



Newsletter

Summer 2011

Issue 86

For more information on the RMSA visit our web site www.baermsa.org.uk

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Photo: Sleeve Notes issue 50

K-7557 prototype Britain First, on the airfield at Filton. Originally the Bristol 142, which was later named 'Britain First' by Lord Rothermere who had privately funded the aircraft. Circa 1935. See article on page 5.

From the Chair.

Well I suppose it was inevitable the closing of Bristol Filton Aerodrome next year. My guess is, in spite of being licensed to operate flights for the public transport of passengers, this has been on the cards for a long time. Ever since the time when a group of residents from Bradley Stoke decided to oppose making the aerodrome the region's airport and successfully persuaded South Gloucestershire Council to throw the idea out with no appeal. Since then, it must have been in the 1980s, the facilities have been allowed to deteriorate and the situation now is as is being reported, even the runway will have to be totally resurfaced for it to remain safe and viable and owner BAE Systems Aviation Services Division will not spend the money on such a little used resource. The precise time and date for the closure has been set for New year's eve 2012.

It's not all gloom and doom though the Filton site has survived the closure of many prestigious aircraft manufacturing firms and sites over the years and remains today as a very successful international manufacturing facility. Airbus and GKN Aerospace the dominant manufacturers regularly announce that more work is being brought into the site and there is to be a new Airbus Aerospace Park, which may mean refurbishing Filton House which is excellent news. However, I can't see how that other icon for the manufacture of past projects, the Brabazon/ Britannia Hangar or whatever name is now in favour, is going to fit into the current scheme of things.

The award winning hangar could be a listed building, I don't even know who owns it. For a time though it was the largest aircraft hangar in the world. I well recall it and the runway extension being built, together with the demolition of nearby Charlton village for the Brabazon airliner project. Now back in vogue - the BAC100:2010 Celebrations may have had something to do with this - I remember seeing Brabazon 1 take off on it's maiden flight, as I did Concorde 002 some twenty years later.

And now we see the last of those British built Concorde languishing on the edge of that aerodrome with a very uncertain future indeed, having very recently had an application for a grant from the Heritage Lottery Fund to help finance the construction of that purpose built museum turned down.

Spring day Out. No such bad luck with lottery funding for the RAF Museum at Cosford in the West Midlands, which we had chosen for our Spring Day Out in April.

There was a good response for this trip, we nearly had a full coach so Dave was very pleased, albeit that some of these were 'guests'. It was a surprise to see a Bristol Britannia on open air display near the entrance. Not having been to the museum before, we had come prepared for everything the weather could throw at us, there is always plenty of open air walking in these places. After a spot of lunch we set out to explore this vast site. Cosford is an operational training RAF station. There are seventy aircraft displayed in four hangars in the museum, entry is free and may be described as a total experience, with aviation events going on throughout the year.

With the time and energy we had we visited two of those four hangars. The first was the Test Flight Hangar in which there were many types used in research going back to the of World War 2. Two were of particular interest to me; a Fairy which was modified to become the Bristol Type 221 and was used for research into civil supersonic flight ahead of Concorde. It was the first project I worked on after joining the then Bristol Aircraft Ltd. the other was an aircraft I didn't expect to see 'in the flesh' again, a Bristol Type 188 'Flying Pencil' a stainless steel concept used in research into the effects of heat on aircraft structures. I didn't work on that, I remember when it first took off though. It was a cold Saturday morning in April 1962 and some of us were doing some overtime - probably on the 221. I think nobody was too sure if it would fly. It did though eventually. There is an article on this project written by Ted Talbot on page 10.

As we know there was no computer modelling in those days. To gain further knowledge special types of aircraft were



A Bristol Type 188 on display in the Test Flight Hangar (Research and Development Section) end
FD2

constructed and test flown sometimes with disastrous results. Hence the large number of different and sometimes odd looking types of aircraft in the hangar. It was intriguing to see how interested young people were in them. There was another surprise waiting here. One of two prototype TSR2 strike and reconnaissance aircraft was on display. Still a subject of discussion I gather, in defence circles long after it was scrapped in the 1960s.

Time was getting short and we needed to see the museum's latest addition; the Cold War Exhibition. Any building that can house nineteen different aircraft including a Vulcan, a Valiant, a Victor and a Belfast plus numerous missiles, vehicles and other exhibits, yet still look architecturally right is going to be described as impressive. Opened in 2007 largely financed by the National Lottery it's got to be the museum's tour de' force. We were only able to scratch the surface as it were. In stark reality is shown most of the resources protecting all of us during the Cold War.

