



THE HAWKER ASSOCIATION

NEWSLETTER NUMBER 6 - SUMMER 2004

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Members. Contents © Hawker Association

EDITORIAL

Welcome to the sixth Newsletter. Thanks to those who have sent contributions. All of you must have tales to tell of your times at 'Hawkers'. Don't be modest; jot them down and send them in. Please. Also, unclassified news of current Harrier and Hawk programmes would be most welcome from our working Members.

Our first Summer Barbecue, held in the shaded courtyard of the Hawker Centre, was a great success being blessed by perfect weather. The bar was open, the food was good and plentiful and the company was lively, especially so as many members came with their partners. Thanks are due to Percy Collino who worked hard with the Centre's team to ensure that all was as we wanted it. He also organised and ran the raffle which had especially good prizes, many donated by Members. Thank you.

At the AGM we elected John Glasscock as our first President and welcomed three new Committee Members: Jan White (Public Relations), Ken Batstone (Project Office/ Airworthiness) and Les Palmer (Contracts), whose many talents and varied backgrounds will ensure that your Association continues to thrive. Your Committee is here to meet Members' wishes so please let us have your comments on events and suggestions for new ones; the Committee needs this feedback. Sadly, Gordon Jefferson stood down from the Committee now that we are up and running. His cheerful demeanour and positive attitude will be missed. Thanks for all your help, Gordon.

Included with the last Newsletter was a **Membership Renewal Form**. If you have lost it, don't worry. Just send your five pound subscription cheque, payable to The Hawker Association, to Barry Pegram (12 Becket Wood, Parkgate, Newdigate, Surrey, RH5 5AQ) if you joined before October 1st, 2003. Please include your full name, postal and e-mail addresses, and telephone number as a check on our records.

Write to: The Editor, Chris Farara, at 24 Guildown Road, Guildford, Surrey, GU2 4EN.

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PROGRAMME FOR 2004

Wednesday 14th July

Talk: "Pegasus Development". Gordon Lewis (Bristol's BE53/Pegasus project engineer at the beginning of the project).

Wednesday 11th August

Social gathering with video.

Wednesday 1st September

Visit to The Museum of Army Flying, Middle Wallop.

Wednesday 8th September

Social gathering with video.

Wednesday 13th October

Talk: "Test Pilot Training." A.V-M Mike Adams.

Wednesday 10th November

Talk: "A Situation Report - BAE S Air Business". Simon Howison (BAES Group Engineering Director - Air Systems).

Wednesday 8th December

Christmas Lunch.

Unless otherwise stated, all meetings are at the Hawker Centre - the old Sports & Social Club - and start at 2.00 pm.

The Museum of Army Flying is at Middle Wallop on the A343 SW of Andover. Please find your own way there (car sharing?), buy your entrance ticket and meet inside the entrance at 2.00 pm. The Museum has much to interest Members as the Royal Flying Corps and its Sopwith aircraft are featured prominently. Lunches and refreshments are available. The website is <www.flying-museum.org.uk>

KINGSTON AVIATION MEMORIAL

In the last Newsletter Les Palmer, who is in charge of fund raising, asked for volunteers to help him with planning and development of a data base of potential donors. He needs people willing to devote only a few hours occasionally now, but perhaps each week later, to contribute ideas and, eventually, to help with the despatching of appeal documents. He expects to start in the summer, this year. Here is an opportunity to make a valuable contribution to a project that will ensure that no-one who visits Kingston can remain unaware of the illustrious record of the 'Hawker' companies.

His request fell on deaf ears. Surely there must be one or two Members who feel that the memorial is a good idea and can spare a little time to help Les raise the funding? **Please telephone Les on 01784 460418.**

HAWK ANNIVERSARY

August 24th this year is the 30th anniversary of the first flight of the first Hawk, XX154, by Duncan Simpson from Dunsfold. CA Release was granted in April 1976 and No.4 Flying Training School at RAF Valley started operations in the following November, just 27 months from first flight. The Hawk is still in service with the RAF in flying training and weapon training roles as well as having many other specialised uses. Over 900 Hawks have now been sold to 19 air arms, world-wide; and it continues to sell. Those of us who contributed to this outstanding record can feel justly proud.

ANOTHER ANNIVERSARY

April 6th this year was the 10th anniversary of the first flight of the first Eurofighter from Warton. The RAF accepted their first Typhoon, as the type has been named, on 30th June 2004, 123 months from first flight, and the Typhoon Operational Evaluation Unit, No.17 (Reserve) Squadron, is now flying four two-seaters from BAES Warton. In July next year the aircraft will move to RAF Coningsby. Those of us who were reprimanded by our northern colleagues for being a few weeks late delivering some export Hawks can be excused a quiet chuckle.

