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| INTERESTING INFO | RANDALL WHITCOMB | PALMIRO CAMPAGNA |

Jim Floyd Bio



James Charles Floyd was born in Manchester England and joined A.V. Roe (Avro) in 1930 at the age of 17 on a special apprentice scheme. Rod Rose, a later Avro engineer on the Arrow program and a key engineer for the space programme from Mercury to the Shuttle, described the special apprenticeship experience at Avro, which he undertook several years later: "You went to every department in the shops, research, flight sheds, drawing materials research, structures? It was hard work, but I think I went to a total of some 27 departments. An aircraft machine shop detail fitting to assembling, pipe-bending, toolroom, heat treatment and press shop, forging to the A.V. Roe airfield at Woodford, where I did flight controls, landing gear, engines, fuel systems,? I also did some time at the drawing office, stress office, materials research, and then on to aerodynamics.? Needless to say this was challenging and comprehensive "hands-on" training. Jim's first job involved churning out bolts on a lathe for about a dollar a week. Due to the great depression he was laid off for a while and took work at a junk yard. Once called back to Avro he began working on real aircraft "installing wiring into Avro Tudor from a diagram written on a postcard.

His talent and enthusiasm soon resulted in his being allowed to work in the design office under chief designer Roy Chadwick. His early design work included fuel systems and the tail for the Avro Anson. The special apprentice scheme resulted in his being loaned out to other parts of the Hawker Siddeley group, including the wind-tunnel facilities at Bedford, the main company airfield at Woodford, and to Hawker Aircraft where he worked on the Hotspur two-seat fighter development of the famous Hurricane. (The Hotspur was not produced at Hawkers he worked under Robert Lickley who would become a famous aerodynamics instructor at the Royal Air Force Academy at Cranfield and would go on to design the famous Fairey Delta Two (FD.2) which won the world speed record in 1956 for Britain of very nearly Mach 2.0. Davies ended up following Floyd back to Avro soon in a senior position there.



Floyd and other designers (under Roy Chadwick) were solicited to produce drawings for the British government for a new heavy bomber design. The design was actually for a delta-winged bomber similar to the Northrop's YB-44 but this was obviously not pursued. The Manchester bomber eventually emerged from their pens as the Avro 730, using two Rolls-Royce Vulture engines. Jim Floyd did a stress analysis and other work on this aircraft but engine problems were responsible for the failure of this aircraft program. By the time of the Avro 730, however, Davies, Floyd and another designer had been bus

other engine arrangements for the Manchester including B. Centaurus radials and Napier Sabre 24-cylinder inline engines. Jim Floyd however did the first drawings extended-wing Manchester using four Rolls-Royce Merlin engines while another engineer did the basic analysis. When Roy Dobson (Avro's managing director) saw the performance projections for this version overjoyed. This is because the Manchester's problems were resulting in pressure from the British government Avro relegated to producing the Handley-Page Halifax bomber under licence. Dobson realised that the Manchester (eventually re-named the Lancaster) would outperform the Halifax and that it would be quicker production than the Halifax considering the time required to re-tool the factory. Another youthful Avro apprentice, Bob Lindley, asked Floyd to recommend to Chadwick that he be allowed into the special section of the design office. Floyd thought this strange since Lindley rode to work daily with Chadwick but when Lindley was accepted into the "Holy of Holies." In a few years this young engineer would produce the first arrangement drawings of what would become the Vulcan bomber before he came to Avro Canada, by way of Canadair.

Jim Floyd continued working at Avro throughout the war (despite having tried to join the RAF twice, his being prevented by Avro's interference where they insisted on his higher value as a designer than as a pilot). He did major design and stress work on the York and Tudor transports and on the Lincoln bomber. In 1944 Dobson, Stuart Davies in charge of a Special Projects group of engineers with their task being to look past the end of the war and develop proposals for the future of the company. Davies chose Jim Floyd to be the Chief Project Engineer and they operated in a camouflaged underground facility in Yeadon nicknamed "the mine." Here 100 passenger jet and turboprop transports, and other types of aircraft, were examined.