Finally, on leaving the hangar I spotted a couple of volunteer pensioner technicians stripping part of a Victor's wing, it looked like corrosion had started to creep in, something we know about here at Filton on Concorde 216.

This was an excellent day out and for me another visit would be very welcome.

RMSA – Website News Update – Summer 2011

Dear Fellow Members,

This update contains information relating to the latest updates to the website, since the Spring 2011 Newsletter.

Version 3.40:

Home Zone pages modified to reflect the new RMSA Constitution approved at the 2011 AGM. Also, Aims & Objectives and Membership Eligibility pages under General Zone and RMSA Membership Form under Contact Us section. Also new printable Application Form links added, plus minor consequential changes made to relevant site pages.

Jack Francis, Dan Sellars and Percy Soper retirement album added to Photo Galleries under Memorabilia Zone.

The RMSA Events News Page and Calendar have been updated to show the latest 2011 RMSA social events as currently known. This version will be launched soon (there are still some items to be added), if you would like to receive email notification of this and future updates, please let us have your email address.

To-date, we have over 60 email addresses on record, but we would ask members who have not yet provided their email address to let us know it by sending an email to myself (Membership Secretary) at: rodney.farmer@blueyonder.co.uk.

The privacy of your email address will be respected at all times.

Did you know that you can access 24/7 online music and continuously updated world news from BBC, Sky and ITN News Services with just a single click from the Home Zone page. Also for those who maintain an interest in Airbus and BAE Systems, news updates are also just a single click away. Additionally there are links to external websites of interest to our members.

If you have any retirement photos of ex- colleagues, or other memorable events, of interest to our membership and would like them added to the Memorabilia Zone please contact me.

Ideas and/or contributions for future website content would also be most welcome and I hope to be able to present more new website items in the Autumn 2011 newsletter.

On behalf of our Chairman and other members of the Committee, we hope you continue to enjoy browsing the site.

Rod Farmer – Membership Secretary & Website Administrator

Email: rodney.farmer@blueyonder.co.uk OR webmaster@baermsa.org.uk

OBITUARIES

It is with sadness that we record former friends and colleagues known to have passed away since our Spring 2011 Newsletter. Mr. R. Edwards, Mr. J.E.Fox, Mr. H.Tomlinson, Mr. A. J. Fairchild and Mr.N. Brailsford.

Our Sympathy is extended to all their families and next of kin

NEW MEMBERS No one has joined us since our Spring 2011 Newsletter.

SOCIAL REPORT JUNE 2011. by Dave Curtis

The Short Break to Southport in October had to be cancelled due lack of support, only 13 bookings were received. 25 being required to make the Break viable.

The visit to the RAF MUSEUM, Cosford on Thursday 14th April was well supported with 31 bookings. You can see a full report on pages 2 &3

Bookings for the Summer Day Out on Tuesday 19th July 2011 Welsh Tour are going well, seats on the coach are still available. Booking Form is printed below.

If you have a place you would like to visit for a Day Out or a subject for a talk please let me know, and I will try to arrange it.

Arrangements are in hand for a talk to be held in November, date, venue and cost will be notified in the Autumn NewsLetter.

Details for the Christmas Lunch will be published in the Autumn News Letter.

**LAST
CHANCE
TO BOOK**

SUMMER DAY OUT TOUR OF WALES WITH A VISIT TO ABERGAVENNY MARKET

ON TUESDAY 19TH JULY 2011.

DEPARTURE TIMES: DOWNEND 09 00 HOURS. FILTON 09 15 HOURS.

Please reserve.....seats at a cost of £19 00 per seat.

Name(s).....Telephone No.....

ADDRESS.....

E.mail address.....

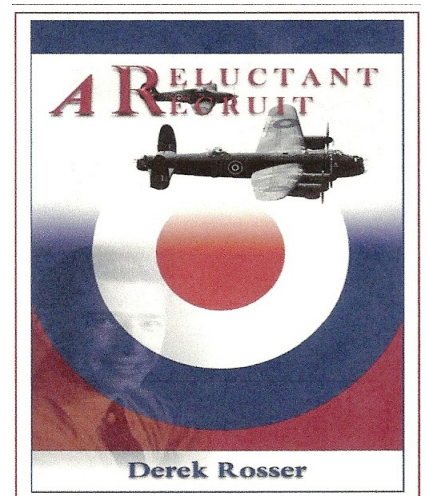
Derek Rosser describes his true life post war adventures during National Service in the Royal Air Force.

