Ejnar Hertzsprung Biography

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Biography

Born in Frederiksberg, Denmark, on October 8, 1873, Hertzsprung was trained as a chemical engineer, but he was also an amateur astronomer and so impressed Karl Schwarzschild (1873-1916) with his knowledge that Schwarzchild offered him a professorship in Göttingen, Germany, in 1909.

Hertzsprung thought there should be a standard by which the brightness of **stars** could be compared. A given star might be very luminous but appear dim to observers on Earth because of its distance. Likewise, a dim star might appear bright because it is closer. If all stars could be placed at exactly the same distance, their relative luminosity would be readily apparent.

In 1905, Hertzsprung set up a standard that he called the "absolute magnitude" of a star, defining the quantity as what a star's brightness would be at a distance of 10 parsecs from Earth (one parsec is equivalent to 3.26 light-years). Once he had determined the intrinsic brightness of a number of stars, it became apparent to him that there was a relationship between a star's **color** and its luminosity. He found that red stars, generally, are not as bright as blue stars, while yellow stars fall somewhere between the two. Furthermore, since the color of a star is related to its **temperature**, Hertzsprung concluded that a star's temperature and brightness were correlated. But he published his findings in a journal of **photography** and timidly kept his diagrams to himself.

Nearly 10 years passed before Hertzsprung's important contribution was finally recognized, when American astronomer **Henry Norris Russell** independently came to the same conclusions. Today the graph depicting the relationship between luminosity and temperature is called the Hertzsprung-Russell diagram. The diagram has played an important role in providing clues to astronomers about **stellar evolution**.

In 1913 Hertzsprung began another important line of research. With the help of **Henrietta Leavitt**, he found a method to determine the distances to Cepheid variable stars. Their exploration of this Cepheid "yardstick" led Hertzsprung to make the first credible estimate for the distance of an extragalactic object--the Small Magellanic Cloud. Their method, in turn, was used by **Harlow Shapley** to determine the size and dimensions of our galaxy, as well as to conclude that spiral nebulae are actually distant galactic systems.

Hertzsprung became director of the observatory at Leiden, Germany, in 1935 and retired 10 years later. He died in Denmark on October 21, 1967, at the age of 94.