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# Contrails

Newsletter of the  
Christchurch Aviation Society  
CAvSoc

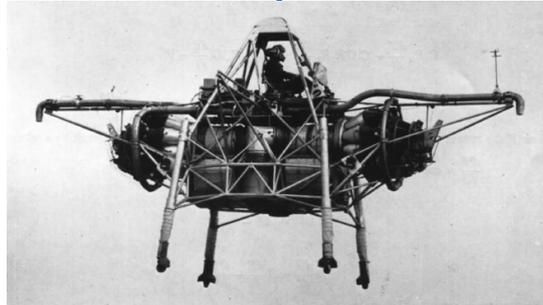
## The Magic that was the Harrier

Chris opened by describing his career which had encompassed three tours on Harriers, including 1 Sqn, and as a Qualified Flying Instructor and then described the evolution and characteristics of this unique aircraft. The concept of vertical flight, originally suggested by AA Griffith, resulted in the test 'aircraft'

known as the Rolls-Royce Thrust Measuring Rig (TMR) and nicknamed the flying bedstead because it had no wings. Its purpose was to explore the practicality, characteristics, and stability requirements. All of its vertical lift was generated by deflecting the thrust of its two back to back Nene jet engines directly downwards. Part of the jet thrust was diverted to four outrigger arms through which air was released for control in roll, pitch and yaw when in flight.

Research aircraft followed that – the Shorts SC1 with a concept of four lift engines and one forward thrust engine using the Rolls-Royce RB108 with a first vertical flight on 26 May 1958 and the Hawker P1127 using the vectored thrust Rolls-Royce Pegasus engine with first vertical flight on 19 November 1960. John Fozard was the main designer and test pilots were Bill Bedford and John Farley. Other attempts at jet VTOL included the Dassault Balzac, the Dornier Do31 and the Yak38 – the latter did make into service with the Soviet Navy.

The P1127 was developed into the Kestrel for evaluation by a Tri-partite Evaluation Squadron, made up of military pilots from the United Kingdom, the United States, and Germany. An early cause of crashes was from the effect of side winds which would tip the aircraft; a simple wind vane in front of the windscreen gave the pilot the forewarning needed to counteract this feature. Chris explained the vector thrust forces involved and why short take offs provided the most efficient take off mode and



the tremendous advantage derived using the ski jump. Starting in service in April 1969, much publicity was gained the following month when Sqn Ldr Lecky-Thompson took off from a coal yard adjacent to St Pancras station and flew to New York in the Daily Mail Trans-Atlantic Air Race. The Harrier

was refuelled by Victor tankers and landed on a temporary pier constructed by Marines who were interested for their own use. In service, the aircraft was used in four different roles; Close Air Support in direct support of ground troops; Interdiction to interrupt logistic resupply; Offensive Air to attack enemy aviation assets including SAM sites and the Tactical Reconnaissance role. Whilst the aircraft's unique capabilities allowed it to be operated from non airfield sites such as forest

clearings, pre-prepared sites and roads, there was a considerable logistic requirement of 900 vehicles to support three deployed squadrons. The tactical war load included a mix of Aden cannons, BL755 cluster bombs, four SNEB pods (each with eighteen 68mm rockets), five 1,000 lb bombs, which could have a retarded tail to enable the aircraft to clear the

blast or they could have a laser guidance nose and be used in a toss bomb manoeuvre. During the Falklands war the aircraft were given a sidewinder capability.

The USA bought the Harrier for their Marine forces and a BAe/McDonnell Douglas cooperative venture developed a second generation known as AV8B for the USA version and the GR5 for the RAF. Leading Edge Root Extensions (LERX) improved the aerodynamics and engine upgrades improved range and ordnance carrying ability in the later versions and upgrades to become GR7 and then GR9.

### George Errington—Airspeed Test Pilot

Mike Phipp has written a thorough account of George Errington, much from his log books. The book will be published late March. Pre orders at £15 including p&p, but Mike will attend the AGM to sell and sign his wares at a big discount to the full price of £16.99.

### Meeting dates

Wednesday 04Mar2020

'Air Traffic Control' by Luke Law, NATS

Wednesday 06May20

AGM, then 'Nevil Shute' by Stephen Robson

**Membership Renewals £15 at AGM**