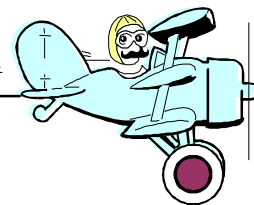




**Newsletter  
THE EYE IN THE SKY  
April 2006**



**Newsletter of the MKMAA**



**Contents:-**

- **Chairman's News**
- **Info from the Secretaries desk**
- **Beginners Guide**
- **Windy Weather Flying**

**Chairman's News April 2006**



**Ok I know** it's now almost April, but a belated welcome to the new season, I hope everyone is well and looking forward to more flyable weather. As per most newsletters I might as well start off with a groveling apology, first for the lack of news letter, but as we said at the AGM (seems a very long time ago!) we really do need input to produce something worth sending out. Secondly I am well aware that I personally have not been around or at the field for a considerable length of time, this has been for a number of personal reasons. As many of you will be aware my family are in process of emigrating to Australia, my wife and daughter are already there, whilst my son and I wait until he has finished his "A" levels and we sell the family home. My fleet of planes ha been suitably down sized to just two (No Barry I didn't crash them!!) and I hope to return to the field as soon as the weather improves. All of this is a round about way of saying that I will be unable to continue as Chairman of this Club as from the end of June this year. I have thoroughly enjoyed my time and hope who ever takes

over will continue to receive your continued support.

If every one is agreement then Barry has agreed to take over as Chairman and Secretary until the end of the year. He will obviously need your full support in this. As chairman I have also been responsible for the club web site, which really doesn't involve too much time to keep up-to-date. If you know anything about web site design and would like to take over the running of the club this would really be appreciated. Please email either myself or Barry if you would like to take this on, we can pass on to you the web account details and files etc. Unfortunately unless some one volunteers then the web site will not be able to be maintained, so basically over to you the members.

**So** enough about me what has been happening in and around the club, silence, not having heard anything I assume every one is also waiting for the long balmy summer days to arrive. Blue skies, light winds and those greasers of a

landing, oh well we can all dream (nothing to do with why I'm off to Australia!!) We are hoping to buy a new mower for the club as our existing mowers are getting a bit long in the tooth. Dennis has been looking and we hope to buy a new one in the next month or two. We will then sell off the older of the existing mowers, keeping the better one as a backup. We will also need some volunteers to help repaint the container. We already have enough paint to redo it and with a couple of volunteers it shouldn't take more than an hour or two.





## Info from the Secretaries Desk

Another year goes by, another AGM takes place. Does it really seem like a year ago that we all met at the Swan Hotel. Any way thanks to all those members who braved a miserable night to attend (the lure of the £5 discount and the free raffle works wonders!!) and we hope that the committee reports were not too boring. Twenty seven members re-joined on the night.

Various lively debates took place, which are reported back in the AGM minutes which you should have received a copy of with your 2006 joining documentation.

You will find enclosed with your new membership cards etc, a revised handbook which has been updated to include elements of the agreed actions taken from the AGM. It also now contains our club policy in respect of children and vulnerable adults. We had as a club previously resisted taking any action in respect of this matter, but with the renewal pack issued from the BMFA this year came a very carefully worded letter, which reading between the lines basically said that if you do not toe the line and produce a policy in respect of children and vulnerable adults, then in future should an insurance claim arise then we as a club and you as individuals may not

be covered by the insurance policy in place. We need to monitor this approach and the situation it is placing us in and review this matter further should it become more onerous.



Over recent months I seem to have

had less and less time to go flying. Holidays, work, and my other passion rugby have all taken a toll on my free time. But as there are no holidays on the horizon for a while, the workload has eased up a little and the rugby team I support has taking to playing badly, there is every chance you will see more of me soon and I hope that we will all partake of a bit of safe flying and happy landings.



If James and I manage to get this out before Christmas (no we did not), have a happy one. If not I hope you did.

Yours

The Secretary

### Footnote:-

On the 3<sup>rd</sup> January 2006, James and I attended the South Midlands area committee meeting at the London Gliding club near Dunstable this takes place just prior to the main BMFA meeting at Leicester and is to enable us to review the proposed agenda and vote/make comments which are passed on by the area representative.. Several long discussions took place of which the four below were the most prominent.

1. A proposal was made to co-opt a current BMFA member to be the public relations officer until November 2006. After a round the houses discussion it was agreed that representation would be made to council for funding be made available for the PRO to become a paid position so as to promote the sport and try to raise funding for its

continuation and improvement of status in the eyes of the general public.