Whilst over half a century has elapsed, Derek has a clear recollection of his time serving as a National Serviceman, setting down 'his adventures' in this book **A Reluctant Recruit**, which he describes in many ways, 'an enjoyable waste of time'. Published in March of this year by Pneuma Springs Publishing.

Book Savvy Newsletter review said 'This is an intriguing and entertaining historical account of a young man's experiences during National Service in the Royal Air Force'.

Copies are available from the publisher or bookshops, wholesalers and good online stores price £7.99.

Or by ordering directly from Derek on tel. 01179 697194, email: danrosser@talktalk.net at a discounted price of £7.00.



NOTE. The following article is summary of a talk given to the Alveston Local History Society by Jock Hill in May 2010 and is published in last April's edition of 'Sleeve Notes' the magazine of the Bristol Branch of the Rolls Royce Heritage Trust, of which I am a member.

Ken Tooze.

It is reproduced here with the permission of the 'Sleeve Notes' Editor.

Frank Barnwell OBE AFC FRAeS BSc - Designer of Aeroplanes for B.A.C. and Resident of Alveston by Jock Hill.

Frank Barnwell lived In Alveston House from 1923 until his death in a flying accident in 1938. He was a prolific designer of aeroplanes and several of his designs outlived him and saw service during the Second World War. During his time working in Bristol some 80 of his designs reached prototype status and 17 went into full production with some 14,000 aircraft seeing service.

His memory is perpetuated in Bristol by an annual lecture and dinner.

Frank had two brothers and three sisters. The memory of brothers Frank and Harold Barnwell is celebrated in two villages in Scotland, Balfron and Causewayhead where the Barnwells lived and worked; there is a stone memorial to the brothers in Causwayhead a short distance from the iconic Wallace Monument.

Frank's father was a Director of the Fairfield shipyard on the Clyde and had a house in Glasgow and also at Balfron. Shipbuilding was the high tech industry of its time and it is likely that Frank learned many of his engineering skills as a graduate apprentice at Fairfields where he worked after schooling at Fettes, one of Scotland's premier Public Schools. Frank obtained a BSc in naval architecture from Glasgow University, probably the best course of this type in the world at that time.

Like many boys of his generation he was keen on motorcycles, cars and aeroplanes - the brothers built both a glider and a powered aeroplane in the stables at Balfron but neither flew.

During the period 1905-07 Frank spent time in the USA working in a shipyard and on his return he established the Grampian Engineering and Motor Company at Causewayhead along with brother Harold.

Frank and Harold persevered with aviation. A monoplane design failed through lack of power and their first success was a canard biplane powered by a Humber engine - this flew for 80 yards at up to 50 feet and was the first powered flight in Scotland. In 1906 a monoplane with an engine they manufactured themselves flew 800 yards and is the subject of a painting in Stirling Museum. The brothers took it in turns to fly and in 1911 Harold flew 5 miles earning a £50 prize.

To pursue their aviation ambitions required a much larger company and Harold joined Vickers as a test pilot and was killed in a flying accident in 1917. In 1911 Frank joined the British & Colonial Aircraft Company where he helped with the design projects until eventually he acquired a spare fuselage which formed the basis of his very successful Bristol Scout aircraft of which 370 saw service in the First World War. During this period he produced a book (which is still in print today) describing the seven steps to aircraft design. This was originally read as a paper for the Engineering Society of Glasgow University and was published in serial form in 'The Aeroplane' in 1915.

Professor John Anderson, who has run many popular CFD (Computational Fluid Dynamic) courses at Rolls-Royce, in a letter to the AIAA about research into aircraft design, concluded that the fundamentals are all in Barnwell's book. Only the technology has changed from the Brisfit to the F35.

In 1914 the Air Ministry decided to only accept designs from the RAE at Farnborough, so there was little for Barnwell to do

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Captain Frank Barnwell

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Frank Barnwell (3rd Left) in front of a Bristol Bulldog.

and he joined the Royal Flying Corp who wisely decided that his talents were better employed in design rather than in combat and he was sent back to Bristol at a time when the new German designs were much superior to those produced by the RAE. This resulted in his design of the Bristol Fighter one of the best aircraft of its era. After WW1 there was a large surplus of aircraft and little demand for new designs so in 1921 Barnwell left for Australia as a consultant to the RAAF.

