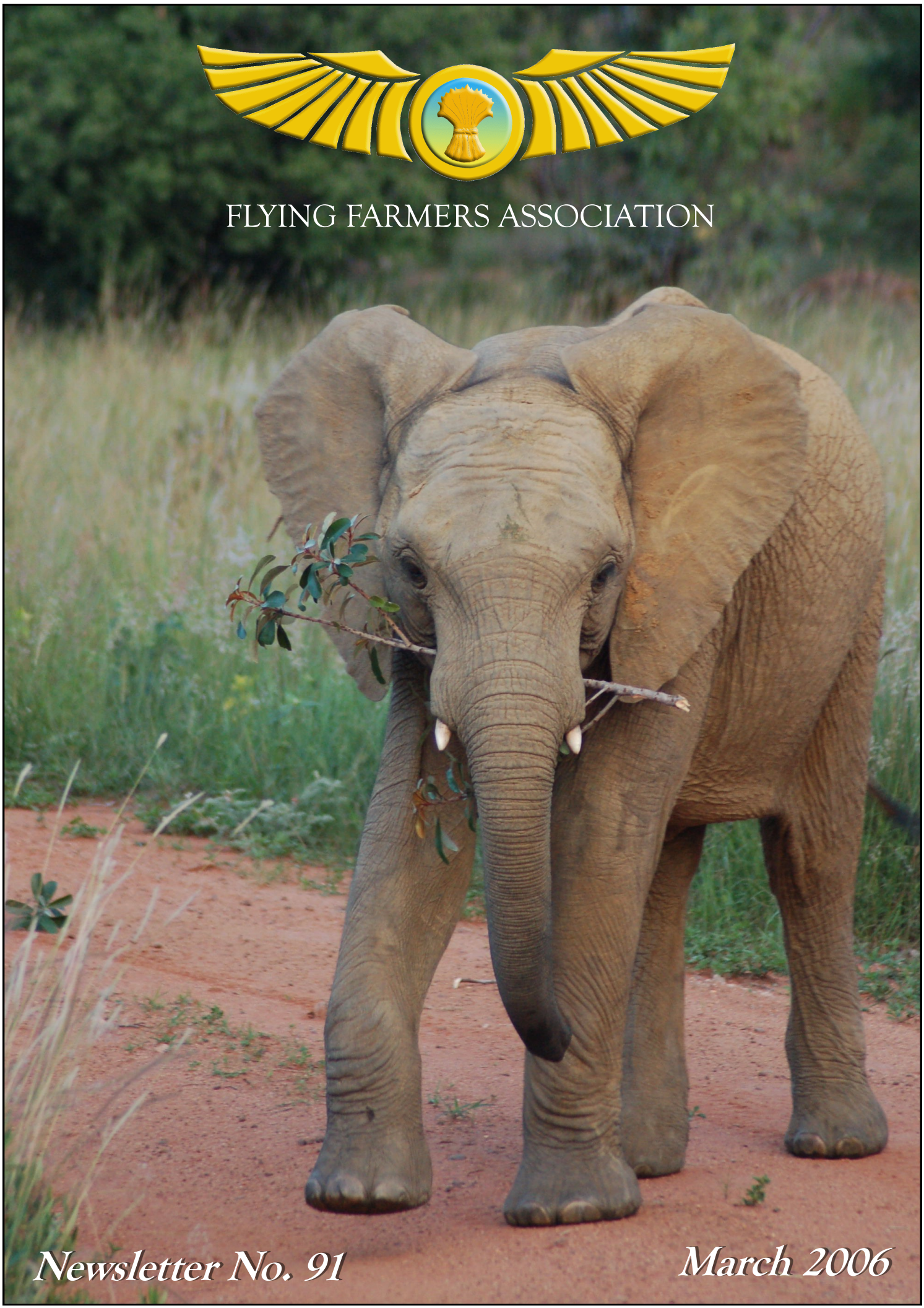


# FLYING FARMERS ASSOCIATION

*Newsletter No. 91*

*March 2006*

# Opening Thoughts

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*Cover photograph;*

Taken by David Corbett on the his recent flying tour of South Africa with other FFA members.

## Chairman's Message

This newsletter will come to you in the spring, a very pleasant time of year. As country people we enjoy the new growth of plants, the new-born lambs, and the start of the annually-repeated cycle. As flying people we look forward to longer days and weather conducive to aviation.

The Association has a good number of visits planned for this year. These vary in length (and cost) and cater for a range of interests, so please take advantage of some or all of them.

Meanwhile we in England trust we will at last receive our SPS money. It may buy a little Avgas!

I wish you good, safe flying.

*John Golden*

## Editor's Notes

As can be seen on the next page, the Committee have lost David Corbett as our longstanding Treasurer. I personally will miss David's input at the Committee meetings as due to his representational work, he has built up a vast knowledge of how the politics in General Aviation work. Without this sounding too much like an obituary - sorry David - he was one of the original instigators of the FFA back in 1974 and together with Colonel John Williams-Wynne Chairman), Anthony Poulsom (Secretary) and Fred Spencer, formed the first Committee of the FFA. He took the Secretary's post in 1978 and has held a position until this year.

You will notice that Mike Cuttell has a very extensive and interesting events programme. He wishes to thank all those that have volunteered to organise the meetings. All events are being well attended, so it would be to your benefit and the event organiser's if you could book in a soon as you can to avoid disappointment.

Martin Gosling arranged a South African Flying Safari with FFA members in mind. You can read how they got on in this issue. If you fancy doing a similar trip, I'm sure Martin can point you in the right direction.

*Paul Stephens*

## Our Representative's Report

**The Royal Aero Club**

At the committee meeting held on 24 February, there was considerable discussion about which GA organisations your Association should support. For a number of years FFA has made contributions to GASCo and GAAC, and to AOPA, because so many FFA members are AOPA members; AOPA members can see for themselves, through reports in their house magazine "General Aviation" the excellent work that is being done on their behalf.

In years gone by, FFA used to be an Associate Member of the Royal Aero Club (RAeC), but that membership was ceased 8/9 years ago, when it was difficult to see that RAeC were doing anything useful on our behalf. However, during 2004 it became clear to me that RAeC were about to start playing a pivotal role as UK representative organisation in Europe, vitally important as aviation legislation changes from UK legislation to European – principally EASA and JAA. Therefore, FFA rejoined RAeC as an Associate Member half way through 2004 – and continued that membership throughout 2005.

When it came to renewing for 2006, there was some considerable debate – but the committee agreed to continue for one more year, during which contributions to GA organisations will be reviewed by the committee with the benefit of the input of our new Treasurer, Andrew Cragg (Welcome, Andrew!).

I now wish to draw FFA members' attentions to a really well written report that appears on the RAeC website. The website is at www.royalaeroclub.org

## Committee Members

| | | |
|---|---|---|
| **Dick Walgate** | President | 01472 371203 |
| **John Golden** | Chairman | 01725 552384 |
| **Paul Stephens** | Secretary | 01944 738281 |
| **David Corbett** | Treasurer | 01568 708351 |
| **Mike Cuttell** | Events Secretary | 01242 236770 |
| **Martin Gosling** | Airstrip Advice | 01787 269369 |
| **Anthony Kedros** | Committee Member | 01295 720876 |
| **Mike Ashmole** | Committee Member | 01738 627622 |

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Scroll down to the section Royal Aero Club News on the home page, and then click on – "Progress Report for 2005". This very well written and full update is by Marc Asquith, the current RAeC chairman. When you have read that, look at the links to "Member Organisations", and then "Europe Air Sports", and then "Individual Members" – and consider joining as in individual member in your own right – I joined, many years ago!

**News from GASCo – the General Aviation Safety Council**

There were Council meetings of GASCo in November 2005 and on 16th February 2006. GASCo publishes "Flight Safety" magazine 4 times each year, edited by Nigel Everett. This magazine is distributed free of charge to registered owners of aircraft (provided that the CofA or Permit is current at the time of mailing); in the case of group owned aircraft, the first named owner on the registration receives the aircraft's copy. The magazine is also distributed to representative organisations and flying instructors. If you think that you should receive a copy of Flight Safety, but you do not, please let me know and I will try to find out why you are not getting it. You can also take out a subscription to receive "Flight Safety" if you do not qualify for a free copy – the subscription takes the form of a Gift Aid donation, paid by standing order, of not less than £16 per annum.

**Here are some snippets of news from GASCo;**

Flying clothing – it has been noted that some makes of baseball caps have "buttons" on the top of them; if headsets are worn over these buttons, pressure can be transferred to the skull, causing headaches and perhaps even other problems while flying. It has also been pointed out that some pilots wear fluorescent waistcoats while flying; this is a dangerous practice, for two reasons – firstly, reflections can make the instrument difficult or impossible to see, and secondly, these waistcoats are flammable. Do not wear reflective waistcoats whilst flying, even if you do wear them on the ground (Do you?).