In 1945 Dobson decided to take over the Victory Aircraft facilities in Malton Ontario Canada. Dobson felt that Canada would be the best place for Avro to shift their emphasis to due to Britain being essentially bankrupt and the USA would be the largest potential market for aircraft. Canadian politicians also felt that Canada should have an independent aircraft industry to allow them to get what they required in event of war. This was also done to make Canada competitive in high technologies so that Canadian-owned companies could compete at a "World level" and thus ensure Canada's economic health after the war. Dobson, in fact, predicted that this Canadian operation would become the production centre for British aviation within a decade. Perhaps surprisingly, the subsequent events actually validated his claim, when Canadair's production was added to that of Avro and Orenda, Canada became the number three aircraft producer in the mid 1950s. As a result, Avro Canada was established with their prospective projects being a possible jet fighter for the RCAF, and a jet passenger aircraft for TCA. In late 1945 Davies asked Floyd if he'd like to go over and manage the design of the jet transport. By this time however Floyd had accepted a position at Chrysler aircraft as chief designer. Davies apparently went berserk over this and as he'd lost his mind! Floyd duly recanted and arrived in Malton in February 1946.

By August 1949 the C-102 Jetliner was flying (and flew only 13 days after the first purpose-designed jet, the de Havilland Comet). For some reason, by this time the Jetliner's original target buyer (TCA) had sworn off the Jetliner that had been created for it with the Canadian government also becoming increasingly meddling and destructive regarding the project. In the United States however, the enthusiasm among the major US air forces, the USAF and US Navy was virtually universal and Avro anticipated sales of hundreds of aircraft.

National Airlines was very interested in the Jetliner as were most major American carriers with National Airlines placing an order for 10 when the program was halted. It is taken for-granted that had National Airlines purchased the first Eastern, and eventually all major US carriers would have had no choice but to purchase Jetliners. This provided politicians on both side of the border the means to block production of an aircraft that would have made Avro Canada a rival to Douglas aircraft in the commercial aircraft industry. CD Howe, Canada's minister of reconstruction (minister of everything according to the opposition Conservatives) ordered Avro to stop work on the Jetliner and concentrate work on the CF-100 which at this time was predictably *at least* two years away from squadron service. Subsequent document release shows that in fact the USAF tried to order an initial 12 J

1951 for parting out and test by the Air Refuelling, Logistics and Training commands before purchase of fleet. The documents proving this were repressed by the Liberal Government of Canada and CD Howe a were only recently disclosed. CD Howe's archival files on the Jetliner affair are also missing from the archive. Under his leadership on the C-102 Jetliner project, Jim Floyd was awarded the American Wright Brothers Medal: non-American to win this prestigious award.

Floyd was ordered off the Jetliner project, promoted to Chief Engineer for Avro, and positioned as Avro's works manager (with Bob Lindley being in charge of the 'Blitz-Group' to fix the CF-100's design deficiencies) during the push to perfect the CF-100 and place it into mass production. Since the CF-100 required serious modifications and testing to install weapons, a fire-control system and to fix a structural problem with the fuselage. This would have been an exceptionally challenging time for him since he was expected to prepare tooling production lines for parts that hadn't even been designed at this point! When the challenges to perfect, and produce the CF-100 are understood, one can see that Jim Floyd and the Avro team achieved near-miracles around the CF-100 program between the Mk. 1 and Mk. 4 aircraft.

Even before the Mk. 4 CF-100 flew, Jim Floyd and Jim Chamberlin were involved in drawings and research for a fighter to eventually replace the CF-100 in RCAF service. This work culminated in the Avro Arrow. Until the Arrow was also (like the Jetliner) cancelled for, in this writer's opinion, rather sinister political reasons. Performance curves compiled for *Avro Aircraft & Cold War Aviation* show that the Arrow Mk. 2 would be the top performing interceptor in the world today in terms of flight performance. Details of a production share the F-101 Voodoo interceptor also demonstrate that the far superior Arrow was priced nearly 25% lower than the Voodoo. Cabinet minutes also demonstrate that the government of Canada made it their policy to kill Avro in favour of a 100% owned aviation company operating in Canada (Canadair at the time was 100% owned by Convair/General Dynamics.)