He returned in 1923 to produce the Bristol Bulldog. This was one of his most successful designs, some 300 being bought by the RAF as its front line fighter. This machine equipped the RAF's predecessor to the Red Arrows aerobatic display team and was prominent in the Hendon Air Shows during the 1920s and early 30s. The Bulldog also had a Bristol manufactured engine, the Jupiter of some 400-450 hp.

In the 1930s it was clear to many that war was not far off and in 1934 Lord Rothermere tried to encourage the business community to become more involved in flying. In response Bristol Aircraft Co produced another Barnwell design, the Britain First as a rival to the DC1. This civilian twin engine monoplane had 700 hp Mercury engines and was some 50 mph faster than the Gloster Gladiator which was the RAF's main fighter of that period.

Eventually Lord Rothermere donated the aircraft to the nation and it formed the basis for Frank Barnwell's, Bristol Blenheim light bomber which served well in WW2, some 6,200 of these being made. The aircraft like many of the original WW2 bombers was unable to deal with contemporary fighters and was only viable at night. After Frank Barnwell's untimely death, the Blenheim was developed into the Bristol Beaufort torpedo bomber.

Frank Barnwell used to 'borrow' aircraft from BAC at weekends and had a series of accidents, damaging several aircraft. BAC Director George Stanley White eventually banned him from flying their aircraft, so he built one of his own which in many respects resembled one of his earliest monoplane designs. In 1938 while flying this at Whitchurch he crashed and was killed. His grave and monument is in Alveston Churchyard where his wife Margaret is also buried.

As a sad footnote to this story, Alveston Churchyard also contains another memorial; the War Memorial, on which are engraved the names of all three of Frank Barnwell's sons who served in the RAF, Richard Anthony Barnwell was killed in October 1940 while flying a Whitley bomber, John Sandes Barnwell died in 1940 in a Bristol Blenheim and David Usher Barnwell perished in Malta in 1941, while flying a Gladiator.

Margaret, therefore had seen her husband's, brother in law's and three sons deaths. All caused by flying.

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I was intrigued about Barnwell Hall when looking at the background to this article and my 'from the chair' report, I can find very little info about it though. Apparently after the disbandment of 501 squadron, apprentices used Barnwell Hall

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Some more Aeromodellers

David Farrar writes:

Like Stan lock I was an aero modeller(ref. Newsletter 85). I think a lot of people must joined BAC from an interest in model aeroplanes.

My father was a WW1 pilot and when I was six years old he made me a rubber powered model aeroplane out of sticks and cotton sheet. Unfortunately it lacked a fin and I scoured the countryside looking for natural materials to design and make one. Dead weeds, rubber and tissue paper eventually produced a model that could fly.

The age of balsa wood construction arrived for me before WW2 and I flew the results in a field near to Croydon Aerodrome. One day an official came over to tell me to stop because the model was considered to be a hazard to incoming Hannibals and Horsas.

In the first year of the war I flew a rubber powered model which had three hundred turns, it hit a thermal and glided for two miles, reaching a cloud base and staying up for an hour. I followed on a my bike and retrieved it from a back garden.

It was reported in the local newspapers.

My Cambridge scholarship was in science, but at the last moment I was allowed to change to engineering. My tutor advised me to go to Bristol as ‘they might do a civil aircraft after the war, He was right.

Jeff Brackstone also writes:

I too was an aero-modeller. I started during WW2, it was on the living room table but I never got round to a petrol engine.

My dad was a chipper and I spent a lot of time carving solid balsa wood, from which my wife tells me, I still have ‘a two inch airforce’.

I made a rubber band driven Lysander as well, which showed it’s weakness on the first wind-up.

Later on I graduated to a jet propelled glider. This just fizzled on it’s first launch finally firing to go straight up then straight down, to land a couple of houses away. I never did find the engine.

A highlight of my time in the Air Training Corps was a trip to an American airforce base on which there were Flying Fortesses, only to find they were all off on a mission. I remember we also missed the Glenn Miller Band by a day.

Much later when I lived in Andover there followed a series of ‘chuck’ gliders. Recently I tried again with a self-designed, aero experienced ‘chuck’ glider. I used a computer programme on it that worked very well.

The half-inch thick wing, however, was too much for my rugby savaged shoulders and now my fingers and brain aren’t flexible enough for any of it.

But I can still say ‘I’ve got a white shirt and I’m ready’ even though it’s changed to pink for refereeing. Happy days!

Do you have a story to tell? Then why not send it to the editor, and it’ll be put in the Newsletter. Contact details are on the back page.

