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## Police Science Technical Abstracts and Notes

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## POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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**An Application of Microradiography to Criminalistics**—Rene Lechat and Henri Muller, *Revue Internationale de Criminologie et de Police Technique*, 12 (2): 124–128 (April–June, 1958). The critical evidence in a fatal hit and run case consisted of two minute flakes (ppr. 1 mg) of green paint imbedded in the frontal bone of the victim. The color was found to correspond to a sample from the suspect's truck but the small quantity of questioned material precluded other tests. It was decided to apply a microradiography technique using a thin section of paint and an extremely fine grain film (Lippmann). This technique, applied to various automotive paint specimens, revealed characteristic differences in the appearance of the paint components at 120× magnification, due to differences in pigment size and radiopacity. On this basis it was concluded that the questioned and the standard paints were identical. (JB)

**Class Characteristics of "Olympia" Typewriters**—Josef Haas, *Arch. für Kriminologie*, 121 (5–6): 126–142 (May–June, 1958). The type design and construction features of "Olympia" typewriters are discussed and illustrated from an identification standpoint, specifying dates and serial numbers of design changes. The "Olympia" machines which have been marketed under several brand names in East and West Germany are now being manufactured at the rate of 3,000 each day making it the foremost German typewriter. (JB)

**Television, A New Police Aid**—Th. Guillemat, *Revue Internationale de Criminologie et de Police*

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*Technique*, 12 (1): 68–80 (January–March, 1958). A survey of video equipment used by European police agencies including its use in traffic control, bank transactions, store surveillance, etc. Portable units are described as well as a TV Snooperscope for night observation. (JB)

**Unusual Impressions**—Arne Svensson, *Nordisk Kriminallteknisk Tidskrift*, 28 (5): 113–118 (May, 1958). Crushing or cutting injuries to bone usually only give information on the class characteristics of the instrument used. The absence of individual characteristics from edged tools is partly due to the porosity of bone. In the related case, however, it was possible to match tool marks in the dense, outer layer of the skull of an illegally killed moose with the edge of a suspect's hatchet. Another case is described involving a comparison (class characteristics) between a fabric impression of a knee in a dirt road surface with a burglar's trousers. (JB)

**Two New Techniques for Determining the Time Elapsed Since Firing of a Shotgun Shell (II)**—A. Schoentag and H. Pfreimter, *Arch. für Kriminologie*, 121: 123–125 (May–June, 1958). While Method I (reported in the *Archiv*, 121: 8–12) was based on the weight loss of a fired shotgun shell due to the gradual escape of powder gases from the cardboard cylinder, the second technique utilized weight increase due to moisture adsorption. The cylinder is cut from the base and weighed on an analytical balance over a period of several days, simultaneously with a standard shell. Generally, an increase will be recorded for the first three days after which the curve falls and reaches an equilibrium after about twelve days. As in Method I, the weight recordings of the questioned shell are compared with a standard weight loss curve for shells of the same make and type. Since it is based on moisture adsorption, this method

will not work with shells subjected to gross humidity changes or rain. (JB)

**Solving Crimes Through Work of Police Artists**—N. J. Kube, *FBI Law Enforcement Bulletin*, 27 (8): 7-11 (August, 1958). Since 1953 St. Louis has had a Technical Arts Division within its Homicide Squad. Its two men make scale drawings of crime scenes and from witnesses' descriptions portrait parle drawings of suspects. (ROA)

**Suggestions for the Prevention of Jewel Thefts**—P. J. Deeley, *FBI Law Enforcement Bulletin*, 27 (8): 12-14 (August, 1958). Excellent description of various ways jewel thieves operate. Precautions to prevent such thefts are also given. Most interesting is that the Chicago Police "jewelry detail" meets arriving jewelry salesmen, store his merchandise overnight in a vault, and during the day give a personal escort by one or more officers. (ROA)

**Chemical Tests to Determine Alcoholic Influence—Their Use and Misuse**—Robert L. Donigan, *The Police Yearbook*, 1958, p. 291-306. Non-technical survey of the field, with particular emphasis on the legal aspects. Misuse mainly consists of not prosecuting those under .15 percent and prosecutors/police committing avoidable errors in the preparation and presentation of chemical-test evidence. (ROA)

**Color Photography in Law Enforcement**—Harris B. Tuttle, *The Police Yearbook*, 1958, p. 155-166. General discussion of the various ways color photography can improve law enforcement. (ROA)

**What Movies Have Done For Us**—William Winfield, *The Police Chief*, 25 (8): 10-12 (August, 1958). This article gives an excellent explanation of the value of taking color movies of drunk drivers. Fifty feet of color film is shot of every driver in a specially adapted corridor of the Rochester, New York police headquarters. This arrangement is the height of ingenuity and the cost is very inexpensive. (ROA)

