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## Police Science Technical Abstracts and Notes

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## POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

Joseph D. Nicol\*

Preparation of Calcium  $\alpha$ -Naphthylphosphate and Anthraquinone-1-Diazonium Chloride—A. M. Seligman and L. H. Manheimer describe the preparation of calcium  $\alpha$ -naphthylphosphate as follows: [*J. Natl. Cancer Inst.*, 9:181-99 (1949)] 14.4 gms. of  $\alpha$ -naphthol are dissolved in 15 cc. of dry pyridine (dried by refluxing with anhyd.  $\text{BaCO}_3$  for several days, distilling, and storing with NaOH pellets). This solution is then added in portions to a phosphorous oxychloride solution (15.3 gms. in 10 cc. of dry pyridine), reaction heat is produced, and the product appears as a white sludge. After standing for ten minutes the mixture is cooled and added in portions to a solution of calcium acetate (30 gms. in 200 cc. of water) and 100 gms. of ice. The oil which separates, dissolves, and reappears as a white precipitate. 150 cc. of alcohol is added, and the product is filtered and washed with 95% alcohol followed by ether and then dried.

The anthraquinone-1-diazonium chloride (III) preparation is described by the same authors in the *J. Natl. Cancer Inst.*, 9:427-34 (1949) as follows: 1-amino anthraquinone is finely divided by precipitating from 85% sulfuric acid solution with water. The filtered and washed precipitate is then treated with concentrated hydrochloric acid to form a grayish-white crystalline hydrochloride. This is diazotized at 30°-40° C. by running 50 cc. of an equivalent sodium nitrite (3.2 gms. for 10 gms. of amine) solution under the surface with stirring. The reaction products are flooded with ten times the volume of water at 70°-80° C. Additional sodium nitrite (0.5 gms.) is added. Filter and salt-out with sodium chloride. Collect by filtration and wash with cold water, alcohol, and ether. After drying the product may be stored for some time under refrigeration.

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Police Training—A four-month course of instruction in police administration is to be given to selected German police officials at the Michigan State College. The program will include classroom and laboratory work.

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The Transport of Exhibits—The March, 1949 issue of the *International Criminal Police Review* [No. 26, 17-18 (March, 1949)] contains a description of a device developed by I. Gauthier and C. Boudon for the preservation and transportation of objects for fingerprint evidence. A box is made of sheet aluminum with numerous holes in the sides and ends. Rods are fastened through these holes in such positions as will hold the irregularly shaped objects to be transported. Small angle brackets are also provided to hold such items as plates and pieces of glass. When not needed, the rods are stored at the ends and bottom of the box.

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Separation of Cotton and Rayon or Cotton and Acetate for Analytical Purposes—Oscar Heim—A method is described for effecting a clean separation of cotton and rayon (regenerated cellulose) or cotton and acetate at room temperature, using a solution of sodium zincate and ammonium thiocyanate. Advantages claimed are that the solutions are readily filterable and no cutting up of the sample is required. [*Analytical Chemistry*, 22:360-361 (February, 1950).] (Submitted by Clemens R. Maise.)

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\* Firearms Identification Technician, Chicago Police Scientific Crime Detection Laboratory.

**Assembly for Positioning Cuvettes Used for Micro-Analysis with Beckman Spectrophotometer**—V. Everett Kinsey—Police laboratories lucky enough to own a Beckman Spectrophotometer will be interested in this device. It enables the operator to do micro work with the Beckman with as little as 50 cu. mm. of liquid, as accurately as with the macro method. Directions for constructing the cuvette holder are given in detail. [*Analytical Chemistry*, 22:362-363 (February, 1950).] (Submitted by Clemens R. Maise.)

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**Coatings**—F. G. Rochow and R. W. Stafford relate the progress made in the field of coated organic high polymers and their incorporated oils and pigments. This article is part of the "Second Annual Review of Analytical Chemistry" appearing in *Analytical Chemistry*, 22:206-210 (February, 1950). A bibliography follows the article which lists 105 references on the subject of coatings. Many of these will be of value to the forensic scientist. (Submitted by Clemens R. Maise.)

