Student number: 5504640904

Name: Ornalin Anancharoenpakorn

Subject:Tycho Brahe

Word count: 1117

We are now living the world of changes, and we humans are mostly the main factors of those changes. In other words, nothing is impossible with humans' abilities. Similarly, the science of astronomy has long been with people for centuries, helping people have much more accurate information when it comes to travelling. To illustrate, astronomers can predict and tell precisely what is going to happen by via of The Rudolphine Tables[1], astronomical tables, invented by Tycho Brahe.

Born on 14 December 1546 as the eldest son of noble Danish family, Tychoe started to be obsessed with astronomy when he began to wonder about how precise of the eclipse prediction was. On August21st, 1560, there was a partial eclipse of the sun. [2] Many people were interested to keep their eyes on it, but no one could ever imagine that the phenomenon could have changed a fourteen- year-old boy's life. The boy himself found it very impressive and it encouraged him to be more interested in astronomy. In 1562, he began observing the stars when he studied at the University of Leipzig[3]. Observing the star every night became an integral part of his life. On August 17th, 1563, a special event happened. Jupiter[4] and Saturn[5] came very close to each other. He found that the Alfonsine table[6], a conventional astronomical table was off by a month in prediction this event, and the Copernicus table was off by several days. [7]

---

1 Consist of a star catalogue and planetary tables published by Johannes Kepler in 1627

2 "Tycho Brahe." *Tycho Brahe*. N.p., n.d. Web. 17 Sept. 2012. <http://galileo.phys.virginia.edu/classes/109N/lectures/tychob.html>.

3 State-supported university in Leipzig, Germany, founded in 1409.

4 The fifth planet from the Sun and the largest planet within the Solar System.

5 The sixth planet from the Sun and the second largest planet in the Solar System

6 Provided data for computing the position of the Sun, Moon and planets relative to the fixed stars.

7 "Tycho Brahe." *Wikipedia*. Wikimedia Foundation, 16 Sept. 2012. Web. 17 Sept. 2012. <http://en.wikipedia.org/wiki/Tycho_Brahe>.

Nineteen-year-old boy felt that these performances by reputable astronomers were still inaccurate. For this reason, he began to think that the table would be much better if astronomers have more accurate observation. Tycho, with a confidence of someone who was not seventeen yet, thought he could do better. Later on, November 11th, 1572, he noticed a new star in the sky that was brighter than Venus[8], which unexpectedly appeared in the constellation Cassiopeia, leading to observing this new star at night for 18 months.[9] In 1574, he proved beyond reasonable doubt that the star was really belonged to the firmament which it opposed to the Aristotelian[10] world-view. The star is now usually known as "supernova".[11] These two astronomical events showed how Tycho devoted himself to astronomy. The first astronomical event was the great impulsion for him to be committed to observation. Consequently, he seriously noticed a new star and also the existing ones night to night. He took almost two years to observe and proved that he was right. Also, he was so brave enough to prove that Aristotelian word was wrong.

Tycho was the last astronomer creating his work without using telescope[12] now that the instruments for observing were not good enough for him. As a result, he improved the instruments by inventing the instruments by his own. Obviously, his instrument was much more accurate than other astronomers. With the King of Denmark's assistance, he set up a huge observatory on the island of Hven Copenhagen sound, called "Uranbory". His observation was full of exceptionally large and accurate instrument. It was the best and modern observatory of that time, nevertheless. Then he constructed many instruments for observation. Nine years later,

8 The second planet from the Sun, orbiting it every 224.7 Earth days.
9 "Tycho Brahe." *Brahe Biography*. N.p., n.d. Web. 17 Sept. 2012. <http://www-history.mcs.st-and.ac.uk/Biographies/Brahe.html>.
10 A Greek philosopher and polymath, a student of Plato and teacher of Alexander the Great.
11 A stellar explosion that is more energetic than a nova.
12 An instrument that aids in the observation of remote objects by collecting electromagnetic radiation.