OBE FOR SIMON HARGREAVES

Dunsfold and Warton test pilot Simon Hargreaves has been awarded the OBE for his contribution to flight testing in the United Kingdom. Simon was the lead STOVL test pilot on the Lockheed-Martin Joint Strike Fighter X-35 demonstrator as part of the BAES team working on the project in California. He is now Deputy Chief Test Pilot on the Harrier and Tornado programmes. As a Commander in the Royal Navy Reserve he flies the Sea Harrier FA2.

SEA HARRIER RETIRES EARLY

Defence spending cuts have led to the Sea Harrier FA2 being withdrawn from service while still relatively young; the last new-build FA2 (ZH813) will be only seven years old when it leaves the Fleet Air Arm. Without these potent AMRAAM armed fighters the fleet will be without organic air defence.

The first manifestation of this move was the temporary disbandment of 800 Naval Air Squadron at RNAS Yeovilton on 31st March, 24 years to the day from when it was recommissioned to become the first Sea Harrier FRSMk1 squadron. The aircraft had disembarked from HMS Ark Royal for the last time on 18th February. In the Falklands campaign, under the inspired leadership of Lt Cdr 'Sharky' Ward and operating from HMS Hermes, 800 NAS's pilots shot down 13 Argentine aircraft making 800 NAS the highest scoring Squadron in the history of the Royal Navy.

Many of the pilots will transfer to the Harrier GR7s of Joint Force Harrier at RAF Cottesmore. In due course 800 NAS will be recommissioned on 1st April 2006 as a Harrier GR9 squadron, to be followed by 801 NAS.

HARRIER DEVELOPMENTS

The GRMk7s are being upgraded to Mk7A, Mk9 and Mk9A standards. The Mk7A is the Mk7 re-engined with the 23,800 lb Pegasus Mk 107 (11-61). The Mk9 has a new mission computer, an inertial navigation/global positioning system, a ground proximity warning system and a new store management system for new weapons, including the Raytheon Precision Guided Bomb and infra red and TV variants of the Maverick missile, but retains the 21,750 lb Pegasus Mk 105 (11-21). The Mk9A has the Mk9 systems but is re-engined with the Pegasus Mk 107 (11-61). TMk10s are to be upgraded to TMk12 standard which is equivalent to the GRMk9.

The first GRMk7A was delivered in November 2003. GRMk9 CA Release is planned for 2006. The third GRMk5 ZD320, now brought up to GRMk9 standard, carried out trials on HMS Ark Royal sailing in the North Sea in February to prove compatibility of the IN/GPS with ship-borne operations. "The software performed faultlessly" said BAES Harrier test pilot John Lawson. In May Flt.Lt Dave Stobie from Boscombe Down (QinetiQ) made the first 'preview' flight on the type.

INDIAN HAWK

On 26th March BAES and the Indian Government signed a 795 million pound firm contract for 66 Hawk Mk132 Advanced Jet Trainers. Delivery of the first aircraft is scheduled for February 2007. With a 'glass cockpit', HOTAS, MFDs and HUD, the Mk132 is based on the Canadian Mk115 used for NATO flying training in Canada and incorporates Indian equipment. The first 24 aircraft will be built at Brough and the following 42

will be assembled by Hindustan Aircraft Ltd at Bangalore from BAES supplied kits. The Hawk order was won against strong international competition from the Alpha Jet, the Aero L-159B, the MiG AT, the YAK-130 and others.

Before the Hawks enter Indian Air Force service 75 pilots will be trained in batches of six over three and a half years at RAF Valley starting in July this year.

THE FIRST HAWKER ASSOCIATION ANNUAL GENERAL MEETING

Gratifyingly well supported by 44 attendees, the First AGM was held at the Hawker Centre on Saturday 24th April.

Ambrose Barber started his Chairman's Report : "It is a mere fourteen months since we assembled here for our Inaugural Meeting when the half dozen or so movers and shakers who had convened were given unanimous backing to get this welcome new show on the road." He reported that the programme of speakers and visits had been well supported. He thanked the Committee Members for their efforts in arranging the programme and running the meetings, finding and looking after the funds, maintaining the website, preparing the Newsletter and so on. He particularly mentioned Gordon Jefferson, one of the 'founding fathers', who was standing down after being such a positive and cheerful Committee Member. He then introduced the Association Rules and Constitution, copies of which were available at the meeting, steering the members present through its various clauses. Adoption was proposed, seconded and carried unanimously.

