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William Joseph O'Brien

WILLIAM JOSEPH O'BRIEN, inventor of the Decca Navigator system and a Fellow and Gold Medallist of this Institute, died on 11 April aged 76. On 19 April, as he had wished, he was buried at sea. Born in Chicago on 15 August 1907, he became interested in radio as a boy and at 18 was a chief engineer of a radio firm while attending Chicago University. In 1929 the firm was taken over by the Brunswick Co., where O'Brien was to meet his future collaborator Harvey Schwarz. In the years following he worked for various companies, including RCA, on projects as diverse as spot welding and sound-film recording, as well as on radio receivers, and he designed the electronics for the Hammond organ.

In 1936, while in hospital in New York following a severe tuberculosis attack, he was asked to consider methods of determining directly the ground-speed of an aircraft. It occurred to him that this might be done by measuring and integrating the aircraft's accelerations but he rejected that idea as beyond the state of the mechanical art. Again prophetically, he considered using the Doppler shift on a radio signal received in the aircraft as a measure of the speed. Finally he conceived the idea of fixing the position of the aircraft continuously by hyperbolic position lines, obtained by comparing the phase of synchronized c.w. signals from spaced radio transmitters at known positions. This he developed into a proposal for an aid to marine as well as aircraft navigation.

Believing that such a system might help the Allies, O'Brien wrote in September 1939 to Harvey Schwarz, then Technical Director of Decca Radio and Television Ltd, who

brought it to the attention of the Admiralty. After making initial tests in California, O'Brien came to wartime Britain (although not fully recovered from his illness) to work with Decca on developing the system further in collaboration with the (then) Admiralty Signals Establishment. It was first used on 'D-Day' for the navigation of minesweepers and landing craft and was to be deployed in peacetime on a world-wide scale.

O'Brien was Technical Director of the Decca Navigator Co. Ltd from the Company's inception in 1945 to 1980, guiding the progressive development of the Navigator system throughout that time. In 1954 he was responsible for a comprehensive technique for resolving cycle ambiguity in hyperbolic systems; as well as enhancing the performance of the Navigator, the technique included a relationship between transmitted frequencies that was embodied some years later in the Omega VLF navigation system. He led Decca's work on Loran-C, making original contributions to receiver and transmitter design.

In 1946 O'Brien received the Thomas Gray Memorial Award of the Royal Society of Arts. In the following year he was awarded the Heinrich Hertz Premium of the (then) Brit. IRE for a paper which disclosed the design of the wartime Decca receiver and reviewed in characteristically original fashion the possible methods of generating a line of position from continuous-wave radio transmissions. With Harvey Schwarz he received in 1956 the Gold Medal of this Institute for their work in originating and developing the Decca Navigator, and in 1969 the Pioneer Award of the IEEE Aerospace and Electronic Systems Group. The US Institute of Navigation conferred on him in 1966 the Col. Thomas L. Thurlow Navigation Award, the citation stating that he was 'widely accepted as the world's leading authority on the use of phase comparison techniques for navigation'. His exceptional ability and vision as an engineer – and not least his mastery of the practical details that make the difference between a concept and a viable system – earned him the respect of all who worked with him, yet he remained modest to the point of self-effacement. Malice was nowhere in his nature and Bill O'Brien will be warmly remembered by everyone who knew him.

C. P.