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Police Science Technical Abstracts and Notes

POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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[*Editorial Note:* Mr. Nicol recently resigned from the staff of the Chicago Police Scientific Crime Detection Laboratory to accept a position as Director of the newly created Allegheny County Crime Laboratory, Pittsburgh, Pa. His departure from Chicago is a severe loss to the Chicago Police Department. At the same time, however, the citizens of Allegheny County have acquired the services of one of the country's finest experts in the field of police science.

District Attorney William S. Rahauser and the other officials of Allegheny County are deserving of much credit for their wise choice of laboratory director and also for their fine cooperation with Mr. Nicol in the selection and training of other laboratory personnel and the establishment of operation procedures which will make it possible for the laboratory to render a real service to the community. *Fred E. Inbau,* Managing Director.]

History of the Ball Point Pen:—An extremely interesting story of the history of the ball point pen, which might also be of professional interest to all document examiners, appears in the February 17, 1951 issue of *The New Yorker,* pages 39-62.

Examination of Textile Fibers by the "Dispersion Staining" Method—"Dispersion Staining" affords a means of identifying fibers otherwise indistinguishable by ordinary microscopic examination. In their article in the *Textile Research Journal, 19*:644-6 (1949), P. G. Douglass and G. C. Crossmon describe a method of fiber examination which makes use of colors of the Becke line observed through a cap analyzer. Many of the synthetic fibers which are otherwise structureless show characteristic colors when immersed in liquids having various refractive indices such as made by different mixtures of diethylene glycol monobutyl ether and cinnamaldehyde. Optical equipment consists of an achromatic condenser, N.A.-1.40, with top element removed to reduce N.A. to 0.59; an achromatic objective, 10.25mm, 20x, N.A.-0.40, coated; and a 10x Huygenian eyepiece. The illumination is dark field. The following colors were observed with cap analyzer paralled to the axis of the fiber:

Fiber	Colors in Liquids of		
	n=1.550	n=1.5880	n=1.524
acetate	white	white	white
cuprammonium	reddish purple	white	yellow
nylon	yellow	blue	white
silk	yellow, slightly red	orange, red, yellow	white
Viscose	blue, slight red	blue, white	yellow

By this method variations from lot to lot can be seen.

The Proficorder—An electrical application to the measurement of surface contour is described by E. J. Abbott and E. Rupke in the *Transactions of the American Society of Mechanical Engineers, 70*:263-70 (May, 1948). In effect this device is similar to that described in recent Notes by John Davis. A

diamond stylus is passed over two inches of the test surface and variations ranging from 10^{-2} inches to 10^{-6} inches are recorded. The stylus is attached to a movable secondary coil which provides variable transformer coupling with the primary coil. An oscillator supplies voltage of a constant frequency for the primary coil. The output of the secondary coil is amplified, and the demodulated voltage is recorded on a moving chart. Selsyn drive motors provide for horizontal motion through a screw drive. It is possible to apply the testing head to large surfaces and surfaces not suitable to test by the mechanical method recently described, therefore, this device might be of greater interest to comparative micrographers.

Estimation of the Levels of Blood Alcohol from Analysis of Breath—The results of a study by R. N. Harger, R. B. Forney, and H. B. Barnes are reported in the *Journal of Laboratory and Clinical Medicine* as follows: (1) The distribution of alcohol between alveolar air, or rebreathed air, and blood of human subjects is essentially the same, 1:2,100; (2) the temperature at which breath leaves the mouth is 31°-35°C; (3) the average deviation of blood alcohol when predicted from alcohol—CO_2 ratio is ±9.7%; (4) the loss of alcohol from condensed moisture inside of balloon is very slight; and (5) the correlation between blood alcohol and alcohol in a given volume of ordinary expired air is 1:3200cc.

Quantitative Spectrochemical Analysis of Ashes, Deposits, Liquids, and Miscellaneous Samples—Edwin K. Jaycox [*Analytical Chemistry, 22*:1115-8 (Sept., 1950)] describes a general technique which is applicable to the quantitative spectrochemical analysis of a wide variety of materials. This has always been a problem to the Police Laboratory technician responsible for spectrochemical analysis. The author discusses sample preparation, the use of special buffers and excitation procedures. Two of the recommended buffers and standard bases are cupric oxide and lead sulfate. Examples of materials analyzed include ashes of various kinds, water, oils, and other liquids. (Clemens R. Maise, St. Louis Police Laboratory).

An Electronic Image Converter and its Use in Chromatography—Zaboj V. Harvalik in an article in the *Analytical Chemistry, 22*:1149-51 (Sept., 1950), hints that this instrument may have criminalistic applications, and it undoubtedly will. Briefly it is a telescope-like device which electronically converts infrared light to visible light. Optical and electrical diagrams are given showing construction details. (Clemens R. Maise).