Secretary Barry Pegram reported on the membership situation. He said that since the Inaugural Meeting in February 2003, membership had risen from 226 to 328 comprising 66% 'local' (defined by post codes out to areas such as Guildford and Redhill), 29% 'distant' and 5% overseas. Some 11% were ladies and about 21% were still working. Attendance at meetings had been encouraging with about 60 present for talks and 25-40 coming to the socials with videos.

The Treasurer, Mike Hoskins, reported a satisfactory situation with a balance at 31st December 2003 of 1369.63. We had been fortunate that we had not been charged for the use of the Hawker Centre for the first year but now there was a charge of 50 each session. Mike thanked Percy Collino for his splendid efforts with the raffles which had contributed handsomely to the present healthy finances. Consequently subscription rates would remain unchanged for the coming year. The accounts, examined by Les Palmer, were adopted unanimously. The Treasurer also noted that the Association was donating 150 for the restoration of a drawing of Neville Duke at the Royal Aeronautical Society.

The Chairman then presented the case for a President and proposed John Glasscock, the Committee's unanimous choice. Again, in the vote, there were no dissenters. The new president graciously remarked that he was very honoured to accept the position.

The Chairman was then re-elected as was the existing Committee (with the exception of Gordon Jefferson), and three new members were voted on. The Committee now consisted of: Ambrose Barber (Chairman), Ken Batstone (new), Richard Cannon (Webmaster), Percy Collino (Meetings), Chris Farara (Newsletter), Wilf Firth, Harry Fraser-Mitchell, Ralph Hooper, Mike Hoskins (Treasurer), Les Palmer (new), Barry Pegram (Secretary/Membership) and Jan White (new).

With that the formal AGM closed and Members retired to the bar/resaurant for refreshment!

HAWK - LAND AND SEA

As was appropriate for this anniversary year, on the 10th May Gordon Hodson gave an excellent 'Powerpoint' presentation on the History of the Hawk. Involved from the very beginning as Head of Preliminary Design P.1182 in the Project Office and retiring as Project Director Hawk USA & T-45 Goshawk - via Assistant Chief Designer Hawk and Project Manager Hawk USA - there is no-one who knows the story better.

In his introduction Gordon said, "Hawk is a British success. It is the product of a dedicated team experienced in design, development, manufacturing, flight test, ground test, contract negotiation, equipment purchasing, marketing and public relations." It was surely the strength of Kingston that all these skills could be found under one roof.

In the 1950s RAF student pilots progressed from Harvard to Meteor T.7/Vampire T.11/Canadair T-33; in the 1960s from Jet Provost T.3/4 and 5 to Gnat T.1/Hunter T.7. The next advanced trainer was to be the Jaguar T.2. This was the background to the conception of the Hawk.

"How did it start at Kingston?" is the often asked question; Gordon told us. In February 1968 Gordon, who had joined HSA at Kingston following the Folland merger, was looking after the Gnat. After a meeting with MoD(PE) on Gnat accidents some of the participants retired to the 'Dive' pub where Gordon, Tony Herring (Kingston's MoD PE Resident Technical Officer), Wg.Cdr Alex Wickham (Central Flying School), Sqn.Ldr Dick Orme (MoD PE) and Charlie Baker (Gnat Design) discussed future trainer aircraft.

Gordon reported the conversation to Bob Marsh, Chief Designer Kingston, whose interest was aroused, and visits to the Central Flying School at Little Rissington and HQ Flying Training Command were organised

for Bob, Gordon, Jack Simmonds from the Design Office and Gnat test pilots Dick Whittington and Mike Oliver. The outcome was a study led by Ron Williams who prepared a brochure for a Jet Provost replacement entitled SP117. RAF policy changed at this time to retaining the JP5, abandoning the two-seat Jaguar advanced trainer as too expensive and replacing the Gnat and Hunter with a new aircraft.

Under the guidance of Chief Engineer Ralph Hooper, Future Projects and Airframe Engineering launched project P.1182. They studied 20 configurations with 12 turbofan and turbojet engines, embracing single and twin engines, swept and straight high and low wings, and tandem and side-by-side seating. The final configuration, the HS.1182AJ, was powered by a non-reheated version of the Rolls-Royce/Turbomeca Adour used in the Jaguar, had tandem seats, a low swept wing and was capable of carrying weapons.

A front fuselage mock-up was built and mounted on a truck for tests at Dunsfold to confirm that the instructor in the raised rear seat could see the touch-down point in the 7 deg nose-up landing attitude. Wind tunnel test showed that instability at altitude was cured by lowering the intakes from their position high behind the cockpit onto the wing.

