Edwin Hubble Essay, Research Paper

Edwin Powell Hubble:

Great Astronomer of the 19th Century

Twinkle, twinkle little star,

How I wonder what you are!

Up above the world so high,

Like a diamond in the sky (Gardner 98).

Stars are a marvelous wonder to many people, that is why some people spend most of their lives wondering what is above the world so high (Gardner 98). These people study and map the little twinkling stars in order to get a better meaning of them; they are astronomers. Great astronomers like Edwin Hubble, Immanuel Kant, and William Huggins, never stopped valuing the beauty of the stars. While they developed great astronomical principals. One astronomer who fits this mold most is, Edwin Powell Hubble. Wondering about what was out in the universe led to the construction of the 200-in reflector telescope, the most high-powered of its day. Using this high-powered telescope he went on to prove that there were other galaxies beside the Milky Way and was able to formulate Hubble s law, which linked the distance of galaxies to their speed. Through his work, Edwin Hubble impacted the scientific world in the twentieth century because of devotion to research, curiosity about the universe, and expertise at mapping galaxies.

Devotion is one characteristic in Hubble that allowed him to do his work so well. Whether it was devotion to his family or to his work. It started when he was just a youth; he was in a family of seven children and was expected to earn money for the family (Whitney 222).

Hubble s devotion was mental and also physical. Hubble worked at Mount Wilson for most of his career. Here, he spent hundreds of bone-numbing hours in the observer s cage at Mount Wilson telescope. Anyone who has spent time in the cage knows what an extraordinary effort of will it can demand: total concentration, and an ability to suppress shivers in the constant chill, lest you vibrate the telescope. (Smoot 42).

Hubble s hard work and long hours were recognized by his fellow astronomers. The author of Wrinkles in Time, George Smoot, said, Night after night Hubble photographed the nebulae, devoting himself to his goal so completely that he was perceived as arrogant and elitist (44).

Unable to complete his any tasks on his own, Hubble hired an assistant. He hired Sandage. Sandage would work with Hubble and learn techniques that Hubble used to hopefully do research of his own in the future. Hubble taught Sandage how to classify galaxies so he could continue Hubble s work. As Hubble age, he was unable to use the telescope any more. He didn t have the strength or energy to stay in the cage for long periods of time. So, he sent Sandage to carry out tasks for him. Everyday Sandage would be given coordinates or jobs by Hubble. When Sandage was done recording he data of his work, he would go back to Hubble and give him the results (Overbye 22). This shows how devoted he was to his research, even if he was unable to handle the job due to old age he compromised. All of Hubble s work and Sandage work was done on the 100-in telescope, yet Hubble was still able to find the Andromeda Nebulae s distance for the Milky Way and study red shifts. While the 200-in. telescope was being built, Hubble asked if he could use the telescope for half of its available time. This shows his devotion because he wanted to use the telescope in order to further enhance his research (17).

Edwin Hubble s curiosity about the universe started at youth and has grown. Without this, he would have no desire to study the stars or galaxies. Hubble s interest in astronomy at the age of eight. On his eighth birthday party he spent the night with his grandfather star gazing (Freidman 16). When he was twelve years old he would ask his parents to seep outside and look at the stars at midnight with his friend Sam Shelton (18). His grandfather asked Hubble an astronomical question, and Hubble answered it so cleverly that his grandfather had is answer published in a newspaper (Whitney 222). This was the start of his great accomplishments to come.

When Hubble was thirty years old, he worked at Wilson s Observatory to use the newly built 100-in telescope (Christianson 110). He noticed that there were faint emissions from nebulae and that he might be able to use these emissions as a ruler; from star to the Milky Way. He studied these emissions and concluded that they were blue stars. With this knowledge, he was able to use these stars in aiding him to measure their distances (Whitney 225).

He was fascinated by Henrietta Leavitt s work on Cepheid s and he had to do his own research on them. Although finding the Cepheid s in the galaxies were easier said than done, Hubble had to find them in remote galaxies. What he could find would enable him to get the calculations correct for measuring distances of nebulae away from the Milky Way (Moore 104). In this way Hubble s curiosity had a great impact on his career as an astronomer.

In addition, Hubble had a talent that other astronomers lacked. This ability was mapping galaxies. He was able to calculate distances by using certain stars as and then finding where the galaxies were based on their distance from the Milky Way. He broke galaxies up into classes and gave them names depending on their appearance. There was one thing that limited Hubble s research, which was the telescope. The 100-in. telescope was not powerful enough to satisfy Hubble s need to explore the universe. Hubble used groups of bright stars, candles in the sky, to calculate the distances of the galaxies. First he had to choose what stars to use. It was all based on statistics, he would look at a group of stars and choose the brightest ones from that group. This was because he was have a more exact calculation with a lot of stars instead of one and because the brighter it is the easier it is seen to measure the distance of distant galaxies (Dressler 27). With this knowledge he put together the Hubble s Law, which said velocity equals Hubble s constant times the distance.

There were many types of galaxies that Hubble studied. He was able to put them all in separate classifications. Three general groups were spiral, elliptical, and lenticular. These galaxies were classified by their shape, size and the way that they morphed. The galaxies were also split into galactic or nongalactic. Hubble found that he could further classify galaxies by using the Franhoter lines, like finger printing to distinguish types of galaxies and the make up of the stars in the galaxies. He observed and mapped the galaxies in a systematical way.

Hubble was an expert at using the telescope. This was the key to mapping galaxies. Other scientist said The Hooker was put to its finest use by Edwin P. Hubble during the 1970 s. (Boslough). Hubble looked at one picture for thirty minutes before taking it in order for it to come out detailed.

Being devoted to his research, curious about the universe, and having the expertise at mapping galaxies enabled Hubble to impact the scientific world of the twentieth century. He had constant effort that kept him on the right track. His go out and get it attitude allowed him to reach and finish his goals. In addition, his curious mind that was ready to be filled with knowledge and his skills at mapping galaxies and breaking them into categories. Hubble was able to impact the scientific world and also able to give the scientific world a big leap to exploring the universe.

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320