Determination of Trace Metallic Components in Petroleum Oils by Means of the Emission Spectrograph—The identification of lubricating oils has always been difficult from the forensic viewpoint. The authors of this article present a method, however, which offers a solution to the problem. Trace metals occurring in oils from 2 to 100 p.p.m. may be determined by impregnating carbon electrodes with the oil sample. Discussed by Mary F. Carlson and E. L. Gunn in the *Analytical Chemistry, 22*:1118-21 (Sept., 1950). (Clemens R. Maise).

Occupational Disease Manifestations in Dental Impairments—C. P. McCord discussed the dental characteristics produced by certain occupations. Among those mentioned in the August issue of *Industrial Medicine and Surgery, 19*:387-8 (Aug., 1950), are tack spitter's teeth, serrated; glass blower's teeth,

four middle teeth effected by tube; brush bristle biter and seamstress thread biter; one pair effected; and others effected by chemicals. This article does not appear to be an exhaustive catalog of the subject but might serve to aid in the identity of some missing person on the basis of their teeth.

How Boise Ironed the Kinks Out of Its Chemical Testing Program—The experience of the Boise, Idaho, Police Department in installing a Chemical Tests for Alcoholic Influence program are described by Theodore Loveless in the *Traffic Digest, 4*:1-3 (Sept., 1950). Suggestions are also given to those intending to set up such a program.

Metallurgy vs Crime—The application of metallography and metallurgy to the field of crime detection is discussed in the *F. B. I. Law Enforcement Bulletin, 19*:4-8 (Nov., 1950). The aid afforded by this branch of science to the solution of burglary, arson, and hit-and-run cases is pointed out. A study of crystalline structure of metals shows significant evidence of possible common source and history. A further application is to be found in the area of serial numbers restoration by the magnetic particle method.

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 a recommendation by the Journal.

Kopti-Kat Comparator, 12" Model—The Kopti-Kat Company, 20120 Sherwood Avenue, Detroit 34, Michigan, have developed an enlarged model of the Kopti-Kat comparator. With this instrument it will be possible to compare larger objects and cover a greater area than afforded by the smaller comparator. The center-to-center span is twelve inches and the surface viewed is three inches in diameter. The optical principles remain the same as for the smaller instrument. The enlarged comparator will permit easy comparison of shoe and tire prints and, with a suitable arrangement of microscopes, an enlarged comparison microscope can be assembled.

Lie Detection—John E. Reid and Associates, 910 South Michigan Avenue, Chicago 5, Illinois, announces a new model of the Reid Polygraph. The new model is portable and has featherweight capillary ink recording pens, which avoids the necessity of a counterbalance. This feature eliminates mechanical balancing adjustments during the test and also reduces any possibility of objectionable pen friction on the chart. In addition, the pens may be left in position on the chart for several days without clogging. Five ink tracings are made simultaneously permitting the examiner the benefit of seven deception indices. From the operator's position the right panel incorporates the respiration unit on the upper part of the panel complete with a clamp shut-off valve and the blood pressure-pulse unit below with a release valve. The kymograph occupies the center position in the instrument, and the chart is propelled at the rate of six inches per minute across the writing surface and down into a convenient vacant compartment below which is also ample to carry test utensils. The left panel, which is similar in size to the right panel, has three complete recording units. The upper section incorporates one pen

recording of the two arm movement recorders, the center section is occupied by the galvanic skin reflex or electro-dermal recorder, and the lower section is used for the thigh recorder.

A new principle is employed in the electro-dermal unit enabling the pen to be centered independently of any dial or arduous procedure of balancing and the running operation is controlled by only one manual knob. An aluminum lightweight collapsible chair has been developed which has an arrangement of metal bellows in the adjustable arm rests and dual metal bellows in the adjustable chair seat which records voluntary or involuntary muscular movements of the arms, legs, and extremities. Any movement, no matter how slight, displaces the air in the bellows through thick walled rubber tubing to the two units of sensitive bellows under the instrument panel, which in turn actuates the pens. Similarly by air displacement from the blood pressure cuff and the pneumograph tube, blood pressure-pulse and respiration are recorded enabling the examiner to follow the pattern of deception in these recordings with the assurance from the movement recorders that the subject is fully cooperating during the test.

The electro-dermal recording is obtained by passing a minimal amount of electricity through the electrodes on the hand thereby recording the skin resistant changes on the chart.

Beau Alarm—A personal alarm in the form of a spring-operated siren has been developed by the Electro-Protective Corporation, 165 Vanderpool Street, Newark 5, New Jersey. It is encased in plastic and of such dimensions that it will fit in purse or pocket. At the touch of a button a non-stoppable siren is started which will operate for forty seconds.