**Investigator Cars Increase Police Efficiency**—C. W. Norman, *FBI Law Enforcement Bulletin*, 27 (6): 7-9 (June, 1958). Springfield, Missouri, with population of over 100,000, used two specially equipped cars to handle emergencies and crime scene work. (ROA)

**Magnetic Metals Detector Used in Crime Detection**—John Ascher, *FBI Law Enforcement Bulletin*, 27 (6): 22-23 (June, 1958). The Chicago Scientific Crime Detection Laboratory uses a 40 pound instrument, with a three-foot probe, to locate ferromagnetic items some distance from the probe (up to 15 feet away in leaves, deep snow, and when the probe is operating under water). Lt. Ascher offers to furnish additional data to any interested law enforcement agency. (ROA)

**A Correlation Study of Blood Alcohol Levels as Determined by Alcometer, Breathalyzer and Direct Blood Analysis Including Blood-Urine Alcohol Ratio**—J. D. Chastain, H. J. Strauss and C. W. Maupin, *Police*, 2 (6): 50 (July-August, 1958). One-page report of experiments performed on two evenings in Fort Worth, Texas. Alcometer & Breathalyzer were within  $\pm .015\%$  of direct analysis of the blood. No statistics, charts, or tables whatsoever are given. However, these can be obtained by writing to Texas Department of Public Safety, Box 4087, North Austin Station, Austin, Texas. (ROA)

**Blood, Fiber and Hair Evidence in Crimes vs. Person**—*FBI Law Enforcement Bulletin*, 27 (6): 13-18 (June, 1958). Very good basic article on the recovery, shipping, and identification of that evidence most closely associated with crimes against persons. (ROA)

**The Camera Column—Depth of Field**—D. O. Moreton, *Law and Order*, 6 (5): 18-19 (May, 1958). Explanation of depth of field in photograph. (ROA)

**The Camera Column—Hyperfocal Distance**—D. O. Moreton, *Law and Order*, 6 (6): 24+ (June, 1958). Explanation of hyperfocal distance and its relationship to depth of field. (ROA)

**The Camera Column**, D. O. Moreton, *Law and Order*, 6 (7): 42-44 (July, 1958). Discussion on a model lay-out of a police photographic laboratory. Right equipment properly placed can increase efficiency without any increase in personnel. (ROA)

**The Appreciation of Colour**—W. R. Harrison, *The Criminal Law Review*, 1958: 209-17 (April, 1958). The possible misconceptions of colors by witnesses to crimes are discussed. Dependency upon visual ability as well as lighting are pointed

out. The author suggests that a system of color charts or photographs as they appear under various lighting should be used to test the witnesses memory of colors pertinent to the criminal investigation, rather than to rely solely on a verbal description. (JDN)

**Photographing Bullets Without A Camera—***Industrial Photography Magazine* (August, 1958), p. 44. Professor Harold E. Edgerton of Massachusetts Institute of Technology, by use of simple techniques, has mastered the neat trick of making high speed photographic studies of bullets in flight without a camera. Midway between a high velocity rifle and its target is a standard 8 x 10 cut film holder so arranged that the line of fire would pass  $10\frac{1}{2}$ " in front of it. A double flash light source placed  $44\frac{1}{2}$ " from the film is directly facing it and leaving a space of 34" from the light source to the line of fire. The film was Panatomic X and was protected until the room was darkened. The light source is triggered by a microphone placed under the gun barrel. It is also possible to trigger the light source by means of a photo cell or manual switch. A 6" ruler is placed directly beneath the path of the bullet and provides a ready means of measuring the distance traveled by the bullet in the interval between the two exposures. Velocities are determined by computing the ratio of the distance traversed between the two exposures to the known time interval between the two exposures.

Cameras may also be used, but require mounting a fresnel lens in the end of the double flash light source unit. This permits the point light source to be focused sharply as an image on the lens of the camera. For studies of explosions, expendable sheets of shatterproof glass may be placed between the equipment and the subject. (WEK)

**Problems in the Identification of Proportional Spacing Typewriting—**Ordway Hilton, *Journal of Forensic Sciences*, 3 (3): 263-87 (July, 1958). A very interesting, intelligent and scientific discussion of the problems in the identification of proportional spacing typewriting. Hilton is of the opinion that these problems are not insurmountable. However, they do represent new challenges, and in some ways the problems are complicated, but if undertaken with a scientific attitude of mind and a thorough understanding of how these machines write, identification of the work of a particular typewriter follows a similar pattern to that

which has been used for years in standard typewriting problems. (WEK)

**Microscopic Identification of Man-Made Fibers from the Criminalistics Point of View—**Anthony Longhetti and George W. Roche, *Journal of Forensic Sciences*, 3 (3): 303-29 (July, 1958). A scheme for the identification of 18 man-made fibers manufactured commercially in the United States at the end of 1956 is presented. The scheme, including confirmatory tests, has been tested with unknown samples and has proved successful for the identification of a single fiber, including heavily dyed and heavily delustered samples. Although it is realized that the scheme might be difficultly adaptable in the case of a very deeply dyed fiber, particularly black, the occurrence of such deeply dyed fibers was found to be less than 5%. For this reason, it is believed that the scheme has practical application in the field of Criminalistics for the identification of man-made fibers; which, more often than not, will turn up as trace evidence in the form of a single fiber.

