



LINE **of** DEFENCE

Just as it had in the Battle of Britain, radar proved crucial in the successful defence of Malta **WORDS:** ROBIN J. BROOKS

BELOW:
The No 501 Chain
Overseas Low
(sometimes referred
to as No 501 AMES)
station at Fort
Tas-Silġ.

Near the Maltese village of Maghtab stands a concrete sentinel from a bygone age. Known as a 'sound mirror', it was constructed during 1934-35, and is similar to structures that can also still be seen at Greatstone on the Kent coast. They were all intended

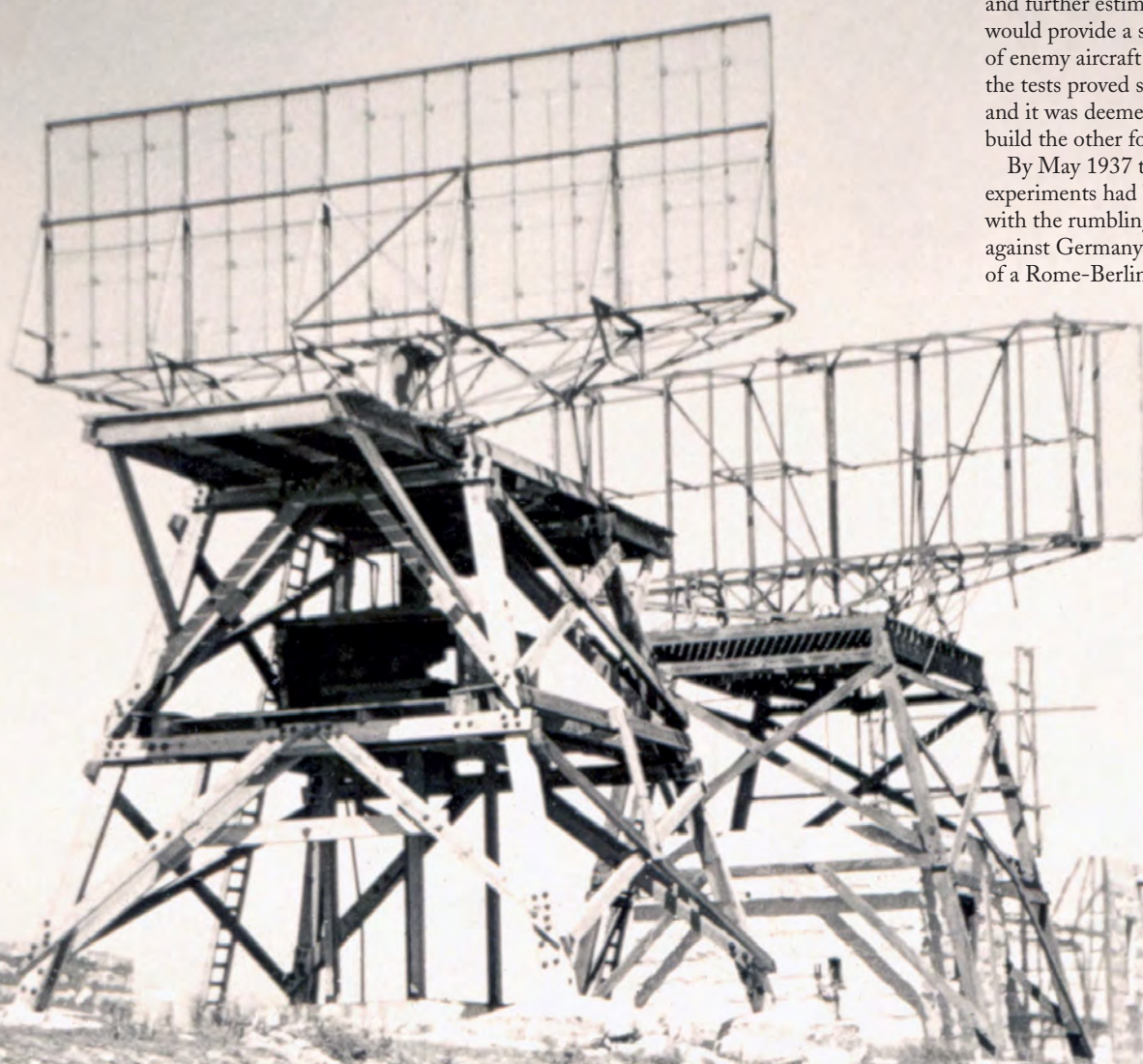
to give early warning of approaching enemy aircraft.

Known colloquially as the 'listening ears', the mirror on Malta was completed in the summer of 1935. It had been decided that five such mirrors would be built on the island, the first at Maghtab being designed

to help protect the Grand Harbour. When completed it faced out to sea at a bearing of 20° towards Sicily.