Flying in France. One GASCo board member, en route SE England to Le Touquet, was told by Lille ATC that there was no ATC at Le Touquet that day and that, if he could not speak French, he should return to UK and not proceed any further in French airspace. After this was reported, Nigel Everett put out an e-mail to say that useful French aviation phrases can be found at the following website www.webvivant.com/aero-andaines/vocab.html Thank you, Nigel. *(doesn't seem to be working at the moment - ed!)*

**News from GAAC – the General Aviation Awareness Council**

In common with other organisations, GAAC members are involved with the CAA Strategic and Regulatory Reviews, both of which are on-going with extensive inputs from GA organisations and individuals. These Reviews are expected to report later this summer.

Another major problem that has been identified concerns planning – with particular emphasis on brownfield sites. A draft of a new planning guidance document, PPS 3, removes airfields form exemption from planning for development on brownfield sites. This is being fought hard, not least by Gerald Haworth MP, chairman of the Parliamentary All Party Aviation Group; ODPM (Mr Prescott's office) has now intimated that this was an error and would be rectified. Watch this space...

The AGM of GAAC will take place at the London Air Show on 21st April at 1400 hrs.

**News from GACC – the CAA's General Aviation Consultative Committee.**

Unfortunately, publication of this newsletter will be a few days before the next GACC meeting on 14 March – because of Paul's need to go to Italy in mid March to recce the June Italian Study Tour. However, I see that the agenda includes – carb icing research project, update; mode S carriage requirements, update; and a presentation about the mis-use of radio frequencies, amongst many other items.

Noting the latter point, I wonder how many of our members see or receive "GA CHIRP Feedback".

This quarterly report of incidents reported confidentially comes out as a supplement to "Popular Flying", the PFA magazine (if you do not see this, try to get hold of a copy – it is a fascinating magazine) but not, I believe, AOPA's "General Aviation". On the first page of the Spring 2006 edition, there is a report of an incident whereby an accident was almost certainly avoided by intelligent use of the Safetycom frequency (135.475mhz). Interesting...

**Future FFA representation on GASCo, GAAC, GACC**

Now that I have retired as Treasurer and as a committee member, I have told the committee that I offer to continue to represent FFA on the above bodies until I finish my term as an EC member of PFA. However, when that event happens – which might be in September 2007 – another FFA member will need to take over from me. If you are interested, please contact one of the committee members; the committee will then ask me to brief whoever they choose as my successor.

*David Corbett*

*News & Views continued on the back cover*

## Welcome to New Members

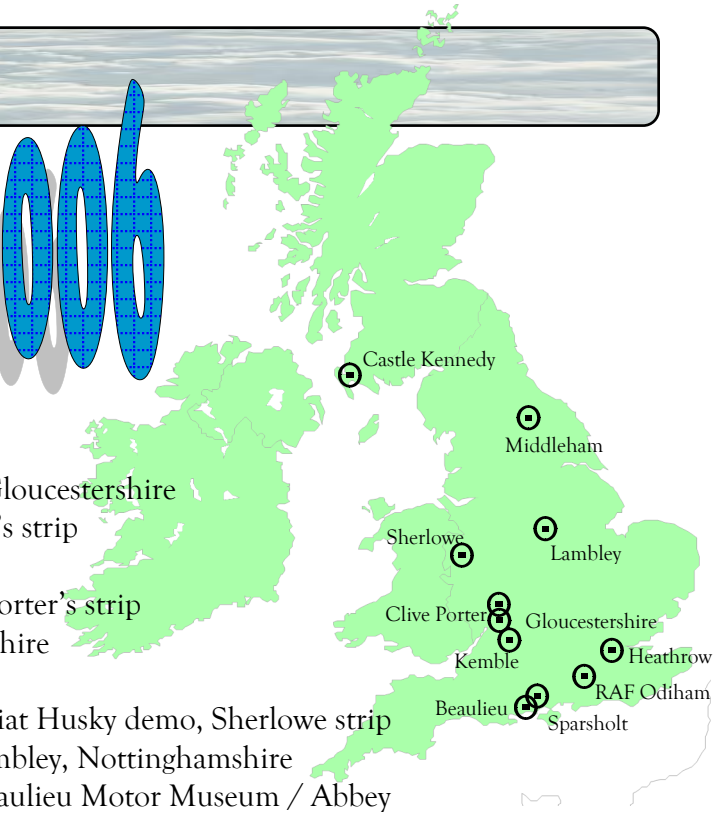
Since 1st December 2005, the following have joined

782 Philip Young, Hunsatnaton, Norfolk
783 Stephen Throup, Nun Monkton, York
784 Nolan Bryne, London
785 Christopher Unitt. Torteval, Guernsey

## Sorry to Loose You

530 Eric Hopper, Ripon, North Yorkshire
606 Douglas Young, Coleford, Gloucestershire

# Programme 2006




| | |
|---|---|
| Wednesday 1st February | London & Heathrow |
| Wednesday 8th February | Alvan Blanch, Kemble, Gloucestershire |
| Wednesday 12th April | Sparsholt, John Dunford's strip |
| Wednesday 10th May | RAF Odiham |
| Friday 12th May | Vale of Evesham, Clive Porter's strip |
| Wednesday 17th to 18th May | Middleham, North Yorkshire |
| 28th May to 6th June | European Tour, Italy |
| Thursday 8th June | Ironbridge museum / Aviat Husky demo, Sherlowe strip |
| Wednesday 14th June | Farm Diversification, Lambley, Nottinghamshire |
| Wednesday 21st June | John Boyd's farm and Beaulieu Motor Museum / Abbey |
| Tuesday 11th to 12th July | Visit the Earl of Stair's estate, Castle Kennedy |
| Thursady 20th July | Air Atlantique, Gloucestershire (Staverton) |

## Sparsholt Agricultural College & Twyford Waterworks Visit, Wednesday 12th April

The first part of the visit is to Sparsholt Agricultural College, which is one of the largest agricultural colleges in England. It has been in existence for approx. 106 years and has 1200 full time students and 200 day release students. The college offers a very diverse syllabus.

Our visit will take approximately 3 hours and will probably cover their aquatic and equestrian centres and the small animal unit and the new pig unit. The television programme Gardening Question Time is filmed here and we also hope to visit this garden. (The schedule may be varied, depending on weather and college activities). Buffet lunch is to be provided at the college.

The afternoon is taken up by a short visit to Twyford Waterworks, which is a nineteenth century pumping station. It is interesting to note that Southern Water still use the same bore hole and extract an excess of five million gallons of water per day. Unfortunately the pump machinery etc. will not be running (as restoration is carried out in the winter months ) but we will be able to see around the complex, take a look at the machinery and get a good idea of working conditions of yesteryear.

We shall be using John Dunford's strip, which is just inside Southampton's ATZ.

**PLEASE NOTE:** Whilst the strip is 650 yards, the approach contains some obstacles to be negotiated. Those of you who usually operate from short strips are likely to be content to use this strip. We have an overall responsibility to be sure that we do not embarrass John Dunford in any way, nor must we blot our own copybook!

Many insurers, within the wording of their policies, instruct that any pilot intending to use a strip, which they have never used before, should inspect it before use.

Cost £25.00 pp with reply slip to Neville Stops by 31st March



## Visit to RAF Odiham, Wednesday 10th May

RAF Odiham is situated in North Hampshire, 7 miles from Basingstoke. The station operates 3 support squadrons of Chinook helicopters and one Army Air Corps Lynx squadron.

09:30 - 11:00 Arrival and coffee in the Operations Centre
11:30 - 12:00 Presentation by the Station Commander Group Captain Reynolds
12:30 - 13:30 Lunch in the Officers Mess
13:30 - 14:45 Visit to the Chinook Squadrons and tour of the aircraft
15:00 - 15:30 Briefing by squadron staff on the operational role of the Chinook
15:30 - 16:00 Departure

The visit is limited to 25 aircraft and 50 members. Acceptance will be on a first come first served basis. The cost will be in the region of £30 to cover landing fee, MoD insurance and lunch. Do not send any remittance at this stage.

It is hoped at the end of the visit and time permitting, that some members who have not come from a far, may be willing to stay and fly some of the station staff around the local area.

The visit is by courtesy of the station commander Group Captain Reynolds, who is a light aircraft enthusiast and will no doubt be interested in having a look at some of the visiting aircraft.

