GLADYS International 21C

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I suppose you'll be wanting another model aeroplane for Christmas!

From all on the SSA Committee
All the Best for 2007
We hope that everyone has a successful flying year

The Sheffield Society of Aeromodellers

Gladys International 21c

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Subscriptions are available from the editor, at only £9:00 (UK) for six issues.

The SSA new website has opened with small beginnings—have a look at:
http://www.ssaclub.org.uk/index.asp

Cover picture: Cartoon created by Richard Whiting for Jeremy Storr.

Rear cover: Andy Shaw comes to the rescue of Phil Dyke's micro model at Dronfield sports centre RC indoor event.

Contents

Editorial

There is a bit of everything in this issue, so thanks to those who contributed. A special thank you to Oliver Staples for telling us about his remarkable introduction to our hobby. If you haven't seen Ollie at one of our indoor RC events then you ought to make a trip there just to see him. This young man has some remarkable skills which put the best of us to shame. His rolling turns, prop hanging and every other manoeuvre in the book are done between the four walls of the sports centre hall with his high performance Depron shock fliers. And if you get stuck mastering the art of helicopter flying then he is always willing to help. He'll show you how to get off the ground and conduct a few manoeuvres.

There are some club business notes and a few other articles. I make no apologies for including a chapter about "trimming a model" from a very old book by Peter Chinn. We can talk until the cows come home about what is the best course of action when we take a new model to the field but we still see people starting up the motor, launching into wind and praying that their new model will fly OK. What follows is often a battle with the tranny trims to achieve stable flight characteristics. A good aerobatics pilot will tell you that they test fly and trim repeatedly until they are satisfied that they have the model flying to the best of its ability. And then when they go out in different conditions they are prepared to test and trim again. Here's hoping we all have a good year's flying.

Can I shock you?

Oliver 'Ollie' Staples

My Experience with Shock-Flyers

I started flying Christmas 2001/2002, with my new trainer at "Barnstormers", Harthill, and I progressed through my 'A' and 'B' certificate in the first two years. In spring 2004, I found FlyingCirkus.com. I enjoyed everything it had to offer: pictures, forums and 3D training videos, free to all. All the flyers there were using small foam planes called shock-flyers, which they used for practising 3D. So at Christmas 2004/2005, I pestered dad into getting me a shock-flyer, and he said they would be a waste of time and money, (***BIG MISTAKE!***). I persuaded him into getting one anyway! We flew it outside for a month at any breaks in the weather and it performed well outside, easily able to prop-hang or just fly around. I really enjoyed this, but not being able to rely on the weather, we soon found our way to indoor flying! For me, starting indoor flying has not been easy, but I've enjoyed every minute of it. To be able to fly through the winter at a reasonable cost is a real bonus, and I have met a lot of nice, like-minded people.

Day 1, the Sports Hall Wall...

Everything went to plan on my first circuit until the plane had a fatal attraction with the Sports Hall wall (a bit like a fly stuck in a spider's web!). At this point we were advised to apply Murphy's Law – *If you only have one, you will break it, but if you have two, you won't.* With this, off we went to Ajay Models, with ***our*** (Dad's too!!!) remaining Xmas money, for another complete setup. Since then I've gone from strength to strength resisting any magnetism given off by the wall!

My first setup

First off, we went for the Ikarus EX-TremA shock-flyer, HET Typhoon 5-3D motor, Tsunami 10A speed controller, Kokam 1000mAH 3s1p 8c Li-Po, three Dymond D54 servos and a GWS 4 Channel Indoor/Park receiver. All this worked very well together, coming out at 8oz all up weight. The cost was just under £200 (although a lot cheaper now). This was at the better end of what was available at that time.

If I could turn back time

If I was just starting up again, I would go for:

Motors & ESC

1. Axi 2204/54 with Castle Creations Phoenix 10A ESC – this would be my best choice for working towards a light and powerful model. The Axi seems to be very powerful and quiet, it also has four mounting holes and is reversible (so you can mount from the front or back of the motor) making it easier to fit on a shockie. The Phoenix 10 can be programmed on the PC or conventionally and the power is smooth and quieter with no surges. This is quite expensive at around £80.00.
2. Rcm Direct A2406-32T Outrunner with a 10/13A ESC. These are just right for a shock-flyer, and at £27.99 for both, you can't beat it! Again this has four mounting holes and is reversible.

3. Rcm direct 2408-21 Outrunner with a 15/25A speed controller would be my choice for a heavier plane (10-15oz), like my Challenger biplane. These motors are very powerful and require a high discharge battery (20c). I think they have too much power for a normal shock-flyer.

Batteries

There is no cheap route with batteries. If you want performance, you need 20c to fly 3D easily. At the Moment, we are using Kokam 740mAH 20c (40c burst) 3S 1P (£35), they last longer than our 10c 1000mA and produce more power!

For a normal shock-flyer (8oz) work around 600-800mAH 20c 3s1p. This isn't too heavy and will fly most of your slot.

Servos

1. Overlander 9g: four for £24.99 (Overlander). These have performed very well and are very good value for money.
2. Hitec HS55 £8.99ea (Al's Hobbies) good all round servo inside and outdoor.
3. SuperTec Pico Std £11.99ea (Servo Shop). Although a little bit more money these have stood the test of time!

When we started we went for expensive high torque servos. They performed very well but didn't last very long when flying outdoors.

Receiver

1. Intelligent type i.e. Shultz or Multiplex IPD around £65.00. These will give you the best chance of survival indoors!!
2. GWS Dual conversion, around £30.00. Even though they are heavier and more expensive than an indoor GWS, they benefit from fewer glitches so it's worth it.
3. GWS 4ch indoor around £16.00. These are cheap and can be flown indoors and outdoors, but glitches can be a problem when really busy indoors.

Planes

1. Ikarus Yak 54
   They fly slow and yet very aerobatic. Our best yet. These cost around £30.00.

2. Ikarus F3A.
   Again these fly slow but are not as aerobatic as the Yak, they fly more like a conventional wing form i.e. not as stalled – so these are easier to just fly around. These cost around £30.00.

3. Free plans off the internet. Once you have had a couple of shock-flyers and saved the carbon-fibre and control fittings, for about £5.00 you can build whatever your imagination runs to!

A few websites:

http://www.3dfoamy.com/manuals.htm

http://www.3dbatix.com/plans.htm

http://www.amjd.ch/challenger.php

http://www.amjd.ch/vertigo.php

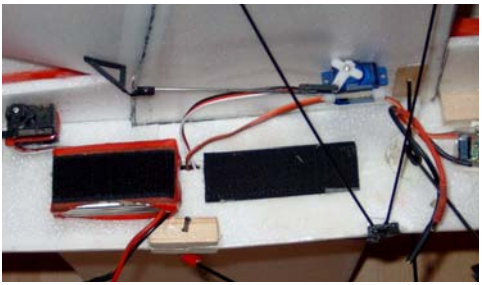
http://www.amjd.ch/troll.html

Building

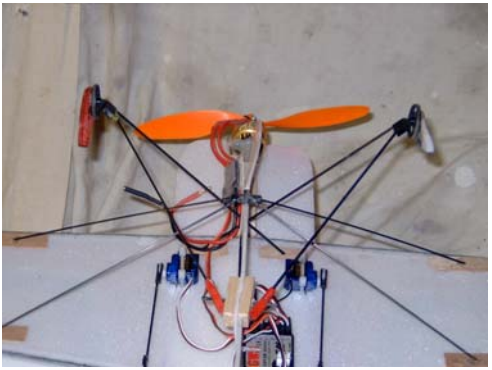
We stray from the instructions on a couple of things.

