

SN 1604 IN CHINA

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ABSTRACT

The 6th East Asian Meeting of Astronomy was held just at the time of 400 years after the discovery of SN (supernova) 1604 and its pre-maximum observation by the astronomers both from the East and the West in the 17th century. It has a special meaning and is interesting to look back on the historical observation of SN 1604. In this paper, we only limit to concern the Chinese observation on SN 1604.

Key words : supernova — historical supernova:SN 1604

SN 1604 appeared in Ming Dynasty, during Wanli 32nd to 33rd year of Emperor Shengzong reign period. The first observation of it was on Oct. 10th 1604 and was recorded in Ming Shenzong Shilu Vol. 400 (see Fig.1) and the last observation was on Oct. 7th, 1605 recorded in vol. 412 (Fig.3). An observation during the middle period (Feb. 3rd, 1605) was recorded in vol.404 (Fig.2). It is obvious that the Chinese astronomers at that time kept observing SN 1604 nearly one year. The summary for the whole year's observation of SN 1604 was originally recorded in Ming Shenzong Shilu vol. 412 (Fig.3), also in Mingshi vol. 27 (Fig4). From the above records, it can be seen that SN 1604 was a guest star fixed in Lunar Mansion of Wei with an explosion phenomenon just like a pellet bomb and was visible for about one year. The visual direction and position of SN 1604 are emphasized in the records, whenever it appeared, disappeared and reappeared, accompanied with the rotation of the sky. It seems that the Chinese astronomers at that time had understood the movement of the celestial sphere as a reflection of the spinning of the earth and its rotation around the sun.

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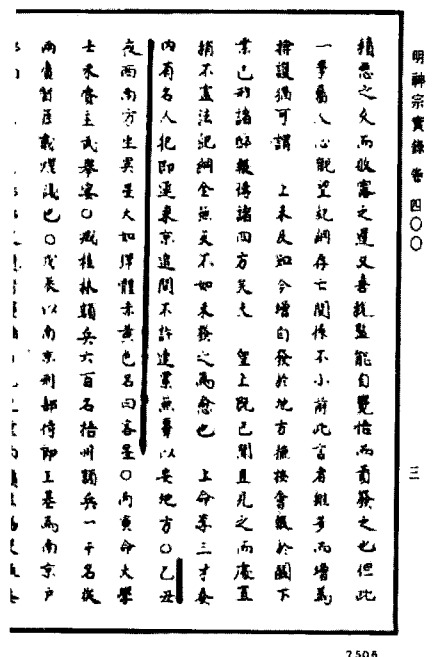


Fig. 1.— The record of SN 1604 for its first appearance in Ming Shenzong Shilu On Oct. 10th, 1604 (day yichou, 9th lunar month in 32nd year of Wanli): “At night, a strange star as large as a pellet bomb appeared at the SW direction, with orange color and was called a ‘Guest star’ ”.

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明神宗實錄卷四十四

禮部官民通行禁妖術詔錄之書曰已未人崇士院一
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Fig. 2.— The record of SN 1604 on Feb. 3rd, 1605 (day Xinyou, 12th lunar month in 32nd year of Wanli): “Tonight, the guest star was seen at SE direction rotated with the sky..., as large as a pellet bomb with yellow color and became less brightness in the Lunar Mansion of Wei.”

Oct. 7, 1605

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Fig. 3.— The record of SN 1604 on Oct. 7th, 1605 (day dingmao, 8th lunar month in 33rd year of Wanli) and the summary of its nearly whole year’s observation: “Tonight, the guest star was out of sight. It was seen in the Lunar Mansion of Wei since Oct. 10th, 1604, usually appeared at the SW direction at 7-9pm, rotated westward with the sky until 10th lunar month it sank and was not seen in the evening. In the 11th lunar month, it usually appeared at 3-5am at the SE direction. During the 2nd lunar month of the current year it became faint and now has been fully extinguished.”

斗至八年正月庚戌入危十二年七月戌辰有星見天
 市垣宗星旁入紫微垣東藩極少幸尚書抵太子后宮
 出西藩少輔旁至八月己丑減十五年十月戊辰有星
 見天廟旁自張抵翼復退至張氏寅減正德十六年正
 月甲寅朔東南有星如火變白長可六七尺橫巨東西
 復變勾屈狀良久乃散嘉靖八年正月立春日長星巨
 天七月又如之十一年二月壬午有星見東南色蒼白
 有宮積十九日減十三年五月丁卯朔有星見騰蛇歷
 天殿入閣道二十四日減十五年三月戊午有星見天
 棓旁東行歷天廚西入天潢至四月壬辰設二十四年
 十一月壬午有星出天棓入箕轉東北行逾月沒萬曆
 六年正月戊辰有大星如日出自西方眾星皆西環十
 二年六月己酉有星出房三十二年九月乙丑尾分有
 星如彈丸色赤黃見西南方至十月而隱十二月辛酉
 轉出東南方仍尾分明年二月漸暗八月丁卯始減三
 十七年有大星見西南宮剝四射四十六年九月乙卯
 東南有白氣一道濶尺餘長二丈餘東至珍西入翼十
 九日而滅十一月丙寅且有花白星見東方天啓元年
 四月癸酉赤星見於東方崇禎九年冬天狗見孛分
 孛字彗之光芒傳日而生故夕見者必東指晨見者必西

Fig. 4.— The record of SN 1604 in Ming Shi on summary of its nearly whole year’s observation “On Oct. 10th, 1604, there was a star as a pellet Bomb with yellow color appeared in the SW direction in the lunar Mansion of Wei until the 10th lunar month it was hidden from view. On Feb. 3rd, 1605 it turned round to be in SE direction still in Wei. It gradually became dim and finally extinguished on Oct. 7th, 1605.”