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Police Science Technical Abstracts and Notes

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ROGER SHERMAN GREENE
1908-1963

Roger Sherman Greene, a leader in the development of the profession of criminalistics in California and well known to the field throughout the United States, died on April 22, 1963. Author of a number of articles appearing in the *Journal*, Greene was employed as a chemist and ballistics expert by the California State Bureau of Criminal Identification and Investigation, Sacramento, when its laboratory was established on August 3, 1931. He was one of the first fulltime scientifically trained laboratory specialists in the field of criminalistics to be employed by a law enforcement agency. By the time of his death, his job title had been changed to Criminalist and the Bureau laboratory had expanded from a one man operation to its present status as one of the best equipped and staffed laboratories in the United States.

Greene was born at Seattle, Washington, July 6, 1908. He was graduated with a B.S. degree in

chemistry from the University of California, Berkeley, in 1931. From that date until 1960, he held a reserve Army commission, serving on active duty 1942-1946 as an ordnance officer. He retired with the rank of major.

Among his professional affiliations, Greene was a Fellow of the American Academy of Forensic Sciences, a life member of the California Division, International Association for Identification, and was one of the founders and charter members of the California Association of Criminalists.

Acknowledged as an outstanding scientist and criminalist, he will be missed not only for the loss of his professional skills, but perhaps more significantly by all those who knew him as a sincere and kindly man.

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Abstractors

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Altered Motor Numbers—G. Maennel, *Kriminalistik*, 17 (4): 156-159 (April 1963). An automobile thief and stripper used a grey plastic compound (not identified in the article) to alter the motor number of stolen cars. The original number was first chiseled out, the plastic was applied, and

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a new number was stamped into the plastic coating before hardening. He had also used a second technique—on Volkswagens—of cutting out the part bearing the motor number with a torch. After welding the part to the stolen car, he smoothed the joints with the plastic material which made the alteration unnoticeable to the naked eye. (JB)

Differentiating Pearls—P. Von Ecken, *Kriminalistik*, 17 (4): 162-164 (April 1963). The article describes natural and cultured pearls and their

differentiation by means of radiography, X-ray diffraction, and luminescence color. While the two types of pearls are built up of the same material externally, the radiographs show the natural pearls as homogeneous and the cultured pearls as composed of an outer and an inner layer. The difference in crystalline structure is also revealed in the diffraction patterns. (JB)

Psychological Analysis of the Human Voice—R. Faehrmann, *Archiv fuer Kriminologie*, 130 (3-4): 72-85 (Sept.-Oct. 1962). Analysis of the human voice is suggested as a diagnostic tool particularly applicable to criminal interrogation. Certain characteristics of speech reveal something of a persons' makeup, as graphology has done for many years in Continental criminology. A systematic characterization of such features as pitch, volume, tempo, rhythm, and structure would assist the interrogator or investigator in assessing the subject, particularly with regard to his ability to maintain deception.

The author has written a text on the general subject of speech analysis (*Die Deutung des Sprechausdruckes*, Bonn, 1960, Bouvier & Co.) and has prepared a special tape of recorded voices for instructional purposes. (JB)

The Thermofax Copying Method—H. Frisch, *Archiv fuer Kriminologie*, 130 (3-4): 91-99 (Sept.-Oct. 1962). A detailed description of the working principles of the Thermofax copying machine and its application to questioned document problems: restoring obliterated writing, charred documents, ink differentiation. The recently introduced transparency material can also be used to demonstrate traced forgeries by superimposing two transparencies.

Of additional interest is the radiation characteristics of the quartz light source of the Thermofax. While the radiation ranges from .4 to about 3 microns, the maximum intensity lies at about 1.1 to 1.2 microns which is well beyond the sensitivity of the ordinary IR films. (JB)

Differentiating Road Dirt in Accident Cases—O. Prokop, W. Duerwald, and W. Reimann, *Archiv fuer Kriminologie*, 130 (5-6): 134-151 (Nov.-Dec. 1962). The authors routinely use the stereo microscope in examining the clothing of accident victims to differentiate two types of dirt particles; those from the vehicle and those from the road surface. It was assumed, and experi-

mentally confirmed, that dirt on the vehicle (bumper, fenders, hubcaps) consists of only the finest particles since the larger particles do not adhere to these surfaces. It is therefore relatively easy to determine whether the victim was merely struck by the car or was run over by the wheels. The criterion is the presence of large quartz particles which are more or less imbedded in the fabric. (JB)

A Simplified Method for Determination of Urinary Lead—Russell Hilf and Frank F. Castano, *Clinical Chemistry*, 9 (2): 163-167 (April 1963). This quantitative determination of urinary lead is a modification of the dithizone reaction. By using specially adapted screwcap wide mouth round 130 ml. bottles fitted with washable plastic liners, the entire quantitative procedure is carried out in the specimen bottle. The method follows Beer's law from 30 to 150 micrograms Pb per liter, and recovery studies indicated no loss of accuracy. (JDC)