1. Mounting Servos. The instructions tell you to cut out and glue into the vertical section of the fuselage - we mount them flat under the horizontal section of the fuselage with a dab of UHU POR and a tie wrap. This way you can change the servos easily and still be flying while the glue is drying. See picture below:

2. Mount the battery to the side of the fuselage on the CG, this way the balance stays the same with any battery and you do less damage when changing them. See picture below:

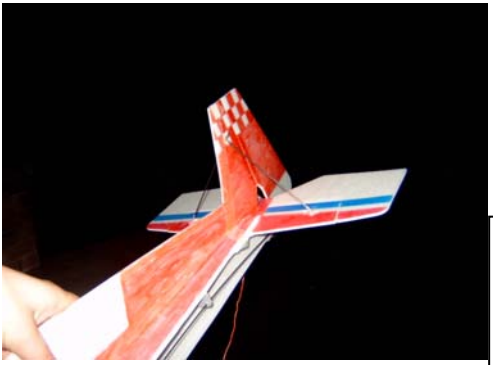


3. The Undercarriage. We don't glue any of the undercarriage, we put struts in the hub part on the main legs and mount the struts with something like a clevis onto a small carbon fibre rod which is strengthened by balsa. See picture below:



4. The motor mount. We have put $^{3}/_{8}$ in square balsa rod glued to the front of the fuselage all the way back to the leading edge of the wing. A plastic part is available from Robotbirds http://www.robotbirds.com/

5. More strength on the tailplane. Just two carbon fibre struts on each side glued onto the Vertical and Horizontal stabilizer. See picture opposite.



6. When using cyano, we sprinkle Bicarbonate of Soda over the glue. This acts as a filler and an accelerator. You're left with a joint that is almost welded!

Conclusion

This is a great way of improving your flying and gets you out of the house and on the sticks through the long, cold winter! Even if you do not want to 3D, these models will happily just fly around and indoor you don't have any bad weather conditions! What sport brings all ages together sharing the same interest?

Useful info

Websites:
Rcm direct
http://www.rcmdirect.co.uk/store/
Robotbirds
http://robotbirds.com/catalog/
Overlander
http://www.overlander.co.uk/
Als hobbies
http://www.alshobbiesstore.com/acatalog/
J Perkins
http://www.jperkinsdistribution.co.uk/
Inwoods
http://www.inwoodmodels.co.uk/

For all your 3D info and training, full of info on the forums.
www.downonthedeck.com
www.teamflyingcirkus.com
www.flyinggiants.com
Depron:
Floor Heating Systems Ltd
G12 Imex Enterprise Park
Wigwam Lane
Hucknall
NG15 7SZ
Email. sales@depronfoam.com
http://www.depronfoam.com/prices.htm
Pricing:
3mm - £60 for 40 sheets (1.2m x 0.8m)
6mm - £60 for 20 sheets (1.2m x 0.8m)

As an infant, like most children, I was fascinated by rotating and whirring things, especially if they could fly. At five, my first model aeroplane (I shall not use the "K" word) was a Rev-o-jet, with revolving wings, that buzzed at the end of a string attached to a small wooden fishing rod. What magic is in those clicking and whirring things forever associated with innocent play! the humming top, the flaming Catherine wheel, those homemade cardboard discs or buttons spinning on string, and, punctuated by the occasional bang, the merry sound of Russian roulette. What child brought up in the 1970s could fail to do a perfect imitation of the sound of Windy Miller's sails, as he stepped between them with the nonchalance of Buster Keaton, deftly avoiding decapitation as a lorry load of bewigged 18th century soldiers trundled past? And what is a windmill but an Earthbound autogyro? I discovered recently that one of my ancestors actually owned one - a windmill, that is, not an autogyro.

But enough of this drivel. It was at Pontefract in July that I first set eyes - and ears- on a Twirl, bravely flaunting its flimsy Depron in the strong breeze, and performing manoeuvres I never thought possible for an autogyro.

My raptures were overheard by a kindly Paul Watts, who calmed me down and promised to send me the January 2006 RCM&E which contained the plan and excellent article

by Al Foot, Twirl's designer. As this article explains construction I shall not go into much detail here.

Al foot had chosen the twin rotor configuration because of the lack of complicated linkages and the attendant ease of construction and repair. 3mm Depron was the chosen material, with an all-up weight of 200-255g (7-9oz). A 30-50 watt CD Rom motor would provide adequate power.

The nose area of the Depron fuselage has 3mm Depron doublers fixed either side with UHU POR. The instructions on my tube of POR were in German, and on making enquiries I found that there were two ways of using this: either as an impact adhesive, where a thin layer is left for ten minutes on each surface to dry before pressing together, or else smeared on one surface and the mating surface clamped to it while the glue is wet. The second method, which I used, takes a long time to dry but allows adjustment.

The fuselage is stiffened with $^1/_8$ inch dowel. For elevator and rudder hinges I used magic tape. 3mm x 1 mm carbon strip, glued with UHU POR, is used to reinforce the wing LE and TE. The rotor blades, four on each rotor, were of 3mm Depron reinforced with strips of printer paper at the LE, and retained against a balsa block sandwiched between two 50mm Depron discs at the hub. The blades were overlapped to create the correct incidence.

The rotor bearings are of 2mm brass tube and axles of 2mm carbon rod, glued to Depron pylons near the wingtips. The wings are braced with struts of 1mm carbon rod at the centre of chord, and thread at the LE. A simple undercarriage is fitted.

I used a Potenski 50w motor with a tuneful 'Dreamfly' Melody 12A ESC from BRC Hobbies, powered by a 2S 800mAH Airpower LiPo. The 50w motor, from Flitehook, is a more powerful version of the Potenski 30w motor, costs £25 and is beautifully made and supplied with a mount, a folding prop, prop saver adapter and plastic spinner nut. Motor and prop adapter weigh 30g. I used a Multiplex 3/4 receiver and two Titch metal geared digital 5g servos.

Flying

If there is a hint of a breeze the rotors start whirring as soon as you lift the Twirl out of the car, and bemused looks follow you all the way to the pits. The restless blades continue to spin while the model is parked. I haven't tried taking off from the ground yet, but a breeze helps with a hand launch. I run forward a few steps dead straight into the wind to get the rotors turning as fast as possible at equal speeds.

