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Police Science Technical Abstracts and Notes

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

Joseph D. Nicol*

The Identification of the Clinically-Important Sulphonamides and Local Anaesthetic Drugs of the Benzoic Ester Group—Two recent issues of the *Journal of Pharmacy and Pharmacology* contain articles which should be of interest to toxicologists in law enforcement laboratories. These articles by E. Hucknall and G. E. Turfitt of the Metropolitan Police Laboratory, London, are "The Identification of the Clinically-Important Sulphonamides". [*J. Pharm. & Pharmacol.*, 1:368-76 (1949)], and "The Identification of Local Anaesthetic Drugs of the Benzoic Ester Group". [*J. Pharm. & Pharmacol.*, 1:462-69 (1949)]. The articles include methods for the isolation, purification, provisional and final identification and are illustrated with photomicrographs of crystals of the sulphonamides and microchemical tests for various local anaesthetics. The original articles should be read by toxicologists in all police and coroner's laboratories. (Submitted by David Q. Burd, Criminologist, Calif. Div. of Crim. Ident. & Invest.)

Poisoning by Fingerprint Powder—The continuous use of grey fingerprint powder composed of mercury and chalk is capable of producing mercury poisoning, according to information in *The Police Review*, 58:543 (Sept. 16, 1949). Exposure of more than 250 hours per year is considered to be a definite hazard. Seven men out of a group of thirty-two in the Lancashire department using grey powder developed symptoms of chronic mercury poisoning.

Directory of Technical Translators—A directory of translators for twenty-three languages has been established by the Science-Technology Group of the Special Libraries Association. Inquiries are to be addressed to Wayne Kalenich, Southwestern Research Institute, San Antonio, Texas.

San Diego's Road-Block System—The road-block system in use in San Diego is outlined by A. E. Jansen in the *FBI Law Enforcement Bulletin*, 18:7-8 (April, 1949). Eleven points have been designated as blockade posts and possess the necessary equipment. A radio code is used to activate any of the several established plans by trained officers. Greater coverage is afforded through the cooperation of surrounding law enforcement agencies.

Developments in Application of Chemical Microscopy—Eight papers on various aspects of chemical microscopy which were presented before the Division of Analytical and Micro Chemistry of the American Chemical Society are published in the *Analytical Chemistry*, 21:430-85 (April, 1949). Their titles are as follows: The Microscopist in the Technical Organization, Microscope Optics, Application of Fusion Methods in Chemical Microscopy, Chemical Microscopy in Dyeing and Finishing, Microscopic Identification of Organic Compounds, Resinography of Some

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Consolidated Separate Resins, Color Photomicrography in the Laboratory, and Electron Microscopy of Colloidal Systems. A bibliography accompanies each article.

Proposed Method for Identification of 1080 (Sodium Fluoroacetate)—

In view of the many deaths that have been caused by the new rodenticide (1080, sodium fluoroacetate) this laboratory believes that some measures should be taken to label the compound. It is possible that many of the unexplained deaths that have been marked as cardiac insufficiency, are in fact, 1080 poisonings.

In reviewing the literature there are only about four methods available for the determination of the compound. The determination of the fluoride ion content is of no value in low concentration, due to the variation of the normal fluoride. Determination of the acetate¹ has the same objection, due to the variation of the normal acetate. The chromatographic techniques² are so far the most specific, however, the value can vary as much as 50% from the actual value. The isolation techniques are the most difficult, therefore, the titration is of no use to the toxicologist. Bioassay is conclusive only if it is known that 1080 is the instrument of death. The proposal suggested by this laboratory is that two auxiliary compounds be placed in the solutions of 1080 that are intended for rodenticidal or insecticidal use. Whether in the solid or liquor form, the materials would always be present. The first compound to be added would be an indicator to the layman that 1080 was present. This compound would be Malachite Green and is chosen due to its penetrating ability and permanence. Example: A child playing around cups of 1080 would get some green dye on its hands or mouth. The color would be obvious to the parents, thus proper precautions could be taken. The second compound to be suggested is that of a fluorescent material which would be used at post-mortem and in the emergency rooms. It is suggested that Eosin Y, or some similar type compound be used. The toxicologist could, upon receipt of any sample of stomach contents, place the sample under ultraviolet and make a preliminary examination. At any time a negative result is reported by the toxicologist, it would be certain that no 1080 is present. In the event that fluorescence was observed, further examinations could be made. Even a Bioassay would be conclusive if both fluorescence and death of the test animal were observed.