Barbiturate Detection Using Thin-Layer of Chromatography—Irving Sunshine, Eleanor Rose, and Jack LeBeau, *Clinical Chemistry*, 9 (3): 312-316 (June 1963). A rather rapid (1½ to 2 hours) thin-layer chromatography method of analysis for barbituric acid derivatives is presented. The usual thin-layer chromatography apparatus is used and two methods of developing the barbiturate spots are given. In addition to the Rf ratio, additional data from the reaction to the spray reagent allows more specific identification. It does not permit precise quantitative estimation, but the spots are semi-quantitative in comparison with standards and permits an educated guess as to their concentration. (JDC)

Evidence, The Key that Locks It Up, a Report on a New Camera—Lee E. Lawder, *Law and Order*, 11 (7): 60-61 (July, 1963). Information is presented on an evidence camera specifically designed to photograph small evidence such as footprints, tiremarks, bullet marks, fingerprints, etc. It is an import from Japan resulting from experimental work by the Metropolitan Police in Tokyo. It is a fixed focus f2.8 lens and uses 35 mm film. (JDC)

How Far Will a Shotgun Shoot—Anon., *Remington-Peters Law Enforcement Officers Service Bulletin*, 18: 4 (March, 1963). Discusses range of

near and distant shot in spread as it strikes ground. Suggests General Journee's formula of $2200 \times \text{dia.}$ in inches, expressed as yards. "Balled" shot, wind conditions may alter conditions. (JDN)

The Danger of the "Interrogate as Though Guilty" Practice—R. R. Caputo, *Law and Order*, 11 (3): 49-50 (March, 1963). Danger of false confessions. Examiner should courageously report results as he finds them in the chart, regardless of investigator's findings. (JDN)

Savage (Stevens) .22 Caliber Firing Pin Impressions—Stanton O. Berg, *Identification News*, 13 (2): 9-11, 14 (Feb., 1963). Dimensions and characteristics of Savage .22 arms, firing pin impressions. (JDN)

How Pneumatic Arms Work—Thomas E. Wesel, *The American Rifleman*, 110 (8): 52-4 (Aug., 1962). A general description of the operation of air-spring, air pump, and CO₂ mechanisms. (JDN).

The Identification of Saliva—D. F. Nelson and P. L. Kirk, *Journal of Forensic Medicine*, 10 (1): 14-21 (Jan.-March, 1963). Four tests were studied to determine their value in identifying saliva stains. The author concluded that:

Amylose is very sensitive, applicable to old stains, conclusive if sources of false positives are excluded.

Phosphatase, though sensitive is not specific.

Nitrite, to be used on fresh stains.

Thiocyanate, sensitive and applicable to old stains. Conclusive if found, although absence does not exclude saliva. (JDN)

Photographic Mapping of Accident Sites—J. D. Moreland and M. M. Miller, *The Police Journal*, 36 (2): 57-64 (Feb., 1963). A telescoping mast is mounted on a Minibus. By means of compressed CO₂ the mast may be extended to 42 ft. above the ground. A Hasselblad camera mounted at the top of the mast will cover an area of 60 ft. square. Errors of dimensions are less than one percent. Flash can be provided for night operation. The inclination of the mast permits photographing a busy intersection without interfering with traffic or risking further accidents. (JDN)

Sample Preparation Methods for X-ray Fluorescence Emission Spectrometry—E. P. Bertin

and Rita J. Longobusco, *Norelco Reporter*, 9 (2): 31-43 (March-April, 1962). A discussion of sample preparation of bulk solid powders, liquids and trace, and micro samples. Each category is discussed relative to sources of sample, sources of standards, alternative methods of treatment, most convenient treatment, special equipment, precautions, mountings, favorable and unfavorable features. An extensive bibliography is included. (JDN)

A Simple Technique for Mounting Minute Samples for X-ray Diffraction Analysis—F. A. Toman, *Norelco Reporter*, 9 (2): 47 (March-April, 1962). Catalyzed Epoxy resin is used to mount powdered specimens on glass fibers. The fiber is held in the brass specimen holder by Duco cement. No background or interfering lines result from the use of Epoxy. (JDN)

Police Radio Procedure—T. F. Adams, *Police*, 7 (5): 35-8 (May-June, 1963). An outline of police radio procedure. (JDN)

Automobile Fires—Their Relation to Automobile Thefts—W. J. Davis, *Police*, 7 (5): 24-5 (May-June, 1963). The author points to the fact that thieves do not steal cars to destroy them by fire. (JDN)