With the electrical equipment installed, testing began in the first weeks of September 1935 using a Supermarine Scapa flying boat as the 'enemy'. It was found that the range of the mirror was 21 to 37 miles, and further estimates showed that it would provide a six-minute warning of enemy aircraft approaching. Not all the tests proved successful, however, and it was deemed impractical to build the other four mirrors.

By May 1937 the Maghtab mirror experiments had been abandoned, but with the rumblings of another war against Germany and the possibility of a Rome-Berlin axis it was obvious



that Malta would need an early warning system to ensure the security of the region for Britain. It had long been said that whoever had control of Malta controlled the Mediterranean.

Only after a visit to Malta in October 1937 by A. P. Rowe, the Air Ministry's co-ordinating officer for air defence, were plans formulated for such a system. Reporting back to the Chief of the Air Staff, ACM Sir Cyril Newall, Rowe finished his report by November. In it he stated that there was a considerable security risk to Malta and ultimately Britain. The island therefore had to be held.



With Malta being given the highest priority, it fell to a small party of signals tradesmen to begin the task of setting up an RDF (radio direction-finding) station in January 1939. They constructed a transportable system on the highest point of Malta, Dingli Cliffs. Known as AMES (Air Ministry Experimental System) 242, it was the first transportable mobile RDF system outside the UK. The transmitter was a Type MB1 built by Metropolitan Vickers, and the receiver a Cossor Type RM2.

AMES 242 was intended to be a stopgap pending the arrival of more permanent Chain Overseas stations, but in the event it was capable of detecting aircraft at a range of 50 miles and a height of 5,000ft. A second mobile station known as AMES 241 arrived in July 1940, again sited on Dingli Cliffs. Malta now had continuous RDF coverage, something no other part of Middle East Command could boast.

One of the first airmen to arrive on the island with the signals flight was Flt Lt R. Tomlinson. "Few knew that when Italy came into the war in 1940,



ABOVE: Filter room personnel on top of the Lascaris War Rooms. The women were British and Maltese civilian plotters while the men were RAF.

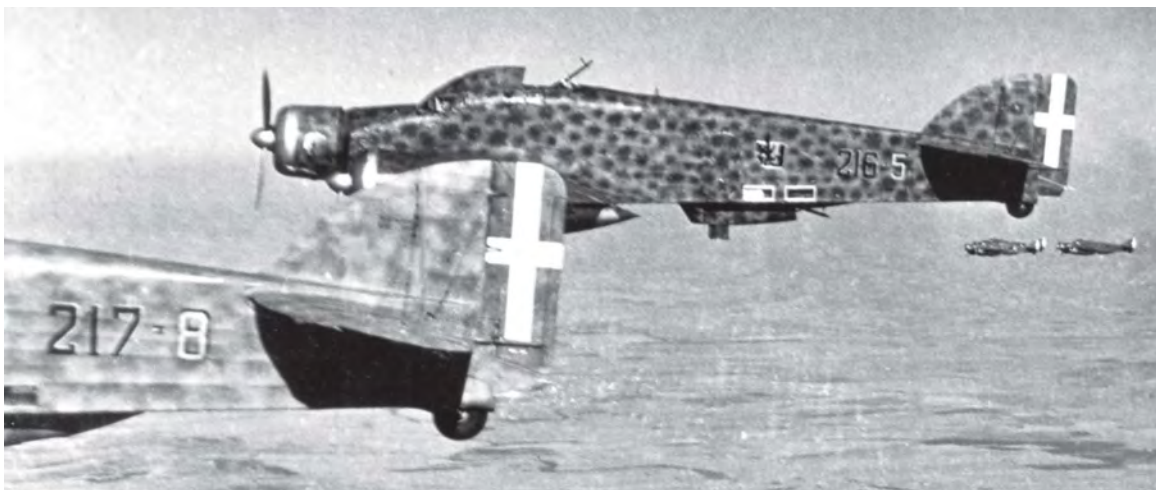
the island already possessed the first transportable RDF", he recalled. "It was this early warning system which helped the gallant pilots to meet daily the numerical odds which the Regia Aeronautica stacked against them. Setting the equipment up and making it work would not have been accomplished without the expertise of a one-time BBC engineer, H. T. Roberts. When he was required in another theatre, nine of us were left to keep the station at Dingli running and man it under what became very active operational conditions. We received co-operation and kindness from the command signals officer, Sqd Ldr A. D. Messenger.

