



Discovery of helium in Fraunhofer line in the solar spectrum – October 20, 1868

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General Note

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Fraunhofer lines are a set of spectral lines named after the German physicist Joseph von Fraunhofer (1787–1826). The lines were originally observed as dark features (absorption lines) in the optical spectrum of the Sun. When light passes through material and is absorbed by atoms and ions of each element (hydrogen, calcium, sodium, iron etc.) a unique set of dark lines is formed in the spectrum. These are called absorption lines. In 1802, a scientist called W.H. Wollaston noticed that the visible spectrum from the Sun had several dark lines in it. Afterwards, Joseph von Fraunhofer built the first spectrometer. This focused sunlight from a small telescope onto a narrow slit. The light then passed through a prism, which produced the spectrum. Fraunhofer later invented the diffraction grating, which is used in most spectrometers today.

Fraunhofer lines, in astronomical spectroscopy, any of the dark (absorption) lines in the spectrum of the Sun or other star, caused by selective absorption of the Sun's or star's radiation at specific wavelengths by the various elements existing as gases in its atmosphere. The lines were first observed in 1802 by the English physicist William Hyde Wollaston but are named for the German physicist Joseph von Fraunhofer, who from about 1814 plotted more than 500 of them and designated the brightest by the letters A through G, a system of identification still in use. About 25,000 Fraunhofer lines are now known to exist in the solar spectrum, between the wavelengths of 2,950 and 10,000 angstroms.

Sir Joseph Norman Lockyer, a British astronomer, in 1868 on October 20th discovered and names the D3 Fraunhofer line in the solar spectrum in the Sun's atmosphere a previously unknown element that he named helium. In 1868, he and French astronomer Pierre Janssen, working independently, discovered a spectroscopic method of observing solar prominences without the aid of an eclipse to block out the glare of the Sun. Lockyer identified the element helium in the solar spectrum 27 years before that element was found on Earth.