Admissibility of Photographic Evidence in Prosecution of Felonious Homicides—D. P. King, *Police*, 7 (5): 17-19 (May-June, 1963). To be admissible in court, photographs must be relevant to some material fact or condition, identified and authenticated, and not solely inflammatory. Photographs need not be excluded merely because they are gruesome if they have probative value. (JDN)

The Demonstration of Recent Sexual Intercourse in the Male by the Lugol Method—F. Thomas and W. Van Hecke, *Medicine, Science, and the Law*, 3 (3): 169-70 (April, 1963). A microscope slide is applied to the penis of the suspect. The slide is then exposed over a dish of 5% Lugol solution. Vaginal cells are stained brown. Although the stain fades, it can be redeveloped. (JDN)

Identification of Mass Casualties: Experience in Four Civil Air Disasters—P. J. Stefens and S. W. Tarlton, *Medicine, Science, and the Law*, 3 (3): 154-68 (April, 1963). The use of pathological, dental, visual, and x-ray findings to identify vic-

tims of air craft accidents is described. It was found that fingerprints and blood groups have limited value whereas jewelry, documents, and visual identification proved most helpful. (JDN)

A Method of Sampling Micro-Amounts of Dusts, Powders, and Fibers for Examination—J. L. P. Wyndham, *Medicine, Science, and the Law*, 3 (3): 141-4 (April, 1963). A simple device by which dust and other fine evidence may be collected on a greased cover slip is described. The unit uses readily available laboratory materials and suction is provided by inhalation by the operator. (JDN)

Infrared Identification of Microgram Quantities of Heroin Hydrochloride—A. L. Mills, *Analytical Chemistry*, 35 (3): 416 (March, 1963). Samples as small as 6-10 mg. of heroin hydrochloride can be identified in the infrared spectra of a specimen purified by 1,1,1, trichlorethane washing. (JDN)

A Modified Flotation Method of Density Determination for Small Solid Samples—E. L. Simons, *Analytical Chemistry*, 35 (3): 407-8 (March, 1963). By using a composite of plastic film and the particle specimen, densities, above that possible with floatation, can be determined. (JDN)

Rapid Gas Chromatographic Method for Screening of Toxicological Extracts for Alkaloids, Barbiturates, Sympathomimatic Amines, and Tranquillizers—K. D. Parker, C. R. Fontan, and Paul L. Kirk, *Analytical Chemistry*, 35 (3): 356-9 (March, 1963). Retention times for 41 alkaloids chromatographed on SE-30 column are given. Alkaline and non-alkaline carbowax 20M columns were studied. Oven temperatures range between 190° and 270°C. Microgram quantities of acidic, basic, and neutral compounds were extracted from tissue and chromatographed without interference from tissue extractives. (JDN)

Improved Gas Chromatographic Column for Barbiturates—K. D. Parker, C. R. Fontan, and P. L. Kirk, *Analytical Chemistry*, 35 (3): 418-9 (March, 1963). A column consisting of SE 30 (1.5% w/w) and Carbowax 20M (2% w/w) was used to separate barbiturates introduced as solids. The combined liquids permitted a higher column temperature than possible with Carbowax 20M alone. (JDN)

The Identification of Drugs of Addiction and Habituation—F. L. Cann, *Journal, The Forensic Science Society*, 3 (1): 33-42 (Sept., 1962). The tests for identification of marihuana, morphine, topranel, chlorpromazine, barbiturates, amphetamine, and meprobamate are discussed. (JDN)

Gas Chromatography of the Antihistamines—C. R. Fontan, W. C. Smith, and P. L. Kirk, *Analytical Chemistry*, 35 (4): 591 (April, 1963). Specimens were examined on carbowax 20M, on chromosorb W, treated with KOH. Chromatograph was operated at 230°C (Injector), 190°C (Oven), flow rate of N₂, 79 cc/min., O₂ flow of 90 cc/min. to maintain flame. Samples of 1-10 mg showed responses. Both salts and free base forms of antihistamines were chromatographed. (JDN)

Some Observation on the Effects of the Consumption of Alcohol and its Relation to Road Traffic—E. Rentoul, H. Smith, and R. Beavers, *Journal, The Forensic Science Society*, 3 (1): 2-10 (Sept., 1962). A discussion of the use of chemical tests and determination of degree of "proper" control of a motor vehicle. Impairment in relation to urine alcohol was studied. The authors recommend that cases be decided either on the quality of the driving alone or on a 10% alcohol. (JDN)

Age Determination of Adult Human Remains by Teeth Examination—G. D. Dalitz, *Journal, The Forensic Science Society*, 3 (1): 11-21 (Sept., 1962). A point system is discussed, using four anterior teeth. An accuracy of + or - 6 years is expressed. (JDN)

Shotgun Ballistics—2—Victor Drake, *Journal, The Forensic Science Society*, 3 (1): 22-32 (Sept., 1962). A general discussion of shot patterns. (JDN)

