

RAF COLLEGE CRANWELL

College Journal Extracts



1983-1984

1983-1984 - College Notes

CAREER BRIEF

AIR COMMODORE A MUSKER



Air Commodore A Musker was born in December 1932 in Liverpool, where he was educated. He joined the Royal Air Force as a Cadet Pilot in May 1951 and qualified as a Pilot and was commissioned Pilot Officer, in Southern Rhodesia, in 1952. At the age of 20 he became a QFI, serving as such at Finningley, Driffield and Full Sutton on Meteors, becoming A2/IRE and Flying Officer during his tour. In 1955 Air Commodore Musker joined No 13 (PR) Sqn (Meteor PR 10) at Abu Sueir, Egypt where he served as Squadron Training Officer and IRE. He then joined No 12 Sqn (Canberra B6) at Binbrook in 1957 again serving as Training Officer/IRE.

In 1959, as Flight Lieutenant, he joined No 6 Sqn (Canberra B6) at Akrotiri as Flight Commander, Training Officer/IRE until he was promoted to Squadron Leader in 1963 and was given command of No 245 (later 98) Sqn (Canberra B2) at Tangmere and Watton. From there he was posted in 1965 to Malta as PSO to D/CinC AFMED, after which he attended the RAF Staff College Bracknell. He then joined the Ministry of Defence as O Est 10 (RAF), was promoted Wing Commander in 1970 and became PSO to DO Est (RAF) until 1972 when he attended the National Defence College Latimer. He then became OC Ops Wg at Coningsby (Phantom).

In 1975 Air Commodore Musker was promoted Group Captain and after appropriate training became Defence and Air Attache Tel Aviv between 1976 and 1978. He then attended the RCDS after which, after further training including the Russian language, he became Defence and Air Attache Moscow where he served until December 1983. Air Commodore Musker will assume the appointment of Assistant Commandant in May.

Air Commodore Musker married his wife Jessie in 1957 and has one daughter, Karen, who works with the Metropolitan Police.

1983-1984 - Queen's Review (1)

THE QUEEN'S REVIEW 1983



*Flt Lt
Walzer
(RNZAF Prize)*

*Flt Lt
Prout
(RNZAF Prize)*

*Flt Lt
Geinger
(Shirley Memorial Cup
and
Minerva Society Prize)*

*Flt Lt
Young
(Chickens Prize)*

*Fg Off
Blair
(Supply Prize)*

*Fg Off
Sherriff
(Kinross Trophy)*

*Flt Lt
Purkiss
(Queen's Medal)*

The Prime Minister

*Pt Off
Kennett
(Sash of Honour)*

*Flt Lt
Wright
(Sword of Honour)*

The Reviewing Officer for The Queen's Review held on 29 July 1983 was The Prime Minister, The Right Honourable Margaret Thatcher MPFRS. The Prime Minister, accompanied by Mr Thatcher, was received by Air Chief Marshal Sir Keith Williamson GCB AFC ADC, Chief of the Air Staff, Air Chief Marshal Sir Thomas Kennedy KCB AFC, Air Member for Personnel, Mr D C Humphreys CMG, Deputy Under-Secretary of State (Air), Air Marshal Sir Michael Beavis KCB CBE AFC, Air Officer Commanding-in-Chief Royal Air

Force Support Command and Air Vice-Marshal R C F Peirse, Air Officer Commanding and Commandant Royal Air Force College. The Prime Minister and the Air Officer Commanding and Commandant were met at the parade ground by Group Captain R M Robson OBE FBIM, the Director of the Department of Initial Officer Training, Squadron Leader C B Hyde, Senior Regiment Instructor, and the Reviewing Officer's Escorts, selected from the graduating officers.



The Prime Minister inspects the Graduating Squadron.

As the Prime Minister approached the dais a diamond nine formation of Jet Provosts from the Flying Training School flew past in salute.

The parade was commanded by Acting Pilot Officer N Bray and consisted of graduating officers of No 69 Initial Officer Training Course and a support squadron of No 70 Initial Officer Training Course. The Queen's Colour of the Royal Air Force College was paraded, the Colour Party consisting of 4 officers from the Flying Training School. Ceremonial music for the parade was played by the Band of Royal Air Force Germany conducted by the Director of Music, Squadron Leader H B Hingley MBE, BMus LRAM ARCM.

After the inspection and march past, the Prime Minister presented the annual College prizes and awards for the year 1982 to the following officers:

THE QUEEN'S MEDAL – Flight Lieutenant C C Purkiss BSc, No 58 Initial Officer Training Course

The Queen's Medal is awarded to the RAF or WRAF cadet who, during initial officer training, has proved himself or herself to be the most outstanding cadet of the year.

SWORD OF HONOUR – Flight Lieutenant G A Wright, No 56 Initial Officer Training Course

The Sword of Honour is awarded to the RAF cadet who, during initial officer training, has produced the most distinguished performance of the year in leadership.

SASH OF HONOUR – Pilot Officer H C Kennett, No 63 Initial Officer Training Course

The Sash of Honour is awarded to the WRAF cadet who, during initial officer training, has produced the most distinguished performance of the year in leadership.

1983-1984 - Queen's Review (2)

KINKEAD TROPHY – Flying Officer P D Sherriff, No 29 Initial Basic Flying Training Course

The Kinkead Trophy is awarded to the RAF pilot in the Flying Training School who is placed first in the combined order of merit for flying and associated ground school studies for the year.

MICHAEL HILL MEMORIAL PRIZE – Flying Officer P D Sherriff, No 29 Initial Basic Flying Training Course

The Michael Hill Memorial Prize is awarded to the RAF pilot in the Flying Training School who has shown the most proficiency in applied flying during the year.

THE SHIRLEY MEMORIAL CUP AND MINERVA SOCIETY PRIZE– Flt Lt P D Grainger, No 7 Basic Aerosystems Engineering Course

This conjoint award is made to the student of the Initial Specialist Training (Engineering) Course who has achieved the best overall performance of the year both in engineering studies and initial officer training at the RAF College.

HALAHAN PRIZE – Flight Lieutenant R A Walster BSc, No 7 Basic Aerosystems Engineering Course

The Halahan Prize is awarded to the student of the Aerosystems Specialisation of the Initial Specialist Training (Engineering) Course who has achieved the best all-round performance of the year.

CHICKSANDS PRIZE – Flight Lieutenant S Young MA, No 12 Basic Communications-Electronics Engineering Course

The Chicksands Prize is awarded to the student of the Communications-Electronics Specialisation of the Initial Specialist Training (Engineering) Course who has achieved the best overall performance of the year.

THE ROYAL NEW ZEALAND AIR FORCE PRIZES

Aerosystems Specialisation – Flight Lieutenant R A Walster BSc, No 7 Basic Aerosystems Engineering Course

Communications-Electronics Specialisation – Flight Lieutenant K E Prout, No 8 Basic Communications-Electronics Engineering Course

A Royal New Zealand Air Force Prize is awarded to the student of each specialisation of the Initial Specialist Training (Engineering) Course who has achieved the best performance of the year in applied technologies.

BECKWITH PRIZE – Squadron Leader A M Gill RNZAF, No 7 Basic Aerosystems Engineering Course

The Beckwith Prize is awarded to the student of the Initial Specialist Training (Engineering) Course who, irrespective of specialisation, submitted the best paper of the year on a selected engineering subject.

SUPPLY PRIZE – Flying Officer D J Blore BSc, No 342 Initial Supply Course

The Supply Prize is awarded to the student of the Initial Supply Course who has achieved the highest standard of the year in professional studies.

Following the presentation of prizes the Prime Minister addressed the Parade, commenting on the high standard of the event. The 3 Senior Chaplains of the Royal Air Force College said prayers for Queen and Country, the Royal Air Force and the Royal Air Force College.

The Queen's Colour was then marched off and the parade ended with graduating officers marching in slow time up the steps into the College Hall to the tune of Auld Lang Syne.

The Prime Minister, escorted by the Air Officer Commanding and Commandant, then walked over to College Hall where the latter presented the President of the Mess Committee, Squadron Leader G R Herring.

An official photograph of the Prime Minister with the annual prize winners was then taken on the steps of the College Hall. For the reception and luncheon the Right Honourable Margaret Thatcher and Mr Thatcher and members of the Prime Minister's staff, Air Chief Marshal Sir Keith and Lady Williamson and members of their party, and Air Vice Marshal and Mrs R C F Peirse, were joined by the following guests:

Mr and Mrs H N Nevile
Mr and Mrs Douglas Hogg
Lady Shirley
Mrs E I Monks
Mrs E Dacre
Air Vice-Marshal and Mrs F D Hughes
Air Vice-Marshal and Mrs W E Colahan
Air Vice-Marshal and Mrs M D Lyne
Air Commodore and Mrs E D McK Nelson
Air Commodore and Mrs L G Levis
Air Commodore H F Renton
Group Captain and Mrs M J Evans
Mr and Mrs T Cook

After luncheon the Air Officer Commanding and Commandant presented a Royal Air Force College Wedgwood Plate to the Prime Minister. Mr. and Mrs. Thatcher were then driven to

Queen's Avenue where the Prime Minister planted a copper beech tree and met groups of Cranwell Service and civilian personnel and their families.



The Prime Minister is presented with a bouquet by Rebecca Jayne Hartley daughter of Sergeant Hartley of the MT Section at Cranwell.

