ABERDEEN AND DISTRICT SOARERS

Newsletter No.19

7 Ashgrove Road West

Aberdeen

July 1984

Once again your regular (?) Newsletter is here. Just look at it- do you notice anything different? Well, it's all done by computer! Both R.C.M.& E. and Radio Modeller have published micro computer programs for various options. I cannot promise the refinement of offering programs to assist your design, building and flying of models, but at least the word processing ability of the BBC Micro saves me endless rubbing out and gallons of liquid paper correcting my usual typing errors. No doubt the errors will still be there but at least I'll be able to blame the computer.

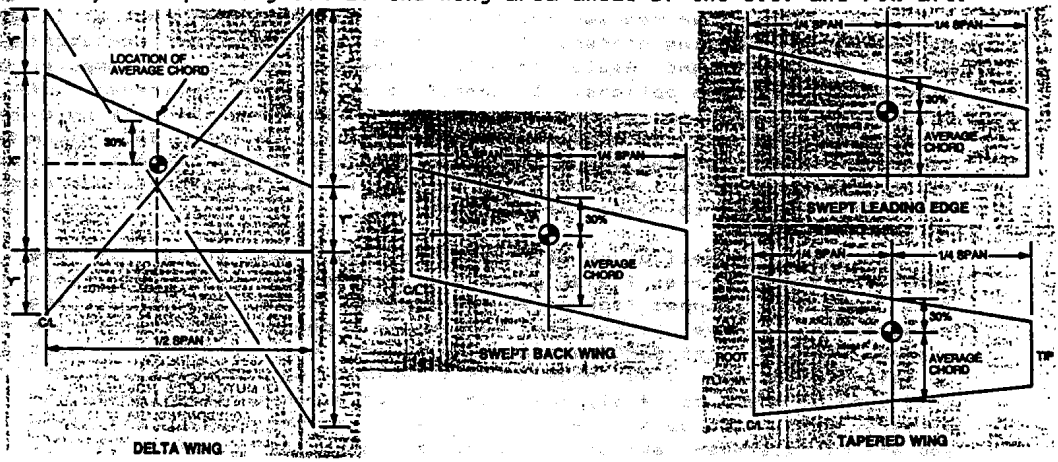
The season is well under way. Most of us have tried out the regular sites - flat field, slope lift and coastal lift. Once again this year the competition side of things seems to be lacking enthusiasm. I have to confess that the only competition that I have entered was the first BARCS postal. My score was terrible - best forgotten. Perhaps like many of us I realy enjoy the fun-fly event. This type of event certainly seems to attract a far greater turnout of members. Don't give up Norrie! One day we'll see the light and join you and perhaps even take part in national competitions. If we believe all we read in the modelling press, we will need to prepare ourselves for hosting Radioglide in 1985!

I had hoped to upstage Chas Gardiner and publish explicit details of the Anglo Scottish slope challenge match in Crete. All I can report is that whilst the event turned out to be a social occasion, flying was out with the suitcase models to hand. A draw was declared!

Graham Donaldson

BALANCING YOUR MODEL

How do you find the balance point of your model? This is a question that we all ask from time to time and in particular when we build something other than a good old plain rectangular wing planform. First, consider that what you are really determining is how much of the total wing area is ahead of the balance point, and how much is aft of the balance point. Experience has taught us that the range of the balance point is from 25% to 40% of the wing area ahead of this point.40% is too dangerous for most fliers. If you're flying in fun fly events with lots of spins, etc., then this aft position will help, but for the normal sport flier (who's he?), a too far aft C.G. is an accident looking for a place to happen, because it is so much easier to stall a model with the aft C.G. Lots of fliers like to C.G. at around 25%. Frankly 25% to 30% even up to 33%, depending on several factors such as airfoil, skill level, etc. is O.K. How do you figure out where this should be on a tapered, sweptback or a delta wing? Take a look at the drawings. They should be easy to follow, and should let you plug in your own dimensions to find out just where the C.G. should be on your latest creation. Remember, when you say balance at 30%, you're putting 30% of the wing area ahead of the C.G. and 70% aft.



This brings up another question. When you are test flying your latest model, do you change the C.G. in accordance with the way the model flies? If you don't, then you should. How many of you actually check the C.G. on the finished model before you go out to fly? If you don't, you may just have a tiger by the tail when that aircraft takes to the air. If after making flight tests, you find that your aircraft was flying straight and level with a bit of up elevator cranked in you need to add a bit of weight to the tail end as it is possibly a little nose heavy. Conversely, if you have to maintain level flight with a bit of down elevator, add a bit of weight to the nose. Stick-on wights can be used in the field or on the hill to make quick changes to the C.G. position. Minor surgery once you are home can insert the weights within the fuselage.