**Events such as these set above are arranged by FFA members on a voluntary basis. It is accepted by those who participate that nothing undertaken by the FFA collectively or members individually shall be construed as establishing a duty of care nor in any way removing or modifying the duties, responsibilities or obligations of pilots or land owners in relation to any event and attendance thereat. All information provided in these programmes is purely advisory and should ALWAYS be verified from official sources.**



## Vale of Evesham Aspargus and Tomato Visit, Friday 12th May

09:30 Arrive Croft Farm Airfield, Defford

Will split into 2 groups. Travel by coach to site visits
Asparagus lunch (2 course - choice on the day of arrival)

16:30 Depart

Please send reply slip with cheque for £25 pp with an SAE to Laura Holt.

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## Middleham, North Yorkshire, 17th & 18th May

The details for this trip were given in the December 2005 newsletter. To date 28 people in 16 aeroplanes have subscribed. However, at this moment there are some places available, so depending on rooms at Swinton Castle, the list is still open. If you would like to come, please contact Gordon Bellerby asap on 01423 520770

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## Ironbridge Museum, Thursday 8th June

A visit to 2 elements of this museum of history in the morning. Those who have not seen this before will find it fascinating. After lunch, we return to Sherlowe airstrip for a demonstration of the Aviat Husky.

Total cost will be £32 to include museum, museum guide, lunch, landing fee and 50 seater coach. Please send remittance with the reply slip and an SAE to Stuart Mole by 1st April.

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## Visit to Nottinghamshire, 14th June

| | |
|---|---|
| 09:30 - 10:00 | Arrive Lambley. Details in Pooleys and AFE or ring John Hardy on 07768 726279 |
| 10:15 | Depart for Richard Esam's farm by coach, visiting a former pig farm now converted into small industrial units and offices |
| 11:45 | Travel to Richard Blant's working pig farm with small scale diversification including composting for the local council |
| 12:30 | Depart for Tony Strawson's Hexgreave Estate |
| 13:00 - 14:00 | Lunch at Hexgreave |
| 14:00 - 16:00 | Tour of converted buildings to offices / houses, wood burning heating scheme, then coach tour around two traditional sandland estate and large vegetable packing unit |
| 16:00 - 16:30 | Tea |
| 16:30 | Return to Lambley and depart |

Tear off slip to Richard Blant with £15 pp by 15th May

## Visit to John Boyd's farm, Hampshire, 21st June



Although he is an arable farmer, we will visit the soft fruit side of his business - strawberries, raspberries and blackberries. With a season extending from April to November, he is one of the UK's biggest suppliers of strawberries to the supermarkets. At peak times he employs more than 300 people. More details from www.boydfarming.com

We expect the farm visit to last about 2.5 hours, after which we go to the National Motor Museum at Beaulieu. Here we will have lunch and anyone not interested in the collection of historic cars could visit Beaulieu Abbey, Palace House and / or the gardens. More details on www.beaulieu.co.uk

Please send £20 towards the cost of the museum entrance and transport costs to John Golden.

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## Castle Kennedy, Stranraer, 11th & 12th July



Still at the organising stage, it is hoped to visit the Stair Estate, the gardens, a cheese factory and possibly Oceanic Control at Prestwick.

Numbers will be limited due to accommodation at Stranraer, so please send in the reply slip by April 30th together with £30 deposit pp to The Earl of Stair (FFA No 734) with the envelope marked FFA. www.castlekennedyairfield.co.uk

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## Air Atlantique, Thursday 20th July 2006

Due to Air Atlantique moving from Coventry to Gloucestershire (Staverton), the date published in the last newsletter has been changed. Those that have already applied need do no more, but please let Ian Bonham-Smith know if you are now unable to come.

| | |
|---|---|
| 10:00 - 11:00 | Arrive at Gloucestershire (Staverton) |
| 11:00 - 12:30 | Briefing on the role and function of Air Atlantique and tour of the Classical Flight |
| 12:30 - 14:00 | Lunch in either the airfield restaurant or local pub |
| 14:00 - 15:30 | Flying in a Dakota, Twin Pioneer or Dragon Rapide |
| 15:30 - 16:30 | Departure |

At this stage, when applying before June 1st, please indicate if you would like to fly in a Classical Aircraft (£50 pp) and choice from the aircraft mentioned above. The type flown will depend on numbers and aircraft availability.



# Churchill Museum and Heathrow

On Wednesday February 1st, members of the FFA visited the Churchill Museum and Cabinet War Rooms. We all met at the Treasury in London. We had an initial meeting with a guide and then we all walked round under our own steam.

It was quite amazing to realize that no-one knew that these important rooms were just beneath the façade of the Treasury. Up to 400 people at times, sworn to secrecy, would have been working 3 meters below re-enforced concrete. At crucial times when bombs were dropping on London the essential people would eat and sleep there whilst plotting the progress of the




War in the Map Room.

The whole complex was very basic and functional. One could not stand upright in the sleeping quarters which were dormitories. Sanitation and ventilation were basic. The toilets were Elsans and Churchill had the only flushing toilet. Furnishings were very spartan. Churchill and persons of very high office would have their own private rooms but they were equally spartan. It was alleged that there were connecting tunnels to No. 10 which it just next door to the treasury, although this is officially denied!

After a spate of weak Prime Ministers, Winston Churchill took office on the 10th May 1940. This turned out to be a very crucial time in our history. Churchill, his war cabinet and members of his inner circle would spend much time in the Cabinet War Rooms. There were 115 meetings of his cabinet in this room and they would normally meet once a week.

The cabinet takes it's name from the small room where monarchs before the eighteenth century used to meet with their ministers. Down in the Churchill Cabinet Room one could feel the atmosphere and imagine Churchill saying "this is the room from which I will direct the war". It was here he experienced his 'finest hour' and influenced the outcome of the war.

Churchill made many of his epic speeches from here and he will be remembered by all of us for the amazing way he rallied the country when the odds were stacked against us. He was the main driving force in winning the war and will always be revered as a great man.

*Mike Rowland*

Having partaken of various lunches and/or snacks in the museum Café, we met the minibus at a suitably situated double yellow line somewhere near Downing Street and, while a couple of us distracted the watching policemen, the others piled on. Off we set in the general direction of west with a more than enthusiastic navigation committee (just as well, as the driver was lost) and arrived at the Heathrow maintenance zone just a little early for the security check-in and for the issue of passes. Ah yes, it's all coming back to me what it's like to work for a large company!

We were met by very friendly BA staff who escorted us to the absolutely huge hangar in which the work is done on aircraft in the BA passenger fleet. It was one very very long building, and I remember thinking it must be that long to get a Jumbo in. But I had no idea, and had completely lost the plot when it came to the scale of things. Yes they did get a Jumbo in: but across the width of the building - not its length. It was long enough to accommodate the width of at least three - possibly five – aircraft. It was divided into different sections and we had the privilege of visiting two of them. These were the maintenance and the painting sections.

Maintenance work was being undertaken on a 777 and a 747 and we were allowed onto the flight deck of the 747 where the avionics was being checked. One engineer was downloading updates for the control software, which is used to control anything from the fly-by-wire characteristics to the air con. to the in-flight entertainment. The other was checking the radios. The checks they do here are the 75 hour checks, and the more major annual ones are done at other facilities at Cardiff and elsewhere. Very little engine work is done here. The aircraft is




down for 24 hours and it takes a 40 man strong team to do the work in that time.

How do you jack up a Jumbo to do the wheels? You don't: the A/C is pushed into the hangar, surrounded by gantries at fuselage height, supported, and the floor is lowered as necessary to allow clearance!

Then on to the Paint Shop next door.

Unfortunately we were unable to see painting in progress but all was explained to us. All the work on an aircraft is done by hand. The old paint is removed using a special peroxide strip-

per and loads of Scotchbrite and a polyurethane primer is applied after careful masking of the whole aircraft. They, of course, use the latest high tech paints and primers – none of your zinc chromate for them! The colour coats are polyurethane two pack and, in order to cure the paints, the temperature of the whole hangar, which is really a huge environmentally controlled chamber, is raised. The curing process is relatively fast when you consider that thereafter they cannot clean it for 46 days, although it obviously gets flown.

The paint staff stand on movable platforms which are suspended from the roof and the waste products and overspray paint are extracted through huge grills in the floor into a "river" below which is pumped into waste storage silo's. Altogether a massive facility and one of the most comprehensive in the world.

The visit concluded with a glimpse of the fire fighting installation which is extensive and can cover an aircraft with foam almost instantly.

A few facts and figures:-

A small aircraft takes 1000 man hours and a larger one 1400 to repaint.

The paint lasts for 7 years approx.

The material costs for the stripper alone is £1600.

It costs £1400 per annum to fly the weight of the paint around the globe.

The BA "ethnic" patterns on the fins are sprayed on using huge pre-cut stencils.

Our thanks to Neville Stops who was able to organise such an interesting and well run day, including excellent refreshments (and whiskey for the return journey) on the minibus.