1983-1984 - Honours & Commendations

HONOURS AND COMMENDATIONS 1983-84

SERVICE PERSONNEL

Companion of the Most Honourable Order of the Bath

Air Vice-Marshal R C F Peirse

Officer of the Most Excellent Order of the British Empire

Squadron Leader R W Haddow AFM
(now retired)

Member of the Most Excellent Order of the British Empire

Squadron Leader L Brown
Squadron L J Marshall
Squadron Leader F Urquhart
East Lowlands UAS (now retired)

British Empire Medal

Flight Sergeant M O'Connell
Sergeant D M Byrne

Air Force Cross

Squadron Leader D J Fisher

Queen's Commendation for Valuable Service in the Air

Flight Lieutenant R G Braithwaite
(formerly Oxford UAS)

Commendation by the Air Officer Commanding-in-Chief Strike Command

Flight Lieutenant M Kidson

Commendation by the Air Officer Commanding-in-Chief Support Command

Warrant Officer J Hayward
Flight Sergeant G L Curtis
Chief Technician J S Meredith

Sergeant M E Buckberry
Sergeant K W Woods
Corporal W H Crook

Commendation by the Air Officer Commanding and Commandant

Warrant Officer R Thorogood
Chief Technician M Bull
Corporal B Newsham
Senior Aircraftman P J Gargan (formerly Aberdeen, Dundee and St Andrews UAS)
Senior Aircraftman R A Judd
Southampton UAS

CIVILIAN PERSONNEL

Commendation by the Air Officer Commanding-in-Chief Support Command

Mr I G F Ball Marshall of Cambridge (Engineering) Ltd
Mr C P Boyfield
Mr B E R Chester
Mr J Crawley
Mr J W Dearden
Mrs E H Long Cambridge UAS (now retired)
Mr C J Lowe
Mrs G R Roadley

Commendation by the Air Officer Commanding and Commandant

Mrs R M Clapton
Mr Raymond Dickinson
Mr Richard Dickinson
Mr W J Harrison
Mrs J McPartland
Mrs P Robinson Birmingham UAS
Mr R Smith
Mrs S M Tuffnell
Mr A W Waby
Mr F Warrington

1983-1984 - Course Awards (1)

COURSE AWARD WINNERS 1983

THE DEPARTMENT OF INITIAL OFFICER TRAINING COURSE AWARDS

The Sword of Merit is awarded to the RAF cadet of each course who has demonstrated outstanding ability, leadership and other officer qualities, and the greatest potential for further development.

Winners:			
65 IOTC	Not Awarded		
66 IOTC	A/Plt Off B J Barnfather	GD/P	Mar 83
67 IOTC	Plt Off G G Boyd B Econ	GD/P	May 83
68 IOTC	Not awarded		
69 IOTC	A/Plt Off P D Lees	GD/P	Jul 83
70 IOTC	Not Awarded		
71 IOTC	Plt Off M Rogerson	GD/Grd (ATC)	Oct 83
72 IOTC	Plt Off A N McLaughlin	GD/P	Dec 83

The Sash of Merit is awarded to the WRAF cadet of each course who has demonstrated outstanding ability, leadership and other officer qualities, and the greatest potential for further development.

Winners:			
65 IOTC	Plt Off P J Garland BEd	GD/Grd (FC)	Feb 83
66 IOTC	A/Plt Off G A Maybourne	GD/Grd (ATC)	Mar 83
67 IOTC	Not Awarded		
68 IOTC	Not Awarded		
69 IOTC	Joint Award:		
	A/Plt Off C L Powell	GD/Grd (ATC)	Jul 83
	Plt Off L M Snook BSc	GD/Grd (FC)	Jul 83
70 IOTC	A/Plt Off S M Perkins	Admin (Sec)	Sep 83
71 IOTC	Fg Off G E J Dodd BEd	Admin (Ed)	Oct 83
72 IOTC	A/Plt Off R J Glanfield	GD/Grd (ATC)	Dec 83

The Hennessy Trophy and Philip Sassoon Memorial Prize is awarded to the best all-round RAF or WRAF cadet of each course, other than the winners of the Sword of Merit or the Sash of Merit.

Winners:			
65 IOTC	Plt Off D J Knowles BA	GD/P	Feb 83
66 IOTC	Plt Off T S Milburn BSc	GD/P	Mar 83
67 IOTC	A/Plt Off S Young	GD/P	May 83
68 IOTC	Fg Off D S Collins	Sy (Regt)	Jun 83
69 IOTC	Fg Off A J Shears	Eng	Jul 83
70 IOTC	A/Plt Off P W P Cafferky	GD/P	Sep 83
71 IOTC	Fg Off R C Norman	Sy (Regt)	Oct 83
72 IOTC	Fg Off A P Lewis	Eng	Dec 83

The Chicksands Cup is awarded to the student who achieves the best overall performance on the Communications-Electronics specialisation of the Initial Specialist Training (Engineering) course.

Winners:		
13 BCEC	No course	
14 BCEC	Fg Off D I Sharpe	Mar 83
15 BCEC	No Course	
16 BCEC	Flt Lt G Ransom MA MSc	Jun 83
17 BCEC	Flt Lt S R Whitby	Sep 83
18 BCEC	Fg Off M F Neal	Dec 83

The Royal New Zealand Air Force Trophies are awarded to the student of each specialisation of the Initial Specialist Training (Engineering) course who achieves the best performance in applied technologies.

Winners:		
12 BAEC	Fg Off S Liley	Mar 83
13 BCEC	No course	
13 BAEC	Flt Lt R A Shearer BSc	May 83
14 BCEC	Fg Off R A Laybourn BA BEM	Mar 83
14 BAEC	Fg Off I T G Brandt BSc	Jul 83
15 BCEC	No course	
15 BAEC	No course	
16 BCEC	Flt Lt G Ransom MA MSc	Jun 83
16 BAEC	Fg Off M J Henderson RNZAF	Oct 83
17 BCEC	Flt Lt S R Whitby	Sep 83
17 BAEC	Fg Off D C Gough	Dec 83
18 BCEC	Fg Off M F Neal	Dec 83

The Beckwith Trophy is awarded to the student of each Initial Specialist Training (Engineering) course who, irrespective of specialisation, submits the best paper on a selected engineering subject.

Winners:		
11 IST (Eng)	Joint:	
	Flt Lt N L Hygate RNZAF	Dec 82
	Flt Lt P Melling BSc ACGI	Dec 82
12 IST (Eng)	Fg Off G R Parfit	Mar 83
13 IST (Eng)	Flt Lt R A Shearer BSc	May 83
14 IST (Eng)	Flt Lt R J Doggett RNZAF	Jul 83
15 IST (Eng)	No course	
16 IST (Eng)	Fg Off M J Henderson RNZAF	Oct 83
17 IST (Eng)	Flt Lt M W Skinner	Dec 83

The Supply Cup is awarded to the student who achieves the highest standard in professional studies on each course.

Winner:		
346 ISC	Fg Off A Wamock	Jan 83
347 ISC	Fg Off M N Primett	Mar 83
348 ISC	Mr G Forshaw	Jul 83

1983-1984 - Course Awards (2)

THE GROUP CAPTAIN P W LOWE-HOLMES AWARD FOR SPORT

The Lowe-Holmes award is made to the student officer or officer cadet from DIOT or commissioned student from DSGT or FTS undergoing Initial Specialist Training who, by active, cheerful and sportsmanlike participation, has given the greatest service to sports and sportsmanship at the College during either the summer or winter season.

Winner: Fg Off R M Whitehead Eng Winter 1982/83
Fg Off R G Bates Eng Summer 1983

THE DEPARTMENT OF AIR WARFARE

The Andrew Humphrey memorial Gold Medal is awarded to the best overall student on the GD Aerosystems Course.

Winner: 16 GD ASC Flt Lt P P Bingham GD/N Dec 83

The Aries Trophy is awarded to the student on each GD Aerosystems Course who produces the best personal project.

Winner: 16 GD ASC Flt Lt R Robson GD/N Dec 83

THE FLYING TRAINING SCHOOL COURSE AWARDS

The Hicks Memorial Trophy is awarded to the RAF pilot who is placed first in his course order of merit in Ground School.

Winners:

31 IBFTC	Flt Lt N Guz BSc	Jan 83
32 IBFTC	Flt Lt S D Forward BSc	Feb 83
33 IBFTC	Flt Lt G T W Beet BSc	Mar 83
34 IBFTC	Fg Off V M M Anita BSc	May 83
35 IBFTC	Plt Off T B Ellison	Jun 83
36 IBFTC	Plt Off P M Wright	Jul 83
37 IBFTC	Plt Off S J Wilkins	Sep 83
38 IBFTC	No course	
39 IBFTC	Fg Off P J McLellan BA	Dec 83
40 IBFTC	Flt Lt D J Ekins BSc	Dec 83

The Dickson Trophy is awarded to the RAF pilot who, on completion of his training course, has shown most proficiency in applied flying.

Winners:

31 IBFTC	Flt Lt N Guz BSc	Jan 83
32 IBFTC	Flt Lt C Teale BSc	Feb 83

33 IBFTC	Flt Lt A East BSc	Mar 83
34 IBFTC	Flt Lt N R Aldersley BTech	May 83
35 IBFTC	Fg Off G Stockill	Jun 83
36 IBFTC	Plt Off T J Parker	Jul 83
37 IBFTC	Flt Lt N A Roberts BSc	Sep 83
38 IBFTC	No course	
39 IBFTC	Flt Lt M J Varney LLB	Dec 83
40 IBFTC	Flt Lt P Gunnell	Dec 83

The Battle of Britain Trophy is awarded to the RAF, Navy or Army pilot who, on completion of his training, is judged to be the best aerobatic pilot on his course.

Winners:

31 IBFTC	Flt Lt N Guz BSc	Jan 83
32 IBFTC	Flt Lt R J S G Clarke BA	Feb 83
33 IBFTC	Not awarded	
34 IBFTC	Flt Lt T J Burbidge BSc	May 83
35 IBFTC	Fg Off G Stockill	Jun 83
36 IBFTC	Plt Off T J Parker	Jul 83
37 IBFTC	Lt T J Baudains RN	Sep 83
38 IBFTC	No course	
39 IBFTC	Lt H S Brown RN	Dec 83
40 IBFTC	Flt Lt R J Offord BCom	Dec 83

The R M Groves Memorial Prize is awarded to the RAF pilot who is placed first on his course in the combined final order of merit for flying and associated ground school subjects.