THE COMPETITIVE WING

The essence of any good flying aircraft is the wing. When a wing is built straight and true,the potential of your finished model is greatly enhanced. This is true for ALL models whether they be trainers, kippers or scale jobs. There is NO SUBSTITUTE for fine craftsmanship to achieve a first class product. Many wings these days are constructed from foam and either obechi or balsa veneer. The following discussion will deal with foam wing construction,but the method of quality control checks will apply to any form of construction.

The wing cores of most kits are, for the most part accurately cut. If you cut your own cores, the problem is to fix the wing skins accurately. Two methods are used - one with contact glue the other with epoxy.

One should not attempt to build a wing without a flat solid surface (this applies to ALL construction!).

After the wing skins are applied to the cores, place them in the cores cradles and weight them down with for example a pile of books. Remove the cores after they have dried overnight. Trim the wing sheeting leading and trailing edges. Then glue on the l.e. using masking tape or similar to hold it against the foam. Once again place the core into the cradle and weight it down. Wait until the glue is dry,then roughly shape the l.e. Follow the same procedure with the trailing edge.

Several methods are available to check the accuracy of your craftsmanship of the wing panels. These are :-

1. Eyeball method - slowly rotate the wing panel with a simple light source in front of you. Imperfections will show up by watching the shadow that is cast.

2. Also sight the leading and trailing edges to look for bows or twists.

3. Place two incidence meters, or short straight edges, at various positions along the wing parallel to the chord. Now sight the length of the wing panel to see if the bars are parallel.

4. Re-measure the distances tip to root of each wing panel - they should be equal.

The two wing panels must be accurately aligned prior to joining. The following sequence of operation should ensure complete accuracy:-

1. Use a slow drying epoxy glue.

2. Sand the root faces to an accurate and correct angle using a long sanding block.

3. Use masking tape to join the lower surface of the wing joint area. Then apply epoxy to the joint. Lay out the wing on the board propping up one panel to obtain the correct dihedral. Waxpaper placed under the wing can reduce the risk of the excess glue sticking the wing to the board.

4. Place once again the incidence meter bars 1/3 of the way from each wing tip. Sight across the bars and ensure that they are parallel. Secure the wing and leave to dry.

The following methods are available to correct a warp in the wing:-

1. If early in the construction of each wing panel, a bow or warp is found,try saturating the wood with household ammonia. Then place the wing back in the wing core cradle and weight. Now leave for 24/48 hours until dry.

2. Cut a diagonal slit in the bottom of the wing panel, twist in the opposite direction of the warp and fill the slit with epoxy.

3. If contact cement has been used, another solution is possible. Use a heat gun. Heat both sides of the wing panel and twist in the opposite direction of the warp and then let the wing cool. This method can be used on a finished wing with care (also with a built up wing).

The trimming of an aircraft begins with accurate construction.Accurate construction depends on the detection and correction of errors that occur during the building process (they occur with me anyway!). When quality checks are utilized, there should be no surprises when your latest creation takes to the air.