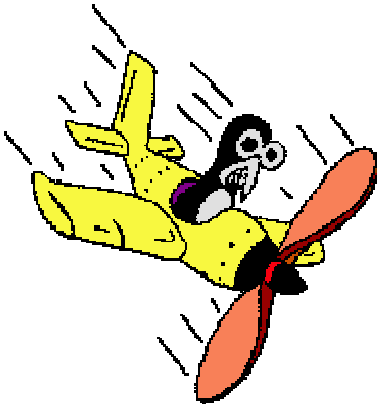
2. The BMFA are concerned that they and all individual clubs allied to it are not doing sufficient in respect of the DDA (disabilities discrimination act), and that sooner rather than later we may well fall foul of a ruling in court against us in respect of discrimination. The delegate was instructed to confirm to council that "reasonably practicable to meet the requirements needed to be inserted within the wording to provide some form of cover for clubs. Our case in particular is very difficult in that we have no facilities and rent the land. We will await further developments.
3. There is some governmental discussion regarding the flying of model aircraft in national parks and the restriction thereof. This was voted to be resisted at all costs.
4. The area examiner co-ordinator asked all clubs to review its members with a view to putting forward candidates to become Chief Examiners. There are only 10 Chief Examiners in the South Midlands area of which 8 are plane only, 1 is silent flight only and 1 is helicopter only. There are also only 9 club helicopter examiners in the South Midlands area, and this shortage is creating a backlog of examinations, especially helicopter A & B certificates.

**There did not appear to be much activity at the site over Christmas (what bad weather !!!), so let's hope this year is kinder and we can all get out there again.**



# The Flying Penguin Beginner's Guide to Flying FAQ File

So, you wanna fly, huh?



**Q: So what is all this toy plane stuff about?**

A: They're not toy planes, they're model planes. Calling them toys is a great way to get into a fight. The hobby is called Model Aeronautics, and we fly remote control model aircraft. In every way they're just like full-scale aircraft (don't call them real aircraft, these are real aircraft too). Any maneuver a full-scale plane can perform, so can a scaled down model version of that plane. Model aircraft are subject to all the laws of physics and aeronautics that full-scale aircraft are subject to. When you scale down an aircraft, you can't also scale down the air molecules it has to fly in, which makes flying model planes a challenge. Generally, the larger a plane is, the easier it is to fly. It's a lot easier to fly a full-scale

Piper Cub than a 1/4 scale one, and that's easier to fly than a 1/6 scale one. Many model aircraft pilots are also full-scale pilots and they find the sport a challenge. They'll tell you that's it's a whole lot more difficult to fly a model of an aircraft than the full-scale version. For one thing, flying a model gives you no seat-of-the pants feel for what the aircraft is doing. You must rely on your eyes, ears and instincts to tell you what your gut or instrumentation would in a full-scale plane. (Now if you'll excuse me, I'm going to go play with my toy planes....)

**Q: Okay then what is Aeromodeling about?**

A: It's about a bunch of guys who get together on weekends, drink beer and fry in the sun all day while staring at the sky in rapt fascination. Kinda like Golf.

**Q: But seriously, what is Aeromodeling?**

A: Different people get into Model Aeronautics for different reasons. Some like to build model aircraft, some like to fly them, some like to do both, some are into competition, some are into the engineering challenge, some want to build detailed scale replicas of full-scale aircraft and some are just looking for any excuse to get away from their wives on the weekends.

**Q: Should I first learn to fly a model plane or a helicopter?**

A: Planes are easier to fly and less expensive to start with. They're also less complicated. Besides, if God had meant for Heli's to fly, he would've given them wings.

**Q: How do you control these things?**

A: A standard aircraft has four basic controls: the ailerons which banks the plane (rolls left and right), the elevator which controls the plane's attitude (nose up or down), the rudder which turns the planes left and right and also steers it on the ground, and the throttle. A basic radio control system has four channels (one channel for each control). They make multi-channel radios up to nine. These extra channels can be used for extra scale controls such as retractable landing gear and flaps.

