Book review

Natural Stone Resources for Historical Monuments: Geological Society Special Publication 333

R. Příkrýl and Ā. Tórk (eds). The Geological Society Publishing House, Bath, UK, 2010, ISBN 978-1-86239-291-5, £80.00, 237 pp.

This new addition to the Geological Society's Special Publications, follows the standard and well-practised format of an introductory paper followed by selected papers grouped by themes, which is hopefully familiar to most Institution of Civil Engineers members. This category of Special Publications is not a text book, but is a collection of papers that brings together current ideas on the dominant trends in recent research. The papers can be grouped into four main topics: (a) decay processes; (b) performance and compatibility of natural stone; (c) properties of natural stone; and (d) provenance studies and stone databases.

Following the initial introductory paper by one of the two editors, Dr Richard Příkrýl of the University of Prague, the bulk of the papers are focused on the various decay mechanisms that can affect stone. Some interesting examples of decay, including alveolar weathering, gypsum crust growth, salt weathering and crystallisation, are presented from various contributors' experience of stones from around Europe and Japan. Each paper is good at explaining the individual decay mechanisms and then relating them to the effect on stone durability. A particularly interesting paper is presented by a team from Queen's University, Belfast, which discusses a more long-term approach to understanding the decay of stone in historic structures. The paper introduces the idea of inheritance; a concept in stone decay studies that all that a stone experiences from the quarry to the present day will impact on its performance. During its time in use there can be complex feedback loops, some positive and some negative, which can act together to determine the state of the stone.

The next section of the book, performance and compatibility of stone, presents three papers based upon research on stone from England, Italy and France, which complement each other. One paper discusses the need for a well-conceived strategy when assessing compatibility, whereas the other papers present examples of compatibility testing. The main theme coming from these papers is that a balanced approach is required to assessing the suitability of stone, including understanding the existing environment, the

petrophysical properties of the stone and the local atmospheric conditions. Particular note is given to the notion that ill-conceived stone use can accelerate decay. The papers preach the concept that a holistic approach is required and not piecemeal solutions. For my mind, I would have preferred more information on various performance and compatibility strategies, perhaps a critique of how approaches have changed over time or are considered on the world-wide stage.

The third topic of the book focuses on determining the properties of natural stone and uses case studies from around Europe. There is a lot of overlap in these papers as they discuss the various methods to determine the inherent characteristics of the selected stones and the effect on potential durability. Perhaps a discussion paper could have been included that assessed the current test methods that are available, which may have reduced the repetition of the selected papers. It would have been useful to include a paper that discussed the existing national and international stone industry standards and their applicability in the assessment of stone for historical monuments. Many of the tests discussed in the papers are ad hoc and designed solely for academic research and, although perhaps suitable for that purpose, a critique would have been interesting.

The final three papers in the book focus on provenance studies and stone databases. All of the papers express the sentiment that stone databases could be a useful tool and have huge practical implications. They require a huge input to establish, but if they can be maintained and periodically updated then their value increases.

On balance, this book can be recommended to individuals involved with most facets of construction, repairs and selection of stone for historic monuments and should be treated as a specialist reference. The collection of papers is by no means exhaustive and there are omissions that could have improved the usefulness of the publication. It is likely that this publication will act as a suitable companion to other similar publications on the topic, such as Geological Society Special Publication 205, *Natural Stone, Weathering Phenomena, Conservation Strategies and Case Studies* (2002), which covers similar ground and presents further case studies.

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