*Ray Friedlander*

# Alvan Blanch

I have always found Kemble to be a friendly, welcoming place to visit, and so it was on 8th February when 12 member's aeroplanes arrived in orderly punctual style on the occasion of our visit to Alvan Blanch.



The day had been as near ideal as could possibly be, despite earlier threats from the TV forecasters that Wednesday would be the worst day of the week. It only goes to show how much of a guessing game the forecasting is in the UK.

In all 31 members attended and those who came by car supplemented the Alvan Blanch minibus to transport us the 2 miles to the factory, a rambling mix of old stone buildings scattered around the village of Chelworth in Wiltshire.

We were ushered into a building whose main purpose seemed to be an equipment store fro grain drying machinery. It was far from ideal as a demonstration area with the sun shining directly on to a screen on which was projected all the salient points which we were trying to absorb.



We were reminded that the diesel engine was invented by a German named Otto Diesel who obtained his fuel from crushed peanuts. Alvan Blanch have been producing oil pressing equipment for 20 years for markets in Africa and the Far East. With that experience behind them they set about designing a machine to satisfy Bio-Diesel needs in EU markets, and there before our eyes was a working model complete and producing oil. I wasn't sure what to expect prior to arrival, but it looked too simple and too compact to be an oil refinery, but that is what it was in every respect.

It can fit in a space little more than 6' x 12'. An elevated hopper contains the rape seed which falls directly into an oil screw press which, under enormous pressure, separates the oil which at this stage is like runny honey. The husk comes out as cake and was distinctly warm to the touch. Now that the oil has been separated from the husk it has to be heated to move it through the first of three processing tanks where caustic soda and methane are introduced. In the final tank the resultant product separates into glycerine, which sinks to the bottom and is drained off, and Bio-Diesel which you can put either straight into your engine or blend with mineral diesel.

Bio-Diesel contains no suphur, emits only the same amount of CO2 as the plant absorbed in growth, decomposes biologically with no risk to water supplies, has no carcinogenic components, has increased lubrication properties, is much cleaner to burn, does not affect engine warranty and provides an 8% increase in fuel economy.

For around £6300, which includes on site installation and training, you can start producing your own alternative fuel. The manufacturers claim that it can pay for itself in less than 6 months, whilst producing 150 litres every 24 hours at a rough cost of 50p / litre including 27p customs duty.

Oh, and I almost forgot, if any of you farmers owns a fish and chip shop, you can use this plant to convert waste oil out of there too!

Having thanked our hosts, it was back to the AV8 restaurant at the airfield for an agreeable lunch, before a quick visit to Delta Jets. In the hangar were several Hunter T7's plus a Jet Provost and a bright yellow Gnat.

Forty minutes in the Hunter T7 would have cost you £2400 and the possibility of loosing your lunch. I did ask but no one stepped forward.

Everyone departed as they had arrived into almost prfect afternoon skies. Our thanks to Glen Moreman of Kemble Air Services, Delta Jets and of course David Abbott of Alvan Blanch, who can be contacted if you are interested on 01666 577333.

*Mike Cuttell*

# A South African Flying Safari

*This tour was arranged by Martin & Annette Gosling. Other FFA members taking part were David & Penny Corbett and Richard & Joyce Hall. This is Martin's report;*

As we progressed to the front of the queue, the official pointed to the red channel. Another ½ hour and we were at the front of that queue with a stern customs officer asking what we had to declare. Saying we had nothing, she asked why then were we in the red channel. We said we had no idea, but that is where we were directed. It turned out that we had failed to fill out one side of our immigration papers, and rather than tell us, the first official had just waved us into the red channel!

Thus was our arrival at Johannesburg International for the start of our air safari with African Aero Safaris, South Africa's equivalent to Australia's Goana Air Safaris, hosted by Dave Vanderspuy, which several of our members have done in past years, but which sadly no longer exists due to the continued march of asinine bureaucracy in aviation.

12 months earlier Annette & I had decided that we would like to get a group together to do a safari in South Africa, so we investigated the company's website, chose a safari that looked the best option for the time of year, discussed ideas for personalising the tour, and asked some flying chums to join us. 12 months later 4 couples met up in Johannesburg for the start of the Odyssey tour, to be joined by another single person from Devon who was to have his 81st birthday at the end of the tour! During those months the value of the dollar, on which the tour






costs were calculated, had fallen by nearly 15%, which made an alarming difference to all our budgets.

No sooner had we arrived at our hotel after a long and rather sleepless night and met up with Dave for the first time, that his first question was "There is a weather issue for the weekend, so how do you feel about doing your validation straight away?" Thus we found ourselves driving straight off to Brakpan airfield to do our Air Law exam, which consisted of a PowerPoint presentation followed by a 20 question multi-choice paper – suffice it to say that it was not difficult, and the slowest of us finished it in about 7 minutes!! While we were in the classroom, a massive storm arrived which lasted for at least an hour and produced approaching 2" rain. This delayed our flight tests to the extent that only one of us could complete it, and the others had to return the next day. The most surprising thing to me was that Johannesburg sits at 5500' amsl, and combined with high summer temperatures, this has a marked effect on a Cessna 172's performance that few of you reading this would believe – and was not something to be taken lightly. Eventually all validations were complete, the paperwork was sent to their CAA, and we were all issued with shiny new South African endorsements to our UK licences.

While these validations and paper processing was going on, there were two spare days as weather buffer days, and these were used for a bit of culture. The first was taken up with a visit to Soweto – the name surely everyone remembers as the epitomy of South African unrest and riots in the mid-1970's. The town has been radically transformed and cleaned up since those days with only a small area of shantytown remaining. In contrast, when we got to Cape Town there were literally miles and miles of the most depressingly impoverished areas beside the main motorway remaining – undoubtedly the worst part of South Africa that we saw, and hard to believe that such poverty still exists today.

After Soweto, we moved on to Lesoti, a tourist village, which was set up to show all the different tribes and their differing cultures. A very well presented experience with tribal members in their own costumes and all their cultures explained by a very intense guide. One of the tribes had a bowl of delicacies that we were invited to try, and as I was at the back of the group and didn't hear the description, I took one to try anyway. Having found it rather bland, dry and extremely tasteless, I was told it was dried caterpillar – and that was actually exactly what it looked like – including the little black eyes. Not a delicacy that I could recommend! After a lunch on site we returned to our hotel for a relaxed afternoon before going out to a superb restaurant that Annette had seen advertised in the bumph in our seatback on the plane, which had the delightful name of 'Linger Longer'!

The second spare day we went to the Cullinan diamond mine, the site of the largest diamond ever found in the world. In 1905 Thomas Cullinan saw this shiny object in the wall of the mine, a rough diamond which weighed 3106 carats in the rough, and when cut into many gems, the largest one is pear-shaped, weighed 530.2 carats and is now set into the sceptre of our British crown jewels (bet you never knew that!). Incidentally when they first tried a thousand or more years ago, to give a measure of weight to a diamond, they had no means of weigh-







ing them, and so they weighed them against a carat, which became the standard unit and is equivalent to 200 milligrams. A carat was something of a known weight in, I think, the Far East, but I've now forgotten what it was (but it certainly wasn't a carrot!).

At last the day dawned for the start of the tour. David & Penny Corbett, Richard & Sheila Brucciani (known as Richard 1), Richard and Joyce Hall (known as Richard 2), Annette and I, our older pilot Peter Love (who had Neil, a South African navigator/companion with him) and our tour organiser, Dave, were to assemble at Brakpan airfield having gathered together the 6 planes from 3 different airfields. As in all things aviation, things went wrong from the start, in that one of the planes collected from Lanseria had no inbuilt headset jack points, (so he had to use a hand mike for the whole tour), the front oleo was decidedly soft and they had failed to fill it with fuel. By the time they had refuelled it, and had had to hold for ages before take-off due to volume of circuit and inbound traffic, those of us waiting at Brakpan were convinced that Richard 2 was lost somewhere in the Johannesburg TMA. An hour behind schedule he hove into view to describe the disorganised arrangements with his plane. A deep breath, a comprehensive briefing and we were away!

The first leg was to Isandlwana – the site of a disastrous defeat for the British army at the hands of Zulu warriors. The flight necessitated a climb to over 8000' to clear the Drakensburg escarpment, the highest point en-route, before descending over rolling grain fields and farmland, and after a flight of 2 hours in excellent visibility and only light turbulence considering the temperature, we arrived at our first stopover at Dundee airport. An excellent spread of sandwiches and drinks to quench our appetites and thirst was very popular, before the transport took us to the superbly appointed Isandlwana Lodge built into the edge of a steep-sided hill overlooking the battlefield. Time to relax with a dip in the lodge pool to cool us off preceded drinks and a brilliant display of Zulu tribal dancing by a group of local children with a certain amount of enthusiastic but rather less skilful participation by some of our group! An introduction to the resident historian, Rob Gerrard, who was to tell us all about the Zulu battles in the morning, was followed by dinner and a deep sleep. Annette had a bad turn in the night which seemed like a bad dose of food poisoning – maybe from one of the sandwiches at the airport – and had to miss most of the next day's proceedings.

