

would never guess so from this kind of interview. Maddox is at his best as a commentator and all that this programme needs to become really worthwhile is to use him in that role

while unloading some of the interview-ing donkey work on to someone more adept at the task. If the powers that be at the BBC could then be persuaded to ensure that it did not clash with the

only regular science programme on television ("Horizon") those of us who have been lobbying for more science programmes would really have something to shout about.

obituary

Sir Robert Waston-Watt

SIR Robert Watson-Watt, pioneer of radar, died on December 5, 1973. He was 81 years old and had been in poor health for some time.

He obtained his early education in Brechin, his birthplace, and proceeded with a bursary to University of St Andrews where, at University College, Dundee, he studied electrical engineering. After graduation he was appointed Assistant to the Professor of Natural Philosophy at Dundee, a post which he occupied until 1915 when he became an assistant at the Branch Meteorological Office at the Royal Aircraft Factory, Farnborough.

It was during his service at Farnborough that he took up the study of thunderstorms by means of the radio waves, or atmospherics, emitted by them. After the end of hostilities, work on atmospherics and their relation to meteorological phenomena became the main investigation of the station of which he had been made Meteorologist-in-Charge in 1917. He continued in charge of the station after its transfer to the Department of Scientific and Industrial Research in 1921 and its removal to Slough in 1924. In 1927 he became Superintendent of the Radio Research Station set up to absorb the atmospherics work and other radio research of the Department of Scientific and Industrial Research in progress at Slough.

In his early studies of atmospherics one of the main problems was the location of their sources. Although some success on streams of atmospherics was obtained using Bellini-Tosi direction finders, it was Watson-Watt's invention of the instantaneous visual cathode-ray direction finder (CRDF) which enabled the source of a single atmospheric to be found and greatly facilitated the whole investigation.

During the Second World War Watson-Watt's CRDF apparatus was operated by the Meteorological Office as a means of observing the positions of thunderstorms around the British Isles in areas from which no synoptic reports

were then received. Similar equipment is still regularly used by the Meteorological Office to help in the production of weather forecasts.

The ability of the CRDF to work on short duration signals found an important application during the Battle of the Atlantic during which ship- and shore-based apparatus was used to locate U-boats from bearings obtained on their brief radio transmissions.

Watson-Watt will, however, be best remembered for his pioneering work in radar. This began early in 1935 when he was approached informally by the Air Ministry for an independent appreciation of the possibility of generating a radio 'death-ray' for use against enemy aircraft. While rejecting the feasibility of such a ray, he reported that the detection and location of aircraft at useful ranges was possible and subsequently submitted a memorandum giving his proposals on how this could be done to Sir Henry Tizard's Committee for the Scientific Survey of Air Defence. After a successful demonstration of the underlying principles he was requested to begin development work along the lines indicated in the memorandum. This he did at Orfordness where the work prospered rapidly and was soon moved to Bawdsey, near Felixstowe.

Appointed Superintendent of Bawdsey Research Station in August 1936 he and his team devoted themselves energetically to those forms of radar, both ground-based and airborne, which were to play such a vital part in the Second World War.

After the successful initiation of radar, Watson-Watt, while continuing to make important technical contributions, found his main activity in cogent advocacy of radar in Whitehall and in stimulating the bureaucratic machine into unwonted activity to provide the material requirements of the research worker and of the coastal stations. These activities led, in 1938, to his appointment as Director of Communications Development, Air Ministry, but soon after the outbreak of war, his talents found more congenial use as

Scientific Advisor on Telecommunications at both the Air Ministry and Ministry of Aircraft Production, and as Vice Chairman of the Radio Board of the War Cabinet.

After the war he retired from Government service to conduct a consultancy business, mainly in North America, which he set up with wartime colleagues.

Amongst the many honours he received were C. B. and Knight Bachelor; he was a Fellow and Hughes Medallist of the Royal Society and held honorary doctorates of St Andrews, Toronto and Laval Universities. He was a Past President of the Royal Meteorological Society and of the Institute of Navigation.

A man of great gifts and wide interests he was a genial, courteous and well-informed companion.

Sir Ronald Holroyd

SIR Ronald Holroyd, FRS, who died on September 29, was an outstanding industrial scientist. His genius lay not in success as an individual worker, but in a capacity to organise large-scale research projects that were the foundation of important new processes. His field was coal and petroleum chemistry, and he was responsible for developments which were of major national importance during and immediately after the second world war.

Holroyd was born in Yorkshire on April 26, 1904. After going to Holgate Grammar School, Barnsley, he read chemistry at Sheffield University (1921-25). After a short period with the Board of Trade, he joined ICI in 1928. Originally with Brunner, Mond at Winnington, he transferred to Billingham in 1932. In 1947 he was appointed research director of Billingham Division, and five years later joined the ICI Main Board in London, quickly becoming research director (1935). In 1957 he was appointed a Deputy Chairman, and held this position until he retired in 1967.

At Billingham, Holroyd was partic-