A basic radio system's components consist of a transmitter which you use to control the plane, a receiver which is installed in the plane and picks up your transmitter signal and decodes it into control signals for the servos. The servos are small motor driven units that move the plane's control surfaces in response to the control stick movements. There is one servo for each channel. Two planes on the same frequency cannot fly at the same time, or they'll interfere with each other and get "shot down". Radios come on a variety of frequencies also called channels (not to be confused with the control channels on the radio). Every flying field uses some system of frequency management, usually a frequency board with channel pins, to prevent two planes on the same frequency from flying at the same time. Most fields limit you to a fifteen minute use of the channel, after which you must allow someone else on that frequency to fly. While you are not using the frequency, your radio must be placed in a Radio Impound to prevent accidental transmission. This is for your protection. You don't want someone else inadvertently shooting you down, and you don't want to shoot someone else down. Accepted courtesy means that you are obligated to pay for someone's plane if you damage it by turning on your transmitter when not authorized to. Believe me, you do not want to shoot down someone's £2,000 scale F-15 jet!



A standard four channel radio transmitter has two control "sticks" the right stick controls the ailerons (left & right) and the elevator (up & down) and works just like a full-scale plane's control stick or yoke. Pulling back on the stick brings the nose up in flight, push forward points it down. The left stick controls the Rudder (left & right) and the throttle (up & down). Full-scale pilots are taught to fly using coordinated aileron and rudder. With most models smaller than 1/4 scale (or 70" wingspan) you can ignore the Rudder except for take-offs and landings. An instructor will not even allow you to use the Rudder or Throttle for the first few flights, to allow you to concentrate on using the primary stick.

**Q: What kind of engines do these planes use?**

A: Model engines come in sizes from .025 cubic inch (the little Cox control line planes you may have flown in your childhood used these) all the way up to four cubic inches. Most sport plane engines are in the .25 to .90 cubic inch range. Most are Two-Stroke engines which provide power on every revolution of the crankshaft. These engines are simple, inexpensive and reliable. Some engines are Four-Stroke and use push rods and valves just like an automobile engine. These engines are more complicated, heavier and expensive than Two-Stroke, but are often used in scale models because of their realistic sound and power range. Four-Stroke deliver more torque than Two-Stroke, so they can spin a larger propeller. Most model engines have a single cylinder, although some varieties come with two or more cylinders (again, these are generally used on scale competition aircraft). There are even planes designed to run on Electric Motors. Electrics are becoming very popular because of the noise problem associated with engines, particularly in Europe. Electric power is clean, but because of their power to weight ratio,

electric planes don't make very good trainers. I learned on an electric, and it definitely makes for a steeper learning curve.

**Q: What kind of fuel do these engines run on?**

A: Model aircraft run on a variety of fuels, but most run on Methanol a form of Alcohol, with a small amount of Nitro-Methane (or Nitro) as an additive to allow easy starting and a good idle. This fuel is known as Glow fuel as it requires a Glow-Plug. Glow plugs screw into the cylinder head of the engine just like a spark plug, but instead of a spark, the Platinum wire in the plug glows (initially because you connect a battery to it to start the engine, but once started engine heat alone maintains the glow) and causes a catalytic reaction along with the compressed fuel resulting in combustion. Since model engines don't have oil pans, 15 - 25% of the fuel is Castor oil, synthetic oil, or some combination of the two to provide lubrication and cooling. This fuel is available in hobby shops with Nitro percentages of 0% (also known as FAI fuel) to 55%. For sport flying, 5 to 10% Nitro is all that's needed - anymore would damage a sport engine. Some exotic high compression competition engines require more Nitro. Jet (Ducted Fan) and Helicopter engines use special blends of fuel with higher percentages of oil. If you live in the UK, 10% fuel generally costs \$15 to \$18 per gallon.

Some larger engines use regular Gasoline mixed with motor oil, and have a familiar spark plug on them. Some engines run on Diesel fuel. There are even true model Jet-Turbine engines that run on Propane or Kerosene £1,200 delivered to your door - step right up....). For the most part, though, the engines you'll be using run on Glow fuel. Glow has a lot of advantages: it has a high flash point temperature, is a lot friendlier to the environment than most fuels, and

doesn't stink up the trunk of your wife's car.

**Q: Do these things crash?**

A: And then some. Get used to it. If you fly for any length of time, you'll crash a plane sooner or later. It's part of the hobby so don't get discouraged. There are some very strict rules about where you can fly at a field just for this reason. Generally clubs restrict your flight to within a box encompassing one side and the ends of the runway. Flying over the pilots, the pits area, or spectators is strictly prohibited. When these rules are followed, planes generally crash in the safe area designated to fly in, and no one gets hurt.