The first launch was followed by a terrifying display of low level aerobatics that impressed everyone present, but I eventually got the hang of it and Twirl climbed out, rather sensitive to rudder, but quite manageable, and flew for 15 minutes, penetrating reasonably into the wind, responding well to the controls and maintaining height on half throttle even on a two cell pack (the designer recommends three cells). Autogyros tend to be rather draggy and need more power than conventional winged aircraft.

As the battery approaches exhaustion, the model gradually loses height, and, when power is cut, sinks and settles gently with little or no forward speed. Very

In formation - four Smart Darts and a Twirl.

little space is needed to land. Subsequent flights were all successful and launches much less fraught. Twirl will perform loops, barrelly rolls and stall turns in spite of its flimsy structure. To get maximum pleasure from Twirl, whirromaniacs should remember Storr's first law of whirrodynamics: "loudness of whirring increases in direct proportion to the tightness of the manoeuvre".

Not being very familiar with Depron, I didn't realise until it was explained to me on the field, that Depron has a grain, which should be aligned to provide strength in the required direction.

An awkward landing, or clumsy handling, can bend a rotor blade, as I discovered, but I adopted Martin Tricklebank's suggestion of taping a reinforcing strip of balsa to the trailing edge of each blade, which obviously increases the rotor area slightly and adds weight, but has no detrimental effect on flight.

To sum up, the Twirl is interesting to build and great fun to fly. I am fired with enthusiasm to build a bigger autogyro. DB Kits supply a twin rotor model for IC. which could possibly be electrified, and I believe someone has built an electric version of the IC. design 'Kestrel', featured in May 2003 RCM&E, by Cyril Carr, whose very name seems, in my diseased imagination, to evoke the crepitant whirring of an autogyro.

Trimming a model (Good Advice from Yesteryear)

BEFORE a newly completed model is flown, there is a certain amount of checking and adjustment to be done. This is quite a simple matter and need not take very long.

It is, nevertheless, of the utmost importance and may mean the difference between your model proving to be a successful flier and its being totally unstable-perhaps to the extent of being badly damaged in a resulting crash.

The whole secret of stability, which is the essence of satisfactory flight, is in the proper balance of the model and correct alignment of the wings and tail. Few readers will want to go into the intricacies of aerodynamics at this stage -most will be anxious to try out their newly-built model ;-so we will avoid purely theoretical considerations and concentrate on the model itself and explaining the practical applications of simple aerodynamics only where this is absolutely essential.

Taking the Gnome fuselage, we observe, if we look at it in side view, that the wing and tail platforms are set on the fuselage at different angles (see Fig. 1). The tail, it will be seen, is parallel with the top of the fuselage-boom, whereas the wing platform is inclined very slightly upwards towards the front, so that the underside of the wing is tilted at a small angle to the air stream when the model is in flight.

This is one of the elementary rules of rigging an aeroplane for flight. The wing is always inclined at a positive angle to a line drawn parallel with the tailplane, and the angle between them is called the longitudinal dihedral angle.

If, therefore, we draw two lines, corresponding to the angles of the wing and tail (Fig. 2), and then measure the angle of their intersection with a protractor (Fig. 3), we shall be able to check that we have the necessary longitudinal dihedral.

On the Gnome, this was found to be 4 deg., which is enough to ensure an adequate reserve of longitudinal stability. Generally, 2 deg. is considered to be the safe minimum.

Strictly speaking, this is an over-simplification of the case since it is pos-

FIG 1

FIG 2

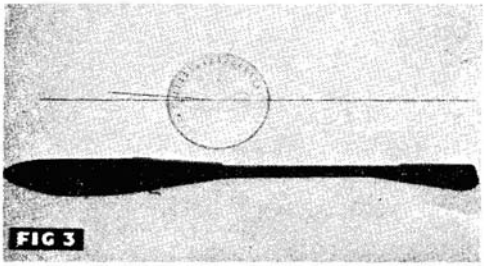


FIG 3

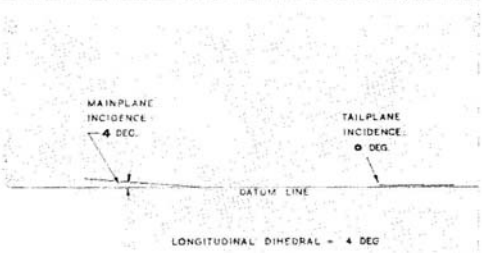


FIG 4

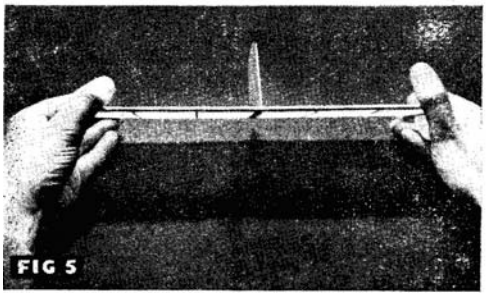


FIG 5

sible, in certain cases, to rig the tailplane and wing at the same angle and still produce stable flight, but this is extremely rare with free-flight model aircraft and need not bother us here.

Usually the respective angles of the mainplane and tailplane, incidence- or rigging-angles, as they are called, are marked against a common datum or centre-line on the side elevation of the aircraft. The wing may be rigged at a positive angle (i.e. with the leading edge higher than the trailing-edge as on the Gnome), which is usual, or it may be rigged parallel with the datum line. In the case of a wing being rigged at zero, or only a very small positive angle, the tail will usually be at a negative angle, thus preserving the all-important longitudinal dihedral angle.

With the Gnome, we have chosen the top of the fuselage boom as our datum line. Thus, the tailplane is at zero degrees incidence and the wing at 4 deg. positive incidence.

Now, the amount of lifting force which a flying surface will give depends on its size, the angle at which it meets the air, the aerofoil-section used and the speed at which it is pulled through the air.

Therefore, since the wing is invariably bigger than the tailplane and is inclined at a greater incidence angle, it follows that the wing will generate much more lift than the tail.

This means that the front end of the aircraft will tend to rear up, and, to balance out this condition, we simply add a certain amount of weight to the nose. Actually, what we do is to bring the centre-of-gravity forward. All flight movements have the centre-of-gravity as their axis and, technically, what happens is that we shift the centre-of-gravity

(c.g.) forward, until the moment-arm, or lever, through which the wing operates, is reduced to a point where it is balanced out by the much longer moment-arm through which the tailplane operates and which multiplies its effectiveness.

This may mean that the wing is producing lift which is centred slightly ahead of the c.g. and is being balanced by tail lift. Alternatively, the wing lift may be behind the c.g. and the consequent nose down, or diving tendency, counteracted by a negative or down-load on the tailplane by reason of a negative rigging angle.

This is purely a matter of relative c.g. positions and tailplane angles: a forward c.g. requires a negative tail setting while a rearward c.g. requires a positive setting. Generally speaking, full-size aircraft tend towards forward c.g. locations while model aircraft more commonly use a more rearward c.g. - hence the use of larger tailplanes on models.

The c.g. position is generally referred to relative to the chord of the wing. A "25 per cent. c.g." means that the balance-point lies one-quarter of the chord from the leading-edge. A "two per cent. c.g." means that the centre-of-gravity is located at the extreme trailing-edge. These figures, incidentally, may be regarded as the upper and lower limits for free-flight model aircraft. The Gnome should balance at the one-third chord point - i.e. a $33^1/_3$ per cent. c.g.