In criminal cases where no other signs of death are observed, the police could at that time use their portable ultraviolet unit and check glasses, cups, medicinal goods, etc., for any fluorescence. This would not be of absolute identification, but would lead to a possibility that could be checked in the laboratory.

In making this proposal, it is realized that the industries using and preparing 1080 would object strenuously due to the additional cost and labor; however, the material could become of more general use and thus counteract the cost if these restrictions were imposed.

Further investigations are underway in this laboratory to determine direct measurements of 1080 and to evaluate the various methods that are now at hand. In addition to the compounds proposed herewith,

¹ Hutchens, J. O., and Kass, B. M., *J. Biol. Chem.*, 177, 571-5 (1949).

² Ramsey, L. L., and Clifford, P. A., *Fed. Sec. Agency Pub.* (1948).

studies are being made on other organic compounds which could be substituted for Malachite Green and Eosin Y. (Submitted by Evan E. Campbell, Toxicologist, Division of Industrial Medicine, University of Colorado Medical Center.)

Fire Technology Laboratory—*Chemical and Engineering News*, 27:2549 (Sept. 5, 1949), describes the new division of fire technology announced by the Southwest Research Institute of Houston and San Antonio. It is the purpose of this division to study the problems of fire protection and investigations through laboratory methods and miniature conflagrations. These services are available to all governmental agencies and insurance companies coping with problems of this nature.

Chromatographic Examination of Propellant Explosives—The scheme of T. C. J. Ovenston's, described in *The Analyst*, 74:344-51 (June, 1949), should find wide application to the problem of explosive analysis in police laboratories. It is particularly suited to the analysis of mixtures of explosive compounds. The system for the separation of twenty-four ether-soluble propellant components on silica gel. celite columns is described as well as the reagents for their identification by streak tests. The system may be used quantitatively.

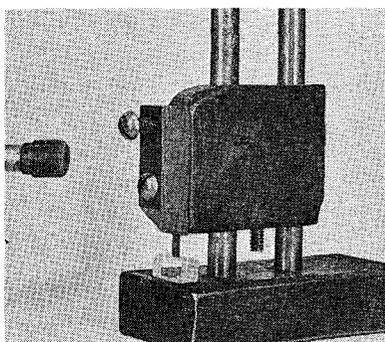
Railroad Police School—The Pennsylvania Railroad is sponsoring a nine-week course in police procedures for the Pennsylvania Railroad policemen in the New York area. The program of study includes discussions of constitutional rights, law of arrest, search and seizure, evidence, criminal procedure under federal statutes, self-defense and crime laboratory techniques. New York and Nassau County police officials and special agents of the Federal Bureau of Investigation will serve as instructors. (Submitted by R. C. Steinmetz.)

The "Conlay" System of Classification and Filing of Fingerprints—A brief summary of the Conlay system of fingerprint classification is given in the *Police Journal* (London), 22:202-9 (July-Sept., 1949). It is asserted that the Conlay system has advantages over the Henry system in its simplicity. The fingerprint impressions are classified into loops, whorls, and arches as the main division, subdivisions producing six varieties. Values given to the whorl; thumb—1, forefinger—2, middle finger—4, ring finger—8, and little finger—16; produce the primary classification with 1,024 divisions. The impressions are further divided by secondary and tertiary classifications. The system may be applied to single fingerprint filing.

Gunpowder Tests—A review of the problem of gunpowder tests is to be found in the *F.B.I. Law Enforcement Bulletin*, 18:7-10 (July, 1949), 2-8 (Aug., 1949). Powder, powder residues, factors affecting powder residues, the laboratory tests for powder residues—microscopic and chemical—ascertaining the distance between muzzle and victim by comparative tests, interpretation of the results obtained, testimony of the examiner, evidence for examination and proper handling, on-the-spot examinations for investigative purposes, the diphenylamine test for

nitrates or nitrites, and comparison of shot patterns on a victim with test patterns obtained in the laboratory with the suspected shotgun are discussed in an informative and non-technical manner.

