



The Air League Newsletter

Issue 5: September/October 2008



ABOVE - A model of the Mantis UAS demonstrator which was unveiled by BAE Systems at FI2008 and could become the basis for a new surveillance and close air support platform, optimised for expeditionary warfare and low-cost operations.

There was a surprise at the start of this year's Farnborough International air show as a new unmanned air systems demonstrator programme was launched, jointly funded by the Ministry of Defence and an industry team led by BAE Systems. Development of the large twin engine unmanned aircraft, named Mantis, has been underway for some time behind closed doors, and reflects growing UK interest in the capabilities and export potential of Unmanned Air Systems (UAS).

The UK government has already committed funds to the development of a stealthy UCAV demonstrator, Taranis, which is about the same size as a Hawk, and has a similar Rolls-Royce Adour engine. Taranis is aimed at de-risking advanced technologies and evaluating what might be needed as an element within the RAF's Future Combat Air

Capability. MOD is currently looking at what is known as Deep and Persistent Offensive Capability (DPOC) and is expected to conclude that the UK needs a stealthy unmanned attack platform to operate alongside manned F-35 aircraft when the time comes to retire the Tornado GR4 fleet after 2025. The F-35 is expected to provide a partial DPOC capability from around 2018.

The new Mantis is a completely different concept to Taranis, and aims at providing a quick and affordable route to a long-endurance multi-role air platform that would be big enough to carry a substantial weapons payload as well as a range of surveillance sensors. It would build on the operational RAF experience being gained from a small number of US-built General Atomics MQ-9 Reaper UCAVs but would establish full UK sovereignty in manufacture and use and, importantly, would be autonomous rather than ground-

controlled. This is seen as being an important requirement for expeditionary warfighting, such as in air operations over Afghanistan, and would provide a persistent ISTAR and close air support capability at far less cost than using Harriers, Typhoons and Tornados. Its small support footprint compared to a conventional RAF detachment of manned aircraft is probably essential to sustain such operations in the future.

Mantis will be able to take-off, in day or night conditions and in all weathers, fly a programmed mission profile, identify and track targets, monitor areas of interest, deliver high-quality images, still

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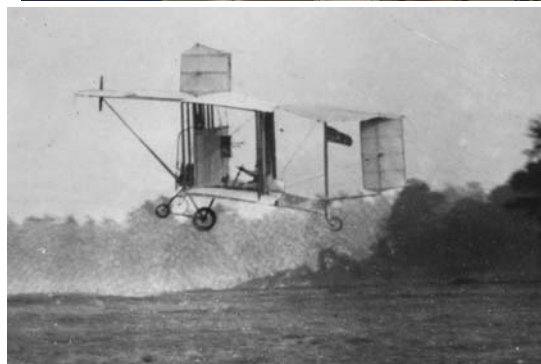
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Celebrating the Centenary of British Powered Flight

October marks the official Centenary of British powered flight, for on 16 October 1908, American-born Samuel Franklin Cody made the first powered, controlled, and sustained flight in Great Britain in a heavier than air aeroplane of his own design. At the time Cody was employed by the British Army as a kite instructor at Farnborough and had become the leading expert in the country in military kite design, and was especially famous for introducing highly controllable multi-box-kites that could lift observers to great heights in great safety. In 1901 he perfected a wing warping mechanism to improve the flying characteristics of his kites and on one occasion a Cody multi-kite reached an altitude of 8,700 feet. In between working on Britain's first military airship, *Nulli Secundus*, and instructing the Army and Navy on kite operations, Cody built and tested his own gliders and a pilot-less powered kite, which flew successfully under controlled conditions in 1907.

Exploiting his self-taught aeronautical knowledge and skills he built a very large flying machine in one of Farnborough's airship sheds, British Army Aeroplane No. 1A, powered by the Antoinette engine from *Nulli Secundus*. He was ready to start trial hops by the summer, but was frequently diverted by other military work. At last, on October 16th, after many tests and trial runs, and after making modifications to the aeroplane, BAA No. 1A took off effortlessly, watched by military observers, local people and members of the press. He flew from the hangar area eastwards for 75 yards and hopped uphill to the plateau where the RAF No. 1 Officers'



ABOVE - The FAST Cody Flyer replica made its first appearance at Farnborough International in July and will be on public view at the Farnborough museum from 16 October. (INSET: Cody's first flight in 1908)

Mess was later built (now the site of the new Aviator Hotel). There he turned the machine to face the West and took off across Farnborough Common on a 27 second flight which covered 440 yards flying at a height of between 30-40 ft. The aircraft climbed over several small trees before Cody was forced to take avoiding action to miss a group of taller trees, whereupon one wing clipped the ground and that historic flight came to an abrupt end. His aircraft would have to be rebuilt but Cody, the former cowboy and showman, had assured his place in British history. Despite his lack of formal qualifications he had succeeded where more academically gifted aviators had failed, and had produced a rugged and practical aeroplane that could lift and sustain itself in the air without the assistance of launch rails, catapults or towing vehicles.

