

Biographical Encyclopedia of Astronomers

© 2007 Springer

Gan De

Flourished China, 4th century BCE

According to tradition, Gan De was a native of the state of Chu-he and was also said to be a native of the state of Qi or Lu-in during the Warring States period (475-221 BCE). He wrote treatises entitled *Tianwen Xinzhān* (New Astrological Prognostications of the Patterns of the Heavens), in eight volumes, and *Suixing Jing* (Canon of the Planet Jupiter), but both are lost. Fortunately, some paragraphs from these works were quoted in later books. We can therefore study some of Gan De's achievements in astronomy from the surviving quotations. These achievements can be summarized in two statements

First, independently of Shi Shen (another astronomer of his time), Gan De observed stars and obtained their latitudes and differences in right ascension. He then compiled a star atlas including the Chinese constellations. Later on, a new atlas appeared called *Gan Shi Xing Jing* (Gan's and Shi's Classic of Stars), which was based on Gan's atlas and Shi Shen's atlas; it greatly influenced the development of astronomy in China. Recent research has shown that the polar distances and right ascensions of the stars found in *Xing Jing* were probably measured around 70 BCE, not during the Warring States Period as traditionally thought

Second, Gan developed the concept of the synodic period of a planet and obtained such periods for Mercury (136 days), Venus (587.25 days), and Jupiter (400 days) (versus present values of 115.9, 583.9, and 398.9 days, respectively). There is some discussion that Gan De may have observed the brightest satellite of Jupiter.

Li Di

Selected References

Chen, Meidong (1992). "Biography of Gan De." In *Zhongguo Gudai Kexuejia Zhuanji* (Scientific biographies of ancient Chinese scientists), edited by Du Shiran. Vol. 1, pp. 25-26. Beijing: Science Press.

Pan, Nai (1989). *Zhongguo hengxing guance shi* (History of observations of fixed stars in ancient China). Shanghai: Xuelin Press, pp. 48-72

Qutan Xida (Tang dynasty). *Kaiyuan Zhanjing* (Canon of astronomy and astrology from the Kaiyuan period 713-741). Photo-offset ed. Beijing: China Book Store, 1983