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Police Science Book Reviews

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POLICE SCIENCE BOOK REVIEWS

Edited by
Rolland L. Soule*

METHODS OF FORENSIC SCIENCE—VOLUME III.
Edited by *A. S. Curry*, Director of the Home Office East Midlands Forensic Science Laboratory, Nottingham, England. Interscience Publishers, Division of John Wiley & Sons Ltd., London, New York, Sydney. 1964. pp. 342. \$13.50.

This series, begun under the editorship of Frank Lundquist, was intended to provide a medium through which new trends and special facets of Forensic Science could be periodically brought into focus in order that the practitioner will have reference sources of refined, organized, and authoritative methodology.

The Third Volume is edited by *A. S. Curry*, well known forensic scientist whose principal activities have been in connection with developments in forensic toxicology.

An imposing array of nine authoritative authors is presented together with subjects which are timely in that they are in serious need of updating.

I. LEAD POISONING by *S. L. Tompsett* (Pp. 45)

An excellent discussion of the causes of lead poisoning; the importance of stippled cells, coproporphrin, and g-aminolevulinic acid as diagnostic tools; and a review of methods with a complete procedure of sample preparation followed by lead determinations using the reversion principle in connection with dithizone spectrophotometry.

Normal lead levels in biological tissue are discussed as well as fatal levels. Mobilization of the metal and treatment procedures are referred to. The toxicity, absorption and determination of tetraethyl lead are mentioned briefly. The chapter is documented with 244 references which, together with the text, is a fine job of reporting the essential features of lead poisoning and its various ramifications.

II. NON-BIOLOGICAL APPLICATION OF NEUTRON ACTIVATION ANALYSIS IN FORENSIC STUDIES by *Vincent P. Guinn* (Pp. 22)

The author of this chapter is the leading world authority on the subject as it pertains to the forensic activity. With the cooperation of the California

Associate Director, Southern Police Institute, University of Louisville, Louisville, Kentucky.

Association of Criminalists in an advisory role, he has through the auspices of the General Dynamics Corporation systematically explored scientific evidence materials with neutron activation analysis.

NAA has already come into the California courts in this connection and it was utilized as an investigational tool in the probe of the assassination of President John F. Kennedy. It is appropriate that its principles be elaborated upon in simple terms so that it can be understood by those who are interested. The subject is thus removed from the esoteric category. Although not easily understood without the necessary background in physics, it is opened to view and understanding and is limited only by training. Relative detection sensitivities are given for 69 elements.

There are two methods of analyses, one which is non-destructive to the sample and which is called the "purely instrumental method", which involves activation by high neutron flux followed by gamma-ray spectrometry without any chemical treatment. Guinn deals entirely with this method. The other method is destructive and is called the "Radiochemical Separation Method". It is handled in the next chapter.

Potentialities for new horizons of identification with the following types of materials are suggested: plastics, tire-rubber, wood, glass, paper, ink, soil, drugs, metal residue.

The author has already demonstrated the usefulness of NAA in examining hands for traces of revolver leakage and the application to grease residue from hit-run victims. There are seven references.

III. BIOLOGICAL APPLICATIONS OF ACTIVATION ANALYSIS by *Hamilton Smith* and *J. M. A. Lenihan* (Pp. 43)

This chapter deals with the Radiochemical operative technique and is heavily directed to the determination of arsenic. The author discusses absolute identity from the standpoint of trace metal analysis of hair and its limitations. The chapter is somewhat redundant of Guinn's general concepts. It goes into much more detail than Guinn's chapter concerning sample preparation, costs of equipment and service and the technology of radiochemical separation analysis.

The text is heavily referenced with 116 separate items in the bibliography. The chapter is a very worthwhile contribution to the present status of knowledge of NAA, and it has a fitting continuity from the previous chapter.

IV. FORENSIC CHEMICAL ANALYSIS OF URINE FOR DRUGS by *Elliott B. Hensel* (Pp. 37)

Drugs in urine and their detection and estimation is too presumptuous a subject for 36 pages of text. However, the chapter is the only one in the volume which is disappointing.

There are gems of advice interspersed throughout, such as: "Collection and Preparation of Samples", "Interpretation of Narcotic Findings", and "Gasoline, Glue and Goofballs". The chapter is entertaining, but leaves the analyst up in the air insofar as a systematic approach to the problem is concerned. It lacks depth of review and analytical detail. The emphasis is entirely on identification. The statement: "Measurement of the amount of drug found in a random sample of urine is relatively pointless" (p.115) must be challenged. Many of the tests are non-specific and in the hands of the inexperienced would only lead to gross misinterpretation.

A number of dogmatic unfounded utterances appear, such as: "A large amount of pale urine suggest that ethyl alcohol has been consumed"; and "50 ml of gravity 1.015 urine is needed for comprehensive analysis".

Detection of barbiturate metabolites loses its point without a mention of the significance of the relative quantities of metabolite and unchanged drug.

Thin layer chromatography has been excluded, and this must be cited as a major deficiency. Especially so, in that the author introduces the chapter by stating that it is slanted to the worker without instruments and that speed and production are important.

Basic violations of analytical chemistry principles occur, such as the recommendation that standards of reference be made from ampoules of absolute alcohol and that concentrated acid-dichromate reagent be made up for storage and use from a stock bottle. It is poor practice of this type that has downgraded quantitative alcohol analyses so much in the past, so that in many quarters the results are appropriately questioned with a jaundiced eye. Surely a better method for quantitative ethanol could have been recommended than the diffusion of 0.5 ml sample into 2 ml of acid dichro-

mate with subsequent spectrophotometric measurement of the yellow dichromate disappearance as compared with the similar change in a questionable reference using an undependable reagent with volumes so small that measurement error becomes intolerable.