Winners:

31 IBFTC	Flt Lt N Guz BSc	Jan 83
32 IBFTC	Flt Lt C Teale BSc	Feb 83
33 IBFTC	Flt Lt A East BSc	Mar 83
34 IBFTC	Flt Lt N R Aldersley BTech	May 83
35 IBFTC	Plt Off T B Ellison	Jun 83
36 IBFTC	Plt Off P M Wright	Jul 83
37 IBFTC	Plt Off S J Wilkins	Sep 83
38 IBFTC	No course	
39 IBFTC	Flt Lt M J Varney LLB	Dec 83
40 IBFTC	Flt Lt P Gunnell	Dec 83

1983-1984 - Air Navigation (1)

THE ARIES IV REPLICA CANBERRA

This article has been prepared by Squadron Leader D A Cunliffe, Department of Air Warfare.

In 1944, the Empire Air Navigation School (EANS) at RAF Shawbury took delivery of a modified Lancaster for use in the development of long range and high latitude navigation techniques. The aircraft, which had its turrets removed and extra tankage and streamlined nose and tail cones fitted, was named Aries. In 1944, Aries became the first RAF aircraft to circumnavigate the globe, taking a total of 202 flying hours. Two days after VE Day, Aries became the first RAF aircraft to fly to the North Geographic and Magnetic Poles.

Several other long range flights were carried out by Aries, but, in January 1947, Aries was replaced by a similarly modified Lincoln, named Aries II, which set up further records of her own, including a London-Capetown record of 26 hrs 57 mins. In her turn, Aries II was replaced by another Lincoln, Aries III, which set a London-Khartoum record of 14 hrs 23 mins during a round-the-world flight in October 1950.

Meanwhile, in July 1949 the Royal Air Force Flying College was formed at Manby, and the overseas and liaison section of EANS was transferred to the new unit, together with Aries III. By 1952, Lincolns were being supplemented

in RAF service by Canberras, and it was felt that Aries III was becoming outdated. Accordingly, in February 1953, Canberra B2 WH 699 was delivered to the RAFFC and was named Aries IV. This aircraft was fitted with improved radio equipment, periscopic sextant and an additional bomb bay fuel tank.

To celebrate the 50th anniversary of man-powered flight, the RAFFC flew Aries IV to Capetown and back in December 1953, setting world records by flying London-Capetown in 12 hrs 21 mins and Capetown-London in 13 hrs 16 mins, including 2 refuelling stops in each direction. In October 1954, during a flight from Bardufoss to Bodo, Aries became the first RAF jet aircraft to reach the North Pole. In June 1955, Aries IV carried out a transpolar flight to Alaska, and on the return flight established an Ottawa-London world record of 6 hrs 42 mins.

The final aircraft in the Aries series, a Canberra PR7, arrived at Manby in June 1955 and was named Aries V. This aircraft flew non-stop from Tokyo to London over the North Pole, a distance of 5942 miles, in 17 hrs 42 mins in May 1957 to set yet another world record.

In due course, the RAFFC was retitled the



Lancaster "Aries" touching down at RAF Shawbury in May 1945 at the end of its non-stop record-breaking flight from Whitehorse (Yukon) via the North Magnetic Pole. The captain was Wg Cdr (later Air Vice-Marshal) D C Kinley DFC AFC.
Photo Acknowledgement: Gp Capt FC Richardson RAF Retd.

Royal Air Force College of Air Warfare (RAF CAW) and, in 1974, the staff of RAFFC moved to Cranwell to form the new Department of Air Warfare (DAW) within the Royal Air Force College. DAW has several mementoes of the Aries flights, but for many years it has been felt that the aircraft and the crews which flew them should have a more impressive memorial. With the gradual reduction in the number of Canberras in service, it became possible to obtain a life expired Canberra for display at Cranwell, and it was decided to repaint the aircraft to represent Aries IV.

In October 1982, Canberra B2(T) WJ637 was flown to Cranwell from Wyton on its last flight. It was first parked outside Aircraft Hall for 4 months while the Aircraft Engineering Group of DSGT stripped the aircraft of reusable items such as engines and ejection seats. Meanwhile DOE staff prepared concrete mountings on the grass outside Trenchard Hall on which the aircraft could eventually be positioned.

One Saturday morning in February 1983, the aircraft was moved to its new position outside Trenchard Hall by an enthusiastic team of officer cadets from DIOT, under the watchful supervision of DSGT engineers. Rain had fallen

overnight and the ground was soggy. The original plan to tow the aircraft up the grassy slope between the airfield perimeter road and Trenchard Hall had to be abandoned when the tractor, running on pierced steel planking laid over the grass, proved better able to propel the planking rearward than the aircraft forward. Eventually, the aircraft was towed backwards with 2 wheels on the adjacent road and one on planking laid on the grass. Two trees were repeatedly felled so that the aircraft could regain the original route across the lawns in front of Trenchard Hall.

The lawns proved less of a problem than the slope, as the ground was level, but much of the planking buckled under the aircraft's weight, while the aircraft showed an alarming propensity to slide sideways off the planking when being towed. The DIOT team spent an energetic few hours constructing ever wider tracks of planking ahead of the aircraft from that which was revealed ever more slowly from behind. After 3 attempts at lining the aircraft up with its mounting blocks, the aircraft lurched into place, the nosewheel leaving the ground for a few horrifying seconds.



WJ637, repainted to represent WH699, Aries IV.

1983-1984 - Air Navigation (2)

There was a lull in apparent progress while negotiations continued towards having the aircraft repainted. The aircraft paint was in poor condition, but its priority for professional attention was obviously low. To minimise cost and yet complete the job quickly, it was decided that self-help would be used for the labour-intensive surface preparation phase. Accordingly DAW staff spent several summer evenings and a weekend crawling over the aircraft carrying buckets of water and wet and dry paper. Tools and equipment were borrowed from the Fire Sections, the Paint Shop, the Rectification Flight and RAF Waddington, but most of the degreasing and rubbing down was done by hand. The Canberra is not a large aircraft until you approach it with a hand sanding block, when it takes on the dimensions of a football pitch.

We had obtained permission to repaint the aircraft as Aries IV and had found details of its original colour scheme, but the main colour, PRU blue, was no longer manufactured and stocks had been exhausted years ago. The only aircraft still wearing this colour was a Spitfire of the Battle of Britain Memorial Flight at RAF Coningsby, the paint for which had been mixed from memory by an aged civilian at RAF Kemble. Samples of this were taken and new stock mixed from existing colours. With the help of HQ RAF Support Command, a team of painters and finishers was assembled from RAF St Athan, Abingdon, Finningley and Cranwell. During a fine spell in September, the aircraft was painted. Mechanical Engineering Flight pro-

vided an expert signwriter, who reproduced the details of Aries's records as they had been painted on the nose of the original aircraft. A commemorative plaque was engraved to be mounted by the aircraft, and a curtained enclosure was constructed so the plaque could be ceremonially unveiled.

On 21 October 1983, the day of the annual Aries Association Symposium, the plaque was unveiled by Air Chief Marshal Sir David Evans, President of the Royal Air Force Air Warfare and Flying Colleges' Association, and Air Vice Marshal J B Duxbury, President of the Aries Association, in the presence of the AOC and Commandant. Several crew members of the Aries aircraft were also present including Air Vice-Marshal DC McKinley, captain of Aries I on her round the world and polar flights; Air Vice-Marshal D Bower, who navigated Aries IV on her record Capetown-London flight; Mr F R Wood who, with AVM Bower, navigated Aries IV to the North Pole; and Air Marshal Sir Charles Ness who ejected from Aries IV when her controls ran away on her last flight from Manby in November 1959.

WJ637, now repainted as WH699, stands as a reminder to the many visitors to the Royal Air Force College of the pioneering days of long range navigation in the Royal Air Force. Every Department within the College, the FTS Cranwell, and many other RAF stations contributed to the reconstruction. The full history of the Aries flights has yet to be written. Perhaps the Aries IV replica may inspire one.



Air Chief Marshal Sir David Evans and Air Vice-Marshal J B Duxbury examine the aircraft after having unveiled the plaque.

1983-1984 - Regiment Training

Regiment Training Squadron Lyke Wake Walk

This article has been prepared by Flight Lieutenant M Shewry, Department of the Initial Officer Training.

Do you remember the July heatwave of 1983? The Regiment Training Squadron (RTS) certainly do. That was the time when they chose to take on the 42 miles of North Yorkshire Moors at their highest and widest point, which make up the Lyke Wake Walk.

RTS is part of the Department of Initial Officer Training. It consists of 3 officers, 8 SNCOs and 5 other ranks, and is currently commanded by Sqn Ldr Charles Hyde, who is the Senior Regiment Instructor. RTS trains officer cadets in all ground defence subjects, including minor tactics to prepare them for leadership exercises, during the cadets' 18 week course at the College. Being keen, "outdoor" types, the RTS staff have also taken part in many competitions, detachments and adventurous training exercises in recent years. These have included the 1982 Cambrian March Patrol Competition, the Volent Rodeo combat competition in America, and more recently the British Army Roadmaster rally competition on Salisbury Plain.

Many of the staff were no strangers to the Lyke Wake Walk, but most were willing to give it another "go", despite painful memories of previous experience.

Accordingly, at the stroke of midnight one cool night in July, Osmotherley village saw 9 intrepid walkers set off on the first leg down the steep hill into the N Yorks mist. The party quickly split into 2 groups, both of which must still have been asleep, for they both got lost in the thick fog and met each other going in opposite

directions. It was a sharp lesson in paying attention, and with 40 miles still to go, the extra mile was not appreciated! It did not happen again.