As a part of the celebrations to mark the Centenary of powered flight in Great Britain, Farnborough International provided a "Pioneers of Flight" pavilion, sponsored by BAE Systems, in which, for the first time ever, replicas of a Cody Flyer, Wright Flyer and A V Roe 1 could all be seen together. The Roe machine came from Brooklands and the Wright Flyer from Dayton Ohio, while the BAA1A replica was making its first public appearance having been built by the Cody Flyer Project team from Farnborough Air Sciences Trust, sponsored by Lockheed Martin and many individual and company donors. On 16 October 2008, just a few yards from where that first flight was actually achieved, FAST will open a new Cody Pavilion containing the 52ft span Cody Flyer replica.

COMMENTARY *by Aeronautica*

A TIME FOR REFLECTION

When the first Farnborough air show was held in 1948 British powered flight was only 40 years old, but the country had emerged after six years of war with over twenty major aviation companies and a total design, research, development and manufacturing capability that was on a par with the much larger US industry. In terms of innovation and creative engineering the UK was a world leader, having transformed the jet engine into a practical means of propulsion. Possessing many of the world's most talented R&D scientists and engineers, including many from Germany, the Royal Aircraft Establishment enjoyed a global reputation that other aviation nations could only envy. Within the aircraft industry itself, the design offices which had expanded so rapidly in the war were racing ahead after embracing the new technologies associated with jet engines and supersonic aerodynamics. At a time when the RAF's primary heavy bomber was still the Lincoln, the Vulcan and Victor – both light years ahead in concept and performance – were already designed with prototypes being built as priority programmes.

Fighters had not progressed as rapidly, perhaps because the proven Meteor and Vampire were so capable of being stretched and modified while the government had cancelled the Miles M52 supersonic jet programme. Swept wings were seen as the key to breaking the sound barrier and so by 1950 there was a flood of new designs - the Sea Hawk, Swift, Hunter, Javelin, and DH110. It took Fairey Aviation's FD2 to break the world speed record and then came the English Electric P1B, the first truly supersonic British fighter. Where the industry was sadly lacking was in strategic vision and marketing skills, as competing companies chased after constantly changing official

requirements (for civil and military needs) and politicians cast aside backing for potentially world-beating projects. With all the foresight of a bull in a china shop, the government of the day scrapped off the production line an advanced four-jet 150-seat airliner and troop transport, the Vickers V1000, just as Boeing was on the brink of introducing its own jet challenger. On the military front the infamous 1957 Defence White Paper swept aside a whole new generation of all-British military aircraft including a Mach 2 strategic bomber, a Mach 2.5+ reconnaissance aircraft, new hybrid jet/rocket fighter interceptors and a multi-role tactical fighter. In the 50s and 60s the industry had become over-reliant on a captive home market - state-run BOAC and BEA and the British services - then provided a comfortably large domestic market and exports were almost an after-thought where decision-making was concerned. Some exceptions couldn't help but be world-beaters, the DH Dove, Vickers Viscount, Hawker Hunter and English Electric Canberra leading the field. But other aircraft, including the VC-10, Trident and Lightning, were far too closely optimised for unnecessarily limiting domestic customer requirements and suffered accordingly in overseas sales campaigns.

After the big corporate amalgamations in the 1960s, the industry had cut out much of the over-capacity and was extremely well placed to exploit the continuing technological leadership it had still maintained against all odds. Britain's lead in vertical take-off and "swing-wing" techniques, large civil aircraft design, large space launchers and low-level military strike aircraft design was ahead of all rivals at one stage, and the decision to build a supersonic airliner was generating a new wave of aerospace knowledge. But then, just as the appropriate designs were reaching a state of design and development maturity – and