After the Arrow cancellation Jim Floyd was convinced, by his old friend Stuart Davies, to return to Britain to join the new Hawker Siddeley Advanced Projects Group. Jim was reluctant to go at first, being suspicious that the group, which was the main focus of this new group, would prove to be another political disaster in the making but he was able to convince him to take on the job and hand pick his own team. In December 1959 they submitted an industry-sponsored Supersonic Transport (SST) design; the HSA.1000. This was actually based on work done in Canada on an advanced SST and was derived in part from computer studies on optimal SST aerodynamics done on Avro Canada's digital computer facilities. Unfortunately Floyd's political intuitions proved correct and the Hawker Siddeley aircraft was awarded the SST contract for a markedly inferior (in this writer's opinion) design. The design produced as the Concorde however, bore little resemblance to the Bristol design and was much more reminiscent of the Hawker Siddeley design, though not as advanced.

In his 1961 lecture to the Royal Aeronautical Society Floyd had revealed the work of the Arrow chief of design, John Morris, that proved that the British assumptions of sonic boom strength were about half of what the reality really was. As a result, his group predicted that SST's would likely be restricted from operating supersonically over land and they submitted a design to get around this. The HSA.1011 'no-boom' airliner was the result and was projected to operate at up to Mach 1.2 without creating a sonic boom due to superb aerodynamic design. The project was not pursued although Boeing's 'Sonic Cruiser' design effort, announced in 2001, depends upon the same principles and concepts and if produced might enter service around 2010. The HSA.1011 was projected for service around 1970.

When this final political fiasco unfolded, Floyd resigned from Hawker Siddeley in distaste and in poor health. He then founded J.C. Floyd and Associates and embarked on a challenging (and much more financially rewarding) career. He was involved in many visionary designs. These included amazing 'reelable' rotor systems for lifting heavy loads, a business jet to use a variable-pitch ducted-fan propulsion system designed by Dowty-Rotol, land navigation systems and much more. His company worked with Litton systems on navigation systems for aircraft and with Dornier on an advanced helicopter landing system for destroyers. For several years Floyd and company were contracted by the

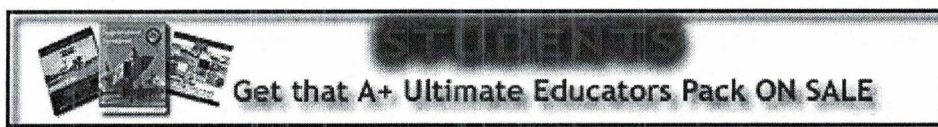
British Ministry of Supply to do detailed economic and route analyses of the Concorde, as well as sonic-

After retirement Jim Floyd and his family (minus one son who married in England and remains there) re-Canada and now reside near the old Avro factory in Etobicoke. Jim considers himself Canadian due to his accomplishments and friendships at Avro and because of his identification with the enthusiasm, cooperability of the Canadians he worked with at Avro. He is an inductee of the Canadian Aviation Hall of Fame. J.A. McCurdy trophy in 1958 for his work on the Arrow and was special guest of honour at the University of Dakota's 1988 convention on the future of hypersonic travel where his 1961 lecture to the RAeS (Some of the Problems Facing the Aircraft Designer) was re-presented. At this event he was awarded the Aerospace Pioneer Award. His awards and accomplishments are incredible yet this writer, who proudly calls Dr. Floyd feels his greatest merit lies in his ability to inspire and motivate people, not to mention his most gracious and basic humanity. These characteristics seem to be fairly common among leading Avro personalities.

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