Sir Robert A. Watson-Watt KCB, FRS, etc. (1892-1973) was the right person in the right place at the right time to develop the first working radar system, not single-handedly but as part of Britain’s national defence strategy in 1935. Radar is a development of radio technology. Radar determines both the direction and distance of an object on its display, and hence can show its speed. The circumstances that took Watt (he didn’t hyphenate his name until the 1940s) to the right place at the right time are a story spanning 40 years.

Robert A. W. Watt was born at 5, Union Street, Brechin, where he grew up in a busy house that was occupied not only by his immediate family but by relatives too. His father was a local joiner and house factor, clearly a practical man who was good with his hands. Robert attended the local High School and then went to his nearest University, which was University College, Dundee, then affiliated to St Andrews University but one of only a few Universities in the country to offer an engineering degree. He graduated in engineering in 1912 and with the onset of the First World War he volunteered for wartime service, as a great many did in 1914/1915. He began as a meteorologist in 1915 and, unlikely though it may seem, it was meteorology that steered him towards radio direction finding. Directional aerials could give ground-staff warning of the location of thunderstorms, for these emitted their own radio waves. Watt proposed the use of the newly invented cathode ray oscilloscopes for displaying these radio signals so that they could be seen easily and warnings given to airmen. Cathode ray direction finders could indicate other radio sources too.

In the 1920s, Watt became superintendent of the Radio Research Station at Slough and in 1933 superintendent of an expanded department under the umbrella of the National Physical Laboratory (NPL). The history of invention is littered with examples of good ideas invented in attics, garages and garden sheds that have come to nought because the inventors have not had the resources to develop their ideas into working devices. Robert Watson-Watt is an exemplar of how to make good. He had the experience, the technical background, the imagination, the position, contacts and support that when the idea was floated across his desk that short-wave communications signals fluttered when aircraft past nearby he could see how this apparently annoying effect could possibly be converted into a means of detecting the presence of aircraft. From this hint Watt was able to make a case and requisition resources to develop what would become in barely 3 years a radar defence system for the South of England, Chain Home, using radio waves in the region of 10 m wavelength. Not just one radar station but a chain of stations was working by 1938. Further developments using VHF (1.5 m wavelength) included a system to detect ships, in-flight radar to detect enemy aircraft and radar-controlled
anti-aircraft guns. Historians have argued whether Watson-Watt ‘invented’ radar, for others had had conceptually similar ideas before him, including James Logie Baird. What is clear, though, is that it was Watson-Watt who made it happen when it did. It’s been well documented that Chain Home worked, detecting German aircraft day and night in all weathers from the beginning of the war. Had Watson-Watt not been responsible for Chain Home and indirectly the systems that it spawned, Britain may well have been bombed into submission in the Second World War. Watson-Watt became Scientific Advisor on telecommunications to the Air Ministry in 1940 and in succeeding years had honours showered on him. From 1949-1951 he was President of the Royal Meteorological Society before moving to Canada, the homeland of his second wife, for an extended period. Much more detail of his life up to this time can be found in his autobiography.¹

Radar is not particularly seen as a technology of war these days. Radar has been developed into a remote sensing imaging technology of high resolution that can cut through clouds. The surface of Venus has been mapped by radar and the most accurate value of the size of the solar system comes from radar measurements. Nearer home, every boat more than about 10 m long has on-board radar as part of its safety and navigational inventory. All larger civilian planes have radar and every airport uses radar. We all owe radar to Watson-Watt, who showed in the 1930s how technology could be used to turn a good idea into reality. The house where Watt grew up in Union Street, Brechin, still stands, now at the end of a terrace, with a small plaque commemorating him on the front wall. The Sir Robert Watson-Watt Society of Brechin is dedicated to promoting his name and erecting a more fitting memorial.

John S. Reid