The *Archaeological Journal*

Book Reviews

ANCIENT GLASS: AN INTERDISCIPLINARY EXPLORATION. By Julian Henderson. Pp. xx and 433, Illus 123. Cambridge University Press, 2013. Price: £70.00. ISBN 978 110700 673 7.

Glass is a fascinating material. It is delicate yet strong; colourless or brightly coloured, and on a par with precious stones. It sounds when struck, it does not smell or tarnish, and it does not adulterate the taste of food and drink. It is beautiful, and a hot topic in contemporary research, with our knowledge about glass making, working and use rapidly expanding. Much new information is emerging from fieldwork, case studies, and innovative trace element and isotopic analyses; time for a textbook.

Julian Henderson is an established scholar with a long history of glass research. His recent book is, with over four hundred pages, substantial enough for this important and complex topic. Four introductory chapters tackling the material and chemical properties of glass lay the foundation for subsequent chapters that explore the archaeology and science, respectively, of 'Early Glass in the Middle East and Europe' (Chapters 5 and 6), 'Hellenistic to Early Roman Glass' (Chapters 7 and 8), and 'Islamic Glass' (Chapters 9 and 10). The final chapter is devoted to 'Provenance of Ancient Glass', and with nearly sixty pages, takes a considerable part of the whole.

There are several key criteria that make a good scholarly book. Does it get the facts right? Does it cover the subject comprehensively and representatively? Is it well written and produced? Unfortunately, this book has numerous factual errors which should have been spotted easily, such as the numerous erroneous mineral names and formulae. Some are slightly less apparent but nevertheless easy to spot: why is an 'additional *potassium* source' necessary to form high *alumina* glasses (p. 53), or how do *thorium*-rich minerals add *lead* to a glass (p. 60)? How can the presence in glassmaking sand of potassium feldspar lead to a correlation of alumina and calcium oxide in the glass (p. 46)? There is no calcium oxide in potassium feldspar. In Henderson's opinion, too fast cooling of glass will *lead to* its crystallization (pp. 17, 19, and repeated later) but fast cooling *prevents* melt crystallization and promotes a glassy state. Vein quartz is not 'an intrusion of silica magma in igneous rocks' (p. 57). It is not the physiognomy (i.e. facial features, external aspects) of a plant that determines how its ash composition deviates from the underlying geology (pp. 41, 48, 360), but its metabolism. Or take these sentences: 'The question that remains is what causes the association of magnesium, potassium and calcium in plant ashes of the *Salsola* genus. One explanation is that feldspars in the soil, rich in these elements, are drawn up into the plant' (p. 324). Firstly, magnesium plays no role in feldspar mineralogy, and while potassium and calcium do, they are mutually exclusive: calcium is in the plagioclase family ($NaAlSi_3O_8$ – $CaAl_2Si_2O_8$), while potassium is in the

albite-anorthite family, $(Na,K)AlSi_3O_8$. Thus, the three elements mentioned are in no way associated with each other in feldspars. But even if they were, plants do not 'draw up' mineral particles; they draw up water that contains ions of certain elements, which then play a more or less active part in the metabolism of the plant.

This is a very personal book. Professor Henderson's own research is extensively covered, including Bronze Age glass in Europe, first-century BC/AD glass kilns in Beirut, and particularly, early Islamic glass from Raqqa in Syria. The complexity of plant ash compositions is treated repeatedly (Chapters 2, 4, 5, 9, 10, 11), as is the importance of isotopic research. Little, however, is said about Bronze Age glass in Egypt, or Roman and Late Antique glass. Medieval and Early Modern European glass, African and Asian glass are covered only in passing. As a result, much of the exciting recent work is missed, or only barely mentioned.

The book would have greatly benefited from close editing to reduce the often very repetitive coverage of some topics, but also to improve consistency in terminology, style and grammar. Is the raw material from Egypt called natron or natrun (p. 52)? On page 184–5 we learn about 'silicon crystals', as in silicon metal instead of silica, its oxide. There is confusion of affect and effect (pp. 44, 265). Several images have no scale (figures 5.4, 7.4–7.9). Sentences such as the following should have been picked out: 'Elateia and lower levels of copper oxide levels and higher levels of nickel glasses' (p. 174). Space precludes listing the many other examples of bad editing which one would not expect to find in a book produced by a reputable publisher such as Cambridge University Press.

In summary, the book provides an overview of glass research as done by its author, and sketches out some of the larger landscape of the study of ancient glass. It shows how we still struggle to understand plant ash chemistry of halophytic shrubs and proper trees. The potential of isotope studies is repeatedly stressed, but it is not a *panacea*, and trace elements provide a much finer tool than most isotope systems. A sound text book is still sorely needed that authoritatively summarizes where we stand — collectively and not just as a single researcher — in our exploration of ancient glass.

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The final version of this review will appear in The *Archaeological Journal* 170 for 2013.