No less important than the correct rigging angles and location of the centre-of-gravity are the alignment of the wing and tail surfaces and their freedom from warps.

The first thing to do is to check the tailplane for warps. Hold the unit in both hands at arm's length with the trailing edge towards you. By lowering the leading edge slightly, you can sight across the chord and note whether the trailing edge is precisely parallel with the leading edge (Fig. 5).

A great deal of trouble can be caused by warped surfaces. Do not tolerate them.

If you built and covered your wing and tail properly and pinned them down after doping, you should not have any serious warps. Of the two, the tailplane is the most likely to warp because, being of a thinner section and lighter construction, it is less rigid than the wing.

If you find, however, that the wing or tailplane has warped so that one side is at a different incidence angle from the other, you can correct them quite simply as follows.

Hold the unit comfortably in front of you with both hands across the chord and positioned at each end of the section to be straightened. Exert just sufficient twisting action to bring the surface back into alignment, plus a fraction in the opposite direction. Now hold it thus in front of an electric radiator, or over an oil stove or similar heating apparatus, for about 20 or 30 seconds so that the whole section becomes slightly warmed. Then, still holding it set, transfer the surface to a cool part of the room for a minute or two. Upon release, it will be found that the offending warp has been effectively removed. You will soon find it quite easy to re-set surfaces true by this simple method.

When checking wings, it should be noted that a slight warp at the tips is sometimes permissible.

1. Side view of the "Gnome" fuselage showing the respective angles of the wing and tail platforms.

2. Checking the incidence angles: Stage 1, marking off the wing and tail angles.

3. Stage 2, checking the mainplane angle by means of a protractor.

4. Stage 3, the longitudinal line-up of the " Gnome," which gives a longitudinal dihedral of 4 degrees.

5. Checking the tailplane for warps.

It is not unusual to find that the designer specifies " wash-out " at the wing tips. This means that the wing panel is twisted slightly so that the extreme tips are, perhaps, one degree less incidence than the centre section. Therefore, if your wings have a very slight negative twist towards the tips, and provided that the twist is equal in both wings, you need not bother too much about this. Do not, however, allow "wash-in" (i.e. increased angle of incidence at the tips) unless the plans specify this.

The next thing to do is to check the alignment of the wing and tail on the fuselage. First make sure that they are level on the fuselage-that is, that one side is not lower than the other-and that the wing and tail are in alignment with one another. The quickest way to check the latter is to hold the model at arm's length with the tail towards you so that it can be lined up with the wing.

Now make sure that the wing and tail are at right-angles to the centre-line of the fuselage in plan view.

The simplest way of checking this is by means of a piece of thread attached to a pin. First push the pin into the end of the tailboom and measure the distance to a convenient point on the wing tip. Check this against the same point on the other wing tip, making sure that the wing is centred on the fuselage, and swivel the wing on its mounting until both measurements are identical (Fig. 6.)

The same method is used for aligning the tailplane. In this case, of course, the pin is pushed into the nose of the fuselage (Fig. 7).

To enable these settings to be kept, it is a good idea to mark the wing with suitable centring lines as shown in Fig. 8. The tail can be similarly dealt with, although, when vertical fins are fitted to the tailplane (as on the *Gnome) a* better method is to "key" the tail-unit onto the fuselage so that it cannot move and upset directional trim.

The easiest way of doing this is to cement four small pieces of $^1/_{16}$ in. sq. balsa on the underside of the tail-plane so that they will butt against the edges of the tail platform, front and back, on either side. Keying on both tailplane and mainplane, incidentally, is considered essential for power-duration type models.

Flying surfaces are usually held on to the fuselage with rubber bands, which form an effectively firm. yet shock-absorbent method of attachment. Make sure that you have sufficient rubber to prevent the wing or tail from lifting dur-

ing flight and remember that strong bands, lightly stretched, are better than thin bands stretched to their limit.

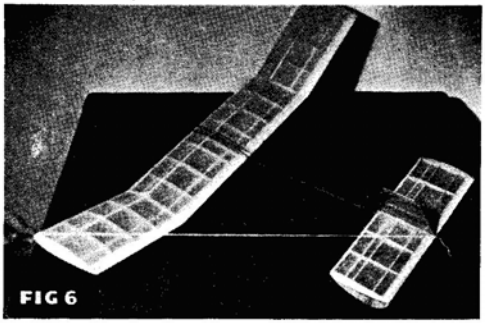


FIG 6

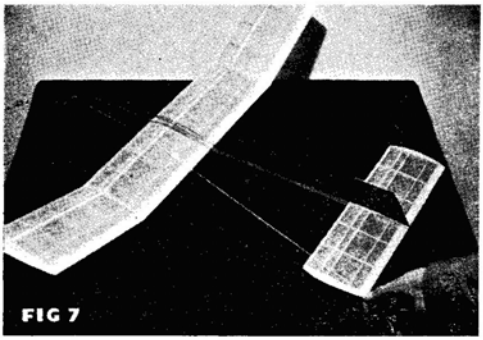


FIG 7

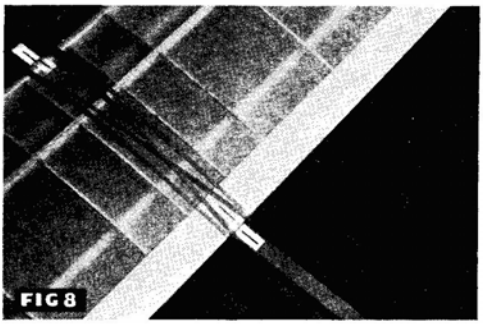


FIG 8

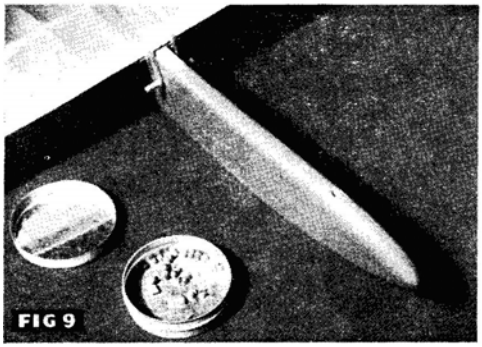


FIG 9

The final stage of getting a glider ready for flight is ballasting. Lead shot is generally the most convenient form of ballast. Feed the shot into the ballast-box until the model balances at the designed balance point (Fig. 9). Don't risk upsetting trim by leaving the ballast-box unsealed so that the shot can find its way out again ; seal the hole with a small strip of cellulose tape.

Flying a simple glider is easy but we are not out of the wood yet, so try to pick a calm day for your first flight and a suitable site free from any sort of obstruction.

Hold the model slightly behind the balance point, with the nose into wind and pointing downwards very slightly. Do not point the nose skywards.

One does not need to run with a model of the *Gnome's* size and weight, but don't just flick it into the air. Launch as smoothly as you can, letting go of the fuselage as your arm is extended to its fullest extent, and with a "follow-through" action.