It is unfortunate that vapor phase chromatography was not mentioned because of the valuable screening and qualitatively indicating data which is available from that instrumentation.

A list of 89 references is cited which is of some assistance in orientation concerning the specifics of drug identification.

V. THE ADMINISTRATION OF A FORENSIC SCIENCE LABORATORY by *Robert F. Borkenstein* (Pp. 18)

This topic is a strange bedfellow to the scientific methodology of the other subject matter in the volume. The editor's excuse for it is that it is a part of the total picture of forensic science. It is written on a level which is out of place with the other segments of the book.

However, it is exceptionally well done. The author is eminently well qualified as a capable and ingenious organizer and administrator by virtue of both experience and demonstrated performance.

The described concepts and philosophies of criminalistics laboratory operation touch topics which need to be considered and discussed. The views expressed are broad but sound. Surely management will play a larger role in the near future when the status of professionalization of the forensic scientist passes from frustration to fruition.

In the brief space allowed, the author has done a creditable job of knocking on a few doors that should be opened for a full examination. If it serves as nothing more than an eye opener, its mission has been accomplished. Five references.

VI. EXAMINATION OF FIDUCIARY COUNTERFEITS AND FORGERIES by *P. Fauconnier, J. Cogniard, and P. F. Ceccaldi* (Pp. 63)

Very little has been published on the detection of counterfeit coins, therefore the section on metal casting is a welcome contribution. Physical evidence examiners may find application to other kinds of die casting problems from this subject.

Currency counterfeiting gives a brief rundown on printing processes and how to recognize them from their products: paper, watermarks and security particles are discussed. Conductivity measurements of paper is mentioned, but there is no discussion of experience data or typical normal values

and ranges. Ink examination is discussed broadly, but with no details of technique.

Typewriter and rubber stamp forgery, as well as tracings and alterations, are mentioned. However, there is nothing in this material which is new to the examiner of questioned documents.

There is no literature cited section, and the text is bereft of experience data. It would seem that the reader is left to his own devices to work out the techniques briefly mentioned by the authors in passing.

VII. THE TOXICOLOGY OF CYANIDES by *Manuel A. Guatelli* (Pp. 33)

This chapter is an important comprehensive, critical review of all the facets of cyanide toxicology. It is clearly and concisely written and leaves little to be desired by anyone seeking practical help or interpretative guidance in a toxicological situation involving cyanide.

"Distribution", p. 238, is the only area needing serious criticism. The ratios quoted for cyanide distribution between the various organs and the body fluids are at variance with the published data of Finkle and Sunshine.¹

83 references are cited.

VIII. THE ACID PHOSPHATASE TEST by *S. S. Kind* (Pp. 22)

A competent and complete treatment of the test from chemical mechanism to specificity and treatment of factors involved in the interpretation of results. Documentation is complete with 39 references.

IX. ERASURES by *Wilson R. Harrison* (Pp. 48)

A systematic consideration of the subject is presented in meticulous fashion. While not new to experienced examiners, the material is an asset to the reference media of the document examiner and valuable to trainees. The chapter is documented with 22 specific citations and 12 general background references.

In summary, the volume takes its place in the forensic library as a useful reference except for the shortcomings noted.

LOWELL W. BRADFORD

Laboratory of Criminalistics
San Jose, California

¹ SUNSHINE, I. AND FINKLE, B., The necessity for tissue studies in fatal cyanide poisonings. *INT. ARCHIV FUR GEWERBEPATHOLOGIE UND GEWERBEHYGIENE* 20: 558-561 (1964).

MACRO MICRO PHOTOGRAPHIE. By *Vincenzo Perelli*, M.D. Progresso Fotografico, 7 via Pompeo Litta, Milan, Italy, 1964. Pp. 534. Illus.

This book, which is a French translation of the Italian publication, second edition, was not written specifically for scientists but the information it contains should be of interest to all those who have to use this type of photography in their profession or have to record their findings in research work.

The author describes the various techniques which should be considered in photomacrography or photomicrography. These techniques are based on his thirty years of experience and obviously he researched his subject well and spared himself little in gathering and compiling the data and arrangement so that a very interesting treatise results.

Photomacrography and photomicrography, as the author describes them in the introduction, are the photographic exploration of a marvelous world which escapes almost completely to a direct observation. Dr. Perelli contends that this subject presents in each case a peculiar set of peculiarities which belong to it alone and that the most insignificant object may be seen on an interesting aspect and become a source of artistic expression.

Four chapters are devoted to the various techniques one should consider in photomacrography. Suggestions are made on photography of objects which are or are not transparent, using dark or clear fields. Sets of tables are provided regarding focus, time exposure and others. Four chapters are also devoted to photomicrography describing in detail the choice of optical parts, sources of light, types of camera and photographic attachments. Included also are two chapters on the determination of time exposure and the measurement of the amount of light on the object. Other chapters deal with the use of electronic flashers, techniques of ultraviolet and fluorescence, infrared and methods of contrast.

The procedures suggested by the author are supported with numerous illustrations which are well explained. Complex problems such as various techniques to be used in microscopy are treated on a practical basis. All in all, this book is a highly interesting and informative one and is a worthwhile investment.

J. A. G. DE LA DURANTAYE

R. C. M. P. Crime Laboratory
Ottawa, Ontario