Trials and Tribulations in Toulouse (Part 4) by Rodney farmer **(The engineering gets serious and time to go home)**

The past three articles describing our life and times in Toulouse were meant to be a 'trilogy' of articles. However, I have had such fun recounting our experiences that more and more events have come to memory and so I am going to write one last article (I promise it will be the last in this particular series!!).

It was July 1971 and we were enjoying a marvellous South of France summer and everything was going well in the office – too well as it turned out!

One day I was at my desk, most likely pondering a two week holiday near St. Tropez that we were planning for later on in the summer, when I was approached by Joe Bresse and a number of test engineers from Flight Test (département d'essais en vol).

It transpired that 001 was being prepared for its first overseas sales tour and one of the requirements was to be able to 'lift' main landing gear wheels complete with tyres into the cabin for spares. The design requirement was to hoist individual wheels into the empennage (aft fuselage) via the ventral air stairs located behind the rear cabin pressure bulkhead – this was a SUD Caravelle innovation which was only present on the two prototype Concorde's. Once inside the empennage, the wheels would be taken through the door in the rear pressure bulkhead and stowed securely in the rear passenger cabin.

We were asked to design a 'beam' to be mounted off the upper centreline of the empennage structure. The beam was to be some 3 yards long and about 5 inches in depth in order to support the safe weight load of the wheels plus the hoist etc. At each end the beam was to have spherical bearings to allow for lateral movement when hoisting the wheels

and the beam would be mounted on a swinging link at one end to allow for the differential thermal expansion between the fuselage skin and the cooler internal location of the beam.

I proceeded to assign the task to one of my mechanical designers, ED are his initials (sadly no longer with us), and in due course the drawings were passed to me for 'approval for manufacture' which were duly released and that was that – or should have been!

A week or so later, I answered a telephone call from one of the planning engineers involved with the task who had a simple question – 'what is the length of this beam?', I replied 'about 3 metres' and that was the end of the conversation. Some time later that afternoon, I spotted a 'delegation' heading in my direction which included my friendly planning engineer who proceeded to place the 'beam' on my desk. I stared at it incredulously, all 8 inches in length, 5 inches deep and with beautiful spherical bearings swaged into the lugs at either end – not a word was uttered by members of the 'delegation!'

Well, I am not usually short of a word or two (my slogan was 'bulls..t baffles brains, but if you have both you're unbeatable'), but on this occasion I confess to being dumb struck – in fact I recall wishing the earth would open up and I would be swallowed up.

What could I say, an understatement would be to say that something was clearly wrong! I called over to the unsuspecting ED to fetch me the drawing of the beam (which I had 'signed-off') – the drawing duly arrived and I proceeded to study it with due diligence – it soon became clear what had happened.

Now, to explain this to readers who

are not familiar with drawing office conventions of the day is as difficult as it was to explain in French to the 'delegation'. Because the beam was so long, ED had chosen to depict the beam at a reduced scale in order to fit it onto an A2 croqui drawing sheet. The end lug details were contained in two full scale scrap views, one for each end of the beam, these being located beneath each end of the reduced scale beam view. A dimension line with arrows, giving the actual measurement between the bearing centres was shown spanning between the two scrap views, this line being broken by zig/zag to indicate the foreshortening of the line. The problem was that ED had laid his scale between the centres of the two scrap views and had quoted the dimension as the arbitrary distance on the drawing paper and not the true actual dimension – hence the shortened beam. This all took a long time to explain and there was much puffing on cheroots, wringing of hands, waving of arms and the rest that only the French can do well. Gradually, they understood and they understood also our (my) intense embarrassment, grins on faces appeared and even a bit of mild applause broke out to lighten up the atmosphere. Of course, I realised it was my fault in not checking the drawing correctly.

Some days later the delegation returned (I had reissued the drawing with the corrections), and to our surprise, they had taken the trouble to polish the short beam to a high gloss and had mounted it on a teak plinth with a small brass engraving with some suitable words of commiseration – this we duly presented to a 'beaming' ED.

The next problem with this 'beam' Project, was to source a suitable hoist, which would be hooked onto a wheeled cradle that we had designed, which would allow the

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landing gear wheels to be pulled along the beam and into the cabin area. I was told that Filton would have to provide this hoist – lots of telexes were sent and the answers coming back was that it was impossible to find a ‘flight certified’ hoist within the available timescale. This was reported to JB who was less than impressed – I was asked to accompany him to his office, whereupon he started thumbing through a very thick glossy ‘mail order’ hardware catalogue – the closest thing I had come across to this was the Gamage’s catalogue circa 1950/60.