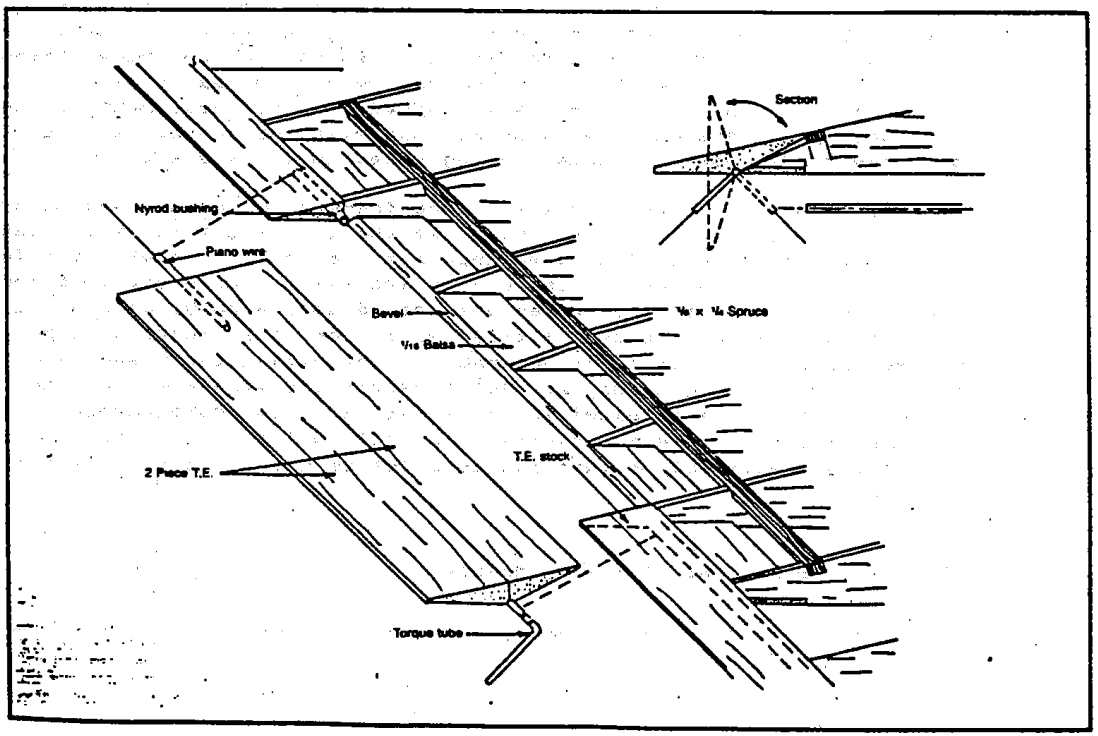
SAILPLANE SAFETY

Sailplanes ARE safe. They are light,slow flying (?) and free of heavy engines and slicing propellers - but not always. Still there is danger and unexpected hazards abound in our sport. Never underestimate the the ability of a winch to do damage to mere flesh and blood. Power winches are getting more and more powerful. Spectators and other flyers out in the field areall fair game for a careless wincher. There is no doubt that someone could be hurt in a couple of seconds of inattention, by a foot on the switch at the wrong time. The myth of the harmlessness of gliders was put in a new perspective when I saw photos of a big hole in the bed of a pickup truck. It was made by a rather ordinary thermal type glider which lost its guidance system. Keep your eyes open and stay alert. They are safe but NOT harmless.

TRAILING EDGE AIRBRAKES

We assume that all readers can launch their glider, find a decent thermal and finally land in one piece. One of the next functions you may wish to add is some sort of airbrake. Airbrakes take all forms:- flaps, spoilers, drag chutes pop-up canopies, fuselage brakes etc. They range from elaborate custom devises to rather simple yet effective ones. Here we will discuss the system used by Bob Cook and Ed Sokolowski of Denver,New Jersey. They have used this system with great success on their 'Paragon' sailplanes. The homemade version described is inexpensive and effective.

Before we begin we should thank Bob and Ed for allowing us to share their system with other modellers. There are a few things that should be noted regarding the construction of these, in fact all airbrakes. Make sure that all the glue joints are strong and secure. Since the continuity of the trailing edge is broken there could well be a concentration of bending force there. A strong main spar is also recommended.Use clear plastic tape to form a seal between the wing and the blade of the airbrake.The torque tube control rod must be bent back at 45 degrees as shown in the drawing. It is also advisable to use long servo arms in order to get full control throw. Bob relates that in one of the 'Paragons' he used one servo locked mechanically to each torque tube: in the other he used two servos wired into the same receiver channel. The two servo linkage is much simpler and less of a strain on the servos themselves. More importantly, easy adjustment can be made of each brake separatetly. The brakes are located fairly close to the centre of the wing to avoid any adverse yaw problems.There was no turbulance effect on the rudder or the elevator with these brakes.



Bob and Ed were pleasantly surprised with the flight characteristics of these airbrakes. The best feature of the trailing edge brakes is that there is no sudden pitch down of the nose, even if the brakes are snapped full on. They found that full application of the brakes will cause the plane to smoothly assume a very slightly nose down attitude, which automatically maintains (or slightly increases) the airspeed and eliminates any tendency to stall. It is not necessary to use any elevator correction except when the glider is within a foot or two of the ground. Another nice feature is that the brakes may be closed at any time without the fear of stalling as with comventional landing flaps. Intentional stalls with fully open air brakes were found to be the same as with the brakes closed with the exception that the brakes should be closed as the nose drops through to ensure fast recovery with minimum loss of height.

The 'flap brake' system really comes into its own for precision landings since a very steep approach is possible. The best technique is to make the final approach quite high and a little fast. Use about half air brake extension to start with and then add or subtract as necessary to control the descent. A smooth round out is achieved with a little back stick just above the ground. If this is not done, a bit of a hard landing will result (aren't they all?). As soon as the nose is pulled up, the drag on the brakes will quickly slow the plane and cause it to settle gently on the ground and stop immediately.

These drag brakes offer excellent dethermalising control for precision duration events. We have used two techniques with very good results. The first is to apply full brakes whilst making steep turns. The plane really comes down while good control is maintained with little or no increase in airspeed. The second is a bit more effective and a lot more dramatic as well as being a lot more stressful for the airframe. This method consists of applying full airbrakes and pointing the nose down at the ground. The brakes will act to retard the dive speed, but the glider will still be flying quite a bit faster than usual so caution should be used. The dive should not be made steeper than necessary. An angle of 45 degrees seems best as it will yield a very rapid descent without excessive speed. The pull-out must be made as smoothly and gradually as possible and with the brakes left open to slow the glider down to normal flying speed as it levels out.