Some crashes are worse than others, and you can almost always salvage at least the radio and the engine. If the plane goes in at a steep angle and at high speed, it's likely a goner, but it can usually be rebuilt if it comes in fairly flat. Never judge the rebuildability of a plane right after a crash - it's too hard to judge it dispassionately at that point. Pick up everything, all the little bits and pieces, put it in a garbage bag (I always keep a couple in the car) and take it home. Wait until you can look at it the next day, or have someone more experienced than you look at it and decide if it's salvageable.

Planes crash for a variety of reasons. Often it's pilot error, or poor maintenance. I've seen experienced pilots forget to let out the receiver antenna wire on a new plane (it should be straight and hanging out of the plane somewhere. Rarely interference will be the cause, but I've found a lot of people quick to blame interference for their carelessness. I've been flying for some nine years now, and I've only had interference cause a crash once that I know of. Sometimes the radio battery goes dead, so it's important to test your batteries with an ESV (Expanded



Scale Voltmeter) before every flight to make sure they're up to it.

**Q: I'm too old to learn to fly.**

A: Not true. A lot of people get into modeling late in life. I'll grant you it's harder to teach a sixty year old than a twenty year old, but old dogs can learn new tricks. The most important thing to remember is that it helps to take as many lessons as possible in one day - it improves the learning curve. I've seen Seventy and Eighty year olds out at the field, so no age is too old. Sure I may not be flying jets or W.W.II fighters at that age, but I sure intend to keep flying till the bitter end even if it's a Piper Cub.

**Q: These things look to hard to fly. They go too fast and I see them crash landing in the grass all the time.**

A: Flying Model Planes isn't easy, but it's not hard either. Trainers are specifically designed to fly very slow and stable. A good instructor will trim your plane to fly at a slow manageable speed. Well designed trainers practically fly themselves - they're more like guided kites. It takes a while to teach your brain and hands the new reflexes you need to fly, and at first even the slow sedate speed of a Trainer will seem more than you can handle, but trust me, soon you'll be craving more speed. We all go through the speed thing. Some never get over it.

Landings are the hardest thing to learn, and even harder to learn to do right. To start with, a lot of beginners wind up in the grass, sometimes cartwheeling the plane. It's okay, and won't hurt anything, just expect to straighten some bent landing gear on occasion. More than likely you'll break a lot of propellers to start with. Don't worry about it. I bought them by the handful when I started, now I buy a couple every year. To start with,

you'll probably be landing in the grass a lot. It takes practice to land on the runway, and I've seen too many new pilots crash because they're so fixated on making it. I tell all my students to land in the grass - grass is soft, asphalt is hard. When you're ready to shoot a runway landing, you'll know it.

**Q: Where should I fly?**

A: You need to find a model flying field or club nearby. This shouldn't be a problem, they're everywhere. Many flying fields are private clubs and will charge you for membership. This membership fee pays for maintenance of the site, mowing of the grass, construction and maintenance of a weather enclosure, and beer for the board of trustees. Some fields are in public parks, and these generally don't require a membership.

**Q: Can't I just fly in any large empty field?**

A: You can, but you shouldn't, especially to start with. First off, you should learn to fly from an instructor, and they're at the flying fields. Second, most flying insurance won't cover you unless you fly with the permission of the owner of the property, and most property owners don't want the liability problem. Also, it is illegal to fly in certain areas, such as within three miles of an airport or heliport without permission from the control tower. Thirdly, you can never know what potential radio interference might be nearby, while at an existing flying field it will be well documented. Finally, you should **never fly alone**. This is a somewhat hazardous sport. You can easily do yourself serious injury. Almost every flyer I know has been injured by a model airplane propeller at least once, and those babies can take your whole finger off if you get careless. Should you be injured, it would be best if someone else was around to apply

first aid, collect your equipment, and drive you to the hospital if necessary.

**Q: What kind of plane should I buy?**

A: They make Trainer aircraft which are easy to fly and best for beginners. Some are in kit form, which can take 80 to 100 hours for a beginner to build. They also make ARF (Almost Ready to Fly) models which are 70 to 80% complete and already covered. These generally take 10 to 20 hours to build (the box might say a couple of evenings, but don't believe it). Generally, the bigger the model, the easier it is to fly, but a .40 size trainer (one designed for a .40 cubic inch engine) generally makes a good first plane. Don't be tempted to buy a P-51 Mustang or an F-16 Jet for starters. It'll take a while before you're ready for that.