After 5 hours, with 7 miles complete and only 35 miles to go, the group met their support party at the first (official) stop for hot coffee. Sgt Seal, in charge of support, was misguided enough to forget the milk. This allowed most of the group to direct their complaints towards him – as opposed to their real tormentor, which was the N Yorks hills. After 2 more hours of walking the first real landmark was reached, as the team reached Blakey Howe. This is significant in that the "Lion Inn" sits atop the ridge. Unfortunately, at 0700 hours all they were prepared to serve was water. Nevertheless, breakfast disappeared remarkably swiftly.

After 30 miles the team had suffered a few casualties as a combination of blisters and a burning sun had taken their toll. By 1630 hours the intrepid finishers: Sqn Ldr Hyde, Flt Lt Shewry, WO Robertson, and SACs Berkeley, Evans and Swallow, collapsed into a well earned rest.

The Lyke Wake Walk proves an unforgettable experience for all who undertake it. For those who drop out, there is a challenge to "have another go" when their nerve returns. For those who do finish the walk, and 6 out of 9 from RTS did make it, there is a great deal of satisfaction. For all, there remains the pleasure of crossing this open, desolate, but utterly fascinating and beautiful, part of Britain. It is an experience which should not be missed.

1983-1984 - UAS News

Land And Water Based Activities Within The UAS World

The general aims of the UASs are well known but what is not generally known is the variety of non-RAF activities that members indulge in, either individually or as groups. Activities have included sponsored walks, work for the physically, mentally and socially handicapped, participation in the current craze of half and full marathons and several national and international competitions. All these activities are character-building and many require careful planning, fitness and determination. They are thus a valuable adjunct to the formal training that is provided by the UASs. Such activities of 1983 have been: representation in the Ten Tors Competition, the Nijmegen International marches, the Devizes to Westminster Canoe Race, and participation in the Joint Service Expedition to Norway (NORPED). In all these activities the participants gained greatly from their entry and in the first 3 events emerged with official recognition.

TEN TORS COMPETITION

The Ten Tors Competition, which took place on 14-15 May, attracts members from many youth organizations. This year there were about 2,400 participants in teams of 6-8 people. Entry is not automatic and the teams that are allowed to enter have proved their worth beforehand. The aim of the competition is successfully to navigate the 10 Tors of Dartmoor which, without error, requires walking 55 miles over very rough terrain. The teams have to carry all their requirements and camp out overnight. Our successful team this year came from Southampton who not only completed the course but completed it before the deadline of 1700 hours on 15 May and were awarded medals and team certificates.

THE NIJMEGEN INTERNATIONAL MARCHES

The Nijmegen Marches take place in mid-July and attract teams of 11 or 12 people from many countries. The aim is described on page 47. This year Yorkshire and Birmingham UAS entered teams and one member from London UAS marched for the RAF Bruggen team. Throughout much of the competition, the

Yorkshire and Birmingham representatives marched as one team. All were 100% successful and were awarded team medals. Yorkshire obviously provides a good training environment since this was that UAS's third consecutive success.

THE DEVIZES TO WESTMINSTER CANOE RACE

Canoe racing is certainly a contrast from sitting in a cockpit, but A Plt Offs Tim Coslett and Steve Hawkins of Southampton UAS have proved that the activities are not incompatible. The Devizes to Westminster canoe race, which covers 125 miles, not only requires competence on the water but overall fitness, since the canoe and contents have to be beached and carried round obstacles; this is technically known as portage. For 2 months before the race the competitors had a rigorous training schedule which in retrospect appeared more appropriate to an Olympic decathlon entrant. Although only two members raced, other members of Southampton UAS provided the all important back-up support both before and during the race. The race started at 1230 hours on 1 April and ended, for the team, 23 hours 40 minutes later. The weather conditions were so bad that half the original 180 crews dropped out before the end. Although the team was placed 23rd overall, they achieved their ambition and were the fastest RAF crew in the competition.

NORPED 1983

Although not a competition, the annual 26th Joint Service Expedition of 15 members had 5 UAS representatives. These were Cdt Plt Dave Spooner and A Plt Off Mike Newby of Northumbrian UAS, A Plt Off Ian Jones of Wales UAS and A Plt Offs Dave Longhurst and Paul Nelson of Oxford UAS. The expedition, which focuses on the icecap of Jostedalbreen in Norway, provides 4 weeks of challenging mountaineering. The team members were of various levels of expertise before the expedition started but by the end, with progressive training, all were much more confident and infinitely fitter and had an unforgettable 4 weeks.

1983-1984 - King's Cup Air Race (1)

KING'S CUP AIR RACE

This article has been prepared by Sqn Ldr D Wooldridge, OC Northumbrian UAS

One late afternoon I received a phone call from Gp Capt UAS who, in his normal cheerful salutation said: "Dave, what do you know of the King's Cup Air race?" I hesitated to show my ignorance but eventually had to admit to knowing very little.

"Well you had better find out" he said laughing. "You're competing for it this year".

So started my entry into the National Air Race Season which was to prove both rewarding and exciting. I began by searching through a number of flying magazines but found very little about the event; fortunately, Yorkshire UAS had competed during the previous season and they kindly sent me their files which provided good background reading. Delving through the reams of paper and numerous letters on the file it soon became apparent that air racing was not only a demanding sport but also a very professional one run by the Royal Aero Club of which Prince Andrew was the President. The season consisted of 8 National Air Races flown over different courses throughout the country. To be eligible to compete in the King's Cup Air Race, the final race of the season, the pilot must have successfully competed in 4 of these qualifying races and the aircraft in 3 of them. The races varied in length from 185 miles to 92 miles; most races consisted of flying 3 times around a course of approximately 30 miles, with each turning point marked by a "day-glow" marker and then once around a shorter course of about 10 miles. The markers were manned by members of the Royal Observer Corps whose job was to ensure that the aircraft went around the pylon and that it was not below minimum race height of 500' AGL; failure to comply with either of these rules meant disqualification. The most difficult job for the organizers appeared to be the handicapping. In these events, where machines varied greatly in engine power and performance, the handicappers' job was a nightmare. The winner invariably says the handicappers got it right whilst the rest of the field chastise them for getting it totally wrong.

I must admit to being very impressed with the standards set by the official handicappers: using a micro-computer they produced handicapping times that, throughout the season meant that if competitors flew accurately around the course and flew the aircraft to its maximum they stood a chance of being amongst the leaders (although I believe they got it totally wrong for us on the King's Cup Race itself!).

So to the start of the season. Preparation for the first event at Goodwood involved selecting our fastest aircraft, preparing suitable maps and experimenting with turning performances. I also decided to fly each race dual with the other pilot, Flight Lieutenant Jerry Kirk Hope also of NUAS, assisting with the navigation and lookout. Our theory was simple: keep exactly on track, turn as tight around each corner as possible and be aggressive in overtaking. The theory worked to an extent but the first race proved we were not alone in our thinking. The Goodwood race had 33 competitors of which 6 were newcomers. The race was 109 miles long and consisted of 4 laps of a course that was fairly straight forward. We were one of the slowest aircraft and started off 12th. At the end of 3½ laps and with only 14 miles to go we were lying 3rd and feeling fairly confident until I looked behind me to find the sky full of aircraft closing rapidly. The race for the line was to say the least 'hairly'; we flew at 100' (the limit is 50' across the line) to be overtaken by an aircraft going below us. We eventually finished in 10th place and although reasonably pleased with our performance decided to rethink our tactics.

Two points had been obvious during the race. The first was that seconds counted; the first 18 aircraft crossed the line within 30 seconds. The second was the variation of cornering techniques; the recommended method was to fly reasonably wide around the pylon using 60° of bank and 2G to ensure no speed was lost and the corner not cut.

Back at base we experimented and found that a 4G turn and a 1G push out, although losing a little speed, gained approximately 1-2 seconds on each corner. In addition, we found that we could virtually fly over the top of the pylon before turning and still not cut the corner; a saving of another 1-2 seconds. With a total of 16-20 corners on each race the saving in time could prove critical as it did during our next race at RAF Cranwell, which co-incided with their Air Day in July. The race was held in marginal weather conditions with the visibility down to 2km in places; this was to our advantage as we knew the course well. We won the race with a reasonable margin in hand and were awarded the City and Livery Trophy and £100 prize money. The handicappers, however, added 20 seconds to our time for the next race at Shobdon.

The Shobdon event was unfortunately marred by an accident; during the race practice 2 aircraft collided at a turning point and one aircraft and its pilot were lost. The committee decided, however, that the race should go on. The course length was only 92 miles, and 38 competitors started the race. The conditions were again marginal and we managed a creditable 4th place. The next race was the longest and contained the biggest field of the season; it was also unique to the National Air Race season. The Round London Air race had 54 competitors racing once around a course of approximately 135 nms in length. Our cornering technique was to be of little advantage in this race as there were only 4 corners; we therefore decided that to ensure we stayed exactly on track we would draw the course on Ordnance Survey Maps. We used 14 in all and after initial concern that the map would take over the cockpit, managed to organize them in an acceptable manner. The race was given a great deal of publicity both by the press and the TV and the prize money of £1000 obviously attracted the large number of entrants. We were narrowly pushed into 5th place losing 3rd place and the prize money of £500 that went with it by just 2 seconds. Despite feeling disappointed we believed we had given a good account of ourselves.

Unfortunately, we had to miss 2 other air races. One was a race to Northern Ireland for which we were unable to obtain security clearance; the other was at Rochester during a

Squadron stand-down. However, having returned refreshed from a holiday I was somewhat taken aback to receive a letter from the Royal Aero Club telling me that with one race left before the King's Cup I was lying second in the British Championships and that the final race for the Stewards Cup at RAF Finningley would decide the winner. I was now faced with a dilemma; if I went flat out for the Stewards Cup I would have nothing in reserve for the King's Cup. Having listened intently to the seasoned competitors' bar-talk throughout the season I knew that everyone held back something during the Stewards Cup to ensure a favourable handicap for the King's Cup. However, if I saved something for the King's Cup it might prejudice my chances in the Stewards Cup and would probably lose me the chance of winning the British Championship. The decision was made to go for the Stewards Cup and expect to get handicapped for the King's Cup; the tactics worked to an extent. We won the Stewards Cup and £250 but then found that we were now lying joint first in the British Championships; the winner was to be decided by the highest placing in the King's Cup. We felt slightly dismayed as our overall speed of 144.23 mph in the Stewards was above our average time for the other races; the handicapper, therefore, had a hey-day on our start time for the big race.

