Larsen, *Fingerprint and Identification Magazine*, 44 (1): 3-5 (July, 1962). Suggest powdered starch as a fixative for iodine fumed fingerprints. Powdered starch is applied with a fine brush, excess starch is removed, and the remainder is exposed to a gentle stream of steam for 1-2 seconds. (JDN)

Plaster Masks Give Police 3-D Views of Wanted Criminals—Anon., *Popular Mechanics*, 116 (3): 105 (Sept., 1961). Based upon a 115-item questionnaire, three dimensional Plaster of Paris masks are constructed. A set of basic masks are used as a starting point in questioning witnesses. (JDN)

Traveling Microscope Camera: A Continuous Method of Photomicrography—F. H. Heck, Jr., *Journal of the Biological Photographic Association*, 30 (1): 17-22 (February 1962). Flat surfaces, such as documents, may be viewed and photographed as a continuous strip by means of a travelling microscope. The image is recorded on a synchronously moving film by means of a slit rather than a shutter. (JDN)

A Study of Modern Methods of Grouping Dried Blood Stains—L. C. Nickolls and M. Pereira, *Medicine, Science and the Law*, 2 (3): 172-9 (April 1962). The authors compared the procedures of Kind and Coombs-Dodd for typing minute quantities of dried blood. The following procedure is recommended: A stained thread is placed in a cavity slide, antisera is added and the fibers are teased apart. After one hour the antisera is pipetted off and the fibers are washed with saline three times. One drop of a 0.5% suspension of appropriate red cells in 1% solution of bovine albumin in saline is added, and the slides are placed in a moist chamber at 50°C for ten minutes. After cooling let set for 2-5 hours, examining periodically under the microscope. Agglutination will indicate the presence of the same agglutinin as that of the cells added. MN and Rhesus D can be detected. (JDN)

Differential Thermal Analysis of Organic Samples—E. M. Barrall II and L. B. Rogers, *Analytical Chemistry*, 34 (9): 1101-5 (August, 1962). Analyses on samples of 1 to 10 mg. size are possible on the equipment described.

Horizontal Chromatography Accelerating Apparatus—J. F. Herndon, H. E. Appert, J. C. Touchstone, and C. N. Davis, *Analytical Chemistry*, 34 (9): 1061-64 (August, 1962). Acceleration of horizontal chromatography by centrifugal force and increased rate of solvent delivery. (JDN)

Identification of Carboxylic Acids in Alkyd and Polyester Coating Resins by Programmed Temperature Gas Chromatography—G. G. Esposito

and M. H. Swann, *Analytical Chemistry*, 34 (9): 1048-52 (August, 1962). Resins are esterified with lithium methoxide, extracted with methylene chloride, and chromatographed on a polyester-Carbowax and a silicone grease column. Methyl-ester peaks were identified by calculating their retention relative to triacetin. (JDN)

Aid for Collection of Liquid Blood at Crime Scenes. Occasionally, blood is found in liquid state at the time of arrival of investigators. These specimens should be collected for determination of species and type. As a rule, collection requires the use of pipettes and saline-filled test tubes. Recently a unit ideally suited for this operation was marketed by Becton-Dickinson as the Unopette.

The Unopette consists of a polyethylene vial of saline solution, a plastic pipette, and a pipette shield. To collect liquid blood, the stopper on the reservoir is removed, shield removed from the pipette, and pipette and reservoir assembled. The unit is held in a vertical position with the pipette up while the reservoir is squeezed to provide subsequent suction when the pipette is inserted into the blood specimen. Blood is drawn into the reservoir until a decided pink color is attained. The pipette can be reversed for thorough flushing, if necessary.

If the specimen is nearly dry, but still retains suspendable cells, saline can be added from the reservoir, and by repeating washing, a reasonable concentration of cells can be put into suspension. The entire unit can be secured by tape, marked, and transported without further treatment.

The resulting blood solution can be typed and subjected to species determination. (JDN)

Watermarks on Paper. Their Value as Criminalistic Evidence—F. Martin, *International Criminal Police Review*, No. 150: 205-11, August-September 1961. A discussion of the origin and manufacture of watermarks together with their criminalistic value as illustrated in two cases. Comments on the value of watermarks in connection with valuable documents or security papers and in connection with the source of anonymous letters are included. The author who feels strong need for paper collections in connection with watermarks describes the national collection of watermarks maintained in Switzerland. (OH)

Testing for Human Blood—Victor Fidely Lapagesse and Eugenio Lapagesse, *International Criminal Police Review*, No. 150: 212-16, August-