The airframe design and choice of equipment emphasised ease of servicing and reliability, and performance guarantees were offered. In competition with Warton's BAC P.59 the HS.1182 won a fixed price contract for 176 aircraft in March 1972. In the event all 11 performance guarantees were achieved or exceeded and very significant reliability and maintainability bonus payments were earned. The first aircraft, XX154, was flown by Duncan Simpson on 21st August 1974, soon joined in the flight development programme by XX156, XX157 and XX158. 154 is still flying at the Empire Test Pilots School and the other three are at RAF Valley and Leeming.

Testing highlights described by Gordon included: directional snaking cured by Fred's Rear End (proposed by Chief Flight Development Engineer, Fred Sutton), structural tests at Kingston, escape system tests at Boscombe Down, cold weather trials in Canada, hot weather trials in Malta and smoke system development for the Red Arrows. First deliveries to RAF Valley were in November 1976, and they are still there, but now finished in high-visibility glossy black in place of the original red, white and grey. Also used for weapon training, 88 Hawks were converted to the War Role standard carrying two Sidewinders and were to defend the UK in conjunction with radar equipped Tornado F3s.

Gordon then went on to describe the export 50 and 60 Series Hawks with their five weapon stations, the advanced 100 Srs two-seaters with wing-tip Sidewinders, the digital cockpit LIFT (Lead-In Fighter-Trainer) Hawks, the NFTC (NATO Flying Training Canada) Hawks and the 200 Srs single-seaters.

The biggest coup for the Hawk was its selection by the United States Navy, an epic programme led by Gordon over many years. The competition was for the VTXTS (fixed wing, experimental, training system) for the US Navy Undergraduate Jet Flight Training System to provide a carrier-capable aircraft to replace the T-2 Buckeye and the TA-4J Skyhawk and to provide the academics, simulators and integrated logistic support. Partnered with McDonnell-Douglas at Long Beach, California, the contract was won in November 1981 against stiff competition from the Alpha Jet, the Aer-Macchi MB339, an upgraded Buckeye and new designs from Douglas, Grumman/Beech, Northrop/Vought, General Dynamics and Rockwell.

Design, wind tunnel testing and flight development were carried out at Kingston, Weybridge and Dunsfold. The design and build of a new front fuselage and cockpit and final assembly were Douglas responsibilities but the rest of the airframe was UK designed and built. The first T-45A Goshawk, 162787, flew at Long Beach in April 1988.

Five significant deficiencies were identified by the Navy: a longitudinal control instability at high Mach numbers, engine performance (low thrust at high ambient temperatures, idle rpm too low for approach, acceleration time too slow for wave-off case), excessive pitch change on extending the new side mounted speed brakes, low lateral/directional stability, and stall performance. All were remedied: the longitudinal control run had revised gearing and was re-balanced and damped; the Adour 871 was substituted for the derated 861; the speed-brake was interconnected with the tailplane; a taller fin, a ventral strake, aileron-rudder interconnect and a low speed yaw damper were fitted; slats which extended with flaps down were added, the full-span flap vane was restored and the wing tip shape was changed.

By September 2003 the T-45 fleet had flown 500,000 hours. The Goshawks are now operating from two Naval Air Stations: Kingsville, Texas with 73 aircraft and Meridian, Mississippi with 83. The Navy requires 234; and 70% of the workshare is in the UK! Later Goshawks are to the T-45C standard which introduces a 'digital' cockpit with HUD and MFDs which will be retrofitted to all T-45As.

Bringing the talk to a close Gordon received a well earned round of applause and then answered many questions before relaxing and chatting to erstwhile colleagues.

ODE TO THE HS.1182

It was fortunate, in this anniversary year for the Hawk, that a remarkable piece of long-lost aviation literature has been discovered. With some difficulty your Editor peeled apart the yellowed pages and deciphered

the strange runes thereon. It seems that this ancient document was penned by one Kenneth Batstone, apparently the bard of the Project Office and no mean wit. So read on, casting your minds back to the golden age of the 1970s...

A Yuletide ode to Projects, entitled "The 1182".

