



Sir Edward Appleton: Nobel Prize in Physics 1947



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Sir Edward Appleton was born in Bradford, England, on 6th September 1892. He was educated at Hanson Grammar School, and then took his B.A. degree in Natural Science at [St. John's College, Cambridge](#), in 1913. In 1914, he specialised in physics and also won a scholarship, working for both [Sir J.J. Thomson](#) and [Lord Rutherford](#). His research was interrupted by World War I. After the war, he returned to Cambridge and took up research on radio waves. Appleton devoted himself to scientific problems in atmospheric physics, using mainly radio techniques. In 1920 he became an assistant demonstrator in experimental physics at the [Cavendish Laboratory](#). Two years later he became sub-rector at Trinity College.

In late 1924 Appleton began a series of experiments which proved the existence of an ionised layer in the upper atmosphere, now called the ionosphere. With the co-operation of the British Broadcasting Corporation, he used their Bournemouth transmitter to shoot radio waves up to the layer to see if they were reflected by it and came back. The experiment was very successful as the radio waves were reflected by the ionised layer. By a slight change of wavelength, it was possible to measure the time taken by the waves to travel to and from the layer. Thus, the position of the reflecting layer could be identified and its height (60 miles above ground) determined. This method is called "frequency-modulation radar". The ionosphere was the first "object" detected by radiolocation, and this led to a great development of radio research. Appleton received the Nobel Prize in Physics 1947, "for his investigations of the physics of the upper atmosphere especially for the discovery of the so-called Appleton layer".

In 1924 Appleton was appointed Professor of Physics at [London University](#) and served there for twelve years, returning to Cambridge in 1936 to become Professor of Natural Philosophy. He was knighted in 1941, acknowledging his contributions to British military research. In 1956 he gave the Reith Lectures for the B.B.C. on "Science and the Nation". His awards included the Gunning Victoria Jubilee Prize of the Royal Society, Edinburgh, in 1960, and the Medal of Honour of the Institute of Radio Engineers of America in 1962. In 1915 Appleton married Jessie and they had two daughters. He died in 1965.