

Topic Page: [Fowler, William A.](#)

Summary Article: **Fowler, William Alfred**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

US astrophysicist. He shared the Nobel Prize for Physics in 1983 with Indian-born US astrophysicist Subrahmanyan Chandrasekhar for their work on the life cycle of stars and the nuclear reactions involved in the formation of chemical elements in the universe.

Nuclear synthesis in stars Fowler concentrated on research into the abundance of helium in the universe. The helium abundance was first defined as the result of the 'hot Big Bang' theory proposed by US physicist Ralph Alpher, German-born US physicist Hans Bethe, and Russian-born US cosmologist George Gamow in 1948. In its original form, the Big Bang theory accounted only for the creation of the lightest elements, hydrogen and helium. In their classic 1957 paper 'B²FH', Fowler and the English astronomers Fred Hoyle and Margaret and Geoffrey Burbidge described how, in a star such as the Sun, two hydrogen nuclei, or protons, combine to create the next heavier element, helium, thus generating energy. Over time, more and heavier elements are produced. After millions of years, the star, if it is sufficiently massive, finally explodes into a supernova, scattering its material across the universe.

Life Fowler was born in Pittsburgh, Pennsylvania, and studied physics at Ohio State University, Columbus, obtaining a BA in physics in 1933, and then at the California Institute of Technology (Caltech), Pasadena, where he gained a PhD and then spent the rest of his career.

Calculating helium abundance Fowler and Hoyle published an even more complete exposition of stellar nuclear synthesis in 1965 and completed the work two years later with Robert Wagoner. Taking into account all the reactions that can occur between the light elements, and considering the build-up of heavier elements, they were able to calculate helium abundance in the universe to an accuracy of 1%.

quotations

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Chicago

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