The negative characteristics were found to be of no consequence, but they are still worth mentioning. If the brakes are fully activated suddenly, the plane will shudder once but then smooth right out.This is undoubtedly caused by the sudden increase in drag and turbulence and can be avoided if the brakes are opened more slowly. We did notice that it is necessary to be a little heavier on the rudder with the brakes deployed but there is no problem controlling the plane, even in sharp turns. In conclusion, we must consider the airbrake experiment a success. It offers an excellent alternative to the more commonly used systems since it offers powerful control while still maintaining gentle and predictable flight characteristics without significant side effects.

(Thanks to Bob Crane of Flying Models)

LATEST LIST OF MEMBERS

01	GRAHAM PHILIP	92 64209
02	JOHN MCCONVILLE	724498 824179
03	JIM MCCURRAN	681339
04	GEORGE ANDERSON	323853
05	NORRIE KERR	324722
06	RAJOO LOGANATHAN	770422
07	JOHN BARNES	932 2368
08	BILL MAIN	732340
09	DOUGLAS ALLAN	022 479 500
10	GEORGE WHELAN	636005
11	PETER RINK BRAKER	01049 421 388759
12	TEUN VAN WAART	023 244815
13	ALAN STEWART	722663
14	GRAHAM DONALDSON	46961
15	RICHARD DONALDSON	46961
16	GERRY MITCHELL	324828
17	JOHN BARNETSON	39835
18	BOB MCCLUSKIE	40413
19	JIM ANDERSON	641110
20	MIKE PIRIE	323640
21	SANDY TOUGH	
22	GORDON DIACK	033 02 2524
23	JIM MASSON	896794
24	NEIL MASSON	896794
25	BRIAN ORD	698449
26	JIM LOVE	
27	JOHN MEUDELL	733413

Just for your information and to prove that holding records in computer can be useful, copies of this and every newsletter are sent to th following club secretaries and magazine correspondents. The compute separates club members from the rest.

40	GEORGE STRINGWELL	
41	TOM TAYLOR	
42	ALEX KENNEDY	
43	M.A.P. LTD	
44	DOUGLAS SMITH	
45	KEN WHYTE	
46	RIK LORENTE	
47	MRS W WATSON	
48	CHAS GARDINER	
49	LES BRADLEY	08864 452

LATE NEWS

ANGLO SCOTTISH SLOPE CHALLENGE

The Unexpurgated Version - Crete 1984

On first arriving in Crete it is difficult to imagine a better site for slope soaring, all you see are hills, mountains and ridges. Nearly all have a road to them. Added to this, the scenery is beautiful, very green and verdant, not the rocky arid conditions I had expected.

During the first few days the Scirrocco was blowing off and on and with a HOT 25 m.p.h. wind conditions were ideal but unfortunately family commitments prevented any flying being done (Cretip No 1. If you take a model don't take the family because a) it costs you less and b) you can spent all your time flying).

After successfully locating Chas Gardiner's hideaway in Chania, Sunday was arranged as the date for the first set of trials, yes you guessed it, Sunday arrived flat calm. After a trip to Maleme to see the local model club site we went to Kastilla at the top end of the island and after a light (??) lunch and 2/3 hours sunbathing and swimmimng, Chas and I climbed aboard his motorbike and set off to look for a suitable slope. A hill 5 miles away looked good -almost a perfect cone some 750ft. high with a cornfield on top and green grassy sides.We almost raced up the hill but what looked like grass from below turned out to be a type of soft gorse which was not very kind to bare legs (Cretip No 2. If slopesoaring, cord or denim jeans are a must for protection). On arrival at the top the slight afternoon breeze had dropped but we heaved the models off anyway.Circuits were just possible and Chas proved the feasibility of using the ever present olive trees as a good alternative landing site.

The next set of tests were then set for the following Wednesday at a delightful village called Georgeoupolis but again the lack of wind led to much discussion over a few bottles of the local Retsina (30p a bottle). This led to lunch and more Retsina which in turn led to a flat stone skimming competition and after a few more beers the Anglo Scottish Slope Challenge was declared a draw.

If this whetted your appetite for taking models to Crete etc. I would recommend something simple like an Impala or Sorcerer built with a two piece wing and an all moving tail. This would then pack away quite small. Provision could be made for ballast, rudder and elevator would provide sufficient control,but ailerons would give better performance. You could fly either slope or thermal on some of the flat areas around. A design is underway for a model to meet these requirements,so watch this newsletter for further developments.

p.s. The Anglo Scottish Challenge is still open and may be attempted in September in Crete or possibly Aberdeen if the maestro can get up here.It is a difficult choice, Aberdeen in winter or Crete in the autumn.

Norrie Kerr