1. A progress meeting had been called that day,
At which I had a part to play.
I present my notes for your attention,
So read on chaps, you've all a mention!
2. Gordon Hodson said to me,
And to the man from the Ministry:
My KB000K0002 needs no correction,
We're all heading in the right direction!
3. Stanley Stapleton then joined in
And was heard to say above the din:
"For a plane that's nice to fly
The tailplane's still too bloody high!"
4. Robin Balmer looked aghast
And muttered in his coffee, "Blast!"
I was about to comment so,
So now I'll say: "The wing's too low."
5. John Allen, Chairman of the meeting,
Dropped the biscuit he was eating;
Scribbling minutes for that day
Wrote: "Tailplane region; somewhat grey."
6. Speaking loudly round the door
Assistant Head of Research, Bore:
"I always said my wing was best,
I'm glad to hear you've all confessed!"
7. At this Ron Williams shouted: "No!
The aircraft was not always so.
My project aircraft wing was high.
That would have been the best to fly!"
8. Then Dave Edwards had his say
About the price we'd have to pay.
But if we take him at his word
To build the plane would be absurd.
9. Into the room came Michael Dyke,
Known to some as an awkward tyke.
The silence was his chance to grab,
So he proposed yaw autostab.
10. Barry Pegram rushed in through the door,
Dropping maps of Dorking on the floor.
"Manchester have just this minute phoned,
They've smashed the model up", he moaned.
11. "Oh no!" cried Gordon full of tears,
"That will cost the programme years.
I did not reckon on this failure mode
Just when we are on the right road."
12. Then up spoke chubby Colin Raisey,
Wide awake; fresh as a daisy.
"If the plane's got too much weight to fly,
Who cares if the model's gone awry?"
13. Then Ralph Hooper came into the room;
We all thought it meant the kiss of doom;
But all he said was, "Now look here,
To me the upper fin looks queer!"
14. Chris Hansford started to agree,
He had not spoken yet, you see.
"Belt up!" said Rochfort with a sigh,
It's my turn, to discuss SI."
15. And so the meeting carries on,
Till a second tea-break's come and gone.
When John Allen's pen runs out,
Then will the meeting end, no doubt.
16. As 1970 draws to a close, can we with confidence suppose,
That in a few years' time, perhaps, in spite of tailplane, wings and flaps,
The "Project" plane will leave the ground and climb and dive and fly around,
Then sell to countries far and wide, so all of us can say with pride:
"I worked on that"?

Well Ken, not only a bard but an accurate prophet as well. Thank you!

THE CONCEPT OF OPERATIONS FOR HARRIER IN THE RAF

Grp.Cpt Jock Heron, who completed two tours with Harriers in RAF Germany, came to talk to the Association on 12th May. He said that he had had an exhilarating time with the Harrier from 1972 to 1982 and much admired its technical competence and merit.

The P.1127 of 1960, said Jock, was an example of technology looking for a job and as the Kestrel in the Evaluation Squadron it found its operational capability. In 1965 the P.1154 was cancelled which turned out to be a sensible decision because operational difficulties could have destroyed the credibility of V/STOL. In its place the P.1127 (RAF) was ordered.

The RAF role for the Harrier was to be in the NATO Central Region; Germany, Denmark and Norway. Here, the location of all bases was published and known so they were vulnerable to many threats: missiles, conventional air attack, ground assault and sabotage. Threats to aircraft included SAMs (surface-to-air missiles), AAA (anti-aircraft artillery), fighters and attack whilst on the ground. The bases were protected by airfield defences, there were hardened shelters and rapid runway repair facilities. The shelters with steel doors could survive a near miss but not a direct hit. Runway repairs were by the Royal Engineers (RE) who could fill craters in about 2 hours, but a strike by the USSR would leave too many craters to repair. Harriers would be housed three per shelter but when the base was threatened would disperse.

Public roads in towns would be used for STO/VL and the Harriers would hide in the likes of supermarket car parks with fuel, weapons and support brought to the site. RAF personnel, in civilian clothes and with a convincing cover story, surveyed suitable sites on foot. Any RE work needed to remove obstructions would be identified and the sites would be photographed from the air. Secret files were built up on every site, which clearly could not be used in peacetime.

So, training strips with 1000 ft aluminium plank take-off strips, 70 ft square VL pads and taxi tracks were laid in fields, and hides were cut into adjacent woods. Such sites were, in fact, seldom found in exercises; even returning Harriers finding it difficult to spot them.

The Harriers were armed with SNEB rockets in Matra launchers containing 18 or 19 projectiles each, and BL755 cluster weapons with 147 bomblets each; their mission was to find and attack tanks.

As well as Harrier enthusiasts, there were also detractors in the RAF and MoD. By 1975 the Harrier was not seen in as good a light as the Jaguar and the policy became to let the Harrier force waste away by the mid 1980s and buy more Jaguars. However, the tide was turned by the Guatemalan threat to Belize in central America. Its defence was a British responsibility and the only fighter capable of operating there was the Harrier. Aircraft were ferried from Wittering via the east coast of the USA and the operational flexibility of the aircraft proved the need for the type and subsequently 24 new GRMk3s were ordered.