He thumbed to the pages related to hoists, consulted me on the safe weight load requirement and quickly found a suitable device. Armed with the catalogue number, there followed a quick telephone call to the supplier’s establishment to confirm that the item was in stock and a second call to dispatch a ‘runner’ to collect the item and deliver it to flight test – it was as quick and simple as that, done on the basis that the item was ‘freight’ to be carried in the cabin and did not need to be ‘flight certified’.

Returning to matters relating to our leisure time and the fact that we had negotiated a long weekend every six weeks to compensate for the longer working week, a number of our team would head off to Andorra in the Pyrenees, a distance of around 80 miles, to enjoy a break and to take advantage of the ‘duty-free’ status of that Principality. Due to the expenses that we enjoyed, certain team members became known as ‘the last of the big spenders’ in recognition of the large amount of ‘goodies’ purchased in Andorra la Vella – the main town. These usually took the form of booze, fags, electrical goods, HiFi audio stuff and the like – all very cheap – rock bottom prices after ‘haggling’ and zero tax.

Now the trip to Andorra involved travelling south, through Pamiers,

Foix, Ax-Les-Thermes, passing through the last town in France, L’Hospitalet (a French customs location at the time) and entering Andorra via the steep mountain pass to Pas de la Casa and then dropping down the other side through Encamp and finally arriving at Andorra la Vella where we would search for a Hotel.

The routine was to check out the price of goods in the very competitive main drag, and load up the car boots and any other available space with merchandise, some of which were ‘special orders’ from our French colleagues. The final hurdle was to get all this ‘non-tax’ paid’ contraband through the French Customs check at L’Hospitalet. This check was somewhat spasmodic, on some occasions there would be no check, whilst on others very nearly every vehicle would be stopped and searched.

It should be mentioned that our little convoy of mainly British registered cars was more than a little conspicuous, due to the fact that all the cars were tail heavy with rear suspensions hard down on the stops! – ‘nothing to declare officer we are just in transit back to England’ was the well rehearsed patter. In truth the French Customs were more than happy to just waive us through allowing us to take a few francs of profit from our French collaborators – just to pay for the fuel you understand, although I think we did have one or two budding Arthur Daly’s in our midst.

Eventually, the time came to return our family to the UK in time of our eldest child to commence primary school. I stayed on in Toulouse for a further four months until the end of my secondment. During this time, without the discipline of my wife to keep our garden in good order, quantities of weeds were growing from the large chipping filled areas of the garden surrounding our bungalow. Knowing that I had a 500 franc ‘surety’, the return of which

rested on the good order of house and garden, I surveyed the scene with some dismay, there was no doubting that clearing up the weeds would not be achieved by hand – **quelle horreur !** I mused and thoughts soon turned towards a chemical attack on the weeds.

I decided to visit the local quincaillerie (hardware shop) in St Martin du Touch in search of something suitable. I remember being bemused by the range of items on offer, and regretting that my ‘out of office’ French was not up to the task of understanding the small print instructions written on the packaging. I took pot-luck with one likely looking product and bought a cheap watering can to dispense said chemicals - with joyous heart and a spring in the step, I returned home to launch the ‘attack’.

I need, at this point, to explain that our large garden was completely surrounded by close planted conifer trees a couple of metres high, forming a very attractive evergreen privacy screen to the garden, it is also relevant for you to know that my neighbour (the one with the cracking daughters) very much enjoyed tending to her rose garden which bordered our garden just beyond the line of conifers.

By this time I was just a week or so away from seeking my 500 francs from my other neighbour who was the owner of the house, so time was pressing to clear things up. I attempted to understand the weed killer instructions and proceeded to mix the chemicals in the watering can. The weather on the day of the attack was somewhat overcast with some rain likely. I pressed on with dispensing the contents of many cans full of this weed killer on the rogue weeds – ‘gotcha’ I thought (in English!) you wretched critter weeds!! and soon the task was accomplished.

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A couple of days later, I was surveying the results of my weed attack, it was a dull autumn day, and I could detect a strong wiff of chemical agents and what seemed like a low hanging mist a foot or so above the level of the garden.

Certainly the weeds were drooping as intended, turning brown and beginning to shrivel up – wonderful job I thought! It was only when I looked more closely that I realised something was different about the look of the garden – the green colour

of the conifers was no longer quite as 'green', there was undoubtedly a 'yellow' tint to the trees – the penny was beginning to drop!

