FROM AEROVAN METAMORPHOSIS TO Shorts Skyvan PART 1

In a new two-part series former Short Bros Flight Test Engineer **GRAHAM SKILLEN** charts the progression from George Miles's visionary, if technologically premature, design for a post-war light transport aircraft, which flew in early 1945 as the M.57 Aerovan, to its ultimate development — via the oddball HDM.105 — into the Shorts Skyvan in the 1960s

TOWARDS THE END of the Second World War aircraft designer and noted polymath George Miles (**INSET RIGHT**) of F.G. Miles Ltd came up with the idea of a light transport aircraft capable of carrying a small vehicle or possibly ten passengers. This was something that could appeal to the military or, with peace breaking out, something that could be attractive in the civil world for a number of reasons. Looking around in the late war period, vehicle transport by the military was by glider, or, if these were not to be used, by the ubiquitous Douglas C-47 or a converted bomber, in which loading was difficult with side access only and a sloping floor. Miles was not alone in the UK at that time in examining this field for potential projects, another being the Bristol Type 170 Freighter, and in the USA the Fairchild C-82 Packet. Neither of these projects, however, was for a light transport.

DEFINING THE 'LIGHT TRANSPORT'

The term "light transport" can mean different things to different people, and in the immediate post-war period the clear-cut categorisation of aircraft by size which emerged later was not particularly relevant. Commercially, a company built whatever it wanted as it saw fit, but for civil aircraft a manufacturer was obliged to adhere to the laid-down regulations. These mainly covered design matters and constructional methods for the airframe structure and the powerplant given, for military applications, in the Air Ministry standards document Air Publication (AP) 970. For civil aircraft the Convention Relating To The Regulation Of Aerial Navigation, Paris, 13th October 1919 was the starting point, ratified by the UK by the Air Navigation Act of 1920. This Act did not itself specify any regulation, but caused a further document, AP 1208, to be written in 1926, providing the regulatory detail.

Like its military equivalent, AP 1208 was a structures document, ensuring that an aircraft was structurally sound, but in the 1930s AP 1208 was expanded to include the classification of Certificates of Airworthiness (Cs of A) and limited performance and handling requirements, forming the starting point for post-war regulation in the UK. However, at that time the concept of designing to an overall safety standard such as exists today was only in its infancy. Design standards used would ensure that an aircraft shouldn't break and that the overall installations and equipment were satisfactory; but having adequate or safe performance at all times, for example, was never a starting point.

This was the way it was, but the post-war re-appraisal and adjustment to standards no longer governed by military necessity meant that aspects such as "adequate performance" were being re-evaluated.

The overarching body responsible for aircraft safety today is the International Civil Aviation Organisation (ICAO), and countries supporting it sign up to using its standards by way of the Chicago Convention of 1944. This gives a level of equivalence around the world that permits, among other things, bilateral agreements on over-flying rights. ICAO does not write the regulations, but those written by individual countries or groups of countries must be in compliance with ICAO's objectives. In the USA examples would be the Federal Aviation Administration's Federal Aviation Regulation (FAR) 23 and FAR 25, both concerning airworthiness standards.

SETTING STANDARDS

ICAO was formed in April 1947, supplanting PICAO (Provisional ICAO), which had been in place since 1945. This was of necessity, given the massive technical improvements of the day, such that many transport aircraft by that date had something close to a genuine transatlantic capability. Unsurprisingly, this process was "top down", starting with the largest aircraft, which left the Miles company further down the queue for appropriate regulation and probably, in its view, penalised.

To finish off the prospective position regarding aircraft performance guaranteeing a good level of safety, today, a "large" aircraft is defined as having an all-up weight (AUW) of more than 12,500lb (5,700kg), with a further category break-point at 6,000lb (2,750kg). Although this may appear strange to the reader, safety as a concept is largely driven by public opinion, in the form of the latter's reaction to public transport accidents. For large transport aircraft it really has to be that accidents never happen; we understand that this is not possible, but it has to be the design objective. For smaller aircraft it is a fact that an accident has a smaller newsworthy impact, so regulated safety standards can consequently afford to be slightly less rigorous.

Looking at it from the passenger's point of view, if a passenger buys a ticket on a public transport

OPPOSITE PAGE, TOP ***The prototype of the Miles M.57 Aerovan aloft after its first flight in January 1945, wearing its B-conditions marking U-0248 before it was registered G-AGOZ.*** **OPPOSITE PAGE, BOTTOM** ***Same concept, different era — the protoype Shorts SC.7 Skyvan, G-ASCN, with Astazou turboprop engines in 1963.*** TAH ARCHIVE x 2