"One cannot, however, forgive the Air Staff's lack of understanding of what it was that we were trying to achieve. Thus, when we had demonstrated what RDF could do it became plain that some form of fighter control would have to be established. Consequently all wing commanders and above were given the job of 'controllers'. The idea of anyone below the rank of flight sergeant being trusted to put tiddlywinks on the plotting table showing aircraft tracks or plots sent by our solitary RDF station was unacceptable."

AMES 241 and 242 became known as Chain Overseas High stations capable of plotting high-flying aircraft. Enemy formations at approximately 20,000ft were normally detected at a range of 65 to 75 miles. However, fading occurred between 30 and 50 miles. To alleviate the problem a Chain Overseas Low (COL) station was operational by December 1940. Known as No 501 COL, it was located at Fort Tas-Sil and, once in service, was joined by No 502 COL at Fort Dingli.



By February 1941, with sporadic air attacks by the Regia Aeronautica, the radar coverage of Malta was found to be adequate. That was until the Luftwaffe arrived in Sicily. A visit by Wg Cdr Tester, the chief radio officer from headquarters Middle East Command, coincided with the realisation that with the increased air activity and raids on Malta some enemy aircraft were getting through the radar screen undetected. He realised that not only was there a need to conduct a better method of radar sweeping but also to initiate an air defence system based on the UK model. This had worked well ➤



LEFT: The main bomber used by the Regia Aeronautica over Malta during 1940 was the Savoia-Marchetti SM79, like these aircraft from the 216^a Squadriglia.

VIA GIOVANNI MASSIMILLO



ABOVE:
One of the operators of the early mobile radar systems on Malta.

during the Battle of Britain when the purpose was to identify enemy aircraft early via the Chain Home radar stations, allowing RAF fighter aircraft to get airborne and be placed in the most advantageous position to attack them.

Tester's reports sought to make the Air Ministry aware of the difficulties on Malta, such as the fact that the main policy at that time was never to permit the fighters to leave the island's airspace. This may have been for several reasons, not least that an acute shortage of pilots and aircraft ensured that if a pilot were to bail out he would land on the island and that parts of his aircraft would at least be recoverable. Consequently, although the radar stations could give early warning of an enemy aircraft approaching, once the raiders had crossed the coastline it was not possible to vector the defending fighters to a position from which to intercept.

The Air Ministry was asked by the Air Officer Commanding Malta in March 1941 to send trained filter officers in order to set up a similar fighter control system to that in the

UK. A month's delay saw Malta's fighter defences suffer at the hands of Luftwaffe Messerschmitt Bf 109s. The lack of experienced pilots and a plea for better fighters such as Spitfires again went to the Air Ministry, backed up this time by a letter to the Chief of the Air Staff from the governor of Malta, Lt Gen Sir William Dobbie.



After further correspondence, the Air Ministry undertook to send officers and men to organise a sector operations room, to advise on the control and tactics of the fighters, and to provide trained sector controllers. Included in the initial party was Corporal Douglas Geer.

"I had joined the RAFVR in October 1938 for the sole purpose of training for and manning the fighter control room at Biggin Hill", said Geer. "I was called up 10 days before the war started, when Biggin Hill was fully manned and ready to go. In January 1940 two persons were taken from each of the control rooms in the group and trained as radar operators. I was one of them as radar

was developing fast and they needed trained operators to go to Malta.

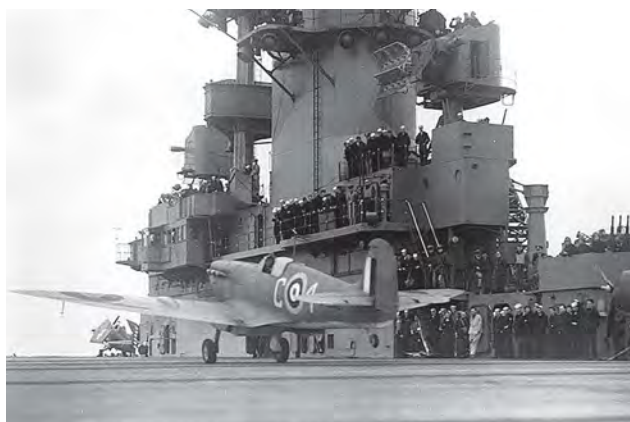
"When we docked in Grand Harbour it was the heat that first hit us. Although I arrived in Malta as a radar operator, I was soon told that I would be transferred to the filter section. From the harbour we were transported to Hal Far, a Fleet Air Arm base, where I stayed until 21 January 1941. Shortly after, I was posted to RAF HQ Valletta and worked in the first filter room that had just been opened at 3 Scotts Street. For security reasons it was known as Room X and was situated in a cellar under a block of flats. It was very small and, you could say, primitive.

