



“THEY ALSO SERVE WHO
STAND AND WAIT ...”

BLOODHOUND

BRISTOL'S RAMJET-POWERED MONOPLANE MISSILE

Continuing our series on the history and development of Britain's aerial weapons, using technical illustrations by **IAN BOTT**, Cold War specialist **CHRIS GIBSON** charts the genesis and development of the remarkable Bristol Bloodhound surface-to-air missile, essentially a supersonic ramjet-powered aircraft armed with a lethal expanding ring of steel

SERRIED RANKS OF Bloodhound surface-to-air missiles (SAMs) spiking the skies of eastern England, usually with a dog-handler and his charge, is for many the defining image of Britain's Cold War air defences. These staunch sentinels may have just stood there in rain or shine but they were the business end of a highly sophisticated air-defence system that had taken decades to develop.

GUIDED WEAPONS DEVELOPMENT

Wartime Britain had embarked on the development of a few surface-to-air guided weapons (SAGWs), three of which — Fairey's Stooze and Asiatic Petroleum's Liquid Oxygen & Petrol Guided Anti-Aircraft Projectile (LOPGAP) for the Royal Navy, and Cossor's Brakemine for the Army — had shown promise. By late 1944 the bomber threat to the UK had subsided, reducing the need for Brakemine, but the Japanese *kamikaze* attacks in the Pacific ensured Stooze and LOPGAP continued in development, the latter eventually evolving into the Armstrong Whitworth Sea Slug.

When the need for a defence system for the nuclear deterrent was raised, Sea Slug was identified as a basis for a land-based SAGW. A longer-range Sea Slug that used the same liquid-

fuelled rocket and beam-riding guidance system was under consideration when in January 1949 the Heathen Committee was established to examine SAGWs for the air defence of the UK. Its initial thinking was for a longer-ranged liquid-fuelled missile that the Ministry of Supply (MoS) called *Red Heathen*. Unlike Sea Slug, *Red Heathen* would use semi-active radar homing, but the limited range available from rocket propulsion, 15 nautical miles (28km), was deemed insufficient.

Longer range meant fewer missiles were required and would therefore be cheaper, but that posed a problem, as rocket motors were still at an early stage of development and liquid engines, which could feasibly provide the range, were awkward to use in service. Turbojets were too heavy, nor could they produce the acceleration or speed increment of one and a half times that of the target necessary for interception.

There was one propulsion system that could meet these requirements — the athodyd — now widely known by its more descriptive American name, ramjet. These were simple, lightweight and powerful and used standard aviation fuels that could be stored in the missile. The National Gas Turbine Establishment (NGTE) at Pyestock, the Royal Aircraft Establishment (RAE) and engine manufacturer D. Napier & Son had been

Bloodhound Mk 1 surface-to-air missiles (SAMs) at readiness on their launchers at RAF Woolfox Lodge in Rutland circa 1960–61. Operated at Woolfox Lodge from February 1960, the Mk 1s of No 62 Sqn were part of Fighter Command's Air Defence Missile Squadrons, which provided air-defence capability for the UK's V-bomber and Thor ballistic missile bases.

TAH ARCHIVE