Paint Comparison—Improvement in Method for Mounting Paint Chips in Plastic—The July-August, 1949 issue of this Journal carried an article entitled "Paint Comparison—A Method for the Preparation of Cross Sections of Paint Chips" by Brewer and Burd. The article described a method of preparing paint chips for microscopic examination of layer structure by imbedding the chips in plastic. Special tools made for the purpose of impressing small slots in plastic into which are placed the paint chips to be examined were described and illustrated. In using these tools, considerable difficulty was sometimes encountered in holding them so that the paint in the completed mount would be exactly perpendicular to the top surface.



Since the time that the original article was written, the authors have overcome this difficulty by making another special tool for producing the slots. This new tool, which is shown in the accompanying illustration, contains a clamp holding small pieces of razor blades which can be cut to any desired size. To force the blade into the plastic, the tool is heated by directing the flame of a small burner at the clamp just above the blade, taking care not to burn the plastic with the flame. Usually a slight amount of pressure must also be applied to force the blade into the plastic. If care is taken, several parallel slots can be made in the same mount by moving the plastic after each slot is made. (Submitted by David Q. Burd, Criminologist, Calif. Div. of Crim. Ident. & Invest.)

Interesting Firearms—Three unique firearms are described and illustrated in the *Bulletin of the Bureau of Criminal Investigation of the New York State Police Department*, 14:7-10 (No. 2, 1949). The first is the familiar fountain pen pistol. The second weapon is a small, home-made pistol capable of being fired between the fingers while concealed in the palm of the shooter's hand. The third weapon is a modification of a toy pistol which has been effected by inserting a .22 caliber barrel into the barrel of a toy popgun.

Direct Spectrochemical Analysis of Solutions—The direct quantitative analysis of solutions is possible to a precision of $\pm 3.1\%$ of the mean by a procedure outlined by Cyrus Feldman in the *Analytical Chemistry*,

21:1041-1045 (Sept., 1949). Quarter-inch carbon electrodes are drilled to produce an eighth-inch cavity to within 1.1 mm. of the end. This electrode serves as the upper electrode and as solution holder. Capillary action brings the solution to the surface of the electrode where it is analyzed by high voltage spark method. Advantages of the method are moderate sensitivity, good reproducibility, small sample requirements and applicability directly to solutions.

NEW PRODUCTS

EDITOR'S NOTE: It is the purpose of this additional service to the readers of the Journal to call their attention to new products deemed helpful in police fields. Data presented will be abstracts of the manufacturer's literature or reports of demonstrations. Only those products considered most suitable to police science will be included. The mention of any product in this Journal, however, is not to be construed as an endorsement by the Journal.

Telephone Amplifying Unit—There are numerous occasions in police work when it is vital to be able to hear both parties in a telephone conversation. A device which has some merit in certain situations is produced by the Electro Engineering & Manufacturing Co. and called the Magna Tele. The Magna Tele consists of a battery-operated three-tube audio amplifier with a permanent magnet speaker. The input coil is situated in such a manner that a telephone placed upon the device will inductively couple between this telephone and the Magna Tele. Conference telephone calls can be heard by all persons in the room.

A Synthetic Sapphire Mortar and Pestle—The Fisher Scientific Company has available synthetic sapphire mortars and pestles ideally suited to the preparation of spectrographic samples. This material is impervious to liquids, corrosion resistant and its hardness, above agate and mullite, enables it to be used on ceramics, precious stones, carborundum, and emery.

Crocker-Henderson Odor Standards—Odors frequently play a part in the identification of traces of material; therefore, police technicians will find the Henderson-Crocker Odor Classification Set useful for the analysis of stench bombs, pharmaceuticals, cosmetics, etc. Odors are classified according to the strength of four characteristics, fragrant, acid, burnt, and caprylic, in number from one to eight. The values of each property can then be arranged into a four digit number which should be meaningful to other technicians equipped with a similar set of standards. The complete set is available from the Cargille Scientific, Inc., 118 Liberty Street, New York 6, N. Y.

FOREIGN LANGUAGE PERIODICALS AND ARTICLES OF INTEREST
IN THE FIELD OF POLICE SCIENCE.*

Compiled by
KURT SCHWERIN†

Annales de médecine légale. Paris. No. 5, Sept./Oct. 1949.

