Tycho Brahe

1546 - 1601

Danish astronomer Tycho Brahe was the first European scientist since ancient times to systematically catalog the positions and magnitudes of the stars. This was done in order to correct for changes in the positions of stars as reported by Ptolemy, over a thousand years earlier. He accomplished this from an observatory called Uraniborg on the island of Hven.

Tycho (1546-1601), despite being a Danish noble, turned to astronomy rather than politics. Granted the island of Hven in 1576 by Frederick II, he established Uraniborg, an observatory containing large, accurate instruments. His cosmology was geocentric, in opposition to Copernicus.

Tycho Brahe is probably the most famous observational astronomer of the sixteenth-century, although is not always clear whether he is better remembered for the fact that his data provided the basis for the work of Johannes Kepler (1571-1630), or because of the more colourful aspects of his life and death. Born into the high nobility of his native Denmark in 1546, he was groomed by his family for a career at court, but from an early age showed greater interest in astronomy than law, the discipline of choice for aspiring royal councillors and administrators. After three years at the University of Copenhagen, he spent much of the period from 1562 to 1576 travelling in Germany, studying at the Universities of Leipzig, Wittenberg, and Rostock, and working with other scholars in Basle, Augsburg, and Kassel. It was in Rostock in 1566 that he lost part of his nose in a duel, and subsequently wore a prosthesis.

The appearance in 1572 of a "new star" (in fact a supernova) prompted Tycho's first publication, which was issued by a Copenhagen printer in 1573. In 1574, he gave some lectures on astronomy at the University of Copenhagen. Already he was of the opinion that the world-system of Copernicus was mathematically superior to that of Ptolemy, but physically absurd. In 1576, his permanent relocation to Basle, which he considered the most suitable place for him to continue his astronomical studies, was forestalled by King Frederick II, who offered him in fief the island of Hven in the Danish Sound. With generous royal support, Tycho constructed there a domicile and observatory which he called Uraniborg, and developed a range of instruments of remarkable size and precision which he used, with the aide of numerous assistants and students, to observe comets, stars, and planets.

In 1588, Tycho issued from his press a work on the comet which had appeared, causing a flurry of other publications, in 1577. The eighth chapter of this book also contained Tycho's system of the world, which retained the earth as the unmoving centre of the universe but rendered the other planets satellites of the Sun. In 1596 he published a volume of his correspondence with another noble-astronomer, Wilhelm IV of Hesse-Kassel, and Wilhelm's mathematician Christoph Rothmann. The latter was a committed Copernican, and Tycho's forceful arguments for the superiority of his own cosmology was one reason for his publication of the letters. Other works begun on Hven were the *Astronomiae instauratae mechanica* (1598), an illustrated account of his instruments and observatories, and the *Astronomiae instauratae*

progymnasmata (1602), which contained his theory of lunar and solar motions, part of his catalogue of stars, and a more detailed analysis of the supernova of 1572. However, the erosion of Tycho's funding and standing following King Christian IV's attainment of his majority caused the astronomer to leave Denmark in 1597. In 1599 he settled near Prague, having been appointed Imperial Mathematician by Emperor Rudolph II, and was joined by Johannes Kepler the following year. He died of uraemia in 1601.