The model should glide gently down on an even keel. If it should veer off to left or right, look again for the warps we have been talking about and check the fin alignment. If necessary, use the rudder tab to counteract any turn.

It is difficult to say how far the model should glide, since this depends on the strength of any wind present. An almost imperceptible air movement will shorten

(Continued on page 17)

Guidelines for Electric Flight at Redmires Playing Fields Site

These are issued because there are an increasing number of instances where flyers are knowingly or unknowingly ignoring safe practice as defined by the BMFA

1. **All** members are responsible for safety and no one is exempt from this responsibility.
2. The first person(s) to arrive on site should set up a "Pits" area depending on the weather conditions at the time.
3. Do not allow flying all around the field 'control line' fashion. Lay out an area of dead airspace that takes in the pits area, the car park, the approach to the pits and any noise or safety sensitive areas which you need to avoid. This will be a segment of at least 90° and could be up to 180° i.e. all flying takes place one side of a line through the strip with the pits, car park etc. on the other side. It is vital to set up this area of dead airspace, even if your field is totally unobstructed all around.
4. It is the responsibility of any and every member to adopt a strict rule that **NO-ONE** flies in the 'dead airspace' at **ANY** height.
5. Frequency control should be strictly adhered to at all times.
6. There are many occasions when it is essential for others to quickly identify the frequency you are operating on and for this reason your transmitter should carry an easily visible channel identification pennant. Most people use 35 MHz and an orange flag with one inch black or white numerals should be used.
7. In addition a peg should be placed on the frequency board to indicate the frequencies in use.
8. **All** members are to carry with them two warning notices and set them out each time they attend the site. The signs will say, '**Please Be Aware. Authorised Model Flying Takes Place Beyond This Point**'.
9. Pre-flight check should be made for all models.
10. Under no circumstances should models take-off from, or land over or towards, the active pits area.
11. Any flying actually over the take-off/landing area must be into wind only, i.e. in the designated landing direction. This avoids conflicting flight patterns over the active runway but does not prohibit other styles of flying away from it.
12. All pilots with models in the air should stand in the same area while their model is taking off, flying and landing. The only exception to this is while the pilot retrieves, as quickly as possible, a landed model
13. Take off and landings to be called out loud and clearly.
14. Retrieval of models to be called out clearly – ensure that others with models in the air have heard you – and to be completed as quickly as possible.
15. Post flight procedure – disconnect flight battery, switch transmitter off, clear your peg from the fre-

quency board, even if you are the only person using that frequency.

The UK is crossed by many low level microwave communication beams and if one crosses your field it may cause problems with interference and glitching. If your club suffers from such interference regularly (usually in the same place on the field) then it may be a microwave problem and you can guard against it completely by simply wrapping your receiver in aluminium foil. The microwaves act directly upon the receiver components, not upon the aerial.

On the next page is an aerial view interpretation of these guidelines, suitable for N, S and E winds.

(Continued from page 15)

the distance, but in conditions of dead still air, a good model should touch-down up to ten or a dozen yards away when launched from five or six feet.

If you can launch from a slight slope, so much the better. This will give a longer flight that will give you a better opportunity to check adjustments.

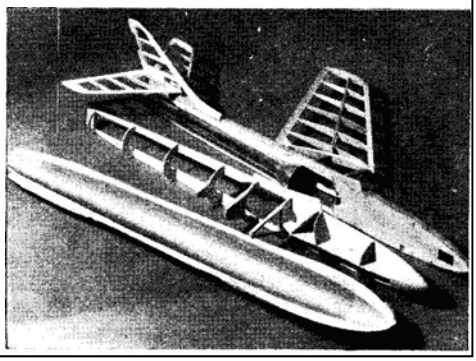
If the model stalls, i.e. raises its nose, slows up and then dives, this may be due to you having launched it too fast, or to the wind being too strong, or to a little of each. Therefore, check this again before making any adjustment.

If the model continues to stall, you can do one of two things: add more ballast or pack up the leading-edge of the tailplane. As we have seen, the *Gnome* has ample reserve longitudinal dihedral, so it is permissible, with this model, to pack up the leading-edge of the tail $^1/_8$ in. or so with a strip of balsa.

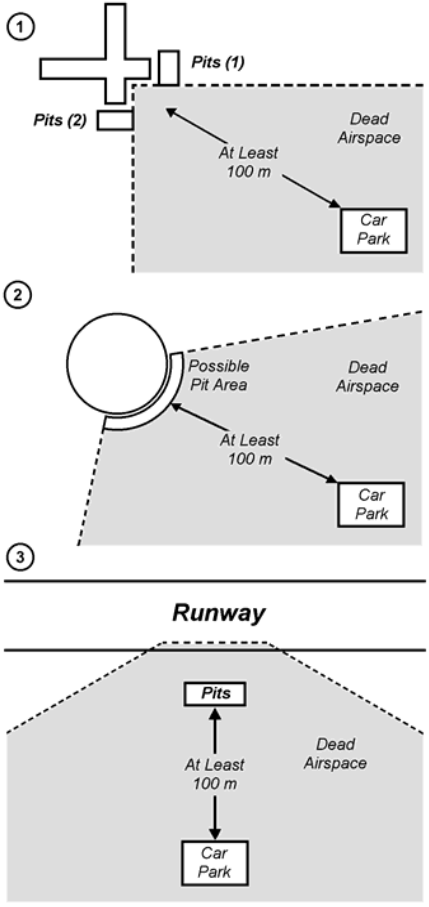
Should the model dive, take out some of the ballast just a few shot at a time- until the model just begins to stall. Then stop. Two courses are now open to you. Either you may replace just sufficient ballast to iron out the slight stall (which is the best method if you are going to confine your flights to hand-launching and slope- soaring) or you may adopt the contest-fliers' method of setting the rudder tab to give a slight turn (this being the more popular for towline-launched flights). The turn will automatically dispose of the slight stall and the model will be flying very close to its minimum sinking speed, which is what we all aim at. From this point onward, avoid changing the trim.

The illustration below shows a new and interesting type of kit under construction. It is the Jetex Jetmaster powered Hawker Hunter and all the parts of the kit are pre-fabricated.

The balsa parts are die-cut and only need pressing out from the sheet. The two halves of the fuselage are already moulded to shape and only require trimming round. In fact, to complete the model it is just a matter of assembly, covering and finishing.



Examples of Site Layouts



Sheffield Society of Aeromodellers
Annual General Meeting

Bents Green Church
8-00 pm 7th December 2006

1.0 Apologies

G. Twigg, Chris Veitch, Mike Stott, Jeremy Storr

2.0 Minutes of the last Annual General Meeting

These were circulated and approved by the meeting.

3.0 Chair's Report

John Penton welcomed everyone to the AGM. He said that as a committee we become less each year consequently new members to the committee must at some time come forward to enable the smooth running of the Club to continue. You may not think it is running smoothly but this will be established by the end of the meeting.