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**Pharmaceuticals and Natural Drugs**—This article by Max M. March and Wayne W. Hilty, which is also part of the "Second Annual Review of Analytical Chemistry," cites the newest methods of analysis in this field. Chemical methods, physiochemical methods, and physical methods developed within the past year are discussed. Of particular interest are the methods of detecting alkaloids and related substances. Special methods for detecting narcotics are referred to and should be of special interest to police laboratory personnel. 288 references cited. [*Analytical Chemistry*, 22:245-253 (February, 1950).] (Submitted by Clemens R. Maise.)

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**Spectrographic Analysis of Coal and Coal Ash**—Richard G. Hunter and A. J. W. Headlee describe a method by which coal can be analyzed on the spectrograph for percentage and composition of ash in a matter of minutes. The total energy method is used. The method can readily be adapted to the analysis of rocks, minerals, and inorganic chemicals of all kinds. [*Analytical Chemistry*, 22:441-445 (March, 1950).] (Submitted by Clemens R. Maise.)

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**National Safety Council**—The headquarters of the National Safety Council have been moved from 20 North Wacker Drive to 425 North Michigan Avenue, Chicago 11, Illinois. The new telephone number is WHitehall 4-4800.

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**Automobile Fire Clinic**—Experts tried to burn up a 1937 Chevrolet by using various methods at the "clinic" held in Louisville, Kentucky, on December 2, 1949. The experiments were under the auspices of W. L. Martin, State Fire Marshal of Frankfort, Kentucky, and activities at the scene were under the direction of J. P. Rockenfield, Columbus, Ohio, a special agent for the National Automobile Theft Bureau. A summary description of the events follows:

Description of Subject Automobile  
1937 Chevrolet Tudor Sedan

**Upholstery**—Fair condition, intact except torn at top back of driver's seat.

**Refinish and Paint**—Fair condition, repaint job.

**Tires**—Rubber worn—All mounted and inflated.

**Floor Mats**—Rear Carpeting—Rubber Mat—Fair condition.

**Manifold**—O. K.

Engine Assembly—Oily and dirty. Collection of oil and dirt in floor pan. No radiator or front grill.

Floor Boards—Metal construction.

Battery—Strong.

Gas Tank—5 gallons of gas.

Glass—Type—

Windshield—Safety Sheet, cracked in front of driver's seat. All other glass intact.

Body—Steel.

#### Series of Events

##### Fires—Without Inflammables

*Seat Cushion*—At the beginning of the demonstration 15 to 20 lighted cigarettes were thrown on the upholstery and rear floor mat on which crumpled newspapers and quantity of old rags had been thrown; also on both front seat cushions and after 45 minutes no fire or flame had developed although upholstery was smoldering in various spots where one or more cigarettes had collected.

*Carburetor and Fuel Pump*—Flame from a blow torch was applied to the fuel pump direct for 2 minutes, result no fire. Torch was again applied to fuel pump for two minutes breaking the glass strainer bowl which ignited and went out in 45 seconds. Blow torch flame applied to the distributor wiring was set fire to and burned for 3½ minutes, charring the wiring but was extinguished in one swipe of a dry cloth.

*Wiring Under Dash*—The direct flame of a blow torch was applied to the wiring under the dash for 2 minutes, charring the wiring but went out of its own accord in less than 1 minute.

*Direct Short Generator and Relay Switch*—Resulted in no fire, burning insulation on wiring and with considerable smoke and odor.

*Running Boards*—The direct flame from the blow torch applied to the running board for 2 minutes but went out in less than 30 seconds.

##### Fires—With Inflammables

*Engine Fry Pan*—Grease and dirt accumulation exposed to flame of blow torch for 4 minutes with no blaze when torch was removed; also oil and grease on engine block was exposed to direct flame of torch with no fire when torch was removed.

