



TUESDAY THE 13th

THE TRAGIC DEMISE OF THE CIERVA AIR HORSE

70 years ago the inelegant but innovative Cierva Air Horse — still the world's only tri-rotor helicopter — suffered a catastrophic mechanical failure and plunged into farmland in Hampshire, killing two of the UK's most experienced rotary-wing pilots. With the help of an official RAE report, **NICK STROUD** investigates what went wrong that day in June 1950

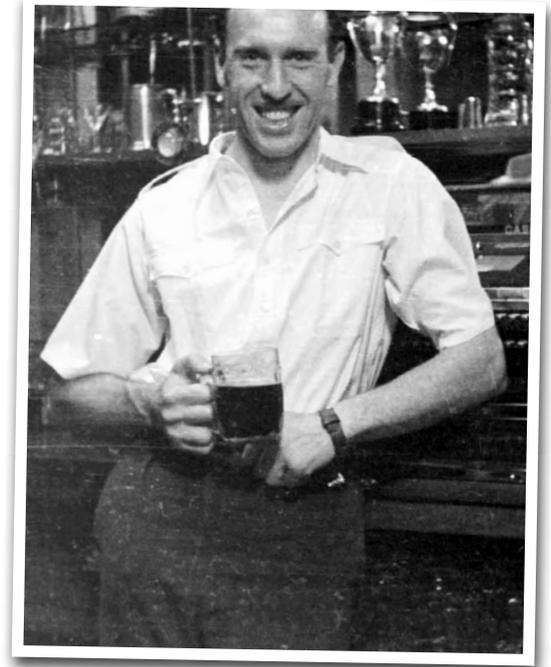
TUESDAY, JUNE 13, 1950, dawned fine and warm at Eastleigh aerodrome near Southampton on the English South Coast, the nearby water meadows swollen with rainfall from recent summer showers. With a high-pressure area lingering over the Solent, the weather was perfect for another test flight of the ungainly yet innovative Cierva W.11 Air Horse, then the largest, heaviest helicopter in the world, described by British weekly magazine *Flight* as “an uncouth picture of almost Wellsian fantasy”.

By the summer of 1950 the single Rolls-Royce Merlin-engined three-rotor-headed behemoth was 18 months on from its maiden flight and had completed more than 69hr of test flying, as well as putting in memorable appearances at the 1948 and 1949 SBAC shows at Farnborough. With the inelegant but technologically ambitious transport helicopter having carried a total of 17 passengers aloft the previous day, and scheduled to take another 24 up on the next, June 13 was set aside for a crew familiarisation flight, chiefly for the benefit of Sqn Ldr Frederick J. “Jeep” Cable, one of the UK's most experienced rotary-wing pilots. Cable had arrived at Eastleigh to perform the initial RAF evaluation of the prototype W.11, serial VZ724, before its delivery to Boscombe Down for extensive trials with the Airborne Forces Experimental Establishment (to become part of the Aeroplane & Armament Experimental Establishment that September). He was to be accompanied on the flight by his mentor, Cierva's chief test pilot H.A. (Alan) Marsh, who had taught him to fly, and Cierva observer/test engineer H.J. (Joseph) Unsworth.

THE FATEFUL FLIGHT

The prototype was in the same configuration in which it had undergone most of its testing, the only notable technical point being that the mechanism controlling the cyclic pitch of the two rear rotors had been permanently locked. (For a brief introduction to the concept of rotary-wing flight and its terminology, see panel on page 83.) With the three aircrew aboard, Cable, in command of the machine, lifted the Air Horse from the airfield to undertake a wide circuit at an altitude of 500ft (150m) for a slow, gentle canter around the paddock before attempting anything more strenuous.

Shortly afterwards, to onlookers' horror, with no visible cues that anything was amiss on the massive machine, the air was rent by a series of loud cracks, subsequent witness statements



ABOVE Frederick “Jeep” Cable was taught to fly by Alan Marsh at the age of 16 and obtained his pilot's licence — for rotary-wing aircraft only — at 17. He subsequently joined Cierva and, in 1939, G. & J. Weir Ltd. After wartime service as an RAF rotary-wing-research pilot, he joined the MoS as a civilian test pilot.

saying that “pieces of rotor blade broke away” and revealing that “. . . after the detachment of the blade pieces, the aircraft was seen first to nose up and then to enter a steep dive which continued until the aircraft struck the ground”.

An official Structures Accident Note (No 228) prepared by the Royal Aircraft Establishment (RAE) at Farnborough in the immediate wake of the accident confirmed that “the aircraft had fallen into a steep nose-down attitude and was probably banked to starboard at impact”. It continued: “The aircraft disintegrated on striking the ground and the two main booms supporting the rear rotors detached and were thrown forward. The wreckage, particularly that of the fuselage, was damaged extensively by fire”.

The three-man crew never had a chance, and Marsh, Cable and Unsworth were all killed when the helicopter impacted farmland at West End, to the south-east of the airfield. The loss of the extensive accrued experience of the crew — Marsh and Cable in particular — represented a devastating blow to the British rotary-wing community. So what had happened?

OPPOSITE PAGE Rotary-wing Cerberus — the Air Horse remains the only helicopter to fly with three rotor-heads. The prototype, VZ724, is seen here during one of the public displays it made after its first free flight on December 8, 1948. Note the open door to aid cooling of the single horizontally-mounted Merlin engine. PHILIP JARRETT COLLECTION