A new, enlarged, wing was proposed by Kingston and in 1975 a brochure was issued on a Harrier 'GRMk5' with improved manoeuvrability and range using the new wing which could be retrofitted if required. Meanwhile McDonnell-Douglas had embarked upon the AV-8B Harrier II. However, in spite of the MoD preference for the UK wing, Britain joined the US AV-8B programme which resulted in the actual GRMk5, GRMk7 and now the GRMk7A with the updated Pegasus 11-61.

This brief survey of the later Harrier developments brought Jock's talk to a close. During questions from his attentive and appreciative audience he was asked about his time in the Falkland Islands where he had been Commanding Officer of RAF Stanley after the war. The task of the RAF detachment, he said, was to defend the FIPZ (Falkland Islands Protection Zone) against Argentine incursions and reconnaissance probing by AAF Electra aircraft. The RAF force consisted of 10 F-4J Phantoms with AIM-9 Sidewinder equipped Harrier GRMk3s in case runway damage or adverse weather prevented the Phantoms from flying. Another example of Harrier flexibility! Jock had happy memories of his time with the hospitable and friendly people of the islands.

PEGASUS GYROSCOPIC DEMONSTRATION MODEL from Roy Whitehead

Our section within the Hawker Experimental Department at Richmond Road was mainly concerned with flight test instrumentation. However, we were constantly asked to tackle jobs for which no other department had the necessary resources. One such job that came our way in 1958 was to make a small model to demonstrate the adverse gyroscopic effects of a large rotating mass on the motion of a manoeuvring aircraft, and a solution to the problem.

The simple model we produced consisted of two very small electric motors with flywheels, mounted close together in tandem on a common axis. They were freely supported on a simple bracket on flexible wires that carried the operating current from a battery. Switches enabled the motors to be rotated either both in the same direction or contra-rotating.

With the motors rotating in the same direction it was possible to demonstrate that if they were gently tilted or turned there would also be a precession effect causing unwanted turning or tilting of the axis of the motors at right angles to the desired direction. With contra-rotation selected little or no precession was exhibited.

I presume the model was intended to demonstrate to Bristols the advantage of contra-rotating the fan and compressor spools of the engine that was to become the Pegasus. Perhaps someone can confirm this.

Postscript from the Editor. When I joined Hawkers in 1960 as a graduate trainee I spent a few weeks in the Apprentice Training School. A similar model was worked on there for John Fozard but this one had an 'airframe' consisting of an 18" long silhouette of the P.1127 fuselage with two co-axial electric motors and

flywheels (painted with black and yellow spirals to show the direction of rotation) on the longitudinal axis, and flat plate representations of the wings and tailplane. The whole was suspended in some sort of gimballed frame so the model could be rolled, pitched or yawed with the flywheels contra- or co-rotating to demonstrate the precessional gyroscopic effects. Does anyone remember this model?

BOOK REVIEWS

THE GREAT No.1 FACTORY AT KINGSTON

This nicely printed and illustrated booklet covers in a concise form the complete history of the Richmond Road factory, built originally by the Government as the No.1 Aircraft Factory. Some of the Chapter headings will give a good idea of the scope and contents of the booklet by Don Williams, a retired HSG Engineering Economic Analyst:- Origin, Sopwith at Ham, Leyland at Ham, The Trojan Years at Ham, The Leyland Cub Years, Leyland's World War II at Ham, Leyland Post-War at Ham, Hawker's Return to Ham, British Aerospace Takes Over, and The End of Ham. Your editor found the chapters on the Leyland occupancy particularly interesting as this period is rarely written about. The booklet is recommended to all Members with an interest in our old workplace. Priced at a modest 2.95 it is published by Barely Read Books, Westerham Green, Westerham, Kent (tel: 01959 561089). It is available from the Brooklands Museum Shop.

BRITISH SECRET PROJECTS. FIGHTERS & BOMBERS, 1935-1950

Tony Buttler's third volume on British military aircraft projects (see Newsletter No.4) is another beautifully produced mine of information on the fascinating subject of what might have been. The British Aircraft Industry's responses to the services' Operational Requirements and to Ministry Specifications are chronicled in considerable detail and reasons for procurement decisions explored. Company GA and perspective drawings and photographs of models are supported by specially commissioned art work and new models. In this book will be found the background to all the British fighter and bomber types which served in World War 2 and beyond including the first generation of jet fighters. Of course, Hawkers figures prominently but perhaps more interesting, due to unfamiliarity, is reading about what our competitors were up to. Highly recommended, this book priced 29.99, is available with its companion volumes from good book shops or direct from the publishers, Midland Counties Publications (tel 01455 233 747, e-mail <midlandbooks@compuserve.com>).