*Anti-Freeze Test*—A fifty percent solution of alcohol and water mixture was thrown over hot motor and exhaust manifold with no flame.

*Gasoline on Motor*—One kind of gasoline was thrown over entire motor and lighted with a lighted paper; after 3 minutes nothing was burning except wire to starter, grease in pan did not ignite and all fire was out in 5 minutes. One quart of gas was poured over the entire motor and went out without assistance after 8 minutes.

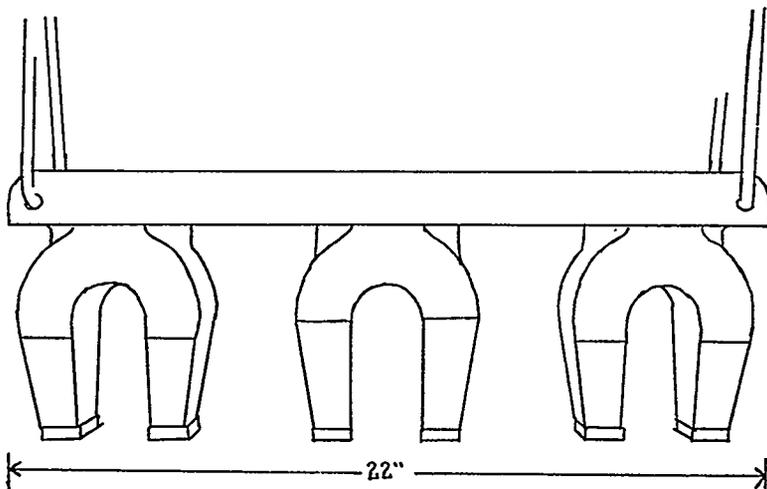
*Upholstery*—Approximately one gallon of gasoline was thrown over interior of car which ignited when the last quart was thrown in the interior apparently caused by the live cigarette and exploded with a large puff and considerable smoke, flames immediately breaking the left rear quarter glass, puffing out for approximately ten feet. It was noted on both doors immediately began blistering and peeling, and due to the limitation of time for the demonstration after this fire was allowed to burn for 10 minutes it was extinguished by Louisville Fire Department Company, but in that time the entire interior of the car was in-flamed and all upholstery badly charred and almost destroyed by the fire.

At the conclusion of the demonstration, the investigators in attendance spent the remainder of the day in a discussion of "Methods of Note Taking and Report

Writing," and "A Classification of Witnesses and Methods of Interviewing." These discussions were led by R. C. Steinmetz. [Reprinted by special permission from the *International Association of Arson Investigators Newsletter*, 1:28-30 (1950).]

**Volatile Material in Arson Investigation**—A modification of the Farrel apparatus for vacuum distillation of volatile solvents from arson evidence is described by J. D. Nicol in the *International Association of Arson Investigators Newsletter*, 1(2):1-6 (Feb., 1950). Various phases of the approach to the fire scene problem, and the location and preservation of evidence are discussed.

**Permanent Magnet**—A newly developed permanent type magnet assembly for use in the recovery of ferrous objects from rivers and lakes is currently used by the Chicago Police Crime Laboratory. This unit was not primarily designed for the lifting of a large amount of weight, but rather for the attraction of an object at a distance from the assembly.



Eliminating the danger of accidental electrocution possible with the use of electro magnets and providing a penetration of muddy bottoms, the use of this magnet in actual case work has produced very satisfactory results. It can be used in trolling or dipping operations.

The magnet assembly consists of three cast Alnico-V horseshoe magnets, each weighing approximately  $16\frac{1}{2}$  pounds and producing a 42 lb. lift. Each magnet is properly spaced and bolted to a 3-inch aluminum channel. The channel is linked to a set of ropes by two stainless steel hooks.

The overall measurements are approximately  $33\frac{1}{4}$  inches wide, 8 inches high and 22 inches long.