Contura—Occasionally copies of documents are desired in situations where it is impossible to remove the material to a laboratory for processing. F. G. Ludwig of the Yale Library has devised a portable light source for reflex copying which fills this void. By means of a pneumatic cushion, photographic paper is made to conform to the contour of even tightly bound books so that 8″x10″, one-to-one, copies may be made. Since the paper is coated with a slow speed emulsion the operation can be performed in a lighted room and then processed at a more convenient time. 110 V. AC or DC are required for power. The Contura copy device is available from F. G. Ludwig Associates, Pease Road, Woodbridge, Connecticut.

Foreign Language Periodicals and Articles of Interest in the Field of Police Science*

Compiled by
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Algemeen politieblad van het Koninkrijk der Nederlanden. The Hague, 99th year, no. 20, Oct. 7, 1950.

H. Dijkstra, *Criminele politiële statistiek* (Criminal police statistics) (p. 393-94).

International criminal police review. Revue internationale de police criminelle.

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

** Head, Foreign and International Law Sections, Elbert H. Gary Library, Northwestern University School of Law.

Official organ of the International criminal police commission. Paris, no. 40, no. 42, Aug./Sep., Nov. 1950. English edition.

S. Versele, *Police and personality dossiers* (no. 42, p. 290-300).—J. Gayet, *The individual identification of typewriting machines* (no. 42, p. 301-306; to be continued).—S. L. Dalstroem, *The classification of fingerprints in Sweden* (no. 42, p. 318-320).—

The issue no. 40 contains exclusively the reports of the *Third International Conference for the suppression of counterfeiting currency* (p. 201-213), and the *19th General Assembly of the International criminal police commission* (p. 214-237), The Hague, June 15-21, 1950. Delegations present and List of member countries: p. 196-199.

Kriminalistik. Zeitschrift für die gesamte kriminalistische wissenschaft und praxis. Heidelberg, 4th year, no. 19/20-21/22, Oct.-Nov. 1950.

Albrecht Böhme, *Ausschnitte aus der arbeit der kriminaltechnischen abteilung des Zentral-Amtes für kriminalidentifizierung und polizeistatistik des landes Bayern in München* (Samples from the work of the technical department in the Zentralamt für kriminal-identifizierung und polizei-statistik of the state of Bavaria in Munich) (3d and 4th instalments, no. 19/20, p. 219-222; no. 21/22, p. 241-247).—X. Bauernfeind, *Warum so wenig fussspuren?* (Why so few footprints?) (no. 19/20, p. 223-25; 2d instalment).

Rassegna di neuropsichiatria. Ospedale psichiatrico consortile, Nocera Inferiore (Salerno), Italy. Vol. 4, no. 4-5, July/Aug.-Sept./Oct. 1950.

C. Catalano-Nobili and G. Cerquetelli, *Personalità psicopatiche e criminalità abituale* (Psychopathic personality and habitual criminality) (no. 4, p. 389-414).—*Personalità amorale e criminalità abituale* (Amoral personality and habitual criminality) (no. 4, p. 415-422).—*Contributo elettroencefalografico allo studio delle personalità impulsive* (Electroencephalographic contributions to the study of impulsive personalities) (no. 4, p. 423-428).

Revista penal y penitenciaria. Buenos Aires (Argentina). Year XI-XII, 1946-47, nos. 39/42-43/46. (2 vols., 617 and 624 pp., published in 1950).

Lemos Brito, *Evolución del sistema penitenciario brasileño en los ultimos veinticinco años* (The development of the Brazilian penitentiary system during the last 25 years) (1946, p. 3-60).—Roberto Pettinato, *Nuevos horizontes del régimen penitenciario argentino* (New horizons for the Argentine penitentiary system) (1947, p. 7-22).—Felicitas S. Klimpel A., *Carceles de mujeres.—Un proyecto de carcel reformatorio para la America latina* (Prisons for women. A prison reform project for Latin America) (1947, p. 23-136).

Revue de science criminelle et de droit pénal comparé. Paris, n. s., 1950, no. 1, Jan./March.

G. Heuyer, *Narco-analyse et narco-diagnostic* (Narcoanalysis and narcodiagnosis) (p. 7-22).

Revue penitentiaire et de droit pénal. Paris, 74th year, no. 4/6-7/9, April/June-July/Sep. 1950.

J.-B. Herzog, *Justice pénale et répression en Amerique latine* (Criminal justice and repression in Latin America) (no. 4/6, p. 342-358).—Bachet, Fleury and Weiss, *Sur l'emploi d'un questionnaire-test dans les prisons de Fresnes* (Notes on the application of a questionnaire test, in connection with the "Tsedek-test," in the prisons of Fresnes) (no. 4/6, p. 359-399).—*Société des prisons et de. legislation criminelle:* Session of June 17: *Narcose et justice. Discussion du rapport de M. Faucher* (Narcosis and justice; discussion of Mr. Faucher's report) (no. 7/9, p. 549-580; see check-list in no. 3 of this Journal).