Tycho Brahe

By Sharon Fabian

[1] Tycho Brahe of Denmark was one of the originators of modern day astronomy. He was the first to realize that good astronomical information could be had only if scientists were first willing to take the time and effort to make repeated observations and take careful measurements. He was the first to create a complete and accurate set of astronomical tables.

[2] Tycho was a man of his time, and scientists of that time were still making observations of the heavens using only the naked eye and measuring tools called quadrants. Scientists of the 1500s also studied astrology and alchemy, and so did Tycho.

[3] Most people at that time also believed in the view of the solar system (or the "universe" as they called it) that had been taught by the church for years. In this view of the solar system, the Earth was at the center, and the sun, moon, stars, and other planets revolved around the Earth. Although other scientists were proposing a new idea - that the sun was the center of the solar system and not the Earth - Tycho accepted the idea that the Earth was at the center.

[4] Eventually, he stated his own theory of the solar system known as the Tychonic system. In this system, the Earth was still at the center, as in the traditional model. However, in the Tychonic system, the sun and moon revolved around the Earth, and the other planets revolved around the sun. So, Tycho's system was between the traditional system, known as the Ptolemaic system, and the new system, known as the Copernican system.

[5] The journey that led Tycho to the development of his new theory of the solar system began when he was still a student. A chance to view a solar eclipse got Tycho interested in the heavens. He bought scientific instruments and tables and began to study. By the age of 17, he had set his goal - to complete a long term project in which he would map the heavens from a single location over several years.

[6] Without telescopes, he would need a large observatory and large measuring instruments to make accurate observations. King Frederick II of Denmark gave Tycho an island on which to build his observatory. There, Tycho built the observatory known as Uraniborg, the best observatory in Europe. He also designed and built his own instruments for observing and measuring. He built a huge, stationary wooden quadrant facing a window of the observatory.

[7] By making daily observations, he was able to note small changes that hadn't been noticed before. He also made some new discoveries along the way. In 1572, he observed a new star, a bright one that hadn't been there before, in the constellation Cassiopeia. He published information about his new star in a book, *De Stella Nova*, and that is where we got the name nova for a very bright star.

[8] At the time of its discovery, Tycho's star caused him to be involved in a controversy. It was the accepted belief at the time that stars were permanent, always remaining the same size and in the same place, and so some people would not believe that the new object sighted in the sky by Tycho was a star. Tycho insisted that it was.

[9] Tycho's theory of the arrangement of the stars and planets was at the center of an even larger controversy. Some people insisted that the old Ptolemaic system was right. Others insisted that Copernicus' new ideas were true. The church, which often had the final say in scientific matters at that time, accepted Tycho's middle ground position. The Tychonic system became the accepted model of the solar system for years.

[10] Tycho's assistant, Johannes Kepler, eventually continued where Tycho left off. He used the charts developed in Tycho's observatory to develop the laws of planetary motion. In this way, Tycho's careful method of observing and measuring led to important discoveries both during and after his lifetime.

Name _____ Science Pd _____

Tycho Brahe

1. Tycho Brahe studied _____.
   - (A) Astronomy
   - (B) Astrology
   - (C) Alchemy
   - (D) All of the above

2. Tycho Brahe studied the heavens using a _____.
   - (A) Both
   - (B) Quadrant
   - (C) Neither
   - (D) Telescope

3. Tycho Brahe became a famous scientist because he recognized the importance of _____.
   - (A) Stars
   - (B) Planets
   - (C) Repeated observations and careful measurements
   - (D) Telescopes

4. Tycho built his observatory on a/an _____ given to him by _____.
   - (A) Island, the king
   - (B) Building, his father
   - (C) Hill, a knight
   - (D) Rooftop, a landlord

5. Tycho built a huge wooden _____.
   - (A) Quadrant
   - (B) Model of the solar system
   - (C) Space station
   - (D) Ship

6. A *nova* is _____.
   - (A) Not really a star
   - (B) A bright star
   - (C) Another name for a quadrant
   - (D) A planet

7. Johannes Kepler was _____.
   - (A) Tycho's teacher
   - (B) The king of Denmark
   - (C) A builder
   - (D) Tycho's assistant

8. The model of the solar system that shows the Earth at the center, the sun and the moon revolving around the Earth, and the other planets revolving around the sun is called the _____ system.
   - (A) Ptolemaic
   - (B) Tychonic
   - (C) Copernican
   - (D) None of the above