The magnet assembly was designed and built for the Crime Laboratory by the Arnold Engineering Company of Chicago, Illinois. (Submitted by Charles Zmuda, Chicago Police Laboratory.)

**Miscellaneous Microchemical Devices (XXIV). Holding and Clamping Devices**—A continuation of this series by J. T. Stock and M. A. Fill is to be found in the March issue of *Metallurgia*, 41:290-1 (1950). This issue describes the construction of small clamps and tongs from glass tubing and bottle caps. Also included

are a friction drive stand, micro-stirrer with lowering device, and a stand for reactions on microscope slides.

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**Ammunition Behavior**—Experiments on unconfined cartridges were performed by J. S. Hatcher and reported in *The American Rifleman*, 98:30-2 (April, 1950). The cartridges tested; Shot-shells, 45 cal. auto. and .30-'06 cartridge; were initiated by the heat of a carbon arc on the primer. The results indicated that little tissue damage is to be expected from such an occurrence; the major danger arises from flying fragments of cartridge cases. Although the experimental procedures employed by Hatcher and by Sojat and Panusch (Technical Note Section, this Journal) differ somewhat, their observations of the results coincide.

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**Effect of Alcohol Ingestion on Driving Ability**—Since the interpretation of the impairment of driving ability due to alcohol may be open to some debate when extrapolating from laboratory tests to the roadway, K. Bjerver and L. Goldberg [*Quarterly Journal of Studies on Alcohol*, 11:1-30 (March 1950)] conducted a series of tests upon drivers under moving conditions. Thirty-seven men, all experienced drivers, were divided into test and control groups and given driving tests after intake of beer or distilled spirits. As a result of these tests it is the author's opinion that the threshold of impairment should be 0.035 to 0.04 even for a group experienced in driving and accustomed to moderate amounts of alcohol as was the case with this group. It might be inferred from that, that the inexperienced drinker will show driving impairment at a still lower level. Laboratory tests conducted with some of the above group showed an agreement as to the threshold of impairment of about 0.02 to 0.05, depending upon whether flicker or blink test is used.

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**Simple Spectrophotometric Determination of Ethanol in Blood by Diffusion in an Autoclave**—Rapid routine determinations of alcohol in blood are possible by the method reported by G. R. Kingsley and H. Curren in the *Journal of Laboratory and Clinical Medicine*, 35:294-6 (Feb., 1950). The reagent used is a solution of 3.70 gms. of potassium dichromate in 150 ml. of water and 280 ml. of sulfuric acid added and made up to 500 ml. The test is conducted by adding 2 ml. of blood and 2 ml. of water to cool beakers, 3 cm. in diameter and 2 cm. in height. The beaker is placed in a 4.0 cm. diameter by 5 cm. height, weighing bottle containing 10 ml. of acid dichromate solution. Weighing bottle is closed and autoclaved at 15 lbs. for 30 minutes. Gently mix before opening and read solution in standard cuvette against blank set at 100% transmission at 600 microns. Standard curves may be made by duplicating procedure with 0.00, 0.1, 0.2, 0.3, 0.4, 0.5, and 0.6 ml. of standard alcohol sol. (2.53 ml. of abs. alcohol diluted to 100 ml.) Other substances found in blood do not interfere.

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**Detection of Parasites in Human Excretions**—Parasites may be examined by mixing a specimen of fecal matter one-half the size of a rice grain in warm 2% fluorescein solution, incubating for a few minutes at 37°C and examining microscopically using blue filtered light. According to G. Bittner in the *Journal of Laboratory and Clinical Medicine*, 35:121-2 (Jan., 1950), living animal cells will appear blue; dead animal cells, bacteria, and vegetable matter will blend into the background; Amoeba and other structures are not destroyed.

