THE AUSTRALIAN HOMEBUILT SAILPLANE ASSOCIATION

Volume 2 Issue 8 **APRIL 1998**

G'day People !

Once again I am here in front of the computer trying to address a few words to all of you, with sadness, I have to inform you of the Final Glide of Ken R. Davies , he will be missed by all the gliding fraternities of Australia. What a gentle man he was. Even he did not know he was a part of the Australian Gliding History - I knew him...!

Read the Obituary written by his best friend Chas. G. Lambeth somewhere in our journal.

It's already been 2 years since I took on the task of Editor.....it seems like it was only yesterday. **This is your issue number 8 and just to remind you all subscriptions are due for renewal**. For subscribers outside Australia, please note that due to the excessive bank charges in transactions on foreign currency and postage charges we can not accept personal cheques.

Only International Money Orders and Bank Drafts in Australian Dollars will be accepted. The subscription is : for Australia AU$ 15.00 and Overseas AU$ 20.00.

I can not leave out not mentioning the superb support of all members of AHSA to this humble escribano and my gratitude goes to all of them specially to the Erudite Co-Editor Peter Raphael and Gary Sunderland our technical editor .- From the bottom of my heart once again..! Thanks fellows.!

In this issue you will find a report from Bruce Carmichael on The Spirