# Innovationen im Quadrivium des 10. und 11. Jahrhunderts: Studien zur Einführung von Astrolab und Abakus im lateinischen Mittelalter

North, John D.

*Published in:*
Isis

*DOI:*
10.1086/355190

Review
Reviewed Work(s):
Innovationen im Quadrivium des 10. und 11. Jahrhunderts: Studien zur Einführung von Astrolab und Abakus im lateinischen Mittelalter
by Werner Bergmann
Review by: John D. North
Source: *Isis*, Vol. 80, No. 4 (Dec., 1989), p. 691
Published by: The University of Chicago Press on behalf of The History of Science Society
Stable URL: https://www.jstor.org/stable/234198
Accessed: 11-12-2018 11:47 UTC

possibility of terrestrial rotation; the combinatorics of chess; a spherical, water-filled glass that acts like a burning mirror; fossils and alterations in the earth's surface; tales of seafarers; Saint Elmo's fire; the electric eel; inconsistencies in the New Testament; the Samaritans, the Manicheans, and the Sabians; the Alexander myth; the spontaneous generation of animals; and so on. From the whole, one obtains the impression of a man of voracious intellectual curiosity, open-minded, of critical intelligence, intolerant only of stupidity and fanaticism, and endowed with a ready if sometimes coarse sense of humor. He had a flair for picturesque expression. Thus, in discussing the capabilities of various languages (his own mother tongue was Khwarazmian), he remarks that he would rather be cursed in Arabic than praised in Persian.

Al-Bīrūnī exhibited a strong penchant toward experiment and observation. In the last selection in the book he cites a number of authorities, all of whom agree that if a snake looks at an emerald, its eyes will dissolve. He then reports that he confined a snake in a basket garnished with emeralds; he waved a string of emeralds before its eyes; he adorned it with a necklace of the same—this over a period of nine months, in cold weather and hot. At the end no change was noted, except that possibly the snake's vision may have improved.

The book was probably put together with the general reader in mind. In fact, it should be of interest and utility to all historians of science, including al-Bīrūnī buffs.

E. S. KENNEDY

**Werner Bergmann.** *Innovationen im Quadrivium des 10. und 11. Jahrhunderts: Studien zur Einführung von Astrolab und Abakus im lateinischen Mittelalter.* (Sudhoffs Archiv: Zeitschrift für Wissenschaftsgeschichte, 26.) 257 pp., illus. Stuttgart: Franz Steiner Verlag, 1985. (Paper.)

This study by Werner Bergmann is essential reading for anyone concerned with the early medieval European history of the abacus and astrolabe. In the first place, it includes an invaluable survey of existing scholarship, which tends to be scattered and in some cases is written as though the rest did not exist. Both instruments are treated in the context of the quadrivium, again reminding us that the abacus had potential applications to astronomy and the computus as well as to more elementary arithmetical problems. The chapter on the quadrivium in the early Middle Ages is itself a minor *tour de force,* balanced and well documented, and students in the burgeoning field of university history should not overlook it. There are useful introductory accounts of the construction and use of both abacus and astrolabe, not at a very comprehensive level, but including as much as is needed to understand the practices of the tenth and eleventh centuries, and there are good surveys of the relevant tracts of the period and their filiation. On the astrolabe, Arabic influences on Iberian sources are shown to act directly and indirectly (through Ascelinus) on Hermann of Reichenau (see the diagram on p. 121 for some of the main conclusions at a glance). This textual survey is the great strength of the volume—which, it must be said, is to a large extent composed in the characteristically German style of a "prolegomena to any future study of such-and-such a subject."

Quite incidentally, the author provides numerous tracers of textual dependence, in the form of star names (in the astrolabe sections) and Hindu-Arabic numeral forms (in the abacus sections). Those who amass databases of such things will not be disappointed in the book. Another useful aspect is its small but intriguing collection of manuscript illustrations. Tucked away at the end, but very valuable, are a cataloguer's details of numerous relevant manuscripts; and prepared with somewhat less care, but useful none the less, is an extensive bibliography. All told, this is a book that should be in any respectable library of the history of medieval science.

JOHN D. NORTH

**Adam de Wodeham.** *Tractatus de indivisibilibus.* Edited, translated, and introduced by **Rega Wood.** (Synthese Historical Library, 31.) vii + 333 pp., app., index. Dordrecht/Boston/London: Kluwer Academic Publishers, 1988. Dfl 240, £74, $128.

In Aristotelian natural philosophy and in medieval scholastic theology, analyses of continuity and divisibility, eternity and infinity, and the refutation of atomism stand as preliminary to Aristotle's study of change in general and local motion in particular and to discussions of charity, divine grace, the Eucharist, and creation. The