

# 100 YEARS OF AVRO

It is sad to consider that as this article was being worked on, the new government announced the cancellation of the current Nimrod MRA4 project, some 18 months ahead of the scheduled closure of the factory. A proud legacy coming to an untimely end and our thoughts are with the remaining employees in these uncertain times.

The AVRO story has significant meaning for family Rodman. My grandfather Samuel E Rodman was a founder member of the Lancashire Aero Club based at Woodford. Before the war he set up Stockport Manufacturing Co Ltd. With the encouragement of Sir Roy Dobson he started manufacturing aircraft parts for AVROs, amongst others, initially from wood and then from aluminium and exotic alloys. Components ranged from engine nacelles to fuel and drop tanks, wing sections and latterly the entire fuselage centre sections for the Lancaster. A large factory complex was developed at Cheadle and he employed over 2000 folk at the end of the Second World War. After the war orders dried up and he turned his hand to toy & snooker table manufacture and converting army trucks to buses. Eventually SMC Ltd was reformed as SMC 1950 Ltd and concentrated on rebuilding the 'new, fork lift trucks (FLT) the US had left behind. A crawler FLT development (the 'Roughrider') led to the bespoke manufacture of materials handling equipment for the FLT industry for the next 50 years.

**Please join me as we look back over some of the significant milestones in this fascinating company.**

## **1907**

AV Roe won the chief award in the Daily Mail model aircraft competition.

## **1908**

The Roe 1 Biplane based on the model design made its first flight with a 24hp engine.

## **1909**

The Roe 1 Triplane made its first flight, a very successful design which is now displayed in the London Science Museum, Kensington.

## **1910**

AV and brother HV Roe set up AV Roe & Co Ltd (AVRO), a flying school at Brooklands and an "Aviators Store House" in Brownsfield Mills, Manchester, to support the aircraft manufacturing business.

## **1912**

AVRO was becoming firmly established as a significant force in European aviation. Government orders started to flow in and an AVRO plane lifted the British Duration Record to 7hrs 31min. Additional premises were acquired in Miles Platting to cope with demand. The Avro Hydro plane was the first to successfully take off from water. The world's first cabin monoplane was developed with the help of Roy Chadwick.

## **1914**

War was declared; a 5000sq yard factory was acquired from Mather's and Platt and another factory in Failsworth. Roy Dobson joined the company and began a lasting friendship with Roy Chadwick. The AVRO 504 entered service and became a key aircraft in the early years of the war.



**Avro 504**

**1917**

The firm was running well and HV Roe resigned as MD and enlisted in the RFC. He soon received a commission and had the satisfaction of bombing military targets from an AVRO aircraft. The AVRO 504's excellent flying characteristics destined it to become the best trainer in the world. The RFC training school developed a new training system using the 504 which was rolled out through the whole of the RAF. The aircraft production rate achieved was amazing. In the 12 months before armistice over 5000 machines were made. During the war over 8,340 Avro 504s were made. Bombers were also produced with Roy Dobson famously having to climb from the rear gunner's cockpit along the fuselage to the front gunner's cockpit to correct the balance of a prototype aircraft whilst in flight!

**1919-1939**

With the war at an end, the hunt for work was on. AVRO came up with a dozen schemes during this period to help it survive. The firm had great success modifying surplus 504s to 2-seaters, using ex-RAF pilots. Over 200,000 passengers had 'joy rides' without a single incident. Toys, billiard tables and even motorised scooters were developed. New production premises were opened at Newton Heath and AVRO moved test flying from Hamble to Alexandra Park near Manchester, and then in 1925 the test flying was moved again to Woodford. The Woodford site was, at this stage, just a large field and little changed until a development programme in the late 30s, gearing up for the war effort, saw the large Chadderton production factory and the Woodford assembly plant/flight test centre formed.

After the war, Crossley motors took a controlling interest with AVRO workshops handling all Crossley's motor bodywork. In 1927 Armstrong Siddeley took over and then in 1935 Hawker Siddeley took control.

On the aircraft front, there were many developments with some 35 different types being produced, ranging from type 554 Shackleton of 1921 to racing aircraft, auto gyros, troop carriers, float planes etc. You name it; AVRO was doing it and learning all the time with advances in aerodynamics, power plants and construction materials evolving from wood and canvas to stressed metal construction.

### **1935**

The Avro Anson light transport was developed starting a production run of 11,020 aircraft, finally ending in 1952.

### **1937**

The Air Ministry issued tenders to approved suppliers to develop new aircraft. After the basic design was settled, approval was given to the best designs to be taken to flying prototype stage; then, following further testing and approval, full production commenced.

The 'Manchester' was Avro's answer to a twin engine medium bomber specification which reached production stage. However there were problems with the aircraft. An excellent design was in engineering terms a bit 'numb', it did what was asked of it but was lacking in spark. In 1940 The Rolls-Royce Vulture engines fitted to the Manchester had reached the end of development and the aircraft was looking like being scrapped. With some arm twisting the Ministry accepted a re-design of the Manchester powered by 4 Merlin (Spitfire) engines and the Lancaster was born. At last the RAF had a powerful bomber that was a joy to fly and exceeded all expectations. The design was approved and production reached 7 per day.