"The original 'nerve centre', often called the Navy and RAF control room, was in St John's Cavalier where we used to send the filtered plots and information from Room X. The section consisted of male RAF personnel only, but on 3 May we were moved to the new Filter and Fighter Operations Room that had recently opened at Lascaris, deep down in the bastions under Barrakka Gardens in Valletta. I was in the filter room to start with but was soon transferred to the new fighter control room as a floor supervisor.

"In the first instance I helped to train the newly employed civilian ladies in their plotting duties in fighter control. Once they were trained I had to 'listen in' on the line between the filter room and our fighter control to check that the plots were being placed on the correct grid reference on the large table maps. I also had to supervise the girls in the direction-finder room, which received bearings on our fighter aircraft picked up by the DF stations. The only officers that I can remember in Lascaris were Gp Capt Woodhall [who had been the station commander at Duxford during the

BELOW RIGHT:
A group of No 501 COL personnel.

BELOW:
In April 1942, the arrival of the first Spitfires to join the Maltese campaign further helped turn the tide. This MkVc is launching from the USS Wasp as part of the Operation 'Calendar' deliveries.



Battle of Britain], who was the chief fighter controller, Sqn Ldr Cohn [filter officer], Flt Lt Hall, Sqn Ldr W. Farnes [both fighter controllers], Sqn Ldr Williams [CO HQ RAF Valletta] and Sqn Ldr Mallia [Maltese adjutant].

“On 28 September 1942 I was sent on exchange to an Observer Corps post at Tas-Silg near Delamara Point, Marsaxlokk. We had an instrument sandbagged on top of a small tower building, and we had to line up the aircraft through an eyepiece on the instrument. This would give us a grid reference, which was passed through to fighter control. We also had to plot many ‘visuals’ of crashed [aircraft] and pilots baling out.”

With an increase in enemy activity, a fourth Chain Overseas Low station was located on the island of Gozo, north-west of Malta. Once operational the unit was recalled to Malta on 29 April 1942, it having been decided that Gozo could not be adequately defended.

Sgt Peter Hewlett was another RAF technician sent to work in the filter room at Lascaris. “One of the heaviest air attacks on the island took place on 7 April 1942, incidentally the day on which the 2,000th air alert was sounded. Valletta suffered a very heavy attack with considerable damage including the destruction of the opera house [and] the Castille... I was on duty at the time in the filter



LEFT: The original radar towers at Dingli Cliffs, now used by Malta International Airport air traffic control.

room, which was situated about 20ft underground in a bastion beside Grand Harbour. What a noise the raid made, with the worst thing being that dust and the force of the explosions would blow through the filter room.

“Despite this the progress of the raid was plotted by the girls working the plotting table. Radar stations around the island would report positions of aircraft massing over Sicily, and then counters representing the numbers of aircraft and height of the formations would move down towards Malta. My job for most of the time was to ‘tell’ the plots and relative information through to fighter control.”

With a fighter control system in place, the intention of the Air Ministry was to build up Malta’s RDF stations to give complete coverage around the coastline, and to introduce a system of ground-controlled interception (GCI) for the fighters.

As the way of intercepting enemy aircraft accomplished by combining radar information from the chain radar stations with the HF/DF information of fighter positions was proving too slow, a GCI station was set up at Gudja. The site proved unsuitable and it was moved closer to St Paul’s Bay. With GCI, the radar display was on a plan position indicator (PPI), a circular screen superimposed with the local grid reference squares. A line of light

— the trace — ran from the centre (representing the transmitting station) to the end of the screen, rotating in conjunction with the aerial, which revolved continuously through 360°. As the trace hit an aircraft, a glowing spot was left behind on the PPI when the beam swept by. A separate aerial was able to produce the height of the aircraft.

With the arrival of Spitfires to replace the ageing Hurricanes and a comprehensive radar system in place, Malta’s battle for survival took on a new dimension. From May 1942 the enemy showed signs of flagging. By this time Malta had 14 RDF stations comprising Chain Overseas High and Chain Overseas Low together with two GCI stations. Upon the invasion of Sicily, which began at 03.00hrs on 10 July 1943, and the surrender of the Italians on 8 September, Malta went on the offensive.

The modern radar ‘golf ball’ on Dingli Cliffs is a worthy successor to the concrete sound mirror and the wartime AMES stations. Walking across this wild and bleak part of the Maltese coast, there are still the original radar towers left. Used by the country’s air traffic control system, they recall the struggles of 1941-42. The sound mirror is a listed construction and together with the wooden towers will stand for eternity, permanent reminders of the first methods of listening for echoes from the sky.



BELOW: The sound mirror at Magtab, still showing signs of its wartime camouflage.

ROBERT FEELEY

