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Police Science Technical Abstracts and Notes

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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X-Ray Diffraction Technique for Small Samples—R. K. Sorem, *Norelco Reporter*, 8(2):39-40 (March-April, 1961). Small samples may be obtained by scraping the desired surface area with a stylus made from a diamond point phonograph needle. The specimen is transferred to a gelatin fiber made by cutting a gelatin capsule. The adhesive, water, is kept to a minimum by touching the tip of the fiber to the edge of a drop for only a small fraction of a second and then immediately rolling it in the specimen. Small powder cameras are recommended to keep the exposure to a reasonable value. (JDN)

Two Darkroom Aids for Use in the Preparation of High Quality Prints and Lantern Slides—H. C. Martin and H. M. Allred, *Norelco Reporter*, 7(5):138-9 (Sept.-Oct., 1960). Two units are described which aid the photographer in judging print quality and making whatever changes produce the optimum results. Unit One, shows print quality as affected by negative contrast and paper contrast; Unit Two, shows print quality as affected by paper contrast and exposure time. (JDN)

Recognizing Where Arson Exists—C. W. Stickney, *The Fire and Arson Investigator*, 11(2):29-57 (Oct., Nov., Dec., 1960). A very comprehensive and instructive discussion of the investigation of the cause and dynamics of fire as interpreted from the residue. (JDN)

Chemicals and Their Application for Developing Latent Prints—A. R. Mc Laughlin, *Finger Print and Identification Magazine*, 43(1):3-7 (July, 1961). Formulas for the development of latent

fingerprints are given and discussed. These include iodine, osmic acid, ninhydrin, amido black, leucomalachite green, benzidine free base, and silver nitrate. (JDN)

Sub-classification of the 10 Arch Group—Parduman Singh, *International Criminal Police Review*, No. 145:41-4 (Feb., 1961). A method by which loop-type arches are classified by assigning Henry-type numerator-denominator values to fingers as follows: thumb-16, index-8, middle-4, ring-2, little-1. "One" is added to each total for left and right hand. (JDN)

Unusual Result of Vehicle Examination—R. L. Jackson, *International Criminal Police Review*, No. 145:34-6 (Feb., 1961). A hit and run suspect vehicle was examined by fingerprint technicians to determine the validity of the owners story that the vehicle had been "stolen." In the course of their processing, the image of the side of the victim's face was developed on the window of the car. At autopsy, parallel lines similar to rubber gaskets around windows were observed on the victim's head. (JDN)

Letter Form Models Advocated by Commercial Handwriting Systems—V. E. Herrick and Wayne Otto, School of Education, University of Wisconsin, 1961. This pamphlet contains an illustrated comparison of forms of upper and lower case letters in both cursive and manuscript writing systems currently in use in this country. Nineteen systems are surveyed. The authors point out that systems themselves contain variable letter forms in examples furnished in their manuals and discuss how a standardized form was chosen for this study.

Survey of the manuscript systems reveal that of the seventeen systems studied there is form agreement only in the "P" and the greatest variety of forms are found in the "E" and "M". Near agreement is found in the forms of the lower case

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"i" and "o" and the greatest variety of forms occur in the "g", "p", "q" and "y". "Differences found in manuscript forms are basically (1) in actual appearance of the letter, (2) order of stroke in forming the symbols, (3) stroke direction, and (4) the number of times the writing instrument pauses or is lifted from the paper surface in forming a letter."

Study of the eighteen cursive systems reveals that there are no upper case letter forms upon which there is complete agreement. The most uniformed being "A", "J", "M" and "O". Letters showing the greatest variation in form are the "B", "F", "I", "P", "Q", "R" and "T". The lower case cursive forms advocated are more nearly in agreement than in other style with virtual agreement in the forms of "a", "i", "k", "l", "m", "n", "s" and "t". Forms showing the greatest variation are "c", "g", "r" and "v".

It is unfortunate that the reproductions by line cut process in this pamphlet are in some instances of poor quality as the study has definite value to those active in the identification field. (OH)

Porous Glass Chromatography—Herbert L. MacDonell, *Nature* 189 (4761), 302-3, January 28, 1961, reports on the use of porous glass as a medium for chromatographic separations of fluid ink samples. This medium is extremely inert, optically transparent and has small pore diameter which after initial tests indicates that it produces unusually fine chromatograms. Advantages include very high surface area of porous glass which confines the sample to a small area due to immediate drying. This with longer development time provides improved resolution or definition of bands. Being an inorganic inert material, organic contamination is at a minimum and pyrolysis rates of specific components have been observed as individual bands changing in appearance. Chromatograms can be permanently filed for reference, and optical measurements have been made directly on dried transparent porous glass after the separations have been accomplished. (OH)

Testimony of the Expert Document Examiner—Winsor C. Moore, *University of Pittsburgh Law Review*, 22(4), 675-707, June 1961. The article far exceeds its title by beginning with a generalized survey of problems that a document examiner can handle, the basis of his opinions, and a discus-

sion of writing standards. The portions of the article dealing with testimony and pretrial examination are designed to inform the inexperienced attorney on what procedures are followed in a questioned document case. (OH)

Survey Studies Iowa Sheriff's, Jails—W. A. Luden. *The Iowa Sheriff*, 33 (6), 25-35, June 1961. A statistical study of data on sheriffs of Iowa and on Iowa County jails. (OH)

Preliminary Report, Police Officer Shooting Study—The following data has been extracted from the case studies collected at Los Angeles State College, and is of a preliminary nature. Further study of the cases will focus on detailed examination of indicated tactical problems.

