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書　評

Ho Peng Yoke, *Li, Qi and Shu: an Introduction to Science and Civilization in China* Hong Kong University Press, 1985, pp. xii + 262

Prof. Ho has been one of the most distinguished collaborators in Joseph Needham's vast and still continuing enterprise, *Science and civilization in China*. His present book admirably fulfils its purpose, which is to condense and bring up to date the information on three of the basic Chinese sciences, mathematics, astronomy and alchemy. The sheer size of Needham's masterpiece, as he notes in the preface,

> '... is overwhelming to the undergraduate; and although Colin Ronan's *The Shorter Science and Civilization in China* is more manageable, two decades have already elapsed since the first appearance of the earlier volumes of Needham's original work, and it is necessary to include the results of some of the new developments that have since occurred. This textbook, written to meet the need of students, is meant not as a substitute for *Science and Civilization in China*, but rather as an introduction to it.'

But the value of the book is not only for undergraduates; there can be few scholars so deep into these three Chinese sciences that they will not be grateful for so convenient a summary. Prof. Ho begins with a general account of the three concepts he takes as fundamental to the understanding of Chinese thought, *li* 理, *qi* 氣 and *shu* 數, and of Yin-Yang, the *Wuxing* 五行, and the system of the *Yijing* 易經. The expositions which follow move freely between, to take two extremes, the Sung algebra which was several centuries ahead of Europe, and 'the intricate and absorbing subject of fate-calculation' (p. 29, with magnificent charts of 'the cyclic change of phases of the ten Celestial Stems'), in a tone admirably free of the usual heavy emphasis on the priority of Chinese discoveries and condescension or defensiveness towards Chinese "superstition". One has the impression that Prof. Ho enjoys a great advantage over Western investigators, the combination of a modern scientific mind with a full comprehension of the Yin-Yang mode of thinking untroubled by any need to apologise for it or make efforts to do justice to it. There is an abundance of useful tables, charts and illustrations, ranging from photographs of an Equatorial Armilla and of a bottle used in alchemy, reproductions of printed illustrations of the *Hetu* 河圖, *Luoshu* 洛書 (p. 9, here misprinted "*Loushu*") and the Chinese version of the Pascal Triangle, and complete layouts of the 64 hexagrams in both traditional arrangements, to a table of 15 correlations with the *Wuxing* selected from Needham's Table 12 (with the derangement of the Five Viscera 五臟 corrected), diagrams of the Greek Four Elements and Platonic Bodies for purposes of comparison, drawings of the counting board and of alchemical labdoratory equipment, and 8 star maps covering all the 28 lunar mansions. Romanisation is in *pinyin*, always accompanied by the Chinese characters, with a conversion table at the end for co-ordination with Wade-Giles and with Needham's modification of it. The book concludes with a finding list (not full bibliography) reaching to 1984, and a comprehensive index.

In the detail of research in Chinese science the book is well up to date. The "circumpolar constellation template" which is the main subject of Needham's Section 20 (g) (5) is duly abandoned (p. 118), following demolition work by Cullen and Farrer published in 1983. The Later Han alchemist Hu Gangzi 孤剛子 (p. 176) and the Sung use of dating by tree rings (p. 152) come from publications as recent as 1984. The introductory account of fundamental concepts however takes little account of modern critical work on their earlier history, ignoring even the *Zhongguo renxinglun shih* 中國人性論史 (1969) of Xu Fuguan 徐復觀, with its appendix on *Yin-Yang* and *Wuxing*. Prof. Ho accepts that 'the earliest person to talk about *yin-yang* and *wuxing* is said to be Boyang Fu 伯陽父' (p. 15), in connexion with earthquakes of 780 and 773 B.C., but does not mention that the source for the claim is the *Kuo yü* 國語 ch. 1 and 16, which is not necessarily good evidence for ideas earlier than the 4th century B.C. In any case the cosmology of the *Tso chuan* 左傳 and *Kuo yü* treats the Yin and Yang not as the ultimate pair but as members of the Six *Ch'i* (六氣), and the five colours, sounds and tastes as related to these *ch'i* rather than to the *Wuxing*; it is doubtful whether the classic system of Yin-Yang and *Wuxing* as he describes it was fully evolved before the 3rd century B.C. He quotes an account of the *Wuxing* from *Guanzi* 管子 as the work of Guan Zhong 管仲 (died c. 645 B.C., p. 24), although elsewhere (p. 155) he recognises the book as 'compiled mainly in the 4th century B.C. but containing some older materials'; W. Allyn Rickett (*Guanzi* v. 1, Princeton 1985) puts little of it even as early as the 4th century. Such objections do not however reduce the value of the introductory chapters as a general account of the system in its classic form.

An interesting point is raised by the remark on p. 129 that 'Maspero said that a fourth Chinese cosmological theory is contained in *Huainanzi* 淮南子. It says that the sun at the meridian is five times further away from the earth than at its rising and setting.' The reference is to the document preserved at the end of the astronomical chapter of *Huainanzi*, which has been translated and analysed by Christopher Cullen (*Bulletin of the School of Oriental and African Studies* 39/1 (1976)). Maspero missed its most remarkable feature, that the measurements are hypothetical and purely illustrative (the first number is introduced by *jiashi* 假使 "Supposing . . . " and later re-used). Unlike our other astronomical sources, which do not hesitate to inform us of dimensions which could never have been estimated from observations with the gnomon, this one tells us only *how* to observe and calculate. Like the optical and mechanical *Canons* in *Mozi* 墨子, which provide purely causal explanations without appeal to Yin-Yang, *Wuxing*, correlations or numerology, this document stands right outside the main tradition of Chinese proto-science so admirably described in this book.

Misprints are few and unimportant. The title indicated by "Nathan" on p. 182 n 21 is presumably the "Sivin (1)" of the finding list. In romanising ruler's names it might have been more convenient to write, for example, "Duke Mu of Qin" (秦穆公) rather than "Qin Mugong" (p. 175), which is confusable with surname and personal name.

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