4.0 Treasurer's Report

Tim Scowcroft reported that the Club started the year with total cash asset of £2,952.02
£598.04 in the cheque account
£2,337.41 in the deposit account
£16.57 in petty cash
He added that we had a total income during the year of £3,420.35. This came from subscriptions and interest paid by the Bank. Our outgoings totalled £3,590.99. These were comprised of subs to the BMFA of £1,373.00, which were by far our largest outgoing. The next largest outgoing was the now popular indoor flying events of £854.00, closely followed by rents for the flying sites and magazine costs.
At the time of the close of the books for this year we had the following cash assets
£378.64 in the cheque account
£2,386.17 in the deposit account
£16.57 in petty cash
A net decrease of £170.64
The Club has no outstanding debts and all costs this year have been covered and we do not have knowledge of any unexpected outgoings that may occur, although we will have to make use of our strategic reserve in the saving account to pay this year's rents for the flying sites.

5.0 Membership Secretary's Report

Colin Troise reported that we ended the year with one hundred and six mem-

bers, which are six more than last year. Fourteen members did not rejoin from 2005, but we had a good number of new recruits. Of our membership fifty-four are 'Senior Members, forty-seven are either retired or unemployed, four are juniors and we have one patron.

Fifty-six members renew their BMFA insurance through the club, which is a drop from a figure of sixty-three in 2005.

The BMFA have agreed a fee increase of £1 for 2007 for Senior Members. Do not forget that your BMFA Insurance runs out at the end of December!

6.0 Event Secretary's Report

Terry Gregory reported that it was becoming harder to find events and he was stepping down from the post but was carrying on as the Electric Secretary. He reported that at this present time he was in contact with Sheffield Council and the BMFA regarding a Licensing Agreement for the Redmires playing fields.

7.0 Free Flight Secretary's Report

Trevor Faulkner reported that the our Indoor group was lucky to be given a grant of £252.00 for a year's rental of the Scout Hall. They have had good attendances throughout the year without it making waiting to fly a problem. They still continue to meet on the 1st Saturday each Month. Outdoors, from the five scheduled meetings they only managed to fly three due to (a) low cloud at Callow Bank and (b) winds of up to 40 mph. They look forward to better weather next season.

8.0 Thermal Secretary's Report

This post is vacant

9.0 Slope Secretary's Report

It was reported that we proposed to run three Slope Scale events. The first was cancelled due to poor conditions. The second was a warm sunny day with a light westerly wind and good thermal lift to be found. The third started off with very light winds but improved through the day. The response to the BMFA - A certificate sessions has been poor this year but things are still in place for members to take this test at an agreed time with John Penton.

10.0 Election of Officers

The existing committee was put forward for the membership to vote en-block for an unchanged committee except for loss of the Event's Secretary and the Thermal Secretary post that is vacant. It was proposed by Barry Barker, seconded by Mike Battisson, the vote showed all in favour.

11.0 Subscriptions

It was proposed by the committee that the club's fee structure should be changed so that there is no differentiation between retired and non-retired people, and that only juniors should be entitled to a discount. After a very short debate it was passed 24 for, 2 against and so it was adopted.

Motion 1: The club's fee structure should be changed so that there is no differentiation between retired and non-retired people, and that only juniors should be entitled to a discount.

SSA Fees 2007	Motion 1 was carried
Senior:	£30
Retired/Unemployed/Student:	£30
Junior:	£14

12.0 Any Other Business

Colin Troise put forward a proposal regarding Children and Vulnerable Adults that was well received as an excellent amendment to the club rules and he received a vote of thanks from the meeting for his efforts.

Motion 2: Amend rule 27 (Chairman); add after rule 26, the rules 26-1 and 26-2:

26-1 Any adult club member who interacts with a club member who is a child or a vulnerable adult shall do so only with the written permission of, or in the presence of, that person's parent or guardian. If such permission or presence is not available, then at least one other adult member of the SSA shall be present.

26-2 Club members are reminded of their duty under the law if they see a club member who is either a child or a vulnerable adult suffering abuse. The club recommends, but does not insist, that Club Instructors and Examiners are registered under the Criminal Records Bureau scheme.

27 CHAIRMAN (and PRO), *add the following responsibility:*
Undertake Welfare Officer duties pertaining to members who are Children or Vulnerable Adults.

Bernard Henwood spoke of an action group that was trying to get the fence removed at Castle Dyke sports field. The meeting did not pass any comments either way on this issue.

Survey of electric models — Richard and Roger respond

Richard's Models	Motor	Prop	Battery	AUW (g)	ESC
GWS Formosa F3A	Standard 350 Geared	9x7 Slow-Fly	7Cell AAA NiMh	491	T2M 20A
Multiplex Mini-Mag	Permax 400	APC 6x4	7Cell AA NiMh	757	Dymond 20A
Multiplex Twinstar II	Permax 400 x 2	Gunther	7Cell SubC NiCd	1330	Dymond 30A
Multiplex Easystar	Permax 400	Gunther	6Cell AA NiMh	712	Dymond 20A
RCM Pelikan Tukano	AXI 2814/10	APC	8Cell4/5Sub C	1515	CC Phoenix

My latest acquisition is the new Ripmax P51 Mustang 600 EP (my first planned winter build). It is a gorgeous-looking warbird and likely to be similar AUW to the Tukano. I've bought a Mega 22/20/3e inrunner to power it, and plan to use the same APC 9x4.5 prop and the same 8Cell NiMH packs (subject to bench-testing). In the light of my own and Nigel Hawes experience of brushless ESC overheating I plan to follow his example and get an Mtroniks Genesis 40A ESC for it.

Flight characteristics:-

Formosa F3A (low wing R/E/A) Cheap to buy and huge fun – reasonably fast and fully aerobatic including outside loops (bunts) up & down. Short (4 minute) flights on 7cellAAA. Lots of brushless/li-po setups available, and some very flash tricycle upgrades available from USA. (See RCGroups.com website).

Mini-Mag (high wing R/E/A) Attractive model and a lovely flyer. Loops and rolls, easy to transport, brushless upgrade available. Average duration 8-12 minutes. Tough elapor construction.

Twinstar II (high wing twin engine, R/E/A) Looks gorgeous in the air and will happily loop and roll. (Trade height for speed) Controls much more sensitive than Mk1, with tendency to tip-stall if air-speed is allowed to drop too much on landing approach. 8-10 minutes duration.

Easystar (R/E) Everyone should have one. Take anywhere. Multiple loops endlessly, will even barrell-roll with sufficient height-for-speed trade-off. Will soar in thermals or decent wind lift. Copes well with wind, in fact flies better. Unbreakable. I still fly it often, even after 4 years. I've had up to 45 minutes duration – average 20 minutes+

Tukano (low wing R/E/A) Low wing sport performance on AXI brushless with 8Cell NiMh. Fully aerobatic and much faster than anything else I have had. Tricycle undercarriage makes for easy ROGs and landings on short grass.

Duration: estimate about 6-8 mins max on 8cells, but I always allow safety margin to go round circuit again if necessary, so usually head for landing after about 4 mins. Probably 15 mins on decent li-po.