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**Detection of Phenyl Barbiturates**—The sensitivity of the Pesetz test for phenyl barbiturates has been improved by E. Rathenasinkam by a procedure described in

the *Analyst*, 75:108-9 (Feb., 1950). One milligram of the barbiturate is heated in a test tube with 200 mg. of potassium nitrate moistened with 20 drops of sulfuric acid for about 20 minutes. Cool reaction and dilute with water. Separate and extract with 30 ml. of chloroform and then 30 ml. of ether keeping extracts separate. Wash extracts with water, evaporate, and dissolve each residue in 2 ml. of acetone. Add a drop of 50% sodium hydroxide and shake. Note color of acetone layer. Purple colors appear in each tube.

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**Inks**—The results of numerous tests and the ratings from these findings of 34 permanent and washable inks are described in the *Consumer Reports*, 14(10) (Oct., 1949). The tests were designed to find out how well various brands of inks lived up to their claims for permanence or washability and also for all around general performance. (Submitted by D. J. Purtell, Chicago Police Sci. Crime Detector Lab.)

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**Office Equipment, Machines, and Supplies in Germany**—In an article in the *Office Appliances*, 91(1) (Jan., 1950) is given a list of office equipment being produced in Germany. It includes a long list of typewriters and writing instruments. It also makes reference to a new ball point pen being manufactured that uses normal liquid ink and is filled like a fountain pen. (Submitted by D. J. Purtell.)

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**Cuban Society of Police Science and Criminalistics**—A group of the leading police science experts of Havana organized the Cuban Society of Police Science and Criminalistics in January 1950. Objectives of the Society include improvement of technical methods, assistance to the Courts in scientific problems, development of professional police schools including courses in scientific criminal investigation, and promotion of friendly exchange of cultural relations with similar foreign societies and institutes.

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**Toxicologist Wanted**—The State of Connecticut Personnel Department has announced examinations for Toxicologist (Salary \$5280-6720 per annum) to supervise work of the toxicology laboratory, Bureau of Laboratories, Department of Health. Information on duties, qualifications, and closing dates of examination can be obtained from the Personnel Dept., State Capitol, Hartford, Conn.

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**Police Training Institute at the University of Louisville**—The University of Louisville has announced the establishment of a regional Police Training Institute at the University of Louisville by means of a grant of \$200,000 from the General Education Board of the Rockefeller Foundation and the Carnegie Corporation of New York. The institute is tentatively scheduled to open in September, 1950, and will be operated for an initial period of five years. Three terms a year of twelve weeks' duration each will be held for twenty-five police students a term.

The institute is designed to serve the southern and southeastern states, including Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Tennessee, Virginia, West Virginia. Students must be members of a police force, with preference given to applicants in command, supervisory, training, and administrative positions. The students will be on leave from the respective police department and must agree to return to the department upon completion of the course. Each applicant accepted will receive a stipend to cover living expenses while attending the institute and in addition will be given a travel allowance for the round trip transportation costs from place of residence.

The project has been under study approximately one year by a planning committee of police officers and university officials, headed by Dean Howell V. Williams of

the University of Louisville. The committee found that the present need for police training in the south is not for a four year college program in police science but is for a short course reaching existing police officers.

The institute will be an autonomous unit of the university, headed by a director who will have both a good educational background and police experience. A full time instructor and a specialized part-time instructional staff will also be retained. An advisory board of police, university, and general public representatives will assist in the development of policies and program.

The program of the institute will be designed to meet the training needs of the South. The curriculum will include not only the fundamentals of police science, such as investigation, identification, patrol, communications, records, etc., but also such subjects as administration law, crime prevention, human relations, and police problems of the South. The latter two subjects will include police work with racial groups.

Announcements giving the details of the positions of director (at \$8,000 a year) and instructor (\$6,000 a year) may be secured by writing to the institute.

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## 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.

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**Porto-Clinic**—Visual Acuity, Color Perception, Depth Perception, Field of Vision and Reaction Time may be measured with the Porto-Clinic, manufactured by the Porto-Clinic Instruments, Inc., of New York City. These tests are contained in a portable case, easily set up and operated on 110 volts A.C. All tests may be completed upon a subject in about ten minutes. The device might be used to aid in public demonstrations of the effects of the ingestion of alcohol.