The Reliability of Corroborated Police Evidence in a Case Flagrante Delicto—L. R. C. Haward, *Journal, The Forensic Science Society*, 3 (2): 71-8 (March, 1963). The sources of error such as psychological factors, memory, duration of view in relating a prior observation are discussed. (JDN)

Using Microfilm for Criminal Identification—A. E. Schoen, *Law and Order*, 11 (7): 52-3 (July, 1963). Photographs of criminals are printed on microfilm (16 m/m) and projected by means of a Bell and Howell portable microfilm reader. (JDN)

"Killing the Time-Consuming Demon"—J. J. O'Neill, *Law and Order*, 11 (7): 16-7 (July, 1963). A brief statement of the project now in its initial phase where fingerprints will be coded for, and searched by, electronic data processing equipment. This system is expected to reduce search time since up to one hundred sets may be searched simultaneously. (JDN)

A New Concept in Operational Filing—H. C. McDonald, *Law and Order*, 11 (7): 10-4 (July, 1963). A slide rule operation translates identification characteristics into a numerical system for filing. The system is used in conjunction with Identi-Kit composites. (JDN)

Identification and Origin Determinations of Cannabis by Gas and Paper Chromatography—T. W. M. Davis, C. G. Farmilo, and M. Osadchek, *Analytical Chemistry*, 35 (6): 751-55 (May, 1963). A determination of the ratio of Cannabidiol to Cannabinol plus Tetrahydrocannabinol permits the determination of country of origin of the plant. Paper chromatography by cyclohexane-dimethylformamide and gas chromatography on SE-30 will separate components extracted with methanol. Ultraviolet, Alkaline Beam reagent, and Duquenois reagent can be used for location and identification. The Beam test gave a purple spot with cannabidiol, but did not react with the other components. (JDN)

A Pipet for Discontinuous Density Gradient Measurements—Stanley Samuels, *Chemist-Analyst*, 52 (3): 87 (July, 1963). A calibrated pipet is sealed and a bulb is formed at the tip. Three small lateral holes are placed at the horizontal equator of the bulb. In use, the various density liquids can be conveniently layered with little mixing. (JDN)

Ice Ballistics—B. D. Munhall, *Fingerprint and Identification Magazine*, 44 (12): 3-5 (June, 1963). Projectiles with the velocity of high velocity Western Super-X ammunition are not identifiable after being shot into ice. Bullets made of ice may have sufficient energy to have fragments penetrate a $\frac{1}{4}$ inch plywood panel at a distance of three feet. (JDN)

Maternal Aspiration of Amniotic Fluid—Report of a Case Following Criminal Abortion—Lester Adelson, *Journal of Forensic Sciences*, 8 (1): 132-6 (Jan., 1963). Amniotic fluid aspiration

occurred in a pregnant woman subjected to criminal abortion. The amniotic sac, uterus, and small intestine were torn, permitting entry of amniotic fluid into the intestinal lumen from which point it reached the stomach and was then aspirated. (WEK)

Detection and Estimation of Toxicologically Significant Amounts of Borate, Chlorate, and Oxalate in Biologic Material—F. Rieders and F. J. Frere, *Journal of Forensic Sciences*, 8 (1): 46-53 (Jan., 1963).

1. A method for isolating, concentrating, and purifying toxicologically significant amounts of borate, chlorate, and oxalate in biologic material has been described. It consists of deproteinization with ammonium sulfate, concentration of the protein free filtrate by precipitation of ammonium sulfate with methanol, evaporation of the supernatant, and purification of the concentrate with activated charcoal.

2. Procedures have been detailed for detecting and estimating the anions in the purified concentrate. These consist of the formation of the violet carminic acid-boric acid complex, oxidation of aniline in HCl to aniline blue by chloric acid, and formation of the emerald green trioxalatocobaltate (III) complex.

3. Precautions with respect to pH to avoid decomposition of chlorate, volatilization of oxalic and boric acids, occlusive precipitation of oxalate by tissue-calcium or adsorption of the anions by charcoal have been discussed.

4. Recoveries of toxicologically significant concentrations of the anions in most tissues in yields ranging from 50 to 90% have been reported. (WEK)

The Medicolegal Diagnosis of Death by Drowning—Frederic Thomas, W. Van Hecke, and J. Timperman, *Journal of Forensic Sciences*, 8 (1): 1-14 (Jan., 1963). The penetration of microscopic particles such as lycopodium, yeast, and starch into the lung capillaries and their transport from there into the left side of the heart, during experimental drowning, was demonstrated conclusively as long ago as 1909, by Corin and Stockis of Liege. Their efforts to make this discovery the basis of a new approach to the medicolegal diagnosis of death by drowning was thwarted, however, by the poverty of the rivers of the Ardennes in identifiable microscopic plankton. The decisive proof that the latter did penetrate into the circulation at the site