when most of the money had already been spent - a catastrophic series of programme cancellations in 1964-65 laid waste the home aerospace capability. TSR-2, P1154, HS681, Blue Streak ELDO launcher, and later on, the BAC Two-Eleven and Three-Eleven, all went into oblivion, taking the hopes and aspirations of a generation of aerospace engineers and thousands of jobs in the supply chain. All had enormous export potential. Adding insult to injury, the Plowdon Report, which recommended a drastic culling of UK aerospace research and development activity in favour of buying more off-the-shelf from the USA and developing all future programmes with Europe, was accepted by government and forms the basis of today's aerospace culture. The decision to favour Rolls-Royce with development of the RB211 engine for the Lockheed TriStar rather than supporting both Rolls-Royce and BAC with the 3-11, pushed the UK into a non-recoverable junior partner role in Airbus Industrie. Even at this level UK wing work was only retained as a direct result of the vision of the late Sir Arnold Hall and the investment commitment of the Hawker Siddeley Group. The RB211 and TriStar programme soon led to the downfall of Rolls-Royce itself, though the much criticised taxpayer-funded bail-out preserved the company for a new future life.

So what was left by the early 1970s after all the programme carnage? Surprisingly, quite a lot, though nearly all resulted from legacy programmes inherited by the nationalised British Aerospace. The UK's supersonic VSTOL fighter may have gone, but the subsonic P1127 (RAF) went on to become the outstanding Harrier/Sea Harrier/AV-8 family which is still in the front line today. The Jaguar, Tornado and Typhoon have provided a flexible family of RAF combat aircraft and

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AIR SHOW

Farnborough



ABOVE - The Airbus A380 lifts off past a Tornado F3 adorned in RAF 90th anniversary markings.



ABOVE - A Boeing C-17 of the USAF dominates the static park with a SAAB 2000 Erieye AEW aircraft beyond.



ABOVE - The Red Arrows provided a superlative performance as ever.

With the public days at the RIAT event at Fairford completely washed-out, it fell upon Farnborough International to provide the country's largest public air show spectacle over the weekend of 20-21 July, following on from a highly successful trade show during the previous week, where over \$88 billion of orders were announced. The show facilities have improved visibly in recent times and there was plenty for visitors to see in the static parks and exhibition halls. The new-look show site certainly looks smart and professional with the highest standards of display presentation on the many stands, and within the growing township of corporate pavilions.



ABOVE - The mighty Vulcan makes its ear-shattering



ABOVE - A unique picture showing descendants of the early aviation pioneers standing in front of the replica of British Army Aeroplane No. 1A at Farnborough. From left to right: Amanda Wright Lane, great grandniece of the Wright Brothers, Peter Cody, great grandson of S F Cody, SF Cody replica(!), Samuel Franklin John Cody, great grandson of Cody, and Eric Verdon Roe, grandson of Alliott Verdon Roe.



ABOVE - The Brookland's Vimy replica was caught by a runaway onto the grass close to the crowd-line before a halt in long grass on the far side. No damage was cancelled following continuing high winds.

SPECTACULAR

International 2008

One of the main aerial attractions, the F/A-22 Raptor, only paid a fleeting visit to Farnborough on the opening trade day, but this was enough for onlookers to appreciate the impressive power and amazing “pixelated” agility of this combat air platform. It was almost unfair to fly Typhoon immediately afterwards, but this latest RAF multi-role fighter nevertheless flew throughout the week showing what a good all-round performer it has become. Probably the two most memorable shapes in the sky during the week’s display routines were provided by the Airbus A380 and the newly-restored Vulcan B2. The A380 is hardly the prettiest airliner in history, but its display was awe-inspiring, especially when making a high alpha 90 knot fly-by, a feat accomplished in near-silence, and even when the four Rolls-Royce

Trents were opened up to full throttle, there was just a gentle rumble as the huge beast banked hard to starboard and then climbed like a Canary Wharf lift! The Vulcan seemed so familiar back in the air it hardly seemed possible it has been missing from its natural element for so long. Keeping it there is another matter and the sheer cost of the project is likely to remain a severe challenge unless a major corporate sponsor can be found. Many regret that the RAF didn’t keep a couple of squadrons in service as it could have provided, even today, a superb long-range air platform

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BELOW - In the exhibition halls the green-them was popular amongst the engine manufacturers. This is a CFM-56 on the Safran stand.



ABOVE - Also in the Pioneers of Flight Pavilion the Brookland's Roe 1 replica was on show while (BELOW) a Wright Flyer was displayed having been brought all the way from Dayton, Ohio.



take-off as crowds watch in awe.



very strong cross-wind as it took off and it departed the re-crossing the runway at 90 degrees and being brought caused though the Vimy flight demonstration was



ABOVE - Russia wants to cash-in on the market for new 150 seat civil jets, and this Irkut MC-21-200 is its latest proposed programme.

