

Alan Macfarlane and Gerry Martin, *Glass: A World History*

WILHELM E. NASSAU

Macfarlane, Alan and Gerry Martin. *Glass: A World History*. Chicago: University of Chicago Press, 2002. xi + 255 pp., illus., cloth, US\$27.50, ISBN 0226500284.

The title of the book *Glass, A World History* provokes both interest and great expectations. There are a large number of books on glass filling the shelves of our libraries, some with spectacular illustrations, some with the results of diligent scholarly research, some written in popular prose and some written in verbose philosophical terms. There is no doubt that glass, as a subject, provides a wealth of opportunity for enjoyment, observation and study. For thousands of years, this mysterious material has been a source of almost endless fascination by virtue of its beauty, variety and utility. Glass makers were inventors, craftsmen and creative artists. These included, no doubt, a fair number of colourful personalities and eccentrics. Many of the books about glass address only one aspect of its rich history, for example a particular period or a particular place or, perhaps, a description of a particular technology. What is still missing is a comprehensive and concise account of all the significant technical developments and their impact on society and material culture.

It was with great expectation, therefore, that I read this work, hoping that it would fill the existing gap in the existing literature. To begin with, I noticed the background and credentials of the two authors. Alan Macfarlane is a much published professor of anthropological science at the University of Cambridge and a fellow of Kings College and the British Academy. Gerry Martin is a former managing director and co-founder of Eurotherm Ltd. He has long been a historian of glass instruments, especially microscopes. Naturally enough, Macfarlane's interest is more in the anthropological and sociological aspects of the subjects, while Martin may have provided more of the technological content. While one can not ascertain who of the two authors had more direct input into any given chapter, the sociological and even philosophical observations and their quoted sources have been given more space than the strictly technological content. The volume is illustrated and these illustrations are interspersed within, and are complementary to, the text, though the quality of the images does not reach the level of comparative publications.

As this is a global history, a global approach to its contents seems in order. The first chapter bears the interesting title "The Invisible Glass." Here

Macfarlane and Martin remind the reader of the impact that glass has had on our daily lives. The authors demonstrate this by describing what life might be like if glass were missing from the world. They write:

This book shows just how central glass is to all aspects of our lives. It is true that other substances, such as wood, bamboo, stone and clay can provide shelter and storage. What is special about glass is that it combines these and many other practical uses with the ability to extend the most potent of our senses, sight and the most formidable of human organs, the brain... [3]

To further illustrate the importance and versatility of glass from a technical and also an aesthetic viewpoint, the authors use many quotations ranging from D. Johnson in 1750 to contemporary publications. The writers also admit that despite the large number of sources, there may be a need for a well-rounded overview. They conclude that this justifies the creation of their own book.

The second chapter, "Glass in the West — From Mesopotamia to Venice," investigates the early origins of glass in relation to pottery and glazing and describes the techniques used in ancient Mesopotamia and Egypt. The history of glass up to the introduction of glass-blowing around the time of the birth of Christ is accurately, albeit briefly, covered. The influence of the new and very practical technique of glass-blowing upon the quick expansion of glass making over the whole Mediterranean area and its culmination in the Roman Empire, is described. Here the division between luxury glass and utilitarian glass became not only a technical but also an economic and sociological issue. The authors then go on to explore the continuation of glassmaking after the decline of the Roman Empire and its further development in the Middle East and western Europe. Advancements in glass technology, too often misrepresented, are aptly described in this book.

In Chapter three, "Glass and the Origin of early Science," the authors investigate the use of glass in scientific experiments, especially among the emerging Islamic cultures. This is important, since many books ignore this part of the history of glass, distracted by the admiration of Islamic and emerging Venetian luxury glass during the Middle Ages and early Renaissance. The learned Arabs may indeed have used glass lenses and mirrors, leading to the perfection of the camera obscura and other optical instruments. Eventually, the use of glass for con-

tainers and instruments would be an asset in the labours of the Alchemists. Turning from science to art, the chapter "Glass in the Renaissance" explores the influence of early glass instruments on the development of perception in western art history. Here the authors raise the question of why the perception of Renaissance artists in Europe, and artists in the highly civilized world of the Far East seems to be so different.