Roger's Models	Motor	Esc	Battery	Prop	AUW
GWS Me109	TowerPro b/l geared inrunner	TowerPro 18A	3 cell lipo – 800 or 1000	9075 Hyperdrive	@375-425g
GWS P51D	ditto	ditto	ditto	ditto	ditto
GWS Spitfire	ditto	ditto	3 cell lipo 1200	ditto	ditto
GWS F4U Corsair	ditto	ditto	3 cell lipo 800 or 1000	ditto	ditto
GWS Zero	ditto	ditto	ditto	ditto	ditto
GWS C47	2X 300H	GWS 480	2 cell 1600 lipo	5043	@ 500g
GWS C130	4 X 150	GWS 480	2 cell 2000 lipo	4045	@ 500g
GWS Pico moth	2500kv outrunner	TP 10A	450-700 2 cell lipo	6030 Hyperdrive	@300-350g
GWS TM400	GWS 2208 outrunner	TP 18A	1000 – 1200 3 cell lipo	9050 Hyperdrive	@450g
GWS BN2	2 x 300H	GWS 480	2000 2 cell lipo	5030	450g
GWS BN2 EDF	2 x EDF50	GWS 300	ditto	n/a	450g
GWS Formosa	TP b/l geared inrunner	TP 18A	1000 3 cell lipo	9075 Hyperdrive	400g
BMI Fokker DVII	BP21 outrunner	ditto	1200 2 cell lipo	9050 Hyperdrive	300g
BMI Curtiss Jenny	BP21 outrunner	ditto	ditto	ditto	300g
FSK Easy Sparrow	GWS 2208 outrunner	ditto	1000 3 cell lipo	9075 Hyperdrive	500g
Freeair SU27	BP21 outrunner	ditto	1500 3 cell lipo	8040 Hyperdrive	250g
Depron F-15	ditto	ditto	1200 3 cell lipo	8060 HD	350-450g
Depron F-18	ditto	ditto	ditto	8060 HD	ditto
Depron SuperBandit	ditto	ditto	ditto	8060 HD	ditto
Depron MiG29	TP b/l geared inrunner	ditto	ditto	9075 HD	ditto

Construction of a slow flyer [THE WASP] Carl Vernals

Fuselage

The fuse is made from 6mm depron with a 6mm x 6mm spruce main spine. The tail-plane from 3mm depron, all control surfaces are hinged with Sellotape. All joints are glued with UHU Por, used as a contact adhesive, apart from fixing the motor where epoxy should be used. Servo pushrods are 3mm carbon rod with bent wire links.

Wing

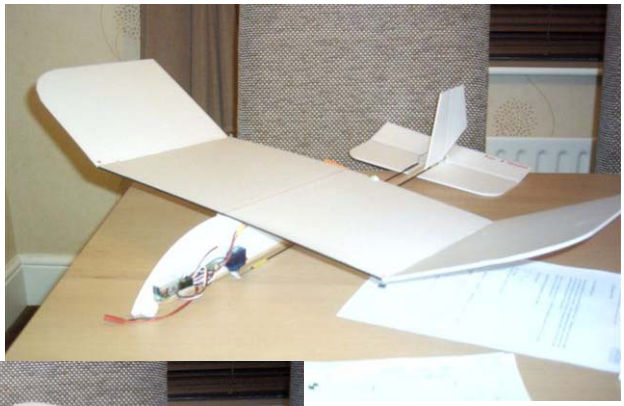
Cut from 3mm depron [noting the grain of the depron-it's stiffer one way more than the other, just like timber]. A 2mm carbon rod is stuck to the LE for strength with UHU POR, but the outer wing panels are butt jointed with epoxy. The final wing to fuselage joint is stuck with epoxy.

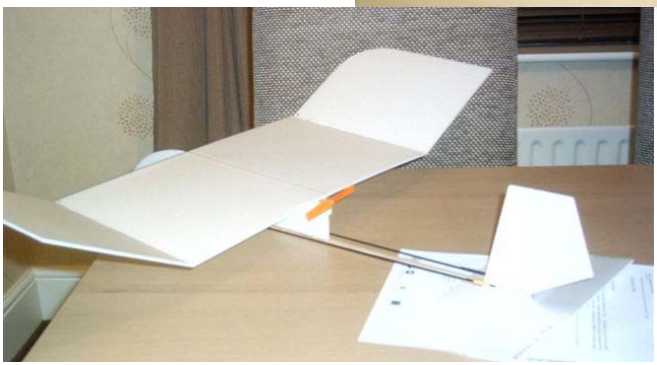
Final points

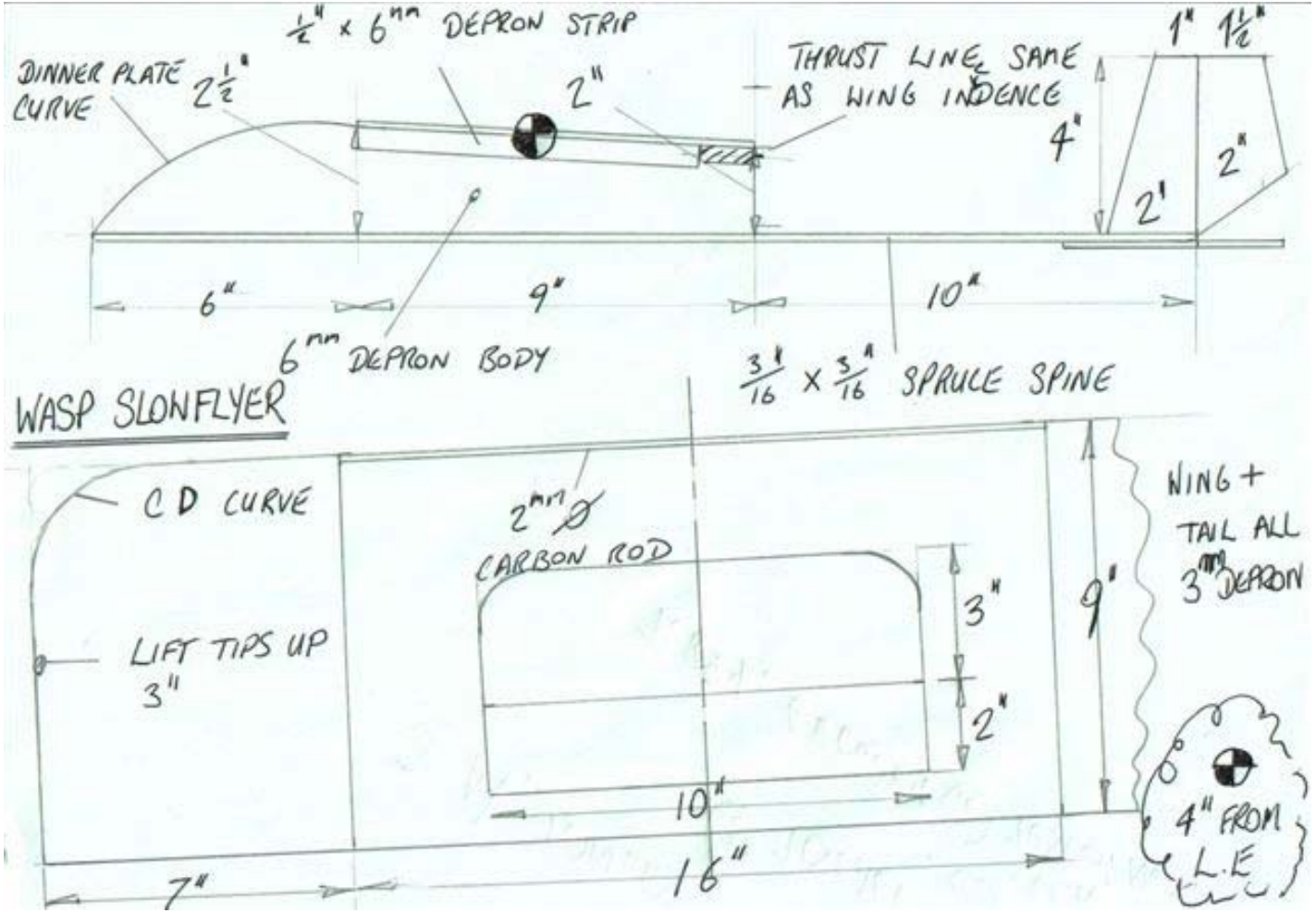
Motor, GWS CN 12 RXC [from Hillcott Electronics], Speed controller-GWS ICS 50 or similar, servos - any 5g will do, receiver - again any will do but obviously light [GWS Pico used on original] Power-340 mAh 7.4v Li-poly battery [All Electric.co.uk cheapest]