The King's Cup was held at RAF Finningley and was part of the Battle of Britain Open Day. Thirty nine competitors were started by Prince Andrew and the first 29 finishers crossed the line in 30 seconds; a credit to the handicappers. We finished a respectable 12th and although we unfortunately did not win the British Championships we gained a consolation prize in winning the Outram Trophy which was awarded to the newcomer to air racing who had gained the most points in a season. We finished the season with 2 National Trophies, the Outram Trophy and a joint first on points in the British Championships; we were, needless to say pleased with our first season's work.

Air racing is a well established sport but for the RAF it is a relatively new venture; I hope that the RAF can continue to participate in these events which are well organized by the Royal Aero Club who jealously guard their reputation for professionalism. The competition is fierce.

1983-1984 - King's Cup Air Race (2)

the rewards high, and the prestige and public relations gained for the RAF are valuable. I count myself fortunate in being the RAF representative in a most enjoyable and exciting

sport but realise that without the backing of my peers and my Squadron, especially my groundcrew, any thoughts of success would be futile.



THE FLYING TEAM

*Sqn Ldr DAVE WOOLDRIDGE
(Clutching the City
and Livery Trophy)*

Flt Lt TERRY KIRKHOPE

1983-1984 - Colonial Impressions

COLONIAL IMPRESSIONS OF CRANWELL

This article has been prepared by Sqn Ldr Stefan Jerga, RAAF and Capt Jim Henderson, USAF, Department of Air Warfare.

As one Colonial cyclist sat shivering and shaken next to his bike on the black ice recently, his keen aerosystems-trained mind was quick to note that while in fact the road was named "Lighter-Than-Air", unfortunately, he was not. Brushing the frost from his uniform and fleeting glimpses of a distant warm and sunny homeland from his thoughts, he consoled himself that although Cranwell is not exactly Bondi Beach or Waikiki, it does have much to offer those officers fortunate enough to occupy exchange positions at the College.

Cranwell is blessed with a sizeable multi-national contingent from the Australian, Canadian, French, German and United States air forces in-exchange posts spread throughout the station, from the Department of Initial Officer Training through the Basic Flying Training School to the Department of Air Warfare (DAW). The authors are assigned to avionics systems training positions within DAW. They are responsible for lectures to the Air Warfare Course and the General Duties Aerosystems Course (GD ASC) on navigation-attack systems, inertial navigation systems, airborne radar, computer hardware and aircraft displays. Unfortunately, prior to taking up these positions on the DAW staff it is necessary to do a very intensive years training (penance?) as members of the GD ASC. This course not only furnishes the requisite background knowledge for the aforementioned instructional duties but also provides excellent qualifications for future service appointments. The high regard accorded the "ASQ" training within the aerospace community was witnessed by the number of Aries ties worn by hosts during the GD ASC visits to industry. This tie incidentally is the "old school tie" of the GD ASC.

In addition to the benefits received from the training within the formal syllabus, the course also serves as a forum in which members from a variety of NATO and Commonwealth countries can exchange cultural and professional ideas. While there has always been a need for this activity to foster understanding and strengthen bonds between allies, it has gained significantly greater importance with the proliferation of

multi-national defence projects such as the current Tornado programme and the proposed European Combat Aircraft.

German, Italian and RAF officers from the 1983 GD ASC have received postings in which they will be working on the Tornado programme within their respective services. The experience and knowledge gained from the course will help them to make meaningful contributions to the continuing success of the Tornado.

While it would be difficult to overstate the value of the training and the cultural interchange which one receives at Cranwell, perhaps the most important feature of exchange duty is that although an officer continues to wear the uniform of his parent service, for all intents and purposes he is a part of the RAF team and is integrated into the RAF community as much as possible. One notable exception is that he is not issued with the coveted engraved "green card" invitation to participate in certain after hours (Taceval type) activities. While this restricts access to some base facilities at times, these hardships are willingly endured by those unlucky enough to enjoy them!

In addition to Cranwell's excellent reputation as a professional training institution, it is almost equally renowned for its location. When he founded the College, Lord Trenchard is reported to have made a statement to the effect that he wanted a location where young cadets would not have to suffer the distraction of a big city environment. His success in this endeavour cannot be argued. However, for the visiting exchange officer who is keen to travel, Cranwell's central location provides an excellent base from which to launch holidays throughout the UK and on the Continent as well. Such travels provide exchange officers and especially their wives and children a rare opportunity to visit such world famous attractions as Buckingham Palace, the Eiffel Tower, the Vatican and the Tower of Pisa. In addition to their travel experiences, very young children also tend to pick up a version of the Lincolnshire accent at no additional charge.

At Cranwell, visiting officers are able to observe many of the finest traditions of the RAF. One example is the NATO guest night held twice each year in College Hall. Despite the occasional rubber duck masquerading as a grouse in the entree, these evenings are experiences which will be remembered for a lifetime. Also, by the end of 3 years, one should be able to identify and recount the history behind at least half of the portraits hanging within the College Hall dining room.

Life is not all work at Cranwell, and there are a number of excellent recreational facilities at the College which are available for use by exchange officers and their families during their tour. It is also to the credit of the Royal Air Force that some of these facilities are made available to

local residents on a regular basis. Such activities are an important step in maintaining a good rapport between the RAF and the civilian community.

In conclusion, while the exchange officers at Cranwell perform important functional roles within the various departments in which they are located, their most important role is the sharing of professional and cultural ideas and experiences with their hosts. The exchange programme provides a medium in which to practise the cooperation amongst the allies which is vital to the defence of the western world. The satisfaction of having been a part of this enterprise will endure long after memories of the occasional "black ice" have melted and gone.

1983-1984 - Broussard

THE BROUSSARD

This article has been prepared by Flight Lieutenant J P Warren-Wilson, Flying Training School.

There are only 2 things you must know about ze Broussard, Messieurs . . . one is 80 knots and ze other is Mon Dieu! Ze landing . . .

After months of letters, phone calls and finally personal visits we had arrived at the French military base of Châteaudun to collect 2 Broussards. Produced by Avions Max Holste some 25 years ago, these aircraft are the French equivalent of our Beaver and can easily be mistaken for such, except for the Broussard's distinctive double tail fin. They are now going out of service in France.

Perhaps I should start the story a little earlier. John Watts and I are QFIs at Cranwell. John and a few friends collect old aeroplanes and preserve them in flying condition. The Broussard was to be the latest addition. It's not in the same class as their other aircraft (a Spitfire and an ex-Swiss Air Force Pilatus), but with its 6 seats and fuel tank of 100 gallons capacity it promised to be a useful support aircraft and even to double as a flying fuel bowser!

There was one slight problem. Neither John nor I had ever flown a Broussard and, with its 50 foot wingspan and 450 horsepower Pratt and Whitney radial, it looked just a little daunting. We had read the book from cover to cover, learnt the speeds and power settings and studied the cockpit layout. We reckoned we could just jump

in and fly them away if we had to, but the prospect of doing so did not appeal at all. So when the Base Commander met us and offered one of his pilots to check us out, we breathed a sigh of relief. Until, that is, we realised that we had been given the youngest pilot on the squadron, that the other pilots were all chuckling in the background and that he was shifting from one foot to the other. We also learnt then that they only fly a Broussard every few months . . .

The pre-flight brief covered just the points I have mentioned – the Broussard does everything at 80 knots plus or minus a bit . . . and the landing! Oh, the landing! All the squadron pilots burst into rapid chatter and alarming French gesticulations and then the senior pilot spoke. He spoke seriously and to a hushed audience. "Ah, Messieurs, really I must tell you that ze landing in ze Broussard is dangereux if you do it badly. You must use 2 hands, you must not put ze stick – how you say – forward . . . you must do it exactement as Jacques show you because otherwise, Messieurs, you will end up on your nose. Ze Broussard is very easy to fly but we have had a lot of Broussards on their nose because of ze landing. OK?"

Jacques' English was even worse than our French, or so he pretended, so we agreed that he would do a circuit, we would watch, and then we

would each have a turn. As advertised, it was all easy until we came to land. Then at about 30 feet, Jacques closed the throttle, put both hands on the stick and pulled back steadily. With just a slight bounce we were safely on the ground and Jacques was beaming! We both had a turn and, sure enough, by copying Jacques we produced reasonable landings. But you could sense that the old saying was true: "All aeroplanes bite fools". This one would be utterly docile whilst taking off, climbing, cruising, stalling, turning descending – but come in to land and it would not growl at you, it would not bark at you, it would just give you one great big bite! The undercarriage is like spiders' legs made of springy steel; the change of trim with power is enormous and the trim is ineffective at low speed . . . so all you had to do was come in a bit fast, a bit out of trim and "boing"! The biggest pilot induced oscillation you've ever seen would start, and only end when you were on your nose.

It was Friday and by now it was 4pm. At 4pm on Friday Châteaudun is well and truly "stacked" for the day. However, just for us, the Base Commander kept the station open. As we went out to the 2 aircraft which were to be ours, we could feel the mounting pressure to get off. There was nothing spoken, just the odd glance at a watch. Trying hard not to rush, we started up, checked in and taxied out together. Engine checks were good and in moments we are airborne. What relief! Away at last! It feels good as we head off for Beauvais in loose formation knowing that although life may get hectic after 150 miles, for the next hour and a half it will be sheer enjoyment.

