

# Richard of Wallingford

Richard Lorch

*Richard of Wallingford: An Edition of His Writings, with Introduction, English Translation and Commentary.* Edited by John D. North. Three volumes: pp. 1,312; 22 plates; 128 text figures. (Oxford University: Oxford and London, 1976.) £75.

RICHARD OF WALLINGFORD (about 1292–1336) was among the ablest astronomers and instrument-designers of the Middle Ages. His *Quadripartitum*, for all its prolixity, bears comparison with Regiomontanus' *De Triangulis*, written a century and a half later; and his astronomical clock was one of the most advanced made in the fourteenth century. Again, the complex universal instrument 'Albion' ('All-by-one') was a remarkable achievement, and was fully appreciated by fifteenth-century astronomers such as John of Gmunden (about 1382–1442) and Regiomontanus (Johann Müller of Königsberg, 1436–76), who, among others, re-edited and commented on the *Tractatus Albionis*, in which Richard describes the instrument. Dr North has provided us with a reliable and annotated edition of all Richard's works. From this monumental edition, which must surely be ranked with Nallino's edition of Albategni, we may gain insight not only into Richard's achievements in astronomy, astrology, the making of instruments, and mathematics, but also into the progress of these sciences throughout the Middle Ages.

In studying any western astronomer of the high Middle Ages it is necessary to pay attention to borrowings from his predecessors, particularly the Muslim astronomers whose works were translated into Latin in the twelfth and thirteenth centuries. On the whole, Richard of Wallingford is explicit about his sources, but some problems remain. Thus, in the first part of the *Tractatus Albionis* he gives chapter and verse for each proposition, the usual sources being—besides Euclid and Ptolemy—Albategni's (died 929) *Opus Astronomicum* and an "abbreviated *Almagest*". As is pointed out in the commentary, the latter is better known as the *Parvum Almagestum*. This is probably a Latin compilation and has been attributed (by A. Birkenmajer, *Studia Copernicana* I, 143–6) to one Walter of Lille, although Campanus of Novara (died 1296) is also a possi-

bility. There are at least two variants of the *Parvum Almagestum*, quite apart from variations in the mainstream text, and one of these could well account for the remaining references to a "Commentator" on the *Almagest*. At all events, this Commentator is unlikely to be Averroës (1126–1198), whose commentary on the *Almagest* was apparently unknown in Latin (despite Birkenmajer's citation of the fourteenth-century Alphonse Dionysii de Lisbonne, who probably thought the *Parvum Almagestum* was by Averroës); and was so differently organised as to make the identification unlikely.

The sources of the *Quadripartitum* are not given with such readiness, but Dr North has discovered the most important of them: a text beginning "*Proporcio est duarum quantitatum . . .*", which he for several reasons ascribes to Campanus. There are some valuable remarks in the commentary about the whole history of "cata" (Menelaus' theorem) and of ratios: it is to be hoped that these notes and the authors cited in them will encourage someone to make a critical edition of the main texts. The *De Sectore*, a reworking—apparently by Richard himself—of the *Quadripartitum*, is not printed in full. It is of some interest since it incorporates the new trigonometrical methods developed by the Muslim astronomers and introduced into the West by the translation of the astronomy of Geber (flourished during first half of twelfth century). Whether later English writers like Simon Bredon (about 1300—about 1372) copied Geber's methods direct or through the *De Sectore* is a matter for further research. What we do know is the approximate date of their introduction into England.



Richard of Wallingford (Cotton MS Nero D VII, f20)

Of the shorter works the treatise on the "rectangulus" is perhaps the most interesting. Characterised by Henri Michel as "un véritable *Torquetum schématisé*", the *rectangulus* was invented by Richard to "obviate the tedious and difficult work of making an armillary sphere". (Anyone who has made even a rough model of an armillary sphere will sympathise.) Dr North points out that such alternatives cannot be lightly dismissed as observing instruments, and further maintains the unfashionable view that they were also used for the transformation of coordinates. It is interesting that in both the *Rectangulus* and the *Albion* Richard follows the custom, found among Muslim writers, of listing the parts of the instrument, together with their technical names. Franco's treatise on the "torquetum" is a possible intermediary.

Some of the texts included in this edition—for instance, the canons to John Maudith's tables, with which volume 1 begins—are here attributed to Richard Wallingford for the first time; and the authorship of doubtful cases, such as the astrological tract *Exafrenon*, is fully discussed. The account of Richard's life, besides being interesting in itself, contains some useful remarks on biographical sources for Englishmen of this period. The texts themselves are mostly established from two or three good manuscripts (in some cases discovered by Dr North), the others being used in a subsidiary role. There are occasional omissions—no doubt following Bjørnbo's edition of Thabit's *De figura sectore*—of purely repetitive matter, but synopses are given to fill the gap. On the whole, the English translation, on facing pages, is literal; but, where appropriate, the material is clarified by the use of modern symbols and line-by-line layout of the argument. As one would expect from the author of *Kalenderes Enlumyned Ben They*, the Middle English translation of the *Exafrenon* is given in preference to a modern one.

The three volumes are conveniently arranged so that the text and translation, commentary, and diagrams, can all be seen at once. In volume 3 there are plates, indexes, glossaries, and no fewer than 39 appendices. Some of these appendices and some of the longer disquisitions in the commentary volume are complete in themselves, and form a collection of well-indexed articles on the periphery of the central theme. We can only hope that their author is not preparing to abandon the Middle Ages. □

Richard Lorch is a member of the Department of History of Science and Technology, University of Manchester Institute of Science and Technology, Manchester, UK.

Courtesy British Library Board