Flying

In a word easy! It would make a good first indoor trainer/slow fly model. Quick to build [2-3 hrs no trouble], cheap - four plus models out of one sheet of depron: [£2.50!!!] The only down side of this model is that it's very noisy [hence the name], which tends to wake up some of the older slow-flyers from their Sunday morning slumber!






½" x 6mm DEPRON STRIP
DINNER PLATE CURVE
2½"
2"
THRUST LINE SAME AS WING INDENCE
1"
1½"
4"
2"
2"
6"
9"
10"
6mm DEPRON BODY
3/16" x 3/16" SPRUCE SPINE
WASP SLONFLYER
CD CURVE
LIFT TIPS UP 3"
2mm ⌀ CARBON ROD
3"
2"
10"
9"
WING + TAIL ALL 3mm DEPRON
4" FROM L.E
7"
16"

Modifying a Robotbird CD Rom Motor

Mike Bowles

As supplied the power leads from the coil dangle freely between the back mounting plate and the rotating magnet casing — these are easily caught, putting tension on the fine wires that attach to the coil.

The Robotbirds' CD Rom motor used in several club members' Smart Dart has given rise to a problem with broken wires. Here's one solution that was used on Brian Johnson's model after he experienced some strange behaviour as he attempted to master the art of flying this very manoeuvrable model at the Redmires playing fields.

The fault

Question: Can a brushless three phase motor run on two phases? The answer is yes but not reliably. After connecting the battery and moving the throttle stick as directed in the instructions the speed controller would go through its sequence of squeaks or burps as expected. Moving the stick forward caused the motor to spring into life at what seemed like full power. ROG or hand launch the model and it would take to the air fine. Once in the air it is usual to throttle back and let the model settle into steady flight, still fine.

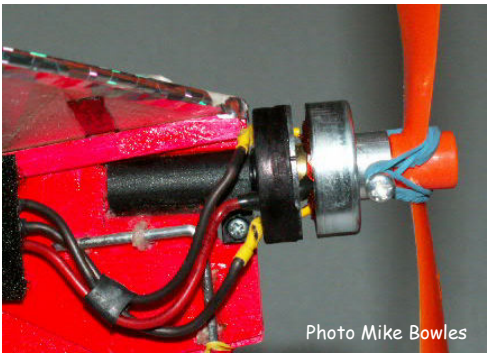
Now let's "bank and yank" at the turn, as we would in the indoor hall. Stick forward, to get a bit more power, as we do so—What the…. ? The motor cut out and the model plummeted to the ground.

The usual inquest began, battery OK, speed controller functioning OK, connections OK, all checked out fine. Then we repeated the process on the bench—sometimes the same thing happened; sometimes it didn't.

A magnifying glass was needed to examine more closely the fine wires to the motor coils. Ah Hah! it was found that one wire, of one of the three pairs of wires, that emerge from the coils had broken. Rather than running on nine coils the motor was running on only six.

The Solution

Not a difficult problem to fix with a suitable soldering iron but how could we help prevent this happening again? The solution was relatively easy: drill the motor mounting plate with three suitably spaced $^1/_8$ in holes and feed the power leads through them. Bind them together with the original shrink wrap and you have a much better support for the three wires.



SSA Club Nights Diary 2007

Meetings held at the usual venue:-
Bents Green Methodist Church
8-00 pm On 1st + 3rd Thursdays.

2007	**WANTED A NEW EVENTS SECRETARY**
Jan 4	Subs Night again.
Jan 18	
Feb 1	
Feb 15	
March 1	
March 15	Final meeting -The SSA model show, please bring along your winter building masterpieces for all of us to admire and praise (Prizes for the best in class).

THE PROGRAM FOR THE REST OF THE SEASON WILL BE FILLED IN AS DETAILS ARE RECEIVED. SUGGESTIONS FOR EVENTS AND SPEAKERS ARE ALWAYS WELCOME

SSA Indoor Meetings 2007

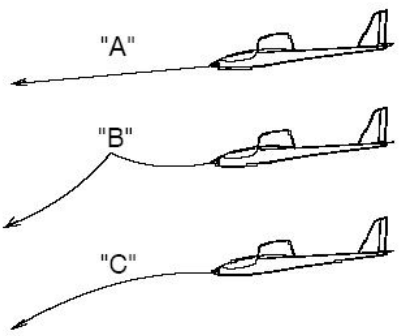
Dronfield Sports Hall Sundays 09-00 to 11-00 hours

January	7th	21st	
February	4th	18th	
March	4th	18th	
April	1st	15th	29th

As agreed at the AGM no charge will be made for sessions up the end of March. The Club will have for 06/07 session an INDOOR CLUB TRAINER managed by John Penton. This comes with a buddy box system so come and have a try. It is good fun and more to the point it is WARM.

(Continued from page 17)

First flight tests and initial trimming



- With the motor switched off, give the model a strong push forward into the wind, with the wings level and the nose slightly down.
- Use the controls if necessary to achieve a straight, flat glide. Adjust the trims and try again. Flight path „A" is what you are aiming for.
- If the model glides as shown in flight path „B" add nose ballast,
- If as shown in flight path „C" add tail ballast, until the model glides correctly.
- You are now ready for the model's first powered flight.

Phil Dyke was grateful that Andy Shaw had brought his old fishing rod with him.

How many modellers does it take to bring down a model from a ledge high in the sports hall? Answers on a post card to the editor of Gladys!

Photos Mike Bowles