Bidden to be ready for the tour to start at 9am, those that arrived a couple of minutes after 9 were given the look which said it would not be wise to be late again – a look I shall try to remember for future FFA tours! Rob Gerrard is a well-known character with a truly astounding historical knowledge of the Zulu wars (and probably many other wars as well). He began by setting the scene from the lodge overlooking the battlefield with the aid of a map, and then we drove down to a particular vantage point where, for about two hours while we sat on deckchairs, he enthralled us with the most imaginative and passionate description of the battle. His delivery was so graphic and his knowledge so extensive that you really felt part of the battle and could almost smell the death and destruction. This was the most comprehensive defeat in British military history in January 1879 with the loss of 1350 soldiers out of a total force of 1630 in a single battle.

We returned, almost shell-shocked, for lunch back at the lodge, but if we thought we were going to have the afternoon off we were much mistaken, for on the dot of 2pm we set off again to visit the site of the afternoon's battle – the oh-so-famous battle of Rorke's Drift, where the mornings disastrous defeat was appeased by an equally famous victory where a mere 190 soldiers successfully defended a supply station against over 5000 Zulus – and which resulted in the award of no less than 11 VC's. This battle was equally vividly described by Rob, propelling us all into the very heat of the battle. How Rob was able to speak so knowledgeably, and so passionately for so long without wilting was staggering, and he said he does it for 5 days in every week!

Dinner that evening saw some in-house entertainment with all the lodge staff singing and dancing to the guests. The night was interrupted by a noisy thunderstorm – and as Annette was still no better, little sleep was to be had by either of us. At breakfast an enormous storm enveloped the area. We were due to fly south to Pietermarisburg, but it looked likely that the weather would not clear until later in the day, so the decision was taken to drive the 3 hours to the destination so as not to disappoint our farming hosts who had laid on an evening in their tourist diversification of lakeside chalets on a farm of over 10,000 hectares. The British settler, Joseph Baines, who pioneered the first commercial dairy, cattle dip and bacon curing facility in South Africa, started this farm in 1860.

Now we have a problem – because our planes are 125 miles







to the North, and we have a long flying day ahead of us to get to the first of our Game Lodges in the Eastern Cape, which is nearly 300 miles to the West! Help came in the form of 2 friendly pilots from the local flying club who volunteered to fly the pilots back up north – one in a Cessna 210 and the other in a Grumman Tiger - while the girls visited the gardens and museum on the homestead, and while Annette went to the local doctor to see why she was still feeling gruesome. The administering of a large injection, and several equally large pills and the removal of 450 Rand from her wallet was just in time to avert a verdict of imminent hospitalisation due to extreme dehydration! The boys returned with their planes, everyone met up again and we departed for a fuelling stop at Port Alfred, home to South Africa's unique flying college "43 Air School", bypassing the planned intermediary stop at Margate in order to catch up on time. This leg was flown all along the Wild Coast and was very picturesque, but at 3½ hours was extremely testing for Annette. Refuelled, we flew the short 32 mile leg due North to land at Kwandwe, our first Game Lodge.

Kwandwe was a private game lodge of 22,000 hectares, and was seriously 5*. Due to the morning's delays, we were much later than our planned arrival, but we were still able to have an abbreviated drive before dark. As we started the drive and left the reception centre, we immediately met with giraffes and some white rhino. They were so soon after leaving, and so close to the reception centre that it actually felt rather contrived and artificial, but it was, in fact, sheer coincidence. Many more species of game were seen, and as dusk approached, we stopped for our 'sun downer' of drinks and nibbles while the sun set in an easterly red glow, before returning to an excellent dinner in the lodge and a not-so-early bed.

The alarm call went off at 5am for our morning drive, but there was a power failure in the lodge, so all washing and dressing was done by candlelight, although the kitchen staff weren't fazed at all – producing everything to start off the day properly! Annette was at last getting a little stronger and came with us on the drive, which lasted for 4 hours and saw a large variety of game which was totally unconcerned by our presence in the Land Rovers. Brunch was all set out for us on our return, and it was obvious there were going to be no slimmer waistlines on this trip.

Off for the evening drive at 4pm, we went looking for elephant and found just one on it's own by some of the staff lodges – when another Land Rover party radioed in that a pack of Wild Dogs had been seen, but they were right on the other side of the park (55,000 acres, remember?). As this was a rare event we decided not to stop for any other animals we may see on the way, in order to get there as soon as possible. Closing in on the Dogs we were radioed again that there were a couple of Cheetah in the same area, and we were guided right on to them to where they were resting before their evening hunt. (The advantage of this radio contact is that, as there are several safari parties out all the time, if anything special is seen, they can call others in the area who may be looking also. It is not nearly as artificial as it sounds, and the park is so large that one rarely comes across another vehicle in the course of a normal game drive). We sat and watched the Cheetah for a while from a range of no more than 15 yards, but as they seemed settled, we moved off to look for the Dogs. We found the pack of 12 Dogs resting on a track by the boundary fence. They are intelligent enough to realise that when hunting, it is to their advantage to keep the fence on one side of them to make it easier to catch their prey. We were assured that Wild Dogs are amongst the most ruthless and efficient killers in the wild in Africa. These Dogs were equally unperturbed by us, and we sat and watched them for about half an hour just milling around and resting on the track (we couldn't have passed had we wanted to!).

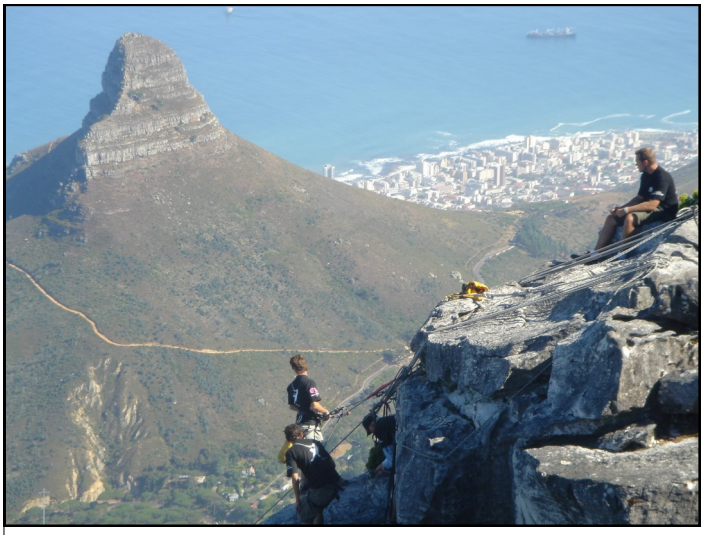
It was time to go back to the Cheetahs, and soon after we caught up with them again, they started to get up and wander around – a sure sign that they were thinking of their supper! Suddenly a Duiker (a small antelope) broke cover, and before we could blink there was a flash of grey, and the Duiker had made the greatest mistake of its life. We rushed around to the bushes where the activity was and we sat and watched for about 20 minutes from a range of no more than 10 yards while the suffocation process was completed and the evening meal was enjoyed. All the time they were eating they were very nervous about other predators snatching their prey, one of the two looking over its shoulder all the time. This was an unforgettable moment in our travels, and although it sounds nasty, it was a real privilege to see it – a kill is something guests rarely witness. Another 'sun downer' on the way home, another good dinner in the lodge & we went to bed that night really chuffed with our day.

We had now got to Sunday, and after one last early morning game drive, we were off to Stanley Island, adjacent to Plettenburg Bay. For this last game drive, we were all keen to see lions, which had so far eluded our search. Mac and Doc, our ranger and spotter, did their best for us, and although they found some fresh tracks, and set off on foot (armed with a large calibre rifle 'just in case'!) to try to locate them, they returned disappointed after being away for 15 minutes. On our way

back to breakfast we came across a tower of giraffes (bet you didn't know that was their collective noun!), and watched in fascination at their contortions while trying to drink, and their mock fights, where they stood beside each other head to tail, and clouted one another on the backside with their horns, which gave a loud resonant thwack!

Two hours after breakfast we were overhead Stanley Island, a narrow grass strip bounded on either side by hefty bushes, at the end of an approach from considerable hills with a narrow gorge to line up from, all giving considerable turbulence and mightily concentrating the mind. My first approach resulted in a go-around much to my disgust (but to Annette's relief!). Shifting our luggage to our adjacent lodges on the island (the whole island was not much more than 10 acres) we boarded a river boat and had a most peaceful couple of hours cruising up the Keurbooms river which cut its way through steep ravines and impenetrable indigenous forests. Time on our return for a short rest and then out to dinner at The Lookout restaurant, perched over the Plettenburg Bay beach, watching several schools of dolphins playing in the bay.