INDUSTRY NEWS

- The airline industry in the Asia Pacific and Gulf markets shows no sign of halting its rush for growth and during the Farnborough air show it was announced that Asiana had ordered 30 Airbus A350XWBs plus options for another 10. Deliveries would start in 2016. Qatar has ordered four A321s and Dubai's leasing company DAE has ordered 100 aircraft comprising 70 A320s and 30 A350s. Etihad signed orders for 20 A320s, 25 A350s and 10 more A380s. Aviation Capital Group has ordered 23 A320s. Meanwhile in North Africa, Tunisair has ordered more 16 Airbus aircraft comprising A320s, A330s and A350s.
 - Boeing has signed up 54 737-800s for Fly Dubai while Etihad has bought 35 787s and 10 777-300ERs. Malaysia Airlines has ordered 35 737-800s while ACG has signed for 15 737-700s. In Nigeria Arik Air has bought seven 737-800s and announced that it is to buy four 787-8s.
 - The big programme announcement at Farnborough was the commercial launch of the Bombardier C-Series 110-130 seat twinjet powered by P&W1000G geared turbofan engines. The wings will be designed and manufactured in Belfast by Shorts, which is celebrating its own centenary this year. Lufthansa has become the first launch customer with commitments for up to 60 aircraft. Qatar and ILFC are said to be close to joining Lufthansa and should push total commitments beyond the initial 100 that Bombardier said it would require to launch the programme.
 - Rolls-Royce has invested over \$22 billion over the last decade in technology and infrastructure and a growing proportion was spent in Germany and its US plant at Indianapolis. Last year alone it spent over \$3 billion on R&D and its 2007 order book exceeded \$72 billion. Future prospects look excellent as the company is well placed on all the major widebody programs from both Boeing and Airbus and the Trent XWB is currently sole choice on the A350XWB. Airbus has been anxious to offer an alternative engine but the GE/P&W Engine Alliance has not been able to provide a suitable competitor engine in the same thrust bracket that would be needed for the stretched A350XWB variant, so for the time being Rolls-Royce has this market to itself. The new Trent XWB engine is to be 17% more fuel efficient than the Trent 700 used on the A330. Rolls-Royce is currently studying open rotor designs and is fully participating as a leading contributor in the European Clean Sky initiative, with Snecma as a partner. In due course this research work may evolve into a new family of high-tech engines for the next generation of short-medium range airliners.
 - BAE Systems is now determined to become a major player in what is poised to become a multi-billion dollar international UAS market. Its newly formed Global UAS Strategy Team will draw together the company's international expertise and capabilities and aims to secure contracts in home markets and beyond. The company believes that within five-six years its current customers will be spending \$10 billion a year on military unmanned systems. The Herti has been flown in five countries and was deployed to Camp Bastion in Afghanistan, showing that it could provide a fully autonomous capability in operational conditions and also that it can operate fully integrated with other manned and unmanned aircraft. A productionised Herti is now to be offered with a new, more robust mission system. Its capability has been extended to include electro-optical and infra red sensors and full motion video. The airframe is now manufactured in the UK by Slingsby aviation based on an original design by J&AS Aero Design of Poland. It has a BAE Systems' Imagery Collection & Exploitation (ICE) system and offers potential for maritime, coastline, border surveillance as well as military missions and also has application potential for pipeline, plant and infrastructure surveillance and insurgent detection. At the show for the first time was an armed Herti, known as Fury, and was shown carrying two underwing new generation laser-guided Lightweight Multirole Missiles from THALES. It has new mission system avionics and a newly developed stores management system. Initial live firing trials of these development missiles have already taken place in Australia.
 - The Cobham Group has announced its interim results:
 - Implementation of growth strategy is driving results.
 - Revenue growth of 14.3% across Technology Divisions.
 - Underlying EPS growth of 22% (19% at constant translation exchange).
 - Cash conversion at 107%.
 - 10% increase in interim dividend.
 - Operating performance continues to improve.
- Distinctive technologies and capabilities providing momentum:**
- Recent contracts won underline this, including more subsystem wins: \$40m LBT transmitter production;
 - R&D investment continues – 6.3% of technology divisions' revenue; 10% including customer funding.
- Record order book gives high level of visibility for the future:**
- Order intake drives order book higher to £2.2bn (2007: £1.7bn).
 - UK FSTA programme \$300m, microclimate cooling systems for vehicles (Bradley) and restraints, further orders for VIC-3 \$54m ahead of VIS-X.

