

us, because his students could not learn from *De temporibus*. As an educator, he learned by experience that setting complex ideas out in their pristine form is not necessarily the best way to convey them to beginners. The texts translated here, although the product of his earlier career, give us access to Bede's ideas unmediated by the need to make them accessible to monastic schoolboys. Our own needs are not neglected, however: the translators' extensive introduction, commentaries, appendices and 'select' bibliography make this an admirable study guide to the texts.

Although it ill befits us to be teleological or Whiggish in the history of science, it should not be thought, on the other hand, that there was no innovation in 'scientific' thought in the early Middle Ages (still less the 'Dark Ages'). Although Bede had conventional (more than conventional, some would argue) medieval respect for *auctoritas*, and quotes extensively from, in particular, Isidore of Seville, he always deployed his sources judiciously to serve his own purpose. He was also sharp enough to realize that his sources left some questions unanswered, and was not afraid to trust his own observation, as well as his impressive arithmetical skills, in attempting to fill some of the gaps. His writings on the computus, indeed, were held to have resolved all outstanding problems until at least the twelfth century, and the huge numbers of manuscripts listed in the introductions to this volume and Wallis's *Reckoning* testify that his were the standard works in the Roman church right through the Middle Ages. Of less pressing import to medieval ecclesiastics, but nevertheless of interest to those in northern climes, was the question of the relationship between the moon and the tides. On this topic, Bede was in a better position, literally, in Northumbria to make observations than were his Mediterranean sources, and the results of his cogitations, always showing due *pietas* to the authorities, in this case mainly Pliny, can be found here in 'On the nature of things', Chapter 39 (and are developed further in 'The reckoning of time'). On the technical details of Bede's calculations, and the development of his thinking on this topic, the translators have added their 'Reflections' as an appendix.

Latinists will no doubt quibble with details of Kendall and Wallis's translation, though they should remember that the translators took advice from such luminaries as Michael Lapidge and George H. Brown. Even Latinists (and even picky ones!) will find these translations a useful guide through Bede's sometimes difficult Latinity and ideas, but it is of course not for them that the translators laboured; it was to make these works, which give us access to the thinking of one of the most sophisticated minds of the early Middle Ages, available to scholars who have not devoted their careers to philological studies; not to turn every word into a technically correct equivalent, but to convey Bede's ideas as accurately as possible in modern English. Only scholars as thoroughly steeped in Bede's writing and thinking as these two could have done so to such good effect. If you are not already familiar with the eighth-century Northumbrian contribution to secular learning, this is your opportunity to remedy that omission. And even if you are, you will find much here that is new and interesting, to make this a valuable addition to your library.

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ALEXANDER MARR, *Between Raphael and Galileo: Mutio Oddi and the Mathematical Culture of Late Renaissance Italy*. Chicago and London: The University of Chicago Press, 2011. Pp. xvii + 359. ISBN 978-0-226-50628-9. £29.00 (hardback).  
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The career as a painter of Mutio Oddi (1569–1639), born in Urbino, was cut short when it was discovered that he suffered from defects in his vision. Turning to mathematical studies and military service, Oddi served as court architect to Francesco Maria II della Rovere, Duke of Urbino (1549–1631). A series of unfortunate escapades – including a nude bath in the river Metauro, a fight with the ducal secretary, and an incriminating letter – led to Oddi's imprisonment and

banishment from the duke's kingdom. He later found employment at Milan as a mathematics tutor and public lecturer and then as chief fortifications engineer in the Republic of Lucca. Oddi wrote various treatises on instruments and practical mathematics and, at the end of his life, returned to Urbino, where he erected memorials to the city's renowned artisans, renovated the house of Raphael (1483–1520), and served as Urbino's first public lecturer in mathematics.

Oddi's eclectic career, Marr argues, provides a window into the mathematical culture of late Renaissance Italy. Marr's aim is to call attention to individuals, like Oddi, whose modern-day obscurity often leaves them marginalized by historians of art and science. In this sense, the title of the book, *Between Raphael and Galileo*, is somewhat of a misnomer, for Marr does not intend to portray Oddi as a link between Raphael and Galileo. Instead, though Oddi did see himself as continuing a tradition of Urbino *uomini illustri* (the most famous of whom was Raphael), his relationship to Galileo was more ambiguous. Oddi, for Marr, represents the 'ordinary' mathematician of late sixteenth-century Italy, one who inhabited the same space as Galileo but did not manage to be included amongst our century's list of *uomini illustri*.

The volume begins by considering the importance of place in Oddi's career, in particular the way in which Urbino's distinctive style of mathematics, one which merged mathematics and craft, shaped Oddi's approach. Part II relies on the sources of historians of both science and art – in particular, rare teaching records and a painting made by one of Oddi's pupils – to probe the content and context of Oddi's teaching in Milan. Finally, in Part III, Marr explores Oddi's work as an author of instrument books and a maker and broker of instruments, concluding with a final chapter on Oddi's views on the proper relationship between *disegno*, mathematics, and their associated practices.