**Q: What do I need to get started?**

A: Patience, and lots of it.

**Q: No really.**

A: First off, you need to carry flying insurance. This protects you in case of an accident (your plane hits somebody, a car, a moose, etc.), and gives you secondary personal injury coverage over and above what your personal health insurance covers you for. There are two easy ways to get this. Join either the AMA (Academy of Model Aeronautics) or the SFA (Sport Flyer's Association). Membership including insurance is anywhere from \$30 to \$40 a year. You can find an application at any hobby store or in the back of a Modeling magazine. You must carry your AMA or SFA card with you whenever you fly (some clubs make you wear it). Make a photocopy of your AMA or SFA membership form and the check you're paying with as most clubs will accept this as proof



of insurance until your card comes in the mail.

**Q: Okay, but what kind of equipment do I need to get started?**

A: A plane (duh!), an engine, a radio system, a gallon of fuel, some kind of fuel pump, a box of #64 rubber bands to hold the wing on, a glow driver (a battery that heats the engine's glow plug for starting), a chicken stick or electric starter (never start a plane by hand unless you know exactly what you're doing) and someone who's willing to teach you how to fly. Don't try to teach yourself! I did, and I have a hole in my wallet to prove it. Go to the flying field and ask around. There's always some people willing to teach you, and you should not have to pay for it. A good instructor will check your plane out to make sure it's built right and safe to fly. he'll teach you how to start and adjust the engine, range check the radio, and maintain your equipment. On the average, you should be flying solo after about fifteen or twenty flights, some people take longer. The more flying you can cram into one day, the quicker you'll learn.

**Q: Okay, so where can I get all this crap?**

A: Check out your nearby hobby store. They can sell you everything. You might also see some used planes for sale there, or in the bargain trader. Most flying fields have a bulletin board with used planes for sale. People get out of the hobby all the time. You might be able to buy a plane complete with a flight box and all the accessories for a good price.

**Q: So how much is all this going to cost me?**

A: It's a falacy that Aeromodeling is an expensive hobby. Like all

hobbies, you *can* spend a lot of money if you want to, but you don't have to. You should be able to get setup with a Trainer and all the accessories for £150 to £250, depending on what you buy. Cheaper, if you buy second hand. ARTF kits are more expensive than regular kits, but they're easier to build and get you in the air quicker. Your first engine and radio need not be anything super-expensive or fancy. Just a basic non-ball bearing engine and an inexpensive 4-channel radio. I would recommend either an O.S. or Super Tiger engine. They're not the cheapest, but they're easy to setup and start. Ask the other pilots at the flying field you're planning to use about good frequencies for your radio, some channels are less used than others. Some channels are banned at certain flying fields because of nearby interference.

**Q: What should I wear to the flying field?**

A: Platform shoes, bell-bottom slacks, and a polo shirt (just kidding). You'll get messy out there, planes get covered in oil after flying, so wear something grungy you're wife won't have a fit over when it gets oily. Depending on the time of year, you should dress comfortable. Jeans or shorts and a T-shirt will do. Wear an old pair of sneakers and socks, as they're going to get oil on them from the engine exhaust (the most common way to hold a plane on the taxi-way is to hold the tail between your legs, and the oily exhaust is gonna get all over your shoes, socks and pant legs). Take some sun-block along, you're going to spend some time out in the sun. A hat helps shade your eyes from the sun, and sunglasses are a must. Don't forget to wear your prescription glasses if you're nearsighted.

**Q: So I've got my stuff, and I'm ready to go, but none of these**

**elitist bastards want to teach me how to fly...**

A: You haven't asked the right people. Sure, some people don't want to deal with newbies, but there's always somebody out there willing to teach you. Be wary of people too eager to volunteer. We all go through a phase right after we learn to fly and think it'd be cool to teach others. Noble sentiments, but an instructor should be a well experienced pilot who's been doing this for a few years. There's usually some older guys out there who know everybody at the field. Ask them who the good instructors are. When you find one, remember he's out there to have a good time too, so let him fly his plane and take you up between flights. Sometimes he's got more than one student, so be patient. You can make things easier by fueling up your plane and getting everything ready to go before he's ready for you.

---

**Q: Do I need any large tools?**

A: Yes. Bring a shovel.... to get your engine out of the ground after a nose-down, full-throttle crash. Oh and a large dustbin bag!!