P. Desclaux, A. Rémond, A. Soules, *Valeur et limite de l'électro-encéphalogramme en médecine légale*. (Value and limitations of the electro-encephalogram in legal medicine) (p. 215-228).

Criminalia. Revista mensual. Organo de la Academia Mexicana de ciencias penales. Mexico, D. F. 15th year, no. 7-9, July-September 1949.

Hector Beeche, *Servicio social criminologico. El informe biografico o sintesis biotipologica* (Criminological social service. Biographical information or biotypological synthesis) (no. 7, p. 285-307). José Miró Cardona, *Bases juridicas comparadas en el tratamiento de presos* (Comparative legal bases for the treatment of convicts) (no. 9, p. 391-395).

La Giustizia penale. Rivista mensile di dottrina, giurisprudenza e legislazione. Rome. 54th year, fasc. 8, August 1949.

Carlo Reviglio della Veneria, *Considerazioni sull'impiego processuale dell'esplorazione farmaco-dinamica della psiche e degli altri mezzi scientifici per la ricerca della verità* (Observations on the legal application of the pharmaco-dynamic exploration of the psyche and other scientific means for the search of truth) (pt. I, col. 225-230).

Grenzgebiete der medizin. Munich. 2d year, heft 8-9, August-September, 1949.

International criminal police review. Official organ of the International criminal police commission. Paris. English edition. 4th year, no. 30, August-September, 1949.

F. E. Louwage, *Use of barbiturics in medico-legal expert examination* (p. 2-7). M. H. Soderman, *Plan of criminal statistics in Sweden* (p. 15-21).

Kriminalistik. Zeitschrift für die gesamte kriminalistische wissenschaft und praxis. Heidelberg. 3d year, no. 7/8, April, 1949- 11/12, June, 1949, no. 15/16-19/20, Aug.-Oct. 1949.

Hans Salaw, *Zum beweiswert von indizien und zeugen* (The value of circumstantial evidence and of witnesses) (no. 7/8, p. 75-80). J. Edgar Hoover, *Wissenschaft und verbrechen* (Science and crime) (no. 7/8, p. 80-81). Dr. Koch-Bremen, *Wert und bedeutung des indizienbeweises* (Value and importance of circumstantial evidence) (no. 9/10, May, p. 105-108). Berthold Müller, *Ueber eine fehlerquelle bei der diagnose des einschusses (Vortäuschung eines schmutzringes im textiltewebe)* (On a source of error in the diagnosis of the entrance of a bullet. Feigning of a circle of dirt in a fabric) (no. 11/12, p. 121-123).

* All periodicals listed are available in the Elbert H. Gary Library, Northwestern University School of Law, 357 East Chicago Ave., Chicago.

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Georg Bartsch, *Die durchsuchung, eine kriminal-taktische massnahme* (The search, a criminalistic-tactical measure) (no. 11/12, p. 129-132).
 Hans Salaw, *Möglichkeiten und grenzen der schriftexpertise* (Possibilities and limitations in the examination of handwritings) (no. 19/20, p. 217-223).

Kriminalistika. Review of criminology and criminal practice. Prague. 4th year, no. 5-6/7, May-July, 1949.

Balassa Gyula, *Monodaktyloskopická soustava Ernesta Kisse* (The monodactyloscopic system of Ernest Kiss) (no. 5, p. 67-68). Ota Borsky, *Fysiologie a psychologie písma* (Physiology and psychology of handwriting) (no. 6/7, p. 87-90). Ota Dutkovic, *Sklo jako vrazedny nástroj?* (Fine-crushed glass as instrument of murder) (no. 6/7, p. 101-104).

The articles in *Kriminalistika* have summaries in English, French, and Russian.

Die Neue polizei. Monatliche fach- und lehrschrift der polizeiorgane. Munich. 3d year, no. 4-9, April-September, 1949.

Wilhelm Ruml, *Vorstellung—technik—temperament als grundpfeiler der handschrift. Ein beitrag zur psychologie der handschrift.* (Imagination, technique, temperament as basis of handwriting; a contribution to the psychology of handwriting) (no. 4, p. 73-78). Bob Mengering, *Das "wahrheitsserum" in der kriminalistik* (The truth serum in criminology) (no. 6, June, p. 115-117).

