

Megaw, Eric

by Keith Haines

Megaw, Eric (Christopher Stanley) (1908–56), scientist, was born 19 January 1908 at the Grand Hotel, Portobello, Dublin, eldest of four sons of Arthur (Stanley) Megaw, solicitor, and (Helen Isabel) Bertha Megaw (née Smith), later of Highfield and Arden, north Belfast. Eric Megaw was educated at Mourne Grange prep school, near Newcastle, Co. Down, and Campbell College, Belfast. Having received, at the age of 12, a book on electricity, he became fascinated by wireless waves. He created a radio experimentation workshop at home, and established the Wireless Society at Campbell College, where he ignored the school's regulations and installed a crystal set under his bed, using the wire mattress as an aerial. In 1923 he intercepted the first signal received in Ireland from New Zealand. In October 1924 he sent, on a home-made set, the first radio signal transmitted by an amateur from Ireland, and on 14 September 1925 he established the first radio contact between Ireland and Australia.

While at QUB, in 1926 Megaw operated an experimental short-wave radio on board ship across the Atlantic ocean to investigate transatlantic radio conditions, and to determine whether low-power short-wave radio could maintain reliable contact between the land and a ship at sea. In 1927, in addition to conducting experimental radio links with India, he established the first radio contact between Ireland and the west coast of north America. This work resulted in 1928 in Megaw being awarded a Beit fellowship at the Imperial College of Science – at 20 years of age, the youngest fellow in the United Kingdom.

In 1930 Megaw began work at the General Electric Co. at Wembley, and in 1933 was awarded the Duddell Premium of the Institution of Electrical Engineering for his investigation into the generation of very short radio waves, which focused on the magnetron – a valve for very high frequency use which employs a magnetic field. In 1935 he was asked to demonstrate his own apparatus at public lectures given by two Nobel laureates associated with wireless transmission – Lord Rutherford and Guglielmo Marconi (qv). A few years later he assisted the admiralty in ensuring that sea-going communications using magnetrons were available by the outbreak of the second world war.

By 1938, the admiralty – representing all the armed forces – had established a commission to hasten the development of microwave systems, concentrating on the development of 10 cm radar transmitters. The cavity magnetron was first tested on 21 February 1940 on a laboratory model created by J. T. Randall and H. A. H. Boot of the University of Birmingham, but the team from Wembley under Megaw – who had been engaged in producing a pulse transmitter suitable for short-wave airborne interception radar – was brought in to transform the model into a workable

design for mass production. On 25 May 1940, using a cylindrical oxide cathode, Megaw completed the design of the E1189 resonant magnetron, which produced 12 kW at 9.5 cm wavelength. The E1189 could generate ten times the pulse output of the original magnetron design, while requiring a magnet weighing only one-tenth of that used with the original valve. It first operated fully on 29 June. The success of Megaw's design was the first effective step in the 'centimetric revolution', which had many important applications in attack and defence on land, on sea, and in the air throughout the war. Megaw was awarded the MBE in 1943.

In January 1946 he was employed by the Royal Naval Scientific Service, being promoted quickly to chief scientific officer, and in 1950 he was appointed director of physical research. His sudden death on 25 January 1956 at his home in Hampstead was attributed to the stress of his heavy workload and unremitting commitment. In his final years he had been examining the links between scientific problems in astronomy, meteorology, and radio, and his work on the theory of tropospheric forward scatter was published by the Institution of Electrical Engineering in May 1957 and granted a posthumous award of its highest premium. There is a memorial plaque to Eric Megaw at the entrance to the Ashby Institute of QUB. Much of Megaw's work was published in *T & R Bulletin* (The Radio Society of Great Britain) and the *Journal of the Institution of Electrical Engineers*.

On 29 March 1933 Eric Megaw married Therese Hija Veder, daughter of Mr and Mrs A. J. Veder of Amsterdam; they had two sons. The elder son, Vincent (b. 1934) became professor of archaeology at Leicester University in 1961, and later professor of visual arts and archaeology at Flinders University, Adelaide, Australia; the younger son, Edgar (b. 1942) became director of the Ergonomics Information Analysis Centre at the University of Birmingham. One of Megaw's brothers, Arthur Hubert Stanley (b. 1910), became director of antiquities in Cyprus, and another, Basil Richardson Stanley (b. 1913), was director of the Manx Museum and an archaeologist.

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*Times*, 8 Feb. 1956; A. Stanley, *A backroom boy* (1960); S. S. Swords, *Technical history of the beginnings of radar* (1986); A. E. Hidden and C. J. Latimer, *Science & technology: Belfast and its region* (1987); L. Brown, *A radar history of World War II* (1999)