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BOWEN, EDWARD GEORGE (1911-1991), developer of radar and an early radio astronomer

Name: Edward George Bowen
Date of birth: 1911
Date of death: 1991
Gender: Male
Occupation: developer of radar and an early radio astronomer
Area of activity: Science and Mathematics
Author: Mary Auronwy James

Edward (Eddie) Bowen was born 14 January 1911, the youngest of four children of George Bowen (steelworker in tinplate works) and Ellen Ann (née Owen) of Cockett, Swansea, Glamorganshire. He attended Sketty Primary School and gained scholarships to the Municipal Secondary School, Swansea and to the University College of Swansea, graduating BSc (Physics, 1st class honours, 1930) with MSc degree in 1931 for an X-ray investigation of the tin-antimony alloys. A Postgraduate Studentship enabled him to work under the direction of Prof. E. V. Appleton at King's College, London University, spending part of 1933-34 working with a cathode-ray direction finder at the National Physical Laboratory (NPL) Radio Research Station, Slough, for a PhD degree, London (1934), when he was noticed by R. A. Watson-Watt and recruited as one of a team of five to Orfordness to set up an experimental ground radar, following a successful demonstration in February 1935 of the reflection of radio waves by an aircraft.

By early 1936 aircraft were being detected at a range of 100 miles, causing work to be started on a chain of radar stations, and the local enlarged team moved to Bawdsey Manor. Bowen tackled the seemingly impossible task of installing radar in aircraft. The development of aircraft radar to detect and intercept aircraft and also to detect submarines had a major effect on winning the Battle of Britain and the Battle of the Atlantic, for which he was appointed OBE (1941) and received the United States Medal for Freedom (1947).

In August 1940 Bowen went to the United States of America and Canada as one of seven members of a mission led by Henry Tizard with information on radar equipment and an early sample of a cavity magnetron recently invented at Birmingham University to develop centimetre-wave radar. He spent two years visiting various laboratories urging the use of shorter wavelengths, and helped to initiate the evolution of microwave radar as a fighting weapon. As a result he collaborated with the Massachusetts Institute of Technology (MIT) to set up a Radiation Laboratory in 1943 and wrote the first draft specification for the system.

In 1943 he was invited to join the Radiophysics Laboratory of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia. He arrived at Sydney on 1 January 1944, and became Chief of the Division of Radiophysics in Sydney in May 1946.

At the end of the war attention turned to non-military matters of importance to Australia. One was radioastronomy which had grown from curiosity concerning the jamming of radar receivers by radiation from the sun. Australia obtained the most powerful radio telescope in the world as a result of his involvement in the design and his efforts to fund its construction. Rockefeller Foundation and Carnegie Corporation contributed large sums towards the cost as evidence of their recognition of his ability as a scientist. The erection of the 210 foot radio telescope at Parkes, New South Wales, proved timely for the United States space programme and played a vital role in the Apollo Moon Landing programme of the National Aeronautics and Space Administration (NASA), and through it the world's television audiences saw man's first steps on the moon.

Another post-war project was cloud seeding to induce rainfall. Following the initiation of cloud and rain physics in the USA he mounted a remarkable effort in 1947 to improve rainfall in the Snowy Mountains, and New England, Australia, and continued the project after retirement in 1971.

Edward Bowen had undertaken at least two other research activities: 1. the pulse method of acceleration of elementary particles; and 2. extensive work on air navigation resulting in the Distance Measuring Equipment (DME), ultimately adopted for all civil aircraft flying in Australia on internal routes. He perfected a means to bring aeroplanes back to earth at night, for which he received the Thurlow Award of the US National Academy of Engineering in 1950, the highest honour of the American Institute of Navigation. He also received a DSc degree of Sydney University (1957), and was elected Fellow of the Univiversiy College of Swansea, and Fellow of Kings College, London (1981).

He was appointed CBE in 1962 and elected a Fellow of the Royal Society in 1975. He was vice-president of the Australian Academy of Science, 1962-63; served as chairman of the Anglo-Australian Telescope Board, 1967-73; and was foreign member of the American Academy of Arts and Sciences. He published *Radar days* (1987), and contributed many articles to scientific books and journals in Britain, Australia and USA.

He remained a devoted Welshman, keeping in touch and visiting Swansea. During the fierce battle for an independent radio service for Wales when BBC technicians in London said it was impossible in Wales, he provided facts that misproved their claims and Wales had its radio system.

He married Enid Vesta Williams of Neath in 1938 and they had three sons. He died 12 August 1991 at Ashley House Nursing Home, Chatswood, Sydney, Australia and his funeral was held in Northern Suburbs crematorium 16 August.

Author

Dr Mary Auronwy James

Sources

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The Biographical Index of W. W. Price, AberdÃ¢r

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Further Reading

Swansea Council: Edward George "Taffy" Bowen

Wikipedia Article: Edward George Bowen

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