Strong positions in robust/buoyant markets - both geographic and by sector:

- Geographic – USA, India & Middle East – India: 7,000 shipborne and vehicle mounted antennas, suite of antennas for Su-30, OBOGS, avionics and antennas for T-50 (Korea) and F-16 (Turkey).
- Sector – US military; homeland security – 55% product revenues military/ govt/ homeland security.

- Marshall Aerospace has designed an advanced digital cockpit and avionics upgrade for the RAF's Tucano advanced trainer fleet. No decisions have yet been made concerning the future trainer that will be provided within the MFTS programme to replace the existing non-digital Tucanos, and a fleet upgrade is one option in competition with Aermacchi and Pilatus who are both offering new generation aircraft.

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and video, if required attack targets with precision weapons, and return to base and land. These missions will be undertaken autonomously, not under operator control like most of today's UAVs, although the rules of engagement concerning any attack with weapons will require a human decision in the operational loop.

Adopting a spiral development policy, BAE Systems intends to develop Mantis in just 15 months but will be able to adapt the capability across different platforms. BAE Systems has entered into a jointly funded 1st phase of the Mantis programme with the UK MOD and will bring together technologies, capabilities and systems to demonstrate the potential of a large unmanned aircraft to support future UK operational needs. Key industrial partners on the programme are Rolls-Royce, QinetiQ, GE Aviation, Selex Galileo, Meggitt and Slingsby. The full-size mock-up shown at Farnborough will soon be followed by the actual aircraft. Final assembly, ground testing and infrastructure integration will take place later this year, the first flight

being planned for early in 2009. There are two engines for added mission reliability and the aircraft will have a triplex flight control system. Reliability will be a major factor in the demonstrator programme and multiple redundancy of key systems is a lesson that has been learnt through operational experience. The mission endurance may be for up to 20 hours at an altitude of up to 50,000ft and the weapons payload could include up to 12 Brimstone missiles and six Paveway precision guided bombs.

BAE has been using a specially modified "surrogate" Jetstream development aircraft to help de-risk the UAS technologies and act as a test bed for the many systems involved in the different programmes linked to autonomous operations. The Mantis project benefits from advanced construction techniques developed on earlier UAS programmes including Raven, Corax and Herti and provides for a wide range of "plug and play" systems and equipment. It is too early to say how an operational version of Mantis might fit into the UK's future military inventory, but speaking at

Farnborough, AVM Simon Bollom, DG Combat Air, said, "Its rapid development will provide indicators of how we can improve the acquisition process to deliver capability swiftly into fast changing military environments. A development programme like Mantis will also help maintain UK indigenous capabilities in this fast-evolving area. We expect to see positive early results before deciding about further investment in a longer term programme."

The RAF is known to want at least 10 Reapers, but it would make little sense in the context of the government's own Defence Industrial Strategy to make such a commitment to yet another off-the-shelf purchase from the USA if a more advanced home-grown product, with export potential, could be developed and supplied within an acceptable timescale and at acceptable cost. If the demonstrator phase goes well Mantis could provide a world lead in operational autonomous UCAV capability, but a speedy decision to buy production systems will be needed or the UK may be out of the game for good.

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Airbus has developed out of all recognition, even if the UK's 20% share has now been sold off. But after the demise of the 3-11, the UK's lead in European civil air transport production took a dive. The BAE146/RJ family was reasonably successful but was terminated prematurely after 9/11 and never developed to its ultimate promise, much like the BAC1-11, which was seen as a threat to 146 sales and was off-loaded to Romania. When BAe was privatised it ruthlessly reduced manufacturing capacity and duplicated facilities, but invested little in new aircraft, seeing the future in upgrading existing programmes and defence systems

integration. The highly successful HS125 business jet was denied investment for new models and was sold off, but is still thriving under US ownership. Even the Hawk, another outstanding export success, has not been replaced and is now struggling to compete with more modern supersonic, fly-by-wire competitors. Only future unmanned programmes give any hope that UK military aircraft production will continue after Typhoon, apart from component work on the F-35.

As we celebrate the UK's first 100 years of powered flight we recall an industry that was second to none in delivering what it was asked to

do. It truly changed history and helped shape the modern world. But such is the current level of foreign ownership we now have to describe it as "The Aerospace Industry in the UK". There can be no going back. The industry has become global with inward investment bringing much needed enhancement of facilities and more competition in the UK home market has delivered better value. The UK is still one of the leading aerospace players, especially in aero-engine capability and defence electronics, and surviving suppliers are well-placed to continue to attract major participation in international programmes. But it could have been so much more.