## **Avro Lancaster**

### **1941-1945**

Roy Chadwick, Roy Dobson and chief test pilot Sammy Brown refined the design and developed many 'specials' including the 'Dam Buster' aircraft carrying Barnes Wallis's bouncing bomb and heavy lift variants to carry his 'Tall Boy' and 'Grand Slam' earthquake bombs. These were the heaviest bombs ever to be carried during the Second World War. The Avro York was developed for transport command utilising many Lancaster components, and carried military leaders around the world.

## 1946

The civil variant of the Lancaster, the Lancastrian, was developed as a long distance passenger plane with seating for 9 and overnight accommodation for 6. It was operated by BOAC and Qantas, flying London to Sydney (12,000 miles) in 49 hours. The Lancastrian also saw service as a test bed for developing the new jet engines. The Avro Tudor was a successful new design for passenger transport, the first variants having rotary engines which by the time the Tudor 8 flew, changed to jet power with the aircraft capable of 500+mph.

## 1947

The Air Ministry specification for a 4 jet bomber was received. Roy Chadwick's answer was the Vulcan which pushed the boundaries of aerodynamics. Such a leap forward into the unknown demanded the production of 5 slightly different single seat prototype aircraft to prove and refine the design of the radical delta wing idea. One of these prototypes is still on show at the Manchester Museum of Science & Industry. The ground breaking work in this field was also used in the Anglo-French Concord Project.

## 1951

Following Ministry approval the Shackelton (a derivative of the Lancaster) entered service with coastal command for long range maritime patrol duties. Later the Shackelton was developed into the AEW.2 carrying advanced airborne early warning radar equipment from 1972 until 1990.



**Avro Maritime Recon**



## **Avro Vulcan**

### **1952**

The first Vulcan flew successfully from Woodford and became a vital part of Britain's strategic defence system for the next 30 years. The last starring role for the Vulcan was as a modified tanker and bomber in an attack on the invaded Falkland Islands, the longest non-stop mission ever undertaken by the RAF.

### **1958**

AVRO was working on a design to replace the DC3 Dakota medium transport.

### **1959**

Avro 748 given the go ahead.

### **1960**

Avro 748 prototype made its first successful flight, and proved a winner. It could operate from unmade airfields and largely fulfilled the design brief that it should complete tasks at least twice as well as the 'Dac'. Its excellent safety record led to it being chosen by no less than 16 heads of state including Her Majesty the Queen having 3 for the Royal Flight. Over 400 were made and sold to 50 countries. Woodford residents with long memories will recall the energetic promotional flying displays involving 'wing overs' and flying with one prop feathered.

**1963** The AVRO name became absorbed into Hawker Siddeley Aviation Ltd (HSA) creating the HS 748 etc. Work started to develop a replacement for the Shackleton. The winning proposal was to redesign the Comet 4C airliner

**1965**

The Nimrod project was approved.

**1967**

First flight of the Nimrod MR1.

**1969**

MR1 entered service with the RAF.

**1977**

HSA became British Aerospace.

**1979**

Nimrod was updated to become the MR2 and remained in service until last year – exactly 100 years after AV Roe & Co Ltd was established. The AEW version of the Nimrod was proposed with blue circle radar in the prototypes. Despite the excellent design, protracted problems with the new radar system lead to the project being cancelled.

**1986**

The replacement for the 748, the Advanced Turbo Prop (ATP), had its maiden flight and proved a safe and robust aircraft used on short hop commuter flights and also became a very successful freighter aircraft.

**1988-onwards**

Production of the BAE146 Regional Jet was transferred to Woodford. With its excellent short field performance it sold well round the world, including to the Royal Flight again. It developed into a family of aircraft with some success and had a last update to the RJ series of airliners. Eventually the considerable overseas competition made the aircraft uneconomic to produce so production was stopped. The company became BAE Systems and concentrated on the military market. BAE Systems won the contract to redevelop the Nimrod for the 21<sup>st</sup> century. The MRA4 aircraft consisted of an original fuselage stripped back to bare metal. All new flying surfaces and systems were fitted, the new fan engines gave an endurance of over 20 hours and the radar suite was groundbreaking and exceeded all expectations. However an initial order for 20 aircraft was gradually reduced to 9 and with no other buyers other than the RAF, production at Woodford was due to end in 2012.

**2010**

Following a defence review the Nimrod project was cancelled despite most of the aircraft being over 90% complete. It is sad to think that we will no longer hear the radio call sign “AVRO 1 clear for takeoff”, the designation proudly given to any new AVRO aircraft taking off from Woodford. The end of a very special era in British Aviation.

*Paul Rodman*

*(with thanks to Harry Holmes of the Avro Heritage Centre, Woodford)*

**Visits to the Avro Heritage Centre in Woodford can be arranged by contacting the Heritage Centre on 0161 955 4182 on Tuesday or Thursday between 11.00am and 3.00pm. We regret that anyone under the age of 15 is not permitted on site.**

**The Heritage Centre is open on Tuesdays and Thursdays between 10.30am and 4.00pm. Cameras are not allowed.**