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**Optical Comparator (Kopti-Kat)**—A new type of optical comparator has been introduced which allows for the super-imposition of two images as well as the standard side by side (juxtaposition) positioning in the field. There is a clear field of view beneath the instrument which allows room for the hands to move the work into the desired location, or the use of a pencil or pen in tracing. It is useful in the comparison of portions of documents, signatures, typewriting, inks and colors, pen widths, and would be very useful in the quick comparison and search for one bullet out of a large group. Low orders of magnification can be obtained at the customer's specification. The instrument is quite handy in the measurement of hard to get at objects, such as internal workings of a watch, some types of bombs, booby traps, etc., where the use of scales or calipers is neither safe nor practical. The instrument is a development of the A. J. Brandt Company, Detroit, Michigan.

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

Compiled by

KURT SCHWERIN†

Annales de médecine légale. Paris. Tome 29, no. 6, Nov./Dec. 1949.

25e Congrès de médecine légale, de médecine sociale et de médecine du travail. P. Desclaux, L. Derobert, R.-F. Katz, *Aspects d'actualité de toxicomanies* (Actual problems of addictions) (no. 6, pp. 277-310). (This article includes a bibliography of 147 titles).—Henri Griffon, *Remarques sur l'extraction et l'analyse des gaz du sang* (Observations on the extraction and the analysis of blood gases) (no. 6, pp. 332-336).

Criminalia. Revista mensual. Organo de la Academia Mexicana de ciencias penales. Mexico, D. F. 16th year, no. 1-3, Jan.-March 1950.

Luis Cubillos Leyva, *La psicotecnia* (Psychotechnology) (no. 2, pp. 66-70).

La Giustizia penale. Rivista mensile di dottrina, giurisprudenza e legislazione. Roma. 55th year (5th year of 6th series). Fasc. 1-3, Jan.-March 1950.

Aldo Broggi, *Infermità di mente ed anormalità* (Infirmary of mind and abnormality) (fasc. 1, sec. II, col. 30-43, case note)—E. Dibilio, *Narcoanalisi, penthotal e giustizia penale* (Narco-analysis, penthotal and criminal justice) (fasc. 3, sec. I, col. 69-71).

Kriminalistik. Zeitschrift für die gesamte kriminalistische wissenschaft und praxis. Heidelberg. 4th year, heft 1/2-5/6, Jan.-March 1950.

Berthold Müller, *Die kriminologie der tötung durch ertränken* (The criminology of killing through drowning) (heft 1/2, pp. 1-4; heft 3/4, pp. 25-30)—Wolfgang Hörburger, *Ueber den chemischen giftnachweis im gerichtsverfahren* (The chemical proof of poisoning in legal procedure) (heft 1/2, pp. 15-17)—Albrecht Böhme, *Beratungsstellen zum schutze gegen verbrechen. Eine moderne massnahme zur bekämpfung des verbrechertums* (Advisory offices for protection against crime. A modern way for the fight against criminals) (heft 5/6, pp. 49-56)—Ch. Leszczynski, *Identifizierung von kittspuren* (Identification of traces of putty) (heft 5/6, pp. 58-59).

Nordisk kriminalteknisk tidsskrift. Stockholm. 19th year, 1949, no. 11.

Jorgen Kristensen, *Identificierung af beskadigede kappeklaedte projektiler* (Description of a method of identifying deformed bullets) (pp. 124-129).

Nordisk tidsskrift for kriminalvidenskab. Copenhagen. 37th year, 1949, heft 1/4. (Changed its title in January, 1949, from Nordisk tidsskrift for strafferet.)

Erik Strömngren, *Narkoanalysens anveldense i retspsykiatrien* (The application of narco-analysis in legal psychiatry) (heft 3, pp. 195-203).

\* 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.