he built another observatory beside Uranbory so that he could expand his space for more experiments and observations. In 1597, Denmark faced with economic problem. The budget of science and astronomy was cut off. Tycho must shut his observatory down even if it could be called the best observatory in that time. Then, he went to many countries in Europe to find the one who can support and have budget for astronomy. Fortunately, he finally met Rudolf II, Holy Roman Emperor,[13] who sponsored to build a new observatory in a castle. In his life, he built the huge 3 observatories and invented many instruments for observation. He stimulated other astronomers around the world to realize that they have to take more seriously with their jobs to do better observation. More importantly, he got a new observatory and a new assistant named "Johannes Kepler"[14] who later became one of the most important of science and astronomy in the world.

When Tycho Brahe died. He left his notebook that he wrote all of his observation. It was the greatest data before telescope. Johannes Kepler, who was received this valuable property, was Tycho's assistant after he moved to Prague.[15] Johanes Kepler helped him with mathematical calculations. They proved Tycho's cosmological theories were true; the Earth was the center of the Universe, the Sun and the Moon went around the Earth and other plants went around the Sun, around all is a sphere of fixed stars. [16] Then, Tycho began his observation again. Kepler helped him to compile a new set of astronomical information, based on his recorded

---

13 was Holy Roman Emperor, King of Hungary and Croatia , King of Bohemia and Archduke of Austria.
14 was a German mathematician, astronomer and astrologer.
15 the capital and largest city of the Czech Republic.
16 "The Observations of Tycho Brahe." *The Observations of Tycho Brahe*. N.p., n.d. Web. 17 Sept. 2012. <http://csep10.phys.utk.edu/astr161/lect/history/brahe.html>.

observations over 38 years. This astronomical table showed 777 stars, [17] which are called " The Rudolphine Tables"[18] as memorial for their sponsor. The Rudolphine tables were the most accurate observation of all time. On 24 October 1601, he was death with unanswered questions. Nobody knows the real cause of his death. Someone said he died because somebody poisoned him, while others said that Kepler killed him because his worthy notebook and all of his instruments. Eighteen months that Kepler was an assistant of Tycho, he learned many things from him. However, after Tycho died, he still can take advantage from Tycho's notebook. He learned and used data from Tycho's notebook. Then, he discovered Kepler's Laws of Planetary Motion, consisting of three laws; the first law is "Planets move in ellipses with the Sun at one focus". The second law is "The radius vector describes equal areas in equal times". The third law is "The squares of the periodic times are to each other as the cubes of the mean distances". [19]He also continued observation the stars and discovered 288 more stars Tycho discovered 777 stars, 1,005 stars in total. Nevertheless, Tycho has considerably changed the world through his hard work and his well-rounded knowledge.Plus, his notebook was so useful for Kepler to use his observable data to develop astronomy and made benefit for the world after Tycho's death.

To summarize, from a young boy who was interested in what he saw to one of the most influential astronomers of the world, Tycho has proved not only himself, but also the astronomical world by means of devoting himself for observation, inventing useful instruments and building observatory. Moreover, the loss of Tycho was not in

---

17 "Tycho Brahe (Danish Astronomer)." *Encyclopedia Britannica Online*. Encyclopedia Britannica, n.d. Web. 17 Sept. 2012. <http://www.britannica.com/EBchecked/topic/77001/Tycho-Brahe>.

18 Consist of a star catalogue and planetary tables published by Johannes Kepler in 1627, using some observational data collected by Tycho Brahe.

19 Steve Howell. "Johannes Kepler: His Life, His Laws and Times." NASA Ames Research Center. September 14. 2012. < http://kepler.nasa.gov/Mission/JohannesKepler/ >

vain, his notebook that compiles all his observation to Kepler still paved the way of astronomy. As a result, it can be said that Tycho Brahe is one of the most important figures that made astronomy as it is today.