Chapter 7 notes, Tycho Brahe (1546 – 1601)

Brahe's importance for the development of Astronomy

He was the best pre telescopic observer of the heavens. The accuracy of his observations were a factor of 5 or more better than any of his predecessors.

Brahe's measurements of the angular positions of the planets and stars are the limit of naked human eye observation.

Brahe's 25 years of regular position measurements were crucial for the discovery of the elliptical orbits of the planets by Johannes Kepler.

Brahe introduced corrections for atmospheric refraction. All his measurements were made for meridian crossings. His two observatories on the island of Hven off the coast of Copenhagen allowed him to cross check his measurements. He frequently calibrated his instruments.

Brahe's ability to measure angular positions for long periods of time demonstrated that the Aristotelian ideal of the perfect incorruptible heavens was wrong. His observations in 1572 of the stable position of the "new star" amidst the "fixed stars" showed that changes in the celestial sphere were possible.

Brahe demonstrated that a comet seen in 1577 was at least six times farther away from the earth than the moon. The unpredictable nature of cometary motion and the changing appearance of the comet with time showed that celestial phenomena are corruptible.

Brahe's giant mural quadrant from Crowe's book.

Western Astronomical Tables - Handy Guides for making Predictions

Table name	Source	Author
Alphonsine, Named in honor of Alfonso X of Castille	Ptolemy's Almagest and Classical Islamic scientific work	Toledo School of translators, 1252, translated into Castillian
Prutentic. Named in honor of Prussia	Copernicus's work	Erasmus Reinhold, 1551, in Latin
Rudolphine, Named in honor of Emperor Rudolph	Tycho Brahe's data and Kepler's calculation of elliptical orbits	Johannes Kepler, 1627, in Latin