Monday we needed an early-ish start for the flight to Stellenbosch, but on checking my fuel it seemed we had rather too little for safety, followed by everyone else admitting the same, so we had to make an unscheduled diversion to Plett Bay, which was only 5 miles away, but by the time everyone had done it and only one person's credit card seemed to be acceptable to their rather archaic system, another hour or so had slipped by. En route to Stellenbosch we were stopping by at Oudtshoorn to see the Cango caves which were the most remarkable I have ever seen with the main chamber probably as big as Westminster Abbey, and then on to an ostrich farm where I was to meet up again with a couple of delightful South African students who came to me as harvest help last year. This area was the only place that we saw in South Africa, which was



three days.

Tuesday dawned clear & calm – an ideal and rare opportunity to go to the top of Table mountain in perfect conditions. We were not enthusiastic enough to climb up, so like 99% of others we took the cable car. This was interesting in that one jostles for position to get a good view, but as it goes up you suddenly find you are facing a different way to where you started. This was most off-putting until you realised that the floor was rotating as it went up (or down), and completed more than one complete revolution during the journey. The view was stunning, and we soaked it up for a couple of hours before descending and taking our minibus to the harbour to catch a ferry to Robben Island where Nelson Mandela was imprisoned for 27 years. A daunting place and fascinating to be given a tour by one of the inmates who was incarcerated as a very young man at the same time as Mandela. It is a wonder that Mandela came out of this imprisonment with no apparent bitterness,






as dry as I expected the whole country to be. Their last annual rainfall had been 35mm – in other words not a lot. We saw the whole cycle of ostrich farming from nesting to the various end products and had an entertaining ½ hour with Annette and Penny riding ostriches. We had a demonstration of ostrich racing, which I was hoping would become the Flying Farmers challenge, but sadly we were only allowed to be spectators!

Leaving Oudtshoorn, we routed back along the coast again, passing the southernmost tip of Africa at Cape Aghulas, and setting up a photo shoot with a low group formation as we passed the lighthouse. The situation of Stellenbosch airfield is a most stunning location, and was to be our base for the next

becoming such a statesman for his country. The wind had by now picked up quite a bit, and looking back to Table mountain, a large curtain of cloud now hung over it's top, as so often is the case, and the sea had become rough to the extent that the boat had to slow dramatically to ride it out on the way back. That evening Annette and I decided to have an evening on our own, but while looking for a suitable romantic restaurant, we came across all the others dining on the pavement, so ended up joining them after all!!

Wednesday morning we visited Dave's mother – a remarkable lady who has created the most beautiful gardens close by Stellenbosch over the past 60 years. She is 93 going on 70 and it

gives her immense pleasure to show people around her creation. She has written several beautifully illustrated and well-acknowledged books on gardening. Her husband, Dave's father, was co-founder of the South African air force. The afternoon was for relaxation, some going on a tour to the Boschendal wine area, some wandering around town, while I lazed around the hotel pool.

The next day's early morning start was, as usual delayed – this time for thick low clouds sitting on the hilltops on our route. We were hoping to start the day by flying around the Cape, by Table Mountain, and over Robben Island and the bay area. Yesterday's strengthening winds had now reached 45 knots, so this part was abandoned, as it would have been far too turbulent to fly that route. We waited about an hour and a half for the clouds to burn off, and then set off on the start of the journey home going inland towards the North East. Half an hour into this journey, my engine began to run ever so slightly rough – nothing dramatic, but enough to make me check out the terrain below 'just in case'. 5 minutes later I was happy again and we continued with confidence. Peter's aircraft suffered the same symptoms a little while further, again for a brief period, but at the end of this 3-hour leg there was a radio call from David announcing a rough running engine, although able to maintain height. The other aircraft closed up as escorts, but as we were within sight of the Beaufort West airfield, a safe landing ensued with the engine clearing whist in the final stages. Nothing could be found wrong with any of the engines, and the suspicion was that perhaps there was a bit of dirty fuel in the systems. No further problems happened with any of the aircraft.

Beaufort West is a fairly deserted airfield, although surprisingly having avgas, and it was used as a fuel and postal services stop for the South African Airways DC3's in their heyday. It has been bought by a displaced Zimbabwean farmer, who is trying single-handedly to improve it with guest lodges, and a restaurant. As it has virtually no infrastructure anywhere near it, he faces a bit of an uphill struggle.

For the next half of the day's flying we were to run the gauntlet of some pretty grown up storm cells, some of them merging into a long storm front. Soon after takeoff, my transmit button failed, although I could still receive clearly. Penny decided to hitch a lift with Dave in case David had further engine problems. The sky darkened and the lightening flashed and much radio discussion ensued as to who was taking what avoiding action to get around the storms. Some went right, some went left, and I changed my mind half way! All the aircraft tried to contact me as they continued to give a running commentary as to how they were threading their way through, and it was fascinating to hear all the assumptions about my position! Eventually I decided to send Dave a text with my present position and intentions and amazingly he received it – although where on earth the phone mast to transmit it was, heavens knows. My actual track took me 40 miles left of that intended, but at least no one got tangled up in the middle of it all. This was the Great Karoo, a semi-desert area, but the rain they had been having over the past weeks had turned it very green and very wet.

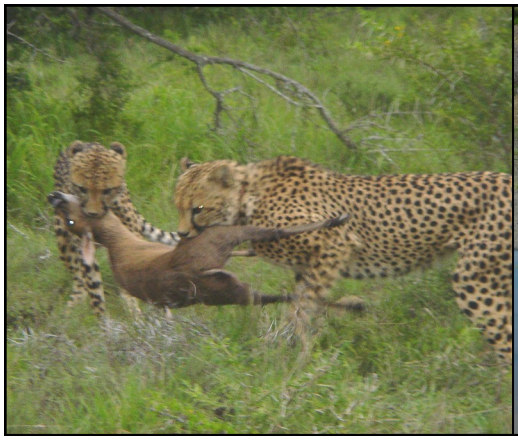


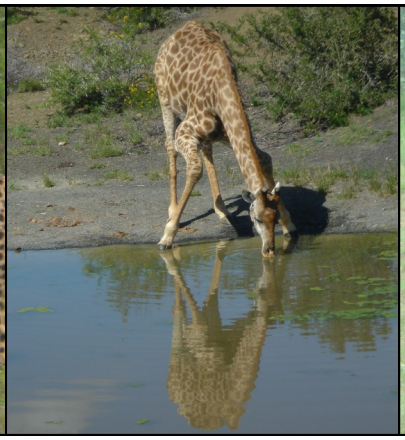
We landed on a local farmers airstrip on land adjacent to the Orange River, and spent the evening cruising on the river and dining in a new thatched restaurant set up as a diversification enterprise by another farmer's wife.

Departing after breakfast we followed the Orange River for quite some time, and saw many wild animals in the bushveld as we went. We passed lots of diamond mines, not multi-national ones but small prospecting ones from which small companies were hoping to make their fortunes. Refuelled again after a couple of hours, we diverted to over fly the Lost City, an extraordinary collection of buildings like a mini-Las Vegas, which would have given our planning authorities apoplexy. Approaching Welgovenden national park, we had to climb to 7000' to clear a ridge, before sliding down to the private airstrip, which must have been at least 2500 meters long. At last, for the first time, I persuaded my plane to do a greaser!

The National park here was 40,000 hectares, or to put it another way, 154 square miles. Mhondoro Lodge, where we were staying, is just one of about 30 or so lodges in this area, but the area is so vast, you rarely conflict with other safari parties. The format was the same as we had at Kwandwe Lodge the previous week, and was just as definitely 5*. A short evening drive saw elephants and giraffes, but the lion was still elusive.

The next morning we concentrated on lion spotting, but despite extensive searching the nearest we got was to see an indistinct face behind a tree a couple of hundred yards away where a group was enjoying their kill. We returned to the lodge for lunch and relaxation, and then went out again for the evening drive to look in the opposite direction. We had a feeling we were close, when we suddenly saw one about 50 yards away in the tall grass. Frantic camera action ensued, but then, just like







the London buses, 8 wandered out of the grass and came right to our vehicle, then wandered slowly up the track in front of us. They were so close and so unconcerned about us, that we were all speechless. We followed them up the track and then they just lay down in a stream right on the side of the track, and we watched spellbound as they had a little drink, cleaned their paws and just generally relaxed, before slowly wandering off back into the bush, after about 20 minutes.

On our way home we rounded a corner and there was a White Rhino and her 3-month-old calf standing right beside the track. Having watched and photographed her for a while, a pair of warthogs and two piglets popped up out of a burrow on the other side of the track. This was a fabulous day, and as we reflected on it back at the lodge, we were, coincidentally, treated to a special dinner in a Boma, traditionally a circular tribal enclosure used as a protection for the tribe and their animals, but in this case used as a dining area around a large fire.