MEMBERS' NEWS

Mark Brown wrote to thank the League for its support and provide an update on his progress. Mark was awarded a flying scholarship in 2001 and, with his previous gliding experience, gained one of the first NPPL's in the country. He received further financial assistance from the Fresson Trust allowing him to upgrade his NPPL to a JAR PPL at the Moray Flying Club. He was then awarded a Bursary, which allowed him to complete both IMC and night Ratings, again at Moray. Mark completed his studies at Glasgow University gaining a BSc with merit in Aeronautical Engineering and he used much of his free time keeping his PPL current and fly in gliding competitions at National level. In 2006 Mark commenced the CTC

Wings scheme, graduating in February 2007. He was awarded the Tony Angel award for best Instrument flying cadet from that year's intake. In March of the same year he gained employment with EasyJet as a 737 First Officer. Mark now plans to unfreeze his ATPL and, in November, he will complete an A320 type rating after which he will be based in Milan flying the Airbus. Mark thoroughly enjoys his job, the challenges it provides and the sense of achievement it brings. Whilst the training was hard, he feels privileged to have been helped at an early stage in his career by the League. He looks forward to the future and hopes one day to be able to return something to those that helped him so generously.

DISCOUNT AT Foyles Bookshops

Have you visited Foyles Bookshops in the Charing Cross Road and at the South Bank, Royal Festival Hall to take advantage of the 10% concessionary discount to you as an Air league member? To claim the discount you must produce your current Membership Card to the cashier who will then give the discount.

Members Area

You are reminded that our website at <http://www.airleague.co.uk> has a **Members Area** which can be accessed using the last five digits of your membership number as your **Username** and your surname as the **Password**, which is case sensitive i.e. it starts with a capital letter. If you have any problems please call Emma on (020) 7222-8463 and she will help you through the process.

New Members

Corporate Members: AAR Corporation, Quo Vadis UK Ltd and Vector Aerospace International.

Full Members: Mr D R Anthony, Mr E J H Dixon, Mr C Field, Ms P Patten and Mr D Thomas.

Student Members: Mr O E Bristow, Mr J Garfield, Mr A Gyarmati, Mr C Hannon, Miss M Isaac, Mr J Newman, Mr L O Quadry and Miss F A Rolfe.

Diary Reminders

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| 29 October 2008 | Andrew Humphrey Memorial Lecture, 4 Hamilton Place.
Speaker: Sir Brian Burrige, Chairman of The Air League. |
| 5 November 2008 | Associate Parliamentary Aerospace Group Meeting,
House of Commons.
Speaker: The Rt Hon Ruth Kelly MP Secretary of State
for Transport. |
| 17 February 2009 | Centenary Lunch, New Zealand House. |
| 17 February 2009 | Slessor Lecture, Willis, 51 Lime Street.
Speaker: Major General B White-Spunner. |
| 14 October 2009 | Centenary Banquet, Mansion House. |
| 17 November 2009 | Andrew Humphrey Memorial Lecture, 4 Hamilton Place.
Speaker: Mr Will Whitehorn, Virgin Galactic. |

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carrying large numbers of stand-off precision weapons, just as the modernised B52 still does with the USAF.

One of the biggest earthbound attractions was the Pioneers of Flight Pavilion situated close to the new FIVE exhibition building, occupied for the show by BAE Systems. The early flying machines in the Pioneers Pavilion gave visitors a chance to compare the very different sizes and designs of these incredible aeroplanes and working Cody and Wright Flyer simulators never ran out of customers, anxious to experience for themselves how easy, or otherwise, they were to fly.

The heavy commitment to the cancelled RIAT show meant that Farnborough had virtually no RAF aircraft on display, other than the Red Arrows and a Typhoon. An exception during the week was a 5 Squadron Sentinel R1, showing what the latest addition to the ISTAR fleet looked like, and the Army showed off one of its Apache attack helicopters. A civilian aerobatic display team, "The Blades" provided some very remarkable flying and another welcome presentation was a First World War re-enactment team flying replica WW1 fighters. EADS provided its Airbus A310 flying boom air refuelling demonstrator aircraft, while in the company chalets, the war of words concerning the future US tanker programme was an enduring topic. Elsewhere, a familiar debate on the environmental impact of aviation continued, alongside company reassurances from Boeing and Airbus that their 20-year forecasts for 23,000+ new large airliners were robust. We'll see!



THE AIR LEAGUE

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