As to whether the source was ultimately cultural or technical, the authors note that,

For the Chinese (and Japanese) the purpose of art was not to imitate or portray external nature, but to suggest emotions. Thus they actively discouraged too much realism, which merely repeated without any added value what could anyway be seen. A Van Eyck or a Leonardo would have been scorned as a vulgar imitator. [59]

In Chapter 5, "Glass and Later Science," Macfarlane and Martin continue to describe the dynamic relationship between improved lenses and mirrors and various western scientific achievements. For example, the application of mathematics in the design of lenses by Ernst Abbe and the use of advanced chemistry by Otto Schott resulted in the construction of really good microscopes. These microscopes, in turn, may have helped in further discoveries in biology and medicine. The manufacture of clear, precise glass tubes allowed the construction of instruments like the mercury thermometer by Toricelli in Florence, or the building of a glass vacuum pump by Robert Boyle. Following this discussion, the authors return in the next chapter, "Glass in the East," to their concern with the development of glass and its influence in Eurasia, apparently so very different from Europe. At first, looking to the Middle East, they examine the decline of a once flourishing glassmaking industry in the Islamic world after about 1400 A.D.

Observing the relative absence in Asia of glassmaking on a western European scale, the authors feel compelled to suggest reasons: the competition of high quality ceramics, like porcelain, is one of such explanations offered.

The issue, obviously one of great interest to the authors, is pursued further in Chapter 7, "The Clash of Civilizations." During the seventeenth century, European glass imported into China and Japan by Jesuit Missionaries — who demonstrated scientific instruments — was seen as a curiosity, though not imitated or imported on a larger scale. As for the difference in artistic traditions, the authors provocatively suggest in Chapter 8, "Spectacles and Predicaments," that the lack of eyeglasses in the

Far East may be an important reason for notable stylistic differences. The subsequent discussion of myopia and its influence on the approach to the visual arts takes up considerable space.

One can not help but question the distance all this takes us away from the main subject, namely the general history of glass. Nevertheless, the concluding chapter, "Visions of the World," discusses the availability of glass in Western and Eastern civilizations from what is clearly a sociological and anthropological viewpoint. Thus on page 197 we are presented with the general observation — none of which should surprise students of material culture — that

...the working experience of trying to understand numerous societies and civilizations reminds Anthropologists that causal paths are very complex... Things invented for one purpose are then used for others. Indeed, this is the single most important fact to emerge from the history of glass.

The volume also contains two appendices that are more technical in nature. Appendix 1, "Types of Glass," is an accurate and comprehensive description of three different types of glass. They are categorized as soda glass, potash glass and lead glass (to this reader a somewhat arbitrary classification.) This appendix may be helpful to the reader to further understand some of the chemical and physical processes involved in the production of glass.

Some reference to the important subject of colouring glass and also various methods of surface treatments, like engraving and cutting, would also have been welcome. Appendix 2 presents "The Role of Glass in Twenty Experiments that Changed the World." These twenty experiments were selected from a previous book, *Twenty Experiments that Changed Our View of the World*, by the Oxford historian Rom Harre (Phaidon, Oxford 1981). Here Macfarlane and Martin are keen to observe that sixteen of these experiments could not have been performed without the use of glass apparatus.

Finally, under "Further Reading," the authors recommend a selection out of the rather large amount of literature that is available to the student and researcher of glass. The list is not complete; indeed, many technological works are missing. Then again, this was clearly not the authors' main focus of interest and, in fairness, there is also a very elaborate and thorough bibliography quoting the sources for this scholarly work. All in all, the book is brilliantly written and carefully researched. As for the sociological emphasis, given the background of the authors this ought not to surprise the reader greatly, though those in search of a truly well rounded overview may ultimately remain unsatisfied.