So when John calls me 10 miles out of Châteaudun with a plaintive "Papa Tango, can we go to stud delta?" I know something is up.

Stud delta is Manston's frequency and so effectively our airborne chat frequency over France. On stud delta the truth comes out: "My door's come open!" Now those of you who fly Cessnas might think this is a minor problem. Let me explain. In the Broussard the door is in fact a double door and it is *large*. The rear half slides backwards. The doors come off for parachuting. Lastly, the distance from the pilot's seat to the door handles is about 3 arms' lengths!

John's rear door has come open – solely the result of our haste since no-one had pointed out to him the little red safety catch. I am more fortunate! Worse still his life jacket, distress beacon and camera are on the floor just inches from the sky, threatening to fall out at the slightest provocation.

My answer is delightfully simple: "Well go back and shut it then!" "You're kidding" comes the reply. "No I'm not" goes mine. I position myself to watch his antics. He gets out of his seat and tries to reach the door whilst still holding the control column. No luck – it is just too far away! The final straw is that the aircraft is out of trim in roll.

Everytime he lets go of the stick the aircraft rolls steadily left. After a few minutes the solution comes. He rolls 45° to the right, rushes back to the door, pulls it shut and ties it with a spare seat belt and gets back to the controls as the aircraft reaches 70° bank to the left. A few moments later the radio crackles: "I reckon that's fixed it . . ."

The rest of the journey to England was uneventful by comparison. It was great fun and has given us many happy memories, as well as a gentle reminder that one never stops learning in the flying game.

1983-1984 - Optical Fibre (1)

OPTICAL FIBRE COMMUNICATIONS

This article has been prepared by FR Lt K Henderson, Department of Specialist Ground Training.

Over the last 10 years the concept of using light signals transmitted through glass fibres for communications has grown from a theoretical suggestion to a practical and efficient system. It is now certain that the next generation of communications networks will use optical fibres in preference to metallic conductors. This article is intended to explain the technical basis of optical communication systems and to outline the military applications, both present and future, of such systems.

A communication link has 3 essential components: a transmitter, a channel and a receiver. In a normal telephone circuit the transmitter is the microphone which converts sound waves into an electrical signal, the channel is the metal cable down which this signal travels and the receiver is the earpiece which converts the electrical signal into an approximation of the original sound plus noise and cross-talk by courtesy of British Telecom.

In an optical link the transmitter is a device such as a laser or light emitting diode (LED) which converts the electrical signal from a microphone or other source into a light signal, the channel is the glass fibre which guides the light and the receiver is a photo-diode which works on the same principle as a light meter and converts the light signal back to an electrical one. It will be noticed that the optical system uses electrical signals as intermediaries; attempts are being made to produce devices which allow some signal processing, such as filtering, to be carried out directly on the optical signal, but there is no prospect of eliminating electrical power from the system in the foreseeable future.

Since the heart of an optical communication system is the fibre, it is necessary to consider the basic theory and types of available fibres before discussing the systems in general. A longitudinal section through the simplest type of optical fibre is shown in Fig 1.

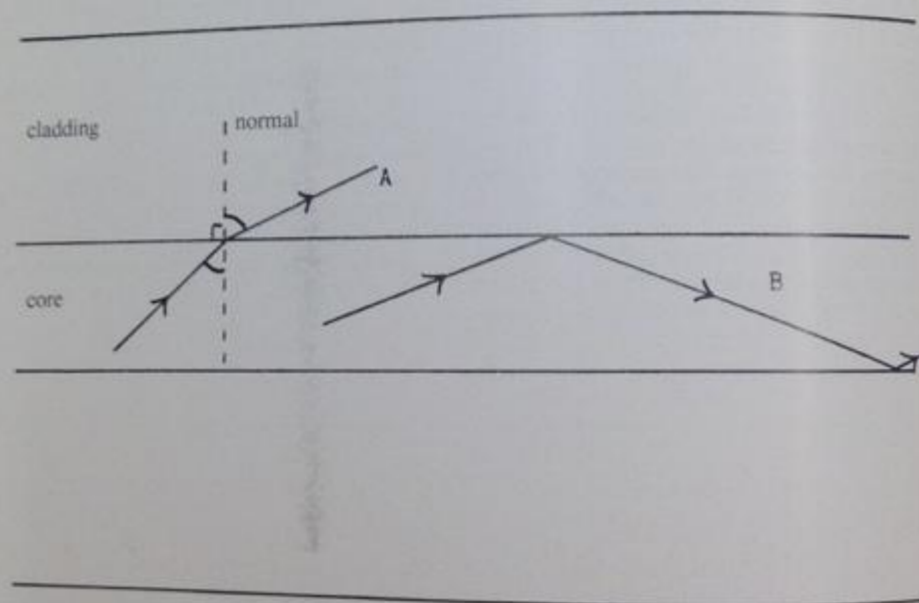


Fig 1

The core consists of glass of high refractive index while the cladding is of low refractive index, so that when a ray of light A passes from core to cladding it is refracted away from the normal as shown, a part of the light also being reflected from the interface. A ray such as B, however, strikes the interface at such an oblique angle that refraction is impossible and total internal reflection takes place, thus confining the ray to the core of the fibre along which it travels by means of multiple reflections. If, as is normally the case, the diameter of the core of the fibre is only a few times larger than the wavelength of the light used it is found that only a limited number of angles of incidence on the interface can lead to propagation down the fibre. In fact the fibre behaves very much like a waveguide used to confine radio waves, although the theory is more difficult because some of the electromagnetic energy, even of confined rays, leaks into the cladding which must thus be made of equally pure material as the core to avoid losses. The permitted ray angles are referred to as modes of propagation and, since they travel different distances as shown in Fig 2, they move along the fibre at different speeds.

present systems is $0.85 \mu\text{m}$ ($1 \mu\text{m} = 1/10,000 \text{ cm}$), the manufacture of such fibres is very difficult.

A number of factors determine the distance which optical fibre links can cover. The most obvious problem is loss of energy due to absorption and scattering of light within the fibre; anyone who has tried to look through the edge of a pane of window glass will appreciate that in normal glass such losses are quite high. The purity of the glasses used in optical fibres, however, is now such that light can be transmitted with acceptable losses for distances in excess of 100 km, and this is the technical breakthrough which makes optical communication feasible. Such long ranges give optical systems a great advantage over metallic cable links which require repeaters (amplifiers) every 2 or 3 kilometres; all optical repeaters can be positioned inside buildings such as telephone exchanges or communication centres thus simplifying repair and maintenance work.

Another problem to be overcome is pulse spreading due to the varying speeds of propagation in multi-mode (large diameter) fibres. Most optical communications systems use digital

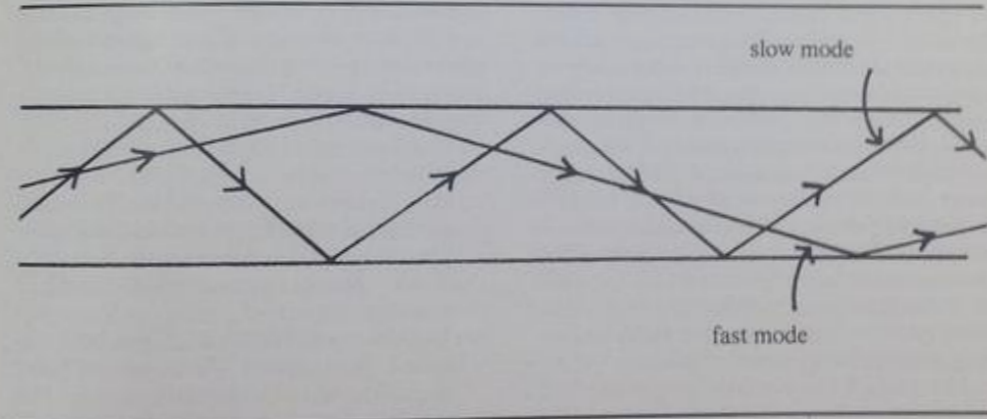


Fig 2

By making the core of the fibre of very small diameter, approximately equal to the light wavelength, it is possible to eliminate all but one mode so that the light travels with a single speed; since the wavelength of the infra-red light used in

signals, ie messages or data are coded into trains of pulses.

Since the different modes will arrive at different times at the receiver a square pulse will become degraded as shown in Fig 3.

1983-1984 - Optical Fibre (2)

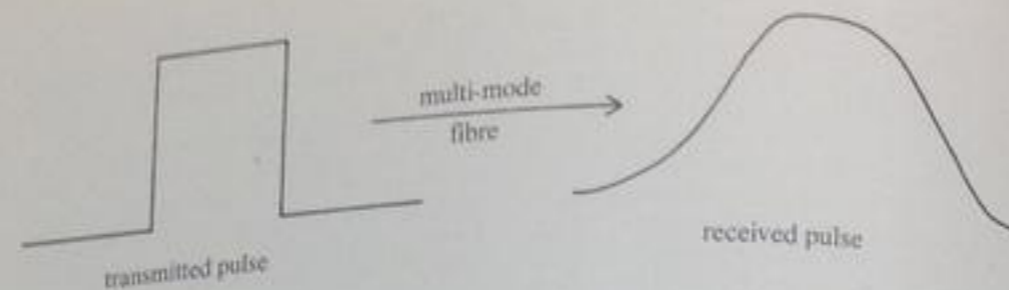


Fig 3

If the pulses are closely spaced they will overlap causing incorrect decoding and message corruption. This effect becomes worse as the fibre gets longer and so the long distance links use small diameter mono-mode fibres. A similar difficulty is encountered due to the variation in speed of light of different wavelengths - dispersion. Although the light sources used are essentially of one wavelength, the pulsed signals cause a spread in bandwidth so that dispersion must be taken into account and represents a serious limit on the lengths of links and the rate at which pulses can be transmitted.