It must be understood that the field of man-made fibers, particularly at the present time, is one in which change is extremely rapid. Many of the fibers studied here can be expected to be altered as new manufacturing processes are developed; changes which in most instances will also affect the properties used in the identification scheme presented here. Furthermore, many new fibers will undoubtedly be discovered in the future. It is, therefore, considered imperative that the scheme be reviewed and revised, if necessary, every 2-4 years.

During the progress of the research reported here it was noted that, although the fibers generally fell into different categories which were valuable for their identification, many of the samples within one type would vary enough, especially as to optical properties, to suggest that many of the tests carried out in the scheme for identification of a fiber type should also be of value for the comparison of fibers to determine whether or not they could have originated from the same textile material. Such tests, being applicable to a single fiber, would be expected to increase the probability of a fiber "match" beyond the value now possible with a fiber type and color comparison.

The following additional research is recommended:

1. Incorporation of a scheme for the identifica-

- tion of man-made fibers into a larger scheme to include natural fibers.
2. Periodic review and revision of the scheme for man-made fibers to include new fibers and older fibers whose properties may have been altered by changes in manufacturing processes.
  3. Research into the relative frequencies of occurrence of all fiber types, particularly the man-made group.
  4. Statistical survey of the various fiber properties reported here in an effort to determine their value in the comparison of fibers. (WEK)

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**Chromatographic Methods of Analysis Applied to Forensic Problems**—Arthur J. McBay, *Journal of Forensic Sciences*, 3 (3): 364-69 (July, 1958). The author presents a brief discussion of the applications of chromatography to forensic problems. There is included a listing of 30 excellent references for those desiring further and more detailed information. (WEK)

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**New X-Ray Technique**—Anon., *Industrial Photographer*, 8: 127 (March, 1957). The method of Eaglesham is described whereby a photograph and a radiogram of an object can be taken simultaneously at a space relation that permits registry printing of the negative. Thus, an inside-outside print is obtained. This method might be applied to the inspection of suspected bombs or devices which must be dismantled and studied. (JDN)

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**Sheriff's Crime Laboratory Pays Its Way**—W. J. Cadman, *California Peace Officer*, 8 (1): 6, 7, 44 (September-October, 1957). A review of the growth of the Orange County (California) Sheriff's Department Crime Laboratory. The scope of the work and instruments are discussed. (JDN)

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**Time and Temperatures vs. Sperm**—Claude B. Hazen, Microanalyst, and Irvin G. Haviland, *Chicago Police Scientific Crime Detection Laboratory*. December 28, 1956, two sisters, age 13 and 15, were reported missing. On January 21, 1957, at about 1:30 p.m., their nude and frozen bodies were found on the shoulder of a county road southwest of Chicago. U. S. Weather Bureau reports for

the area indicated temperatures ranging from 15 degrees below zero to 20 degrees above zero for the 24 days the girls were missing.

On January 23, 1957, Coroner's Pathologists submitted to the Chicago Police Scientific Crime Detection Laboratory swabs, one of which was identified as a vaginal swab taken at autopsy. Extractions of the swab revealed a measured acid phosphatase activity sufficient to indicate the presence of semen. Microscopic slide preparations revealed the presence of spermatazoa.

The swab was kept under refrigeration in the temperature range of 40 to 45 degree F and slide preparations made from it were examined at approximately 7 day intervals. A preparation made at the end of a 67 day period revealed that the epithelial cells were disintegrated and the spermatazoa cells somewhat shrunken but still identifiable. After eleven months of refrigeration, microscope slides were prepared and revealed no identifiable epithelial cells, and a few cells, the morphology of which was insufficiently defined to positively identify as spermatazoa.

#### New Products

Submitted by: Claude B. Hazen, Chicago Police Scientific Crime Detection Laboratory

**Firearms Identification Service.** A unique service has been offered by the H. P. White Company, Box 331, Bel Air, Maryland. On subscription, information on firearms, bullets, head stampings, latest publications, manufacturers data, are sent to the subscribers on 4 x 6 cards. For a nominal charge additional emergency information can be obtained by writing, wire or phone. Each annual subscription starts October 1.

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**Photogrammetric Instruments for Taking Photographs for Evidence.** Wild, Heerbrugg Ltd., of Heerbrugg, Switzerland (Port Washington, New York) has adapted photogrammetry to the photography of crime and accident scenes. Three dimensional photographs can be taken on a camera as simple to operate as the ordinary camera used daily by police departments. The prints of these negatives, 6.5 x 9 cm, can be viewed in an ordinary stereoscope. A Plotting Apparatus permits accurate dimensions to be taken from the combined photographs.