



SWING-WING POCKET ROCKETS

FOLLAND'S GNAT DEVELOPMENT CONCEPTS

Known chiefly for its diminutive Midge and Gnat jet fighter and trainer designs, Folland Aircraft Ltd, under the leadership of eccentric genius Teddy Petter, expanded the “pocket rocket” concept with an ambitious programme of designs based on the Gnat, including some little-known but highly intriguing “swing-wing” projects, as **JAMES JACKSON** relates

IN THE 1950s Folland Aircraft Ltd became famous for its Fo.141 Gnat lightweight jet fighter. Much of the company's design and engineering effort was focused on the Gnat, from the development of the initial concept to potential further evolution into the supersonic category and an array of variable-geometry-winged successors. We take a look at these varied and hitherto-little-known company projects.

PETTER & FOLLAND

In February 1950 William Edward Willoughby “Teddy” Petter resigned from English Electric, for which he had developed the Canberra and laid the foundations of the P.1 supersonic research aircraft, which would culminate in the RAF's first Mach 2-capable fighter — the Lightning. Petter was not idle for long. In September he was appointed by Henry Folland as his eponymous company's Chief Engineer and Deputy Managing Director, succeeding Folland as Managing Director in July 1951. Building a design team around himself, including several ex-English Electric colleagues, Petter and the company succeeded in securing contracts from the Ministry of Supply (MoS) to develop the *Red Dean* active-radar-homing air-to-air missile (AAM) and the RTV-2 liquid-fuelled rocket testbed.

Since he was one of Britain's most capable military aircraft designers, it was not surprising that a delegation from the Air Staff visited Petter

at Hamble on July 11, 1951, to discuss Operational Requirement (OR) 303 for a lightweight interceptor. OR.303 was drawn up to counter the threat from Soviet Tupolev Tu-4 *Bull* piston-engined strategic bombers (essentially a reverse-engineered Boeing B-29). The aircraft needed to reach an intercept altitude of 25,000ft–30,000ft (7,600m–9,000m) and it was planned to use a “Power Pack” turbojet with a service life of only 50 flying hours. Petter's team began investigating a series of concepts. The MoS awarded a development contract in October 1951 and a month later the *Red Dean* project was transferred to Vickers-Armstrongs to free up capacity.

Sourcing a suitable “Power Pack” proved difficult. Having begun with a pair of 1,500lb-thrust (6.7kN) Rolls-Royce RB.93 Soar turbojets (designed for the *Red Rapier* unmanned bomb/ expendable bomber), when Rolls-Royce abandoned this engine a single 3,750lb-thrust (16.7kN) Bristol BE.22 Saturn was substituted. But the demise of *Red Rapier* killed the Saturn too, which meant that the Fo.139 Midge prototype received a 1,640lb-thrust (7.3kN) Bristol Viper 101 turbojet instead. Petter visited Stanley Hooker at Bristol in late 1952 and requested a new 5,000lb-thrust (22kN) engine. This engine materialised as the BE.26 Orpheus.

The initial designs covered a variety of layouts. The most outlandish had a pair of RB.93s in wingtip pods with the pilot laying prone in the

OPPOSITE PAGE The most advanced of Folland's post-Gnat developments was the Fo.147, one iteration of which incorporated variable-geometry wings and a rotating all-moving foreplane instead of a tailplane. This superb artwork by LUCA LANDINO shows a pair of Fo.147s of the RAF's Yellowjacks aerobatic team circa 1964. © 2026

