

In any case, besides the elaborate reading of Duoduo's poems, the book deserves further credit for the copious introductory materials in the field of contemporary Chinese poetry, as well as Crevel's careful (re-)translations of Duoduo's poems.

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*Astronomy and Mathematics in Ancient China: The Zhou bi suan jing.* By CHRISTOPHER CULLEN. Cambridge: Cambridge University Press, 1996. xiv, 241 pp. \$69.95.

This is the first volume in a series of monographs to be published by the Needham Research Institute featuring work on East Asian science and culture which develops or links up with the encyclopedic *Science and Civilisation in China* series. The author, Christopher Cullen, is Senior Lecturer in the History of Chinese Science and Medicine at the School of Oriental and African Studies, University of London, and Deputy-Director of the Needham Research Institute in Cambridge.

The *Zhou bi suan jing* (a.k.a. *Zhou bei suan jing*) is a collection of ancient Chinese texts on astronomy and mathematics traditionally attributed to the early years of the Zhou dynasty, hence the title "Gnomon of the Zhou." As the author shows in his detailed analysis of the contents, however, the work was most likely compiled during the former Han Dynasty in the first century B.C.E. "by an individual or by a group with some common interest" (p. 140) and "cannot be understood as a single unified book" (p. 101). Most of the *Zhou bi* is taken up by calculations of the dimensions of the cosmos using observations of the shadow cast by a vertical pole gnomon. Analysis of the text shows that its author(s) was an adherent of the *gai tian* cosmography in which an umbrella-like heaven rotates about a vertical axis above an essentially flat earth. The text is unique, according to Cullen, in being "the only rationally based and fully mathematised account of a flat earth cosmos" (p. xi), in addition to being the "principal surviving document of early Chinese science" in the view of A. C. Graham. Scholarly opinions as to the value of the *Zhou bi* have diverged considerably. So that readers may judge its value for themselves, Cullen's stated objective is to locate the text in its historical and scientific context and make it accessible to anyone with an interest in the history of Chinese science and culture.

As clear and precise as Cullen's translation of the *Zhou bi* itself is, it occupies only 35 pages or barely 15 percent (pp. 171–206) of the volume. The preceding four chapters (pp. 1–170), "The Background of the *Zhou bi*," "The *Zhou bi* and Its Contents," "The Origins of the Work," and "The Later History of the *Zhou bi*," are equally if not more valuable in providing a magisterial account of the intellectual, institutional, scientific, and political context which produced the text. In the process of elucidating the background of the *Zhou bi* and helping the reader make sense of the concepts and methods invoked by its author(s), Cullen provides a lucid and highly readable survey of the development of Chinese cosmography, the cultural and ideological importance of calendrical astronomy in ancient China, the main methods of observation of astronomical phenomena, the problem of the calendar and successive early Chinese solutions to it, Chinese computational procedures with examples, as well as a capsule history of the general history of the development of early Chinese astronomical theory and practice. Following the translation are four appendices which deal with substantive aspects of the main commentary to the text, that of Zhao Shuang

(fl. 3rd c. A.D.). All this and more is set forth in a jargon-free style accessible to the general reader while at the same time satisfying the demands of the specialist for comprehensive and informative references and Chinese characters.

By way of illustration of the kind of valuable insights which the author derives from his analysis of the methodology of the *Zhou bi* may be noted his penetrating discussions (pp. 80, 92) of how not to impose Western categories on early Chinese thought processes, as when application of the method of similar triangles and angular measure would seem intuitively obvious in certain contexts, but can be shown not to have figured at all in the conceptual apparatus of the time. To this should also be added the author's observation (pp. 53, 128) that, contrary to the assumptions which Western readers and students of the history of science might bring to the text, Chinese astronomers of the period "as yet without the concept of the celestial sphere and following the paradigm of meridian transit observation, naturally saw themselves as primarily involved in measurements of time intervals rather than of spatial intervals on the heavens."

The volume is quite expensive if handsomely produced. Given the care which has evidently been lavished on appearance and presentation there are a surprising number of typographical errors and other minor blemishes. A less than exhaustive list includes "Fu Daiwie" (pp. xiv, 73, 114, n. 138, 115, 228, etc.) for "Fu Dawei", "Tiao lu li" (p. 30) for "Tiao lü li"; "tYellow Road" (p. 58) for "Yellow Road"; "Zhao's" (p. 88) for "Zhao"; "Fig. ar" (pp. 104, 106) for "Fig. 10"; "at he pole" (p. 130) for "at the pole." Errors of a different sort include 23,000 years for the precessional period of earth's axis instead of 26,000 (p. 15); "have lead" (p. 139) for "have led"; Zhang Heng's essay *Ling xian* dated to both A.D. 100 and A.D. 120 (pp. 112, 140).

These are all minor quibbles and even in the aggregate they do not seriously detract from what is otherwise an exemplary work of critical and historical scholarship and an auspicious beginning for the Needham Research Institute series. The author is to be commended for producing such a broadly informative study of a unique document in the history of Chinese science.

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*Martino Martini, A Humanist and Scientist in Seventeenth-Century China.* Edited by FRANCO DEMARCHI and RICCARDO SCARTEZZINI. Trento, Italy: Università degli Studi di Trento, 1996. xiv, 381 pp. Lit. 50,000.

In April 1994, the University of Trento and the Chinese Academy of Social Sciences organized a conference on the life and work of the Jesuit missionary and pioneer Sinologist Martino Martini (1614–61). This volume—the English-language counterpart of versions in Italian and Chinese—collects the papers delivered at that conference.

Martini's main contribution to the European understanding of China was his *Sinicae historiae decas prima* (1658), containing, as its title indicates, a ten-part summary of Chinese history running from legendary times to the Han dynasty. His eyewitness account of the fall of the Ming, *De Bello tartarico*, was often published as a supplement to the history. More detailed and comprehensive than the accounts of Juan Gonzalez de Mendoza (published 1585) and Matteo Ricci (printed in Nicholas Trigault's Latin version, 1615), Martini's work had a considerable influence on the sinophilic writers