It finally landed later in the day, when my neighbour knocked on the door to bemoan the fact that her prized roses were wilting and what was that smell – was there a connection she wondered! sI had to confess, there was no escaping that it was not coincidence that her plants were going the same way as the weeds and trees.

I was thinking that my 500 francs,

always assuming that I could get my hands on it before the owner realised the trees were expiring, would have to be paid as compensation to the other neighbour. In the event, the neighbour's eldest daughter (one of the 'crackers'), was soon to be married, and would I think of giving her some of our soon to be redundant furniture as a 'wedding' gift – a way out had been presented – the entente cordiale maintained! And I did recover my 500 francs!

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for accommodation and Bristol University Air Squadron used the RAF facilities. I remember that some of my work colleagues used to lodge there as apprentices. There must be a few interesting stories to tell of those days though. If anyone has one to tell then let me know and I'll put it in a Newsletter.

Ken Tooze

In a new retro series, I am reproducing articles written for earlier Newsletters from time to time kicking off with this one written for Newsletter 65 -Summer 2004.

Ken Tooze

Early Warnings of Supersonic Problems by Ted Talbot

At the beginning of the fifties the Bristol Aeroplane Company had been given the task of designing an all steel supersonic research aircraft, initially aimed at Mach 2 but eventually, with new power plants, to reach Mach numbers near 3. The engines for operating at Mach 2 had already been specified by the Ministry and were to be made by the De Havilland Engine Company. At the same time, away up North the English Electric Company was designing a fighter aircraft to fly at Mach 2, later to become the formidable Lightning.

The Lightning had a basically subsonic Rolls-Royce engine, equipped with reheat to enable it to get there. It did, frequently. The Bristol Type 188 had an engine designed to operate at Mach 2, but not necessarily to get there even with reheat... It didn't. This aircraft was to have aerodynamic refinements to help it along, rather than the brute force of the Lightning and its competitors. The main body of the aircraft was to have a coke bottle shape to reduce the drag; the air intakes to the engines were to have variable geometry to minimise the drag still further. On the other side

of the Atlantic they were publishing reports on power plants that showed similarities with that of the 188, but from their shape it could be seen that they were aimed at Mach 3 from the start. The American aircraft eventually became the renowned spy-plane; the SR 71 Blackbird. The Type 188 eventually joined the ranks of the popular Ministry group under the heading: Project Cancelled.

Sexy Shapes.....

The coke bottle design for the body, or to give it its more formal name the Area Rule was, as was everything else, in its infancy and the theory for it, to be known as Slender Body theory was in an even more embryonic shape.

A Technibit.....

The draughtsman was asked to draw cross-sections through the body and wings at angles corresponding to each Mach number and plot the various areas on the centreline of the body. This gave a series of graphs with the appearance of a two-humped brontosaurus. These lines would be smoothed and averaged out, He would

then be expected to add or subtract from the areas of the current fuselage to achieve the smoothed lines. This series of graphs he presented to the Aerodynamics Office after drawing what he thought was a mean line through the lot

In rising seniority three aerodynamicists (Ted, John Flowers and Mick Wilde) then drew what they were sure a better mean line should be. This was presented to the Chief Aerodynamicist (Bill Strang) who drew his own version; saying that there must be a mathematical theory to avoid all this work...so find it!

This 'final version' was very similar to that drawn by the draughtsman, who left the office with a very smug look on his face. The draughtsman was back in a very short time "What accuracy do you want?"

Seeing that he had witnessed the highly technical manner in which the final lines had been defined it was deemed politic not to be too severe. "About five percent" He then disappeared for at least half an hour, it being mid morning tea break and then promptly returned, holding

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up the spaghetti of graphs as he lent over the top of the desk. Across the 'final' solution, from the front of the forward hump of the brontosaurus to the rear of the back hump he had drawn a straight line. This would have produced a parallel fuselage, something with which no modern supersonic aircraft could expect to wear, if it was to be considered sophisticated. "We will have a better specification of accuracy when we have developed the theory. Call you back!" "Don't be too long because I will have to book my hours to Waiting Time!" His was a veiled threat, as there was the usual purge on non-productive 'waiting time'.

The theory of slender body drag was in its infancy (and we were unaware that it would not develop satisfactorily for the next decade) so we had to think of something plausible, but satisfactory at the same time. The next day he was told to make it one percent with a maximum skin waviness of one degree. Well, why not?