The Study. Beginning in 1959 students in Police Patrol classes at Los Angeles State College began to collect *detailed* case studies of police officers who had been shot (injury or fatality). No attempt was made to randomize the selection of these cases, as they were extremely hard to obtain. When the local cases, which were easily obtained by personal interview, were exhausted, it became necessary to proceed by correspondence on a nationwide basis.

Letters of request to the administrators of the largest law enforcement agencies produced virtually no response, and the same result was obtained by publishing a request for information in the professional journals. Many of the leading agencies refused cooperation, while a few, such as Kansas City, Indianapolis, Houston, the Indiana State Police, and the California Highway Patrol, cooperated extensively.

In the Spring of 1961, it was decided to discontinue the collection of these cases and evaluate those already collected. By elimination of several non-applicable cases, a group of 110 incidents involving 150 officers was selected for study. The results must be viewed with the consideration that this is a *pilot study*, based on a *small group of cases*.

SELECTED DATA OF INTEREST

Circumstances of Shooting. While many officers feel that dealing with suspects in vehicles causes the greatest exposure hazard, the study indicates this is not true. Only 18% of the officers were shot while approaching stopped vehicles, and only 3% were shot in vehicle pursuits. It is of interest

to note that 28% of the officers were shot while dealing with *criminals in buildings*. Other percentages of interest are the 5% that were shot by *criminals in custody*, and the fact that 14% were shot while trying to arrest criminals who were in the act of committing a crime, which was *known* to the officer prior to his approach.

Question. Is as much police training time devoted to the subject of removing criminals from buildings as is devoted to handling suspects in vehicles?

Shooting Distance. Over 80% of the officers shot were within 50 feet of their assailants, 54% were within 25 feet, and 43% were within 15 feet. Only 10% of the shootings occurred at distances over 50 feet, and approximately 10% at distances which could not be determined.

Question. Should police officers be combat trained on reduced-size silhouettes at 25 yards (as in most Police courses) or should they be trained on life-size silhouettes at 15 yards?

Officer's Ability to Return Fire. Only 46% of the officers shot were able to return the suspect's fire. It is of interest to note that these officers were almost entirely distributed among the 60% who were shot with a .38 or smaller caliber weapon. Only a few officers shot with larger caliber pistols or shotguns were able to return the suspect's fire. It is of interest to note that 61% of those officers shot with a .38 or lesser caliber were shot with a .38 S & W Special.

Question. Is the .38 S & W Special an adequate man stopper—when in the hands of a criminal, it does not disable the officer to the extent that he cannot return the criminal's fire?

Number of Shots Fired. When studying the group of officers who were able to return the criminal's fire, the *number* of shots they were able to return showed an interesting pattern.

<i>Number of Shots</i>	<i>Number of Officers</i>
1	7
2	13
3	7
4	1
5	10
6	20
	1
(2 officers returned 12 shots)	

The large number of officers that emptied their revolvers (a number of departments still require their officers to leave empty the chamber under the hammer) is significant.

Question. Would police officers who are involved in gun fights be more effective if their weapons had a greater capacity?

Time and Day of Shooting. This pilot study indicated that week ends were not as dangerous as week days. For instance, Saturday and Sunday combined accounted for only 19% of the shootings, while Monday and Tuesday *each* accounted for 17% of the shootings.

With relation to time of shooting, if we assume that the hours of darkness and daylight may be indicated by the periods of 6:00 a.m. to 6:00 p.m., and 6:00 p.m. to 6:00 a.m., we may say that 33 officers were shot during daylight as compared to 94 shot during darkness (the time of shooting could not be determined for 23 of the officers shot). With respect to those shot during the 12 hours of darkness, the period 8:00 p.m. to 2:00 a.m. accounted for 78% of the shootings. The single most critical hour was 11:00 p.m. to midnight.

Question. Is information of this type valuable in dispatching or distribution of the patrol force?

One-Man vs. Two-Man Cars. The results of this pilot study follow those of Kirkwood and other researchers. Only 27% of the officers studied were alone at the time they were shot. The other 73% were accompanied by one or more other officers. Some leap on statistics such as these to strengthen arguments for one-man cars.

In any such discussion, these statistics are attacked by the argument that far more officers work with a partner than alone; hence the number shot while accompanied is naturally far greater. Another argument advances the theory that there is no way of determining how many criminals have been deterred from firing at officers because they were patrolling in pairs rather than alone.

Those departments which do not have a complete one-man car system, usually use two-man cars during the hours of darkness. The above arguments should be evaluated to some extent, then with the chronological distribution of officers, and the time at which they were shot (see earlier section).

Question. Are officers working alone any more liable to be shot than those working with a partner?

Condition of Suspects. Although the condition of 33% of the subjects could not be determined, 7% had been drinking, 10% were mentally disturbed, and 50% were apparently normal. No officers were known to be shot by persons under the influence of narcotics.