FIRST LIGHT

The author, Geoffrey Wellum, joined the RAF in 1939 at the age of seventeen on a short service commission and flew Spitfires with 92 Squadron throughout the Battle of Britain. He joined the squadron at Duxford with Trevor (Wimpey) Wade whom he describes as "small and rather rotund" and having a great sense of humour, wit and intelligence. Geoffrey Wellum's book is beautifully written and really brings to life what it was like to be a young, enthusiastic fighter pilot who matures under the incredible pressures of air battle. There are many books of wartime memoirs but this is one of the best. The book is published by Penguin-Viking at 16.99.

TEMPEST PILOT

Sq.Ldr CJ Sheddans account of his life in the Royal New Zealand Air Force and in the RAF flying Typhoons and Tempests will be of great interest to Hawker enthusiasts and lovers of well written, first person accounts. Frank Murphy also features in the narrative. Originally published in 1993 it is now issued by Grub Street at 8.99 in well illustrated paperback format.

REQUESTS FOR INFORMATION

KINGSTON PROJECT GA DRAWINGS

Your Editor, Chris Farara, has for some years been trying to collect together a full set of GA drawings for all the Kingston projects which ran from P.1000 to P. 1246. He has had considerable success but the following are still missing:

1000-1004, 1007, 1008, 1010-1015, 1017, 1021, 1023-1029, 1041-1046, 1044-1050, 1053, 1059, 1060, 1070, 1074, 1076, 1080, 1084-1085, 1095, 1119, 1142, 1144-1148, 1157-1163, 1178, 1180-1181, 1188, 1191, 1210, 1211, 1223, 1236, 1237, 1244, 1245, and 1246.

I imagine that the early ones may well have disappeared completely but somebody should have the later ones in the 1100/1200 range. If any Member has a print of any of the above I would be absolutely delighted, and even more so if they would permit me to photocopy it. See Editorial for contact details.