Two years later as I walked past the open door of the large hangars, variously now called the Brabazon, Britannia, Concorde or Assembly Hangars, depending who was talking and when they joined the firm, I could see a very complex assembly jig under construction. What's that for?" "It's the final stage jig so that we can get the correct profile you required for the fuselage skin. When we spot weld this stainless steel it goes twang as we take it off the first stage jiggling, so we have to be very careful!" The production people were beginning to learn that they should have challenged the design rather than accepted the challenge.

Steam Technology.....

As the design progressed more designers were drafted in to cope with the more complex technology in all areas. One such addition, put in a very Responsible position, commenced a review of several critical areas. It was rumoured that his sole significant contribution to his last design was the seat of the toilets. He now wanted to relieve the new 4000psi hydraulic system of the large load imposed on it as the undercarriage was raised, by driving it by

steam! The steam would be provided from a flash boiler wrapped around the turbines of the engines, thereby putting no measurable load on the engine. On certain aspects of drawing office activity things could move faster than others. The next morning there was a small gathering around one of the pillars in the drawing office guffawing at a large, well-drawn cartoon hanging from it. As the day progressed word got around and engineers, secretaries and others could be seen wandering in on some pretext or other to have a look. It showed a drawing of the aircraft diving down, cockpit hood drawn back and Godfrey the Chief Test Pilot, with hair streaming back in the slipstream showing a soot-streaked face. His shoulder flash showed his new title - Chief Stoker.

The new man, now referred to as Stevenson's Apprentice, did not last much longer.

Enter the surges.....

The engines for the Type 188 were De Havilland Gyron Juniors. They had been specified in the cloistered surrounds of the MoD Procurement corridors and were to be designed to operate at Mach 2. The results from the Number Two test cell at the National Gas Turbine Establishment at Pyestock showed that the Gyron could operate at this condition but only if the turbine stayed on. The engine terminated abruptly when the turbine left the engine and tried to cut its way out of the Test Cell.

A Technibit.....

In the Gloster Javelin test bed however there were indications that achieving this speed would not be without its troubles. The reheat was temperamental and, even though the Javelin's engine air intake was a smooth, round tube the engine surged. The bangs startled us, as well as the pilot. It did not augur well for the 188 whose intake contained a cone held by five supports, between which are ten auxiliary inlets to open at low speed, behind which are ten spill valves to open at supersonic speeds. There was very little inside surface left to control the airflow. However future extensive wind tunnel testing showed how to get over these problems and provide a better air pattern than that of the Javelin.

So it looked as though the road to Mach

2 would be bumpy but even then it was essential that the reheat system worked consistently, which it showed no signs of doing. De Havilland called for an urgent meeting at Bristol to talk reheat. They were very worried because the installed reheat would light consistently, but as the throttle was pushed to the stops the flame either responded, or went out.

As the De H designer was explaining the problem, the Bristol chairman (Harry Whiteside) called for Frank, the bearded wonder. Frank came into the meeting and was promptly sent out again with the spare set of drawings; no explanation, but a command to "look at that and tell us what you think!" Within half an hour the conference room opened and the beard was pushed through. Receiving a nod from the chairman Frank entered. "Funny thing" he said "do you find that when reheat is selected and the throttle is pushed forward, then sometimes you get full reheat and sometimes it goes out?" There was silence until the De H designer said a questioning "Yes?" "Well I'm not surprised as it's built into the control linkage!"

It was now too late to modify the linkage already installed in the prototype for the ground runs scheduled for later in the month. However, after studying the diagnosis, the engine men sent along Asbestos Harry to supervise the runs. This gentleman appeared to be impervious to heat. With the engine running behind and to the side of the exhaust he would slowly lean over Towards the jet and have a glancing look at the reheat flame in the jet pipe, his hair flapping in the blast. Ear defenders were not mandatory and were therefore not used. Should there appear to be a problem, he would remove a panel on the side of the nacelle and insert a hand between the skin of the nacelle and the jet pipe to pull the erring lever into its proper position. The aircraft would shudder as it felt the full kick of the reheat thrust. Asbestos Harry would then lick his tingling knuckles and then give the thumbs up signal to whoever was in the cockpit.

This had to be classified as an interim fix!

To be Continued /

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SUBSCRIPTIONS

History repeats itself year on year, a large number of members have still not paid their subscriptions for 2011. Fortunately they still have time to redeem themselves before December 31st arrives.

To help those members who have not paid up, a reminder from our Membership Secretary is included in this Newsletter.

A standing Order can be raised at any time quoting the annual renewal date of January 2nd or there about. The details you need for a Standing Order are as follows, your Bank will assist you if you have any queries.

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