H. Merkel, *Ueber todeszeit-bestimmungen menschlicher leichen auf grund gerichtlich-medizinischer erfahrungen.* Pt. I. (On determining the time of death on the basis of medico-legal experience) (no. 9, p. 174-176).

Nordisk kriminalteknisk tidsskrift. Stockholm. 19th year, no. 5-6, 1949.

Arne Hansen, *Koffein och koffeinmissbruk* (Caffeine and misuse of caffeine) (no. 5, p. 49-53).

Nordisk tidsskrift for strafferet. Copenhagen. Appears from Jan. 1949, with its 37th year, under the name of *Nordisk tidsskrift for kriminalvidenskab* (Scandinavian periodical of criminology), ed. by Prof. Stephan Hurwitz.

Latest issue in Library: 36th year, hefte 3/4, August, 1948.

Polizei-praxis. Fachzeitschrift für die gesamte polizei. Frankfurt a/Main. 3d year, no. 9/10-17/18, May-September, 1949.

Polizei-rundschau. Monatshefte für polizeikunde und kriminalistik. Lübeck. 3rd year, heft 7-12, April-September, 1949.

Franz Meinert, *Glasspuren und ihre deutung* (Traces in glass and their significance) (no. 11, p. 191-193).

Recueil de documents en matière pénale et pénitentiaire. Bulletin de la Commission internationale pénale et pénitentiaire. (Select papers on penal and penitentiary affairs. Bulletin of the International penal and penitentiary commission) Berne. Vol. XIV, no. 1/2, May, 1949.

Lionel W. Fox. *The development of community services in prison, and the place of the voluntary worker* (p. 16-21). Ferenc Horvath.

L'activité de la protection judiciaire de l'enfance en Hongrie et la réforme des méthodes d'éducation des mineurs délinquants exposés à la déchéance morale (Judicial child welfare in Hungary and the reform of educational methods for delinquent minors in moral danger) (p. 29-37). *Enquete sur les délinquants d'habitude et leur traitement* (Enquiry on habitual offenders and their treatment). General survey prepared by the Permanent Office of the International penal & penitentiary commission, 1948. (p. 73-182).

Revista de la Escuela de estudios penitenciarios. Madrid. 5th year, no. 47-53, February-August, 1949.

Antonio Alvarez de Linera. *Lecciones de psicología* (Lectures on psychology) (no. 52, p. 47-54; no. 53, p. 33-39). Manuel Cidrón Garcia, *Principio y fin de la antropología criminal* (Principles and objects of criminal anthropology) (no. 53, p. 87-93).

Lucas Sanchez, *Alcatraz*. (no. 47, p. 62-68). Juan Lorca Cánovas, *Dactiloscopia* (Dactyloscopy) (no. 47, p. 82-86; no. 51, p. 82-87). Antonio Alvarez de Linera, *Lecciones de psicología* (Lectures on psychology) (no. 47, p. 94-99; no. 48, p. 30-37; no. 49, p. 50-57; no. 50, p. 47-53; no. 51, p. 70-75).

Rivista italiana di diritto penale. Milan. 2d year (n. s.) no. 1-3, January/February/May/June, 1949.

Revue de criminologie et de police technique. Geneva. vol. 3, no. 3, July/September, 1949.

F. E. Louwage, *La Commission internationale de police criminelle* (The International criminal police commission) (p. 156-158). J. Graven, *Une histoire et une mise en accusation de la torture, des origines à nos jours* (A history and indictment of torture, from its origins to our days) (p. 166-194). R. Vouin, *Le problème de narco-analyse devant la justice française* (The problem of narco-analysis before French courts) (p. 194-197). W. Froentjes, *L'affaire van Meegeren—l'enquête scientifique* (The case of the Dutch painter van Meegeren—the scientific investigation) (p. 202-213).

Revue de droit pénal et de criminologie. Publiée sous les auspices du Ministère de la justice avec le concours de la Fondation universitaire de Belgique. Brussels. 29th year, no. 7-10, April-July, 1949.

Auguste Ley, *Le choc émotif "judiciaire" chez les malades nerveux et mentaux* (Mental anguish caused by the shock of being involved in judicial proceedings and its effect on nervous and mentally ill people) (no. 9, p. 801-810). S. S. (Simon Sasserath), *La justice française et l'emploi du penthotal* (French justice and the use of Penthotal) (no. 10, p. 957-965).