Marr's more general conclusions, which place Oddi as an intermediary in a mathematical culture that united the work of the mind and the hand, are perhaps less important than the particulars he draws out from his evidence. Especially enlightening are the archival materials Marr has found detailing Oddi's expenses for the printing and distribution of his 1625 book on surveying, *Dello squadra trattato*, as well as those pertaining to Oddi's business with the Urbino workshop in the construction and circulation of its instruments. Equally compelling is the way in which Marr integrates the history of art and the history of science. In his analysis of the role early modern mathematicians and artisans assigned to *disegno* (arts of design), he shows how Oddi collected and traded drawings done by, among others, Raphael and Leon Battista Alberti, in order to further his own study of *disegno*, but also as part of an emerging gift economy in which the collection of drawings and discussions of their style and iconography allowed non-professionals to display their own erudition. Analysis of two paintings, the Oddi–Linder double portrait and the *Linder Gallery Interior*, provides insight into Oddi's pedagogy and his attitudes towards the proper relationship between mathematics and material culture. Marr reads the latter picture, for example, as a coded critique of Galileo's reliance on telescopic observations. Furthermore, he argues, this interpretation reveals that a conservative, Aristotelian, non-Galilean approach could coexist with what may appear to us, in Oddi's work, as a 'modern' celebration of the material culture of mathematics and instruments.

By delving into Oddi's material and mental universe, Marr offers an engaging perspective on the early modern mathematical practitioner, one familiar with art, war, practical mathematics and the ancient classics, and one who negotiated a complicated network of aristocratic patrons, artisans and printers. In an effort, perhaps, to make Oddi's 'ordinary' life seem more relevant to disciplines often obsessed with larger-than-life figures, Marr emphasizes throughout how Oddi's career compares with those of his better-studied contemporaries, Galileo (primarily) but also Christoph Clavius and others. One only wishes that Marr had not felt so compelled to justify his treatment of Oddi in this way, for, in doing so, Oddi is often reduced to a mere *exemplum*, relevant only

because he demonstrates how the experiences of Galileo (and others) can stand in for their less-illustrious counterparts. Instead, Marr's new monograph should be celebrated for what it is: a much-needed study of the material, textual and artistic world of the sixteenth-century mathematician.

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DANIELA BLEICHMAR and PETER C. MANCALL (eds.), *Collecting across Cultures: Material Exchanges in the Early Modern Atlantic World*. Philadelphia: University of Pennsylvania Press, 2011. Pp. xvi + 361. ISBN 978-0-8122-4305-5. £32.50 (hardback).  
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The title of *Collecting across Cultures: Material Exchanges in the Early Modern Atlantic World* hints at – but ultimately understates – the ambitions of an edited collection whose focus stretches from sixteenth-century Europe to nineteenth-century Mexico, with brief stopovers in Java, Siam, the Pacific Northwest and Peru squeezed in along the way. This collection brings together fourteen interdisciplinary essays written by an equally diverse group of scholars; represented in its four sections are historians, archaeologists, anthropologists, curators and art historians. If, as a collective, they are subject to many of the same methodological and classificatory challenges as the early modern collections they describe, the essays in this collection are nonetheless sure to be of great interest not only to historians of early modern science but to scholars of empire, globalization and cultural contact in the early modern world more broadly.

The essays in *Collecting across Cultures* offer a fascinating new perspective on Europe's encounters with an ethnically and culturally diverse early modern world, analysing how a varied cast of (mostly) Europeans collected experiences, representations and artefacts and mobilized them to make sense of the world beyond Europe's shores. The collection opens with Daniela Bleichmar's insightful analysis of the seventeenth-century collection of Aragonese nobleman Vincencio Juan de Lastanosa, yet few other essays so clearly focus on individual collections. Others most often cast their net more widely, considering types and methods of collecting, or they proceed more narrowly, situating the histories of specific objects in European collections such as Javanese palm manuscripts and Native American skulls within Europe's expansion into the early modern world. These objects and collections prove incredibly rich sources but, more importantly, the authors of *Collecting across Cultures* are able to use them to ground discussions of often abstract concepts such as contact or imperialism in histories of informal and idiosyncratic exchanges at the margins of empire or in the experiences of individual collectors grasping to understand new worlds and cultures. Collections and the objects within them are thus themselves imaginatively reconceptualized as sites of encounter and exchange.

Readers are consistently presented with glimpses of objects in motion, circulating both around the globe and through multiple registers, genres and media. Whether it be the cold and increasingly careful arithmetic with which slaves were categorized in eighteenth-century Jamaica, the transition from collecting living Native Americans to visual and textual representations of them, or the evolving appreciation of Mexican regalia in Habsburg Europe, these essays highlight the instability of collections and the multiplicity of meanings assigned to them. Among the most innovative essays are those that have, to quote Benjamin Schmidt's contribution, 'allowed media to mingle' (p. 38). Over the course of the collection, discussions of objects are paired with discussions of manuscripts and printed texts, but many essays individually deal with the impact of genres and formats on how knowledge was collected, constructed and represented. Schmidt's chapter, for example, discusses the changing meanings of exotic icons such as parasols as they were translated from physical objects into abstract representations of foreign cultures and places. Cécile Fromont's excellent essay similarly discusses the interplay between visual and textual representations of