Fortunately, it is found that if the wavelength of light used is raised to $1.3 \mu\text{m}$ both energy losses and dispersion effects are minimised and data rates of 140 million pulses per second over ranges of 120 km can be obtained. It is therefore certain that the next generation of optical communications will use this higher wavelength, although this requires the sources and detectors to be made of special material using complex microelectronic construction techniques. It must not be forgotten, however, that many communications links are quite short and these can be implemented using relatively cheap multi-mode systems - in fact many short range applications use very cheap plastic fibres.

The military applications of optical fibre technology are potentially almost limitless. The advantages over copper cables include:

Reduction in weight and volume leading to easy handling.

Low cost, allowing redundancy (duplication) to be built into the system.

Security. Optical fibres are almost impossible to 'tap', and any such attempt can be detected easily. They are also immune to electro-magnetic jamming and resistant to the

electric-magnetic pulse (EMP) produced by nuclear weapons.

These advantages are offset by a single major disadvantage; optical fibres, because of their tiny dimensions, are difficult to join and repair. This problem is quickly being solved, however, and is unlikely to impede the introduction of the systems.

The obvious first area for the introduction of optical fibres is in ground-based communication systems. Project Uniter, the new RAF Integrated Communications System uses the technology widely. Similarly, aircraft information and data systems, which are becoming ever more complex, will, in the future, tend to be based on optical fibres which will allow large amounts of data to be handled and also allow sufficient duplication to avoid system break down resulting from battle damage.

Slightly more futuristic developments include:

Missile guidance. An optical fibre could carry a TV video signal from a missile to the fire unit and relay control signals back to the missile. Similar systems could be used on torpedoes.

Tactical communications. It has been suggested that optical fibres (of sufficient strength) could be laid from the air to provide rapidly deployed battlefield communications.

There is no doubt that the use of optical fibre technology can, and probably will, increase the speed and efficiency of military communications and data handling dramatically. As long as care is exercised in implementing reliable and well-planned systems, a new era in military intelligence and communications is about to begin.

1983-1984 - 70 IOTC in Kenya (1)

THE 70 IOTC EXPEDITION IN KENYA

This article has been prepared by Flight Lieutenant M J S Goddard, Department of Initial Officer Training.

The Kenya Expedition was organized by the students and staff of number 70 Initial Officer Training Course (70 IOTC) to the mountainous areas of Kenya from 12 September to 3 October 1983.

Kenya, situated in East Africa, offers a variety of terrain: from the humid, palm fringed Indian Ocean coast and the dry heat of the bush covered savanna to the cool, fertile highlands and the cold, lofty mountains. It was to Mount Kenya that the expedition was trekking. Mount Kenya straddles the equator and, after Kilimanjaro, is the second highest mountain in Africa. Despite being on the equator, this mountain has permanent ice and snow and still has areas which are remote and seldom visited. The team were hoping to ascend to over 16000 ft using a little known and undocumented route through the north-eastern forests and moorlands of Mount Kenya.

It was early in January 1983 that ideas for a DIOT expedition to Kenya were first discussed. Kenya seemed to offer the opportunity for an adventurous training expedition of high altitude trekking in a mountainous terrain and climate which is unavailable in Europe. The main object of this expedition would be to document a route, called the Meru Route, to an altitude of 16355 feet on Mount Kenya; additionally, the team would study the culture, wildlife and geology of the area.

It was decided to select the team members from the officer cadets, student officers and staff of 'A' Squadron, 70 IOTC. The timing of the expedition, therefore, would have to coincide with the period immediately after 70 IOTC's graduation parade on 8 September 1983. During this period the directing staff of 'A' Squadron would be on standdown and many of the newly graduated officers would be holding posts, awaiting their professional training courses.

In the early months of 1983 much background work was done: funds were arranged, food and menus planned, the Sports Advisory Bureau of British Airways approached to arrange flights, plans made for transport within

Kenya, maps ordered, cameras and films obtained and numerous other administrative details arranged to ensure a sound base for a successful expedition.

Eventually approval was given for the expedition from the Ministry of Defence and diplomatic clearance granted; the team of 12 could now be selected. The cadets of 70 IOTC arrived at Cranwell in early May and soon after their arrival the expedition plans were announced and volunteers invited to apply for a place on the team. A 'paper' selection board, followed by interviews and a weekend in the Peak District produced the final team list of 6 directing staff, 7 RAF and 2 WRAF members.

It was an apprehensive and excited team of newly commissioned, and some not so newly commissioned, RAF and WRAF officers with their 350 kg of equipment who met at London Heathrow on Monday 12 September 1983. Their adventure started with a 9-hour flight to Nairobi on a British Airways Tristar. On arrival at Nairobi airport in the early hours of Tuesday morning the team quickly adjusted to the slower pace of life in East Africa by making up for lost sleep.

On the second day and for the remainder of the expedition's time in Kenya, Lieutenant Colonel R Harrison, OC the British Army Training Liaison Staff Kenya, kindly loaned the team a long wheelbase Land Rover with trailer. This proved invaluable on the steep gradients and rough tracks of up-country Kenya.

The British Air Advisor in Nairobi, Wing Commander Barry Latter, invited the team to his house for drinks and thoughtfully arranged for several noted Kenyan mountaineers and members of the Mountain Club of Kenya to give the team the opportunity to learn more about the terrain and climate they were about to encounter. During these first few busy days Pilot Officer Mark Graham arranged and packed the equipment, Pilot Officers Karen Thorpe and Ian Guthrie kept the expedition diary up to date and Pilot Officer Pat Cafferky coordinated the team's activities.

After provisioning in Nairobi and training on the Ngong Hills at over 8000 feet the team were ready to start the acclimatization phase. Climbing Mount Kenya has unique medical implications.

Known for its steep faces and rapidly rising altitude, Mount Kenya has claimed as many as 50% of all the high altitude Pulmonary Oedema cases in the world each year. The most common single determinant of potentially fatal Pulmonary Oedema is rapid ascent without acclimatization. This expedition was therefore planned to enable all members to acclimatize sensibly and reach Point Lenana at 16355 feet with a minimum of altitude sickness and a greatly reduced risk of Pulmonary Oedema. This was achieved by a carefully planned acclimatization phase.

The expedition spent several days in the Rift Valley, climbing Mount Longonot at 9110 feet and ascending El Donyo Lesatima in the Aberdare Mountains. This latter peak, at 13130 feet, is the summit of the Aberdares and the team camped one night there. The experience was indeed memorable; at over 13000 feet the dawn temperature was well below zero, the tents were frosted over and the ground was frozen hard. However, brilliant sunshine encouraged one or two members to venture out of their tents and absorb the dramatic view. The cloud was 500 feet below the peak and the glaciers and summits of Mount Kenya were visible in the hazy distance some 30 miles away, rising like an island from a sea of cloud. It was an inspiring sight and provided a timely reminder that the main part of the expedition was yet to come.

After the acclimatization on Rift Valley volcanoes and in the Aberdare Mountains the expedition re-provisioned themselves; the trusty Land Rover was re-fuelled and checked by Pilot Officer Andy Robson and the team prepared for the main phase. However, en route to Mount Kenya, the expedition had planned to visit a Kikuyu farm on the fertile slopes of the mountain. The farm, or 'shamba' in Kiswahili, belongs to Peter and Winnie Muembu and, with 4.4 acres of fertile land, provides them and their family with many of their basic needs. The warmth of the Muembus welcome, the sincerity of their hospitality and the efficiency of Peter's

well-organized 2-day programme of cultural visits deeply impressed the team who were provided with a fine and memorable example of the Kikuyu way of life and all benefited from experiencing a little part of it. Squadron Leader Jerry Stewart and Pilot Officer Paul Hart, who were studying the Kikuyu culture, were particularly interested in this visit and took copious notes and photographs.

Mount Kenya at last, and it was not at all like some of the team imagined. Perhaps it was the weather which provided the greatest shock; the effects of altitude are, after all, insidious and the programme of acclimatization had, hopefully, minimized these effects. Yes, the weather was bad but at least it was predictable.

At altitudes above 10000 feet the early mornings were cold, frosty and clear. The sun was deceptively strong and soon heated the ground, although the air temperature was still below freezing. However, by mid-morning the cumulus built up and by lunch time the rain, sleet or snow began, continued throughout the afternoon and cleared before dusk.

The terrain was not too difficult; giant heather and tussock grass soon gave way to moorland shrub, giant groundsel and screes. On the higher slopes the ground was barren, rocky and icy. By day 5 the team had trekked from 9000 feet to over 16000 feet, carefully documenting the route on the way, to reach a small hut perched on the edge of a large glacier named Lewis Glacier. The final ascent to Point Lenana at 16355 feet, done the next morning, was relatively easy on the firm but steep gradient of the glacier which was frozen hard in the early morning frost.

The view from the top was spectacular. After so much climbing and physical effort the achievement was not immediately evident; in a little over 2 weeks, 12 people, many of whom had done no mountaineering at all, had successfully scaled a 16000 feet peak, by a remote route, without major difficulty and with no altitude-related problems. Flight Lieutenant Alan Landsburgh, the team photographer, and Pilot Officer Lawrence Fisher, the expedition artist, recorded the views before the team made a hasty retreat from the mountain to try to avoid the inevitable snow storm, unsuccessfully as it turned out.

1983-1984 - 70 IOTC in Kenya (2)



The team on the summit of Point Lenana, 16355 feet; from the left, Flight Lieutenant Alan Landsburgh, Squadron Leader Jerry Stewart, Pilot Officers Karen Thorpe, Ian Guthrie, Sue Perkins, Mark Pattinson, Flight Lieutenant Mike Goddard, Pilot Officers Lawrence Fisher, Pat Caffery and Mark Graham.