The Sunday was the last day for us all, and we tried to find the last of the Big Five – the Leopard. We found fresh tracks, we held our breath, we searched up and down the area of the tracks, but although we were convinced they were watching us, we never saw them. And so we returned back to the lodge for breakfast and departure.

It was at this time that we all began to go our own ways. David & Penny went to Ant Hill, another safari camp with the emphasis on horse riding, Richard & Sheila went to Malawi to see some friends, Richard and Joyce, who had been in South Africa since Boxing Day, returned to the UK, and Annette and I retained our trusty (if oil-thirsty) C172 to fly to, and have a 4 day break on, an island resort off the coast of Mozambique.

We set off to get to Pietersberg, where we were to clear customs, and file a flight plan for Vilanculos in Mozambique. Half way to Pietersberg, we needed to cross some high ground, but it was covered in low cloud and raining hard – so with no way through, we had to divert to an airfield in a valley clear of cloud. This turned out to be a deserted crop spraying strip, and we spent the next 3 hours sitting in the plane with the rain beating down, alternating between snoozing, eating our packed lunch and ringing a very pessimistic Met. service, who said we would be lucky to have a clearance before midday the next day! Eventually with the sky lightening, we decided to give it a try with one eye firmly on the 180° if it proved a bad idea. As it happened there was no problem, so as quickly as we could, we refuelled, cleared customs and flight planned. On requesting start, Air Traffic asked us to call Dave before we departed. Using our mobile from the cockpit, he told us that Vilanculos closed at 5pm and there was no way we would be there before 7pm – so it was with a very heavy heart we had to undo all the formalities at the airport and find what turned out to be rather a low grade hotel for the night, thus missing our first day on the Island.

Returning to the airport at 6.45am, we were ready and away by 7.30 for the 3½ flight to the Mozambique coast over unbroken bush with little chance of a safe forced landing if... Strangely in the whole journey we saw very little game, in stark contrast to the bush in South Africa. What we did see was occasional strange little areas of habitation of about five circular thatched huts simply miles and miles from anywhere, with no visible evidence of contact with the outside world. On what they survived we have simply no idea.

Vilanculos airport was small, but what it lacked in size was amply made up for by it's enthusiasm for bureaucracy. Eventually we escaped and flew the last 20 minutes to Indigo Bay resort and couldn't wait to relax – and that is just what we did for the next three days. The weather was not as gorgeous as we had hoped – there was a cyclone brewing in the Mozambique channel (the area between Madagascar and Mozambique), and it was






creating a lot of wind and squally showers – but that did not spoil our break, (in fact it probably prevented us from getting sunburnt!) A little swimming, snorkelling, and horse riding on the sand dunes all helped us unwind – although an unscheduled visit to the resort doctor to insert 4 stitches in my big toe after I stood on a razor clam took a bit of the shine off!

We chose to return to Johannesburg via the coastal route to Maputo, which was a 3.40 hour flight almost entirely at very low level along the beach. Passing the Limpopo river mouth, there was a fascinating demarcation of the river water into the sea, whereby there was a vivid brown area out to sea with a completely clean-cut edge where it met the blue of the sea. As we got closer to Maputo, I began to show a very much greater interest in the oil pressure gauge, which slowly dropped from its normal 85psi at the top of the green, to 55psi at the bottom. Fortunately the temperature gauge remained stable, and when we landed there was no oil visible on the dipstick. This was an ongoing issue with our plane, which used 15 litres of oil during our 35 hours of flying!

Trying to find the right official to fill in the right forms at Maputo was quite a challenge. Nobody seemed the slightest bit interested in us and we wandered around the buildings and apron completely unhindered with no evidence of security whatsoever. Apart from not being able to easily find what we wanted, this lack of security was like a breath of fresh air!

We eventually left Maputo, staged through Kruger International, (which is a very smart airport built only 5 years ago with all the terminal buildings roofed in thatch, but is seen to be a bit of a white elephant) to enter back into South Africa, and thence back to Brakpan where we started from 17 days and 35 flying hours earlier.

## Understanding Variable Pitch and Constant Speed Propellers.

The purpose of this article is to provide a basic understanding of the principles and use of variable pitch and/or constant speed propellers from a piloting and flying standpoint rather than a technical and engineering viewpoint. I am not a mathematician nor am I an engineer, but I have often been aware of pilots who, when confronted with an aircraft which has a variable pitch propeller for the first time, have had little understanding on why they are fitted and how to operate them correctly.

Let's start with a fixed pitch propeller, which we usually find fitted to most light single engined aircraft. Such a propeller is designed to be an efficient aerofoil section (similar to a wing) producing a maximum horizontal lift, as thrust, at one particular airspeed and rpm only. This is usually based on the require-



ments of the aircraft type and engine used based on the normal take off and early climbing speed. At faster or lower rpm speeds, and different airspeeds the propeller becomes less efficient producing much less lift/thrust and noticeably more drag as part of the propeller blade may indeed be stalled like a normal wing when the angle of attack to the relative airflow reaches and/or exceeds the critical angle. The complexity of the propeller shape is such that from the stem to the tip the actual speed becomes greater as the radius increases from the hub and the propeller designer has to make it produce maximum lift along its whole length for just one set of specific parameters.

When I first started flying Cessna 150's in 1970, I learnt as a student that one particular aircraft cruised nicely at 90 Knots (or mph?) with 2200 rpm set on the throttle. When one day, I flew a different aircraft of the same type it would not maintain height at 2200 rpm; it needed a least 2500 to stay in the cruise at the same speed. Why? The propeller was a different type; one with a much finer overall pitch which required a much higher rpm to achieve the same thrust. The other aircraft's propeller had a much more coarse setting which was great in the cruise giving the aircraft a much greater range but it required a much longer take off run as the propeller produced less thrust during the take off run. This illustrates that a particular propeller can be designed with either a fine pitch setting which gives greater thrust at low airspeeds and a higher engine rpm or it can be a coarse one which has poor performance at low airspeeds but is much more efficient at higher airspeeds and lower engine rpms in the cruise portion of a flight.

Obviously, we would like to have a "perfect" propeller which will give maximum thrust both during take off and in the cruise. If it is fixed pitch, this is not possible but with a variable pitch the angle of the propeller can be adjusted to give the best performance possible at all stages of a flight. Early types of propellers had just two settings, "fine" for take off and "coarse" for the cruise. Douglas Bader, the famous Battle of Britain legless fighter ace recalls in his memoirs the occasion of trying to carry out his first take off in a Hurricane fighter with coarse pitch selected. He ended up failing to get airborne and going through a hedge. He did not realize the importance of selecting fine pitch for take off! Having said that, if the airfield had been long enough, he would probably have made it eventually.

In an opposite sense, I once attempted to take off with a propeller set to an incorrect fine pitch setting. This propeller was set so fine that it produced very little forward thrust and drag causing the engine to overspeed and the aircraft to barely stay airborne; until I realized the problem and manually coarsened the pitch angle slightly.

Modern variable pitch propellers are designed so that any desired pitch angle can be set between two limits, a forward fine pitch setting of say 9 Degrees to a coarse aft setting of say 24 Degrees. As the selected propeller angle will change the amount of thrust (lift) and drag created engine rpm alone cannot be used to indicate the amount of power being developed. The power output of the engine is indicated with a manifold pressure gauge indicating the induction manifold pressure in either inches of Hg (Mercury) or a negative/positive boost; especially when a supercharger is fitted. I used to fly an aircraft with a supercharger fitted. This enabled me to keep the. manifold pressure at a high boost throughout the climb whilst keeping the propeller rpm on a constant fixed setting. (Note 9 & 24 Degrees are just two chosen numbers).

It is normal practise to take off with the fine pitch setting selected to ensure maximum thrust. Once airborne, one should reduce the power output of the engine first; i.e. the manifold pressure, then increase or coarsen the propeller pitch angle to reduce the rpm. There is often a recommended manifold pressure and rpm for climbing depending on the aircraft and propeller type. It should be noted that the manifold pressure can be maintained during a climb by opening the throttle further until a full throttle height in reached. 1f the climb is then continued, the engine power output will reduce and it may be necessary to lean the mixture control if one is fitted. Once in the cruise, the manifold pressure can normally be reduced further and the prop coarsened again as the airspeed increases to improve the efficiency of the propeller.

During a descent to land, the propeller is normally left in the coarse pitch setting but if a finer pitch is selected during the descent and approach, the propeller blades will act a an airbrake and help to reduce the airspeed. However, on the downwind or base leg in the circuit, or on final approach, the propeller pitch is once again set to the fully fine position for landing; just in case a go-around is required for any reason.