HAWKER ASSOCIATION MEMBERS - JUNE 2004

A: Ken Alexander, Peter Alexander, John Allen, Terry Ansty, Alma Apted, Steve Apted, John Arthur, Alan Auld, Bryan Austin. **B:** Colin Balchin, Ambrose Barber, Ray Barber, Derek Barden, Peter Barker, Geoff Barratt, Graham Bass, Ken Batstone, Dennis Baxter, Colin Bedford, Anne Beer, Guy Black (A), Keith Bollands, Paul Boon, Cliff Bore, Pat Bott, Steve Bott, Bob Bounden, Alan Boyd, Roy Braybrook, Clive Brewer, Laurie Bridges, Ian Brine, Doug Britton, Peter Brown, Reg Burrell, Robin Burton, Ron Bryan, Christopher Budgen, Roy Budgen, George Bunt. **C:** Bert Callan, Richard Cannon, Maurice Carlile, Chris Carter, Bob Catterson, Ken Causer, Jeremy Cawthorne, John Chacksfield, Colin Chandler, Jenny Chandler, Keith Chapman, Reg Chester, Gerry Clapp, JF Clarke, John Cockerill, Bob Coles, Percy Collino, Brian Coombes, David Cooper, Paul Cope, George Cotterell, Nick Cox, Eric Crabbe, Shirley Craig, John Crampton, Russ Culley, RG Curtis. **D:** Roger Dabbs, Clive Dalley, Andy Dalton, John Danse, Afandi Darlington, John Davie, Ken Davies, Philippa Davies, Trevor Davies, Diana Dean, Norman Devielli, Mike Dodd, Lambert Dopping-Heppenstal, Jack Dowson, Dick Duffell, Jean Duffell, Peter Drye, Neville Duke, Chris Dunhill, Mike Dyke. **E:** John Eacott, John Eckstein, Andy Edwards, Dave Edwards, Tony Elliott, Norman Evans, Roy Evans, Frank Ewen. **F:** Ian Falconer, Mike Fantham, Chris Farara, John Farley, John Farrow, Geoff Fieldus, Mike Finlay, Wilf Firth, Ann Fletcher, Richard Fletcher, Colin Flint, Dave Fowler, Mike Frain, Harry Fraser-Mitchell, Geoff French, Mike French, Heinz Frick. **G:** Roy Gaff, Mike Gane, John Gardner, Patricia Gardonio, Sandie Gear, Mark Gerrard, Alan Gettings, Tony Gibbs, John Gilbert, Maurice Gilson, John Glasscock, Roy Goodheart, Eric Goose, John Gough, Andy Green, John Green, James Griffin, Barry Grimsey. **H:** Douglas Halloway, Clive Handy, Bryan Harman, Dawn Harris, Guy Harris, Brian Harvie, David Hastie, Eric Hayward, Bob Head, Sheila Hemsley, Ted Hemsley, Keith Hertenzenberg, Frederick Hewitt, Merlin Hibbs, Richard Hickey, Peter Hickman, Reg Hippolite, Keith Hobbs, Chris Hodson, Gordon Hodson, Derek Holden, Doc Holliday, Ralph Hooper, Linda Hopkins, Paul Hopkins, Jean Hopper, Mike Hoskins, Dawn Howes, Terry Howes, Simon Howison, Gordon Hudson, Gavin Hukin. **I:** Pete l'Anson, John Ieronymides, Len Illston, Maive Impey, David Ince (A), Brian Indge. **J:** Keith Jackman, John Janes, Gordon Jefferson, David Jelley, John Johnson, Johnnie Johnson, Ian Jordan, Trevor Jordan, Robin Jowit, Alf Justin. **K:** Brian Kent, Dennis Ketcher, Bill King, Dave King, Martin King, Charles Kirk, Ralph Kuhn. **L:** Barry Laight, Mike Laker, Charles Lamb, Richard Lane, George Latham, Pam Lawrence, Valerie Lawrence, Ron Leader, Geoff Lee, Mark Lewis, Vernon Lidstone, Andrew Lloyd, Gary Lockley, David Lockspeiser, Norman Long, Gordon Lorrimer, David Lovell. **M:** Albert Magee, Al Mahoon, Mick Mansell, John Marsh, Bill Marshall, Bob Martin, Dennis Mason, Brian Maton, Don McGovern, June McKeon, Ronald Mears, Mike Mendoza, Jim Middleton, Kit Milford, Jack Mills, Brian Monk, Pat Moon, Leslie Moore, Pauline Moore, Pat Moran, Nicholas Morland, Pete Munday, Carole Murphy, Gloria Murphy. **N:** Martin Nash, Anthea Newman. **O:** Roger O'Brien-Hill, John O'Sullivan, Robin Owen. **P:** Les Palmer, John Parker, John Partridge, Barry Pegram, Martin Pennell, Bill Phillips, Ted Pincombe, Dick Poole, Don Pratt, Dave Priddy. **Q:** John Quinn. **R:** Frank Rainsborough, Colin Raisey, Brian Ralton, Paul Rash, Diane Raymond, Vanessa Rayner, Douglas Reallf, David Rees, Peggy Remington, Francis Rhodes, Geoff Richards, Bill Richardson, Chris Roberts, John Rodd, Eric Rubython, Malcolm Ruscoe-Pond, Peter Ryans. **S:** Helen Sadler, Roger Samways, Bernie Scott, Alex Seaman, Ray Searle, Arthur Sharpe, Peter Sibbald, Bill Sherwood, Jack Simmonds, Sadie Simmonds, Duncan Simpson, Derek Sims, Gerry Sims, Charles Smith, Don Smith, Harold Smith, John Smith, Karl Smith, Pete Smith, Selwyn Smith, Roy Sparrow, Peter Spragg, Cora Stanbury, Vivian Stanbury, June Stephens, John Strange, Carroll Stroud, Mike Stroud, Christine Strudwick, Tony Strudwick, Douglas Stubbs, Bill Swinchatt. **T:** Brian Taylor, David Taylor, Stuart Taylor, Brian Tei, Reginald Thompson, Graham Tomlinson, Terence Tompkins, Rod Tribick, Ron Trowell, Frank Tuck, Bert Turner. **U:** John Underhill. **V:** Herbert Valk. **W:** Brian Walden, Terry Walker, David Ward, John Webb, Harry Webb, Patrick Webb, Graham Weller, Rob Welsh, AP West, Bryan West, Judith Westrop, Jenny Wheatley, Phil Wheatley, James While, Jan White, Mick White, Roy Whitehead, Annette Williams, Sally Williams, Colin Wilson, George Wilson, Paul Wilson, Dick Wise, Helen Woan, George Woods, Trevor Woods, Len Woodward, Alan Woolley.

It is with regret that we record the deaths of two members: Ian Craig and Wally Rayner. Our sympathies go out to their families and friends.

DON'T FORGET OUR WEBSITE <www.hawkerassociation.org.uk> for up-to-date news. The Webmaster is Richard Cannon who would love to hear from you. Log-in and speak-up!