

BOOK REVIEW

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Review of: *Fundamentals of Forensic Science*

REFERENCE: Houck M., Siegel J.A. *Fundamentals of forensic science*. Burlington, MA: Elsevier Academic Press, 2006, 672 pp.

This book by two forensic science educators “represents a different, albeit more, realistic, view of the field of forensic science, than is found in other textbooks” (Preface, p. xiii). The authors claim that their approach more closely follows the processing of a crime scene and the forensic examination of physical evidence than that found in other textbooks. Furthermore, they claim that the book can be used by students with more varied backgrounds. To do this the book is divided into six sections and multiple chapters. Section I “Criminal Justice and Forensic Science” includes the following chapters: 1. Introduction, 2. Crime Scene Investigation, and 3. Natural Evidence. Section II “Analytical Tools” includes the following chapters: 4. Microscopy, 5. Spectroscopic Techniques, and 6. Separation Methods in Forensic Science. Section III “Biological Sciences” includes the following chapters: 7. Pathology, 8. Anthropology and Odontology, 9. Entomology, 10. Serology and Blood Stain Pattern Analysis, 11. DNA Analysis, and 12. Forensic Hair Examination. Section IV “Chemical Sciences” is composed of the following chapters: 13. Illicit Drugs, 14. Forensic Toxicology, 15. Textile Fibers, 16. Paint Analysis, 17. Soil and Glass, and 18. Fires and Explosions. Section V “Physical Sciences” includes the following chapters: 19. Friction Ridge Examination, 20. Questioned Documents, 21. Firearms and Tool Marks, and 22. Impression Evidence. And, finally, Section VI “Law and Forensic Science” includes chapter 23. Legal Aspects of Forensic Science.

This review attempts to test the authors’ claim that it is broader and more “forensically relevant” than other texts with a more academic orientation. The two relevant textbooks are the perennial classic *Criminalistics*, by Richard Saferstein, now in its 9th edition (1), and *Forensic Science* by Stuart H. James and Jon J. Nordby, in its 2nd edition (2). These two books are quite different from each other; Saferstein’s is a single-author textbook that follows a similar approach as that used by Houck and Siegel, although it does not include some of the more exotic topics such as entomology and anthropology, which in reality are used infrequently in routine crime laboratory approaches to evidence. In contrast, James and Nordby’s is an edited volume that treats subjects in greater depth than Houck and Siegel, with each chapter written by a different expert. Thus, it is to some extent questionable as to how different their approaches are. The authors might have improved their approach by selecting a type of evidence, such as drugs, and not only address testing procedures but also discuss the frequency the type of evidence is submitted to in the

crime laboratory. In my experience, this type of information is gathered and readily available.

As a reviewer, I give the authors credit for the immense effort they expended in producing this textbook, which on the whole covers the field of traditional forensic science at an introductory level. Hopefully, in the 2nd edition of this book they can correct the flaws that blemish this otherwise excellent coverage of the field. The greatest number of flaws occurs in the volume’s Section III on Biological Sciences; however, there are many other errors throughout the book. For example, certain terms and acronyms are often used before the term has been defined. To illustrate, in Chapter 5. Spectroscopic Techniques, “HPLC” is used on page 117 without being defined until page 141. The authors also on occasion will describe a methodology with multiple detection techniques, and use an example that was not otherwise addressed in the text. For example, when discussing capillary electrophoresis, the single paragraph on detection only discusses UV absorption (that is primarily used for drugs); however, the example shown is a DNA electropherogram that uses laser-stimulated fluorescent detection, which is not discussed. There are other small problems throughout the book that detract from the clear presentation and understanding of the material. In the final chapter, where report writing is addressed on page 645, they state “Figure 23.4 shows typical wording of this type of analysis,” which according to the text refers to a previous paragraph describing a quantitative drug test; however, Figure 23.4 is the report of fiber and glass analyses. In general, these types of errors and occasional misspellings are relatively infrequent in most sections of the text, with the exception of the section on Biological Sciences.

The Biological Sciences section contains the greatest number of contradictions, factual errors, and poorly written sentences. One must assume this is so because the authors are not (forensic) biologists. Space does not permit a complete enumeration of all these problems. Two examples will have to suffice. On page 168, under Cause and Manner of Death, in their description of rigor mortis, they state “Onset begins two to six hours after death, starting in the smaller muscles and eventually affects even the largest ones. The stiffness remains for two to three days and then diminishes in reverse order.” Then, on page 179, they state “As noted earlier, rigor mortis becomes apparent within half an hour and an hour and progresses to a maximum within 12 h, remains for about 12 h and disappears within the following 12 h.” On page 275, in their discussion of how RFLP DNA technology (a form of DNA testing no longer used forensically) works, they state, “Several different VNTRs can be analyzed at the same time,

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employing different specific restriction enzymes simultaneously.” In fact, this has never been carried out forensically; although different enzymes have been used in different settings *Pst*I (Life-codes), *Hinf*I (Cellmark, Europe), and *Hae*III (FBI protocol), they have never been validated forensically on mixtures of enzymes. Unfortunately, the inaccuracies and contradictory statements in the biology section make it impossible to recommend this volume as an introductory textbook. This is unfortunate, because the errors in the rest of the volume are few and far between and can be easily overlooked, particularly because this is a 1st edition, first

printing. Hopefully, these can be corrected in future editions and will allow this volume to be a useful and instructional aid for students.

References

1. Saferstein R. Criminalistics: an introduction to forensic science (college edition). 9th ed. Upper Saddle River, NJ: Prentice Hall, 2006, 672 pp.
2. James SH, Nordby JJ. Forensic science: an introduction to scientific and investigative techniques. 2nd ed. Boca Raton, FL: CRC Press, 2005, 778 pp.