

BOOK REVIEW

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Review of: *Forensic Cremation: Recovery and Analysis*

REFERENCE: Fairgrieve SI. *Forensic cremation: recovery and analysis*. Boca Raton: CRC Press, 2008. xi + 206 pp.

The objective of this book is to provide forensic scientists and students an overview of the various techniques, methods, and special considerations encountered in the recovery and analysis of burned bones and teeth. The volume is a welcome addition to the growing literature about burned human remains from a variety of fire contexts.

The book expresses two overarching themes: (i) the difficulty of totally destroying a body and associated evidence—in all but the most extreme cases, useful and valuable information about the victim and the crime will still persist, even in severely burned remains; and (ii) fire appears chaotic but it is actually an orderly, predictable system with a clear, patterned progression. The second chapter provides a useful review of the technical aspects of fire and combustion without delving into too much detail. We find the author's insightful explanation of fire dynamics and mechanics highly readable without treading too deeply into "instant expert" territory.

Chapter 3 addresses color changes, shrinkage, morphological changes, and heat-induced fracture patterns. While this is among the most informative chapters in the book, we found some confusing terminology in the discussion of the effects of heat on "green" versus "dry" bone. The author defines "dry bone" as bone "that [has] been recently defleshed" rather than "green bone" which are bones "that have been burnt with soft tissue present." This definition seems to differ substantially from the way these terms are used by other authors (wherein green bone is fresh and still contains moisture and its organic components, versus dry bone which has lost most of its moisture and organic content [i.e., is extensively weathered]).

Chapter 4 provides a review of recovery techniques. The second half of the chapter (beginning with Section 4.3) provides useful, concrete guidance and recommendations for field equipment and recovery and documentary strategies. This type of reference is always welcomed by practicing forensic anthropologists, and the narrow focus on recovery of burned remains is especially beneficial.

Chapter 5 explores determination of the biological profile in burned remains, including the effect of shrinkage and morphological changes on indicators of stature, sex, and interpretation of traumatic lesions. We like the approach to the biological profile, which keeps the text from becoming bogged down with a lot of detail about the general construction of the biological profile that can be found in other texts. Apart from some minor contradictory statements related to the question, "Does the skull explode when heated?" (Section 5.7.2), and an osteological error on p. 105, where the author mentions closure of the mandibular symphysis as a means of age estimation

in adults, we agree that this chapter is a useful and focused synthesis of the relevant literature on the subject.

We would have preferred to have seen Chapter 6 incorporated into Chapter 3, in which the author discusses macroscopic changes and heat-induced fracture patterns. Not only is there tremendous overlap in the material presented in these two chapters, but it also would have been very helpful to read the material in Chapter 6 before reading Chapter 5 and its discussions of the analysis and interpretation of trauma in burned remains. Also, photographs of histology slides would have been helpful for illustrating the micro- and ultrastructural changes in bone histomorphology which the author is discussing.

Chapter 7 provides a well-written overview of basic dental anatomy and microstructure. Here, the author makes sure to acknowledge that dental analyses are under the purview of the forensic odontologist, while drawing from anthropology's contribution to the forensic odontology literature.

The author reviews identification techniques in the final chapter, including antemortem-postmortem radiographic comparison, dental methods for identification and age estimation, and DNA analysis. This chapter is very well organized and clearly presented.

One objection must be noted in regards to terminology, especially as it relates to the title of the book. Most anthropologists we know reserve the terms cremation, cremated bone, and cremains, to refer to remains that have been commercially cremated in a retort. Remains that have been exposed to other forms of combustion, such as car or house fires are usually referred to as "burned" remains. As the author has effectively communicated in this volume, burned remains often retain a portion of their organic component, and as such, are subject to several lines of investigation not possible with commercially cremated remains—in particular, DNA. Various researchers have caused considerable confusion in the courts by using the term "cremated remains" as opposed to "burned remains," leaving some jurists, experts, and lay persons with the impression that it is possible to extract and sequence DNA from commercially cremated remains. In our opinion, this volume is about the recovery and analysis of burned remains. It is a small, semantically-induced disagreement that has caused misunderstanding between the legal community and the many forensic anthropologists engaged in the analysis of commercially cremated remains.

In summary, *Forensic Cremation: Recovery and Analysis* is a welcome addition to the growing literature on burned bones, joining other outstanding texts such as the *Analysis of Burned Human Remains*, edited by Schmidt and Symes (Academic Press). There seems to be a renewed interest in the properties of burned and cremated bone among forensic researchers that is stretching the boundaries of human identification into new territory.