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Solar Eclipses in Ancient China

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Chinese astrology began in the Shang Dynasty. The Chinese culture believed that solar eclipses were caused by a mythical dragon devouring the sun.

It was also believed that eclipses in general told the future of the emperor. Due to this, predicting solar eclipses was deemed of the highest importance; so much so, that two astrologers were once beheaded because they failed to predict a solar eclipse.

Astrologers not wanting to be beheaded used many methods and tools in order to try and accurately predict solar eclipses.

Solar Eclipse Tools

Ancient Chinese astrologers used an array of different tools and methods to predict solar eclipses; including celestial globes, star maps, and armillary spheres. Astrologers would aim artilleries at stars through a sight tube, and could be used to decipher them by looking at dials on its equatorial ring. The Dunhuang Star chart is one of the oldest remaining star maps in the world.

The Shang Dynasty

Chinese astrology began in the Shang Dynasty. (1226 BCE to 1161 BCE) The Chinese culture believed that solar eclipses were caused by a mythical dragon devouring the sun.

How Ancient Chinese Astrologers Predicted Solar Eclipses

Chinese astrologer Yi Xing; predicted solar eclipses by analyzing the moon’s motion and position. For every revolution westwards of the celestial globe, the sun would revolve one degree eastwards and the moon would revolve 13 and 7/19 degrees eastwards as well. After 29 rotations of the celestial globe, the moon and sun would meet creating a solar eclipse. A celestial globe at that time was a huge globe, showing the 28 mansions, celestial equator and ecliptic.

Celestial Globe

Chinese astrologers also used the Metonic Cycle, which they called the Zhang cycle due to the dynasty in which it was discovered. The Metonic Cycle converts 19 solar years to 235 lunar months.

This also helped Chinese astrologers predict solar eclipses because it helped them form the calendar that they used, and therefore were able to predict which day a solar eclipse would take place.

Ancient Chinese Solar Eclipse Predictions

235 months x 29.53 = 6939.6848 hours
19 years x 365.2422 days = 69369.6018 hours

Conclusion

- Chinese astrologers took a trial and error approach to finding solar eclipses
- There were many different methods in predicting eclipses.
- Chinese astrologers preferred a more tool oriented approach to predict eclipses, and accurately predicted ways to discover solar eclipses.

Ancient Chinese Solar Eclipse Predictions

The 28 Chinese Mansions Asterisms/ Day Names & their Associated 28 Mansion Animals

<table>
<thead>
<tr>
<th>The 28 Chinese Mansions Asterisms/ Day Names</th>
<th>28 Mansion Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. The Green Dragon</td>
<td>A. Tiger</td>
</tr>
<tr>
<td>II. The White Tiger</td>
<td>B. Dragon</td>
</tr>
<tr>
<td>III. The Black Tiger</td>
<td>C. Tiger</td>
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<tr>
<td>IV. The Red Tiger</td>
<td>D. Dragon</td>
</tr>
<tr>
<td>V. The Yellow Tiger</td>
<td>E. Tiger</td>
</tr>
<tr>
<td>VI. The White Tiger</td>
<td>F. Dragon</td>
</tr>
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<td>VIII. The Red Tiger</td>
<td>H. Dragon</td>
</tr>
</tbody>
</table>

The Chinese calendar, where the days begin and end at midnight. The months begin on the day with the dark (new) moon. The years begin with the dark moon near the midpoint between winter solstice and spring equinox. The solar terms are the important components of the Chinese calendar.