Handling a variable pitch propeller can be confusing but the golden rule, to ensure no engine damage is done, is to reduce the manifold pressure (i.e. the throttle or power lever) before the propeller rpm is reduced when reducing power and to in-

crease propeller rpm before the manifold pressure (i.e. throttle) when more power is or may be required. Flight manuals for a particular aircraft will often provide tables with recommended manifold pressure and propeller rpm settings for selected altitudes giving both fuel consumption and true airspeed figures, range etc.

Having said all of this, it is often an air test requirement to ensure that a go-around can be achieved with the propeller in the fully coarse position. Also, it is also possible to set a variable pitch propeller to one chosen setting slightly coarse from fully fine pitch, leave it there, and then fly the aircraft as if it had a fixed pitch propeller.

A development of the original simple variable pitch propeller which had just two settings, fine and coarse, has been the "Constant Speed Unit" (CSU) which is designed to retain the selected rpm despite changes in the power output of the engine. This complex mechanical device automatically adjusts the pitch angle of the propeller as the engine power is increased or reduced, increasing or reducing the load on the propeller to retain the desired rpm. However there are limits beyond which the CSU will not retain the selected rpm. The obvious example is an engine which has been reduced to idle power or shutdown; the propeller rpm will obviously reduce or stop completely irrespective of the chosen rpm on the propeller lever!



Having a CSU to control the propeller speed automatically can lead to problems especially if the engine is a normal aspirated engine with a carburettor. If you start to suffer from carburettor icing, the reduction in the power output will only be shown on the manifold pressure gauge. Initially, the prop rpm will be retained as the blade angle is reduced giving the illusion that all is well. I was caught out once flying a Britten Norman Islander aircraft at low level trying to fly under the weather. I suffered carburettor icing and slowly lost manifold pressure until eventually the CSU control could no longer retain the selected rpm. It was a wake up call if ever there was one!

Another development of the variable pitch propeller has the ability to "Feather" the propeller completely. This is when the blade angle is increased beyond the usual maximum coarse pitch setting eabling the blades to be placed edge on to the relative airflow. This reduces drag to a minimum in the event of an engine failure and gives an aircraft a better single engine performance. Feathering can be selected on the propeller lever, usually by bypassing a lock or feather gate, but it should be noted that in most cases, the propeller blade angle within the normal fine to coarse pitch range is held in position (via the CSU) by either hydraulic or oil pressure from the engine and that in the event of a failure it will automatically feather itself even if the cockpit lever is left in a cruise setting position. Although variable pitch propellers with a feathering capability are normally found only on twin and multi-engined aircraft, they are now being found on light single engined aircraft and motor gliders. This is to allow the pilot to increase the gliding range if the engine is deliberately shut down or a failure occurs.

Several PFA types such as some Europas, and the Alpi Pioneer 300 for example, now have this ability but the propeller controller in the cockpit is designed to make it almost impossible to carry out an unplanned feather unless two hands are used together. One has to be very deliberate if you do indeed wish to feather the prop!

One non flying aspect should be considered. The fine pitch setting of the propeller gives it maximum rpm and noise which on some high performance aircraft can lead to the propeller tips going supersonic with a corresponding shock wave. Although it is possible to increase propeller rpm on the downwind leg of a circuit to land, for noise abatement purposes, selection of fine pitch for landing is normally left until you are either on base leg or final approach when the engine power (manifold pressure) will have been reduced.

The fine pitch setting on a propeller is normally only required for take off and for a possible go-around after an approach to land. This should be borne in mind when considering the noise factor; an important consideration these days.

To summarize therefore, a variable pitch propeller enables you to get the maximum efficiency out of a propeller for all aspects of a flight, from take off, the climb, cruise, and the descent to landing. Because the propeller pitch can be altered with a corresponding change in the rpm, an indication of the engine power output is required, either with a manifold pressure gauge; or on turbo-prop aircraft, a torque pressure gauge. The blade angle of the propeller, and hence the rpm, is either controlled with a propeller lever and a constant speed unit (CSU) or it may be altered with a three position electrical switch. In this case, an electrical failure will in effect make the propeller a fixed pitch one with a performance to match the resultant blade angle; either in fine or course, but you will still be able to fly safely.

As a matter of interest, early twin engined aircraft like the Avro Anson, the DeHavilland Rapide, or the Mosquito for example, had basic vp props or fixed pitch propellers which could not be feathered in the event of an engine failure. When an engine failure occurred these aircraft could hardly maintain height on one engine due to the large amount of drag caused by the windmilling propeller and many accidents happened trying to fly back to base gradually losing altitude and airspeed as the pilots tried desperately to maintain height; whereas a decision to land out, i.e. in a controlled crash, would have been the better option in most cases.

My aim in writing this article has been to introduce the reader to the operation of a variable pitch propeller. They can be complicated and difficult to understand initially. I hope that I have not confused you all further? My notes are in no way intended to replace any specific aircraft type and it is important to read the aircraft's Flight Manual as well!

Remember, If increasing power, increase propeller rpm before power. Conversely, if reducing power, decrease power before propeller rpm. If confused, just leave the propeller where it is and fly it normally accepting whatever performance you achieve! In theory, you can leave a propeller in the cruise setting for an approach and landing, making much less noise, but it could cause you a problem if you had to make a missed approach or Go-around!

These notes are given to anyone carrying out "differences" training as part of any type conversions I carry out. As always, comments on this article are welcome to my e mail address at:- "thompsonmilson@talk21.com" or by calling my mobile telephone on 07702-077996.

*Hugh Thompson. (UK ATPL No 219649B & PFA No 14799)*

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## Ye Old Order Changeth

The Committee held a meeting on the 24th February at Nottingham. On the agenda was;

**Treasurer's position** - At the last AGM, David Corbett announced that he would stand down as Treasurer when a suitable replacement was found. Through the bulk emails, Andrew Cragg volunteered. The Chairman went to see Andrew at his farm at Romney Marsh, Kent and found him to be an ideal candidate. He has accountancy skills, is a large scale farmer using precision techniques and is a well qualified pilot with twin and instrument ratings. He is also of the 'younger' generation and would introduce some fresh blood onto the Committee.

David is one of the very founder members of the FFA and has been on the Committee for 32 years. The Committee will miss his knowledge of aviation politics at the Committee meetings, as he also resigned from the Committee altogether. He represents the FFA at many Councils and has kept abreast of all the changes going on in the aviation world. He will help ease Andrew into his new role over the coming months.

I'm sure we all wish Andrew the best of luck as the new Treasurer and no doubt he will bring new ideas to the Committee.

**Events programme** - Mike Cuttell went through a very full programme for 2006. More details on page 4.

**Treasurer's report** - The FFA is trading with a small profit. The pledge to donate 10% of membership funds to councils that will help fight our corner, is being broadened to include the Royal Aero Club (RAeC) (www.royalaeroclub.org), who through Europe Air Sports represent a large number of bodies in Europe, where the majority of decisions affecting General Aviation's future are made.

**AGM 2006** - It was proposed to have a speaker from the RAeC at the next AGM, possibly to be held at Cranfield in October.

**Minutes** - Since adopting the brief action minutes, it was reappraised as to whether they are informative enough. It was agreed to continue with them, but make reports such as this to expand on relative detail.

## The Ultimate Diversity

On Jan 30th we opened our new facility - a Crematoria. The Bishop of Reading came and carried out a Service of Dedication with about 100 invited guests including representatives of all the denominations of the church and local Funeral Directors. It has taken nearly 20 years to come to fruition, to wear down the planners, overcome the recession, get a roundabout built etc. It's positioned where I wanted it then, and we have been round the block to get our way and it really feels good! Its on Colthrop Manor Farm and with the other farms including Steve's we call ourselves Albedale Farms Ltd. I hope you all think its good idea. There has been 30 odd services up to now. Its known as The West Berkshire Crematoria, Colthrop.

*John Goddard*

## Bulk emails and FFA Photos

Last year we started two new ventures;

**Bulk emails** - These were introduced to keep members informed of any relative happenings between newsletters. More than 30 mini e-newsletters have been sent out with subjects from consultation papers on foreign registered aircraft, airfields being classed as brownfield sites, a new member wanting information on building a hangar, windfarms affecting airfields, warnings of the Skymap 3C expiring batteries causing total failure, notice of forthcoming events etc. etc.

If you are not on the email list, send me an email and I'll put you on.

**Photo gallery** - This is a collection of FFA photos of recent and past events totalling over 500 pictures with the latest event on the first page going through several pages to old photos. The site can be accessed through the FFA website by clicking on PHOTOS.

Please send me any relevant pictures to add to the archive and any taken at recent events.

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For FFA clothing, caps & ties contact Roz Stephens, 01944 738281


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