The Expedition Leader, Flight Lieutenant Mike Goddard, was well pleased with the team's efforts. The expedition had proved that a major trek to a remote overseas area can still be mounted from the RAF College, the brevity of the IOTC notwithstanding. The whole team experienced life in Kenya and reached the third highest peak on Mount Kenya, by the remote

and undocumented Meru Route. Detailed and sound advance planning, good team morale and spectacular scenery helped the team to meet the challenge of strenuous physical exertion, to practise the skill of self-sufficiency in a remote area, to sample the culture of African tribespeople and therefore to experience expedition training in its fullest sense.

1983-1984 - Nijmegen

The 67th Nijmegen 4-day International Marches

This article has been prepared by Squadron Leader J W Haywood, Department of Specialist Ground Training.

The RAFC Cranwell has a thriving Walking and Road Marching team. The team has represented the College at various events, both civilian and Service sponsored, throughout England and overseas. The main marching event of the year is the International Marches held in Nijmegen, Holland.

The Nijmegen International Marches are a 4-day event in which the participants have to march 25 miles on each day. The marches take place in and around the university town of Nijmegen which is situated approximately 12 miles south of Arnhem. The 4 days are the Tuesday, Wednesday, Thursday and Friday of the third week in July.

In 1908 there was some concern in The Netherlands about the poor state of national fitness and the low level of sports in general in the country. A group of Dutch met in The Hague and resolved to improve the situation. Thus was founded the 'NEDERLANDSE BOND VOOR LICHAMELIJKE OPVOEDING' (Netherlands League for Physical Culture). In 1958 the league received Royal patronage and became the 'KONINKLIJKE NEDERLANDSE BOND VOOR LICHAMELIJKE OPVOEDING' (KNBLO) (Royal Netherlands League for Physical Culture). The KNBLO is responsible for the organization of the International 4-Day Marches (Vierdaagse). The aim of the Marches is to promote an interest in long distance walking involv-

ing long preparation and training to achieve a high peak of fitness and feeling of well-being. The spirit of the Marches is non-competitive; completion of the allotted distance in the generous time allowance is all that is required.

The definition of walking or marching for purposes of the Marches is: to move along on foot at a moderate pace by placing one foot on the ground before lifting the other.

Both military and civilians take part in the Marches. This year a total of 22,000 people took part, 7,000 of whom were military. The participants come from all over the World; at least 40 countries entered teams. All male military personnel have to carry a pack which must weigh not less than 10 kilograms (22 pounds).

There is no record of the College having entered a team for the Marches before this year, when all the 11 members of the team, including one WRAF, successfully completed the marches. Each received an individual medal and the team was awarded a team medal which has been presented to the College, and can be seen in the trophy case in College Headquarters.

After the Marches have finished on the Friday, all the military participants take part in a march past through Nijmegen. This year the march past was watched and cheered by 120,000 people.

The training for the Marches began in early February, when a short distance of 8 miles was covered. The distance covered in each weekly training session was progressively increased

until by the middle of April the team could march 25 miles in 8 hours without too much trouble. The most important pieces of equipment are, of course, the boots. They must be a comfortable fit, but it must be remembered that after 2 days of marching the small size 9 foot becomes a large size 10. One other fact we learned during training is that you should never get friendly with dogs tied up by a newsagent's shop. Once you take your pack off to go inside to buy refreshments the dog will pay his compliments on your poncho!

Eventually all our training was behind us and on Saturday 16th July 1983 the RAFC Cranwell Nijmegen Team boarded the Harwich ferry bound for Holland, along with many other marchers. The night passed quietly and uneventfully once everyone had sore throats from too much boisterous singing. One member, however, was sea-sick even though the sea was as smooth as glass.

We arrived in Nijmegen about 1000 hrs on Sunday. We were joined by the RAF Newton team; all 19 of us then packed into a 14-man tent prior to sampling the delights of downtown Nijmegen. It must be added at this point that the WRAF had to suffer terribly by being billeted in a gymnasium some 5 miles from the tented accommodation.

On the Monday half of us went to see the delights of Amsterdam whilst the other, more studious, half went to see the museum at Arnhem. However, we were all in bed by midnight.

Tuesday 19 July began with reveille at 0330 hrs, and with Ruth Gray alongside Art "I get my face on every photograph" Puzzar leading the team we left the camp gates by 0430 hrs. It was during this first day that we had our photograph taken. The first day proved to be the easiest and we had no problems in completing the 25 miles by 1230 hrs.

The second day, the Day of Bridges, and the longest day, approximately 28 miles, we left the camp gates at 0445 hrs. It was during this day that we found out that Ruth had to be kept fed to keep her stamina up so that she could keep up with us. Once replenished she was off up the road as though she was on fire. It was also the day when John Haywood, he who had marched 400 miles in training, developed bad blisters on the soles of his heels. However, we arrived back at the camp by 1315 hrs. John then went to see the Army medics to get his blisters attended to.

During that night Art Puzzar suffered an attack of delayed sea sickness; and during the next day, the Day of Hills, had to be assisted on the way round. Whilst John Haywood was helping Art round, Seamus Hamill-Keays was helping Art round, Seamus Hamill-Keays led the team. In one village a senior officer was taking the salute as the teams passed; but Seamus was busy singing and he almost missed the eyes left. Unfortunately when he gave the command in rather a loud voice, to overcome the Oompapah band, he was right behind one of the ladies standing by the saluting base, and almost frightened her out of her dress.

The 4th and last day began at 0230 hrs and it was the hottest day of the event. Ruth had by now pulled a tendon on the front of her shin. Alan Forrester was exhausted, John Haywood now had a nasty swollen left knee, and Seamus had blisters. Nevertheless, we all crossed the finish line together as a team. Once at the finish John Haywood retired to the medical tent; Seamus went over to see how John was and succumbed to heat exhaustion. The rest of the team did march through Nijmegen and were given many bunches of flowers.

That night Nijmegen was painted a vivid shade of red by all participants. We arrived back at the camp just in time to pack up and get the transport to the station to catch the 0700 hrs train to the Hook. We arrived back at Cranwell at midnight on Saturday 23 July 1983.

Despite the blisters, heat exhaustion, and pulled tendon a very good time was had by all. So much so that a team will be taking part in a 50 miles march in Clermont, Belgium in February 1984. Training for Nijmegen 1984 will begin straight after the Belgium trip.

Things we learnt at Nijmegen:

1. How important it is to have a good and varied repertoire of songs.
2. Seamus knows only one song "Waltzing Matilda".
3. Although he had been to Nijmegen twice before, when asked how far to go, Kevin Hunter replied, "about 6 miles". Unfortunately 8 miles and almost 2 hours later the same question elicited the same reply.
4. When you are lying in the gutter suffering from heat exhaustion do not expect help from John Haywood.



Left Hand Rank SACW Ruth Gray SAC John Tague Jnr Tech Tom Devlin Cpl Kevin Hunter Flt Lt John Haywood (Team Leader)
Right Hand Rank SAC Alan Forrester Cpl Art Puzzar SAC Rick Young SAC John Williams Flt Lt Seamus Hamill-Keays

1983-1984 - Snow Graduation

Snow graduation

A unique graduation ceremony was held high in the Swiss mountains on the 2nd February 1984. Whilst his peers from No 73 IOTC held their Graduation Parade at the RAF College Cranwell, Pilot Officer Ian Ferguson was representing the RAF at the International Inter-Service Ski Championships at Andermatt. To ensure that Ian's graduation did not pass

unnoticed a parade was organized consisting of two flights, one formed by the RAF Ski Team and the other by the Australian Defence Forces Ski Team. the Reviewing Officer was Air Vice-Marshal J F G Howe CBE AFC RAF and after receiving the Air Marshal's congratulations, Ian led the parade in a slide past whilst all sang Auld Lang Syne.



1983-1984 - Obituary Air Marshal Nicholetts

OBITUARY

AIR MARSHAL SIR GILBERT NICHOLETTS

By Augustus Tilley

Air Marshal Sir Gilbert Edward Nicholetts, who has died aged 80, was a pioneer of flying-boats and in February 1933, set a world air record.

With Squadron Leader O R Gayford he flew a Fairey long-range monoplane with a Napier Lion engine 5,431 miles non-stop from Cranwell to Walvis Bay, South West Africa. The flight took 57 hours 25 minutes.

Five years earlier in 1927-28 he had been a pilot in a team of four Southampton bi-plane flying boats which flew 27,000 miles from Plymouth to open up air routes to Australia and the Far East.

The open cockpit planes cruised in the Far East, visiting Hong Kong and Australia before landing at Seletar, Singapore in December 1928, after a 14-month mission.

A Royal Navy cadet at Osborne and Dartmouth, he was transferred to the RAF in 1919 when the Navy was reduced under the "Geddes Axe". He thus became one of very few officers who passed through Osborne, Dartmouth, Keyham and Cranwell as well as later, the Staff College.

He was stationed at Calshot from 1922 and was with the Mediterranean Fleet and the aircraft carrier Eagle in 1924-26. After the Far East flight of flying boats he was stationed at Singapore with No 209 Sqn for four years.

He was awarded an Air Force Cross in 1931 and gained the Bar in 1933 for the world record flight which also won him one of the first silver medals of the Royal Aeronautical Society.

From 1936 to 1938, he served in Iraq and during the 1939-45 war commanded No 228 Sqn from 1939 to 1941 at Haifa and Shallufa. In 1942 he was taken prisoner by the Japanese at Java.

After the war he was Air Officer Commanding the Central Photographic Establishment from 1946 to 1948, and Director of Organization, Air Ministry, from 1948 to 1951. After a spell with Flying Training Command, he became Air Officer Commanding Malta, and Deputy CinC Allied Forces Mediterranean from January 1956 to December 1957.

He was Inspector General of the RAF in 1958-59. He was appointed a CB in 1949 and made a KB in 1956. A bachelor till he was 53, he married Mrs Nora Beswick, daughter of Mr Francis Butt of Chester in 1956.