*Contributed by Per Bergqvist -  
[en9305@energi.ing.hb.se](mailto:en9305@energi.ing.hb.se)*



## Windy Weather Flying

by Clay Ramskill

All too often, on an otherwise nice but windy day, folks just don't fly. Obviously, for a beginner, that's common sense—but for someone who has some experience, the wind can be a challenge that adds some spice to flying.

While it's easy to see that experience level has a lot to do with how much wind is too much, it may not be quite as apparent that the type of model you're flying also can have a great effect on your ability to handle winds.

Let's go through some airplane design features to see which ones give us the best flying characteristics to handle winds and the resulting turbulence.

**Size:** In general, the larger the airplane, the better it will handle winds of all kinds; large models don't "flop around" as much!

**Dihedral:** The more dihedral in a model's wings, the more they are going to be affected by crosswind gusts; it is hard to keep the wings level, therefore lineup to the runway is difficult in a crosswind situation.

**Wing Loading:** The higher the wing loading, the less an airplane will be affected when hit with a gust.

**Aspect Ratio:** Lower aspect ratio (stubby) wings will be less bothered by gusts; there is less leverage for side forces to upset the airplane, and lower aspect ratio wings have a greater tolerance to changes in angle of attack caused by gusts.

**Power:** Having the power to overcome the force of wind is necessary. The same thing goes when you get into a sticky situation.

**Lateral Control:** Ailerons are beneficial in a crosswind landing and takeoff phases. The ability to

dip a wing into a crosswind without changing heading is essential, as is the ability to rudder the airplane parallel to the runway heading while keeping wings level with aileron while landing.

**Landing Gear:** Models with tricycle landing gear are easier to land and take off in a crosswind than tail draggers; in addition, the wider the spread on the main gear, the better.

**Manoeuvrability:** This one is a bit harder to quantify. You want a model with stability, yet you do need good manoeuvrability to cope with gusts. Therefore, you want a model that is stable, yet responsive.

**Wing Mounting:** Generally, a low-wing airplane will handle crosswinds better. This is because the centre of gravity of the airplane is nearer, in a vertical sense, to the aerodynamic centre of the wing. Therefore, a side gust does not roll the model as easily. Moreover, by mounting the main landing gear on that low-wing model, they can be spread wider.

It's unfortunate that almost every item above is in direct opposition to the characteristics found in many popular trainers. The main exception is the requirement for tricycle landing gear. But even with trainers, there are differences. Compare a Seniorita with the Kadet Mk2. While the Seniorita may be a bit slower and a bit easier to fly, the Kadet, with its ailerons, higher wing loading, lower aspect ratio, and lower dihedral, is a far better airplane when flying in windy conditions. Going a step further with the same kit manufacturer, the Cougar (.40)/Cobra (.60 size) kits embody all the right characteristics for windy flying.

In closing, I offer Confucius' only known saying about RC flying: "To learn to fly in wind, one must fly in wind!"



## Articles for The Eye In The Sky - WE NEED YOU

Just another plea for any volunteers to write articles for this newsletter most gratefully received. As much as we would like to be able to give you a bi-monthly newsletter, the truth is whilst its only the secretary and chairman contributing then I am

sure you are going to get fed up with our thoughts and grumbles..yes I know its our age but to be fair you will all get fed up with our view of whats good or bad with this hobby of ours. I am sure like most people all you want is a

safe place to fly with no hassles. You can write about a variety of topics but try to keep your articles short.



### CONTACT NAMES: PLEASE CALL BETWEEN 11AM AND 9PM

If you need a training session or discuss matters of modeling, please call or e-mail

Name	Phone	Comments
James Millward	01604 702556	Club Chairman, instructor <a href="mailto:chairman@mkmaa.co.uk">chairman@mkmaa.co.uk</a>
David Shaw	01908 221884	Club treasurer, <a href="mailto:treasurer@mkmaa.co.uk">treasurer@mkmaa.co.uk</a>
Barry Stewart	01604 764480	Club Secretary, instructor <a href="mailto:secretary@mkmaa.co.uk">secretary@mkmaa.co.uk</a>
Dean Bleser	01604 642432	Safety officer, instructor
Dennis Owen	01908 322944	Instructor, (helis & planes) and club examiner

That's its then guys, remember to keep it safe whilst flying!!  
Happy landings

James Millward

*And Finally*

**Chairman's thought for the day:**  
Never be afraid to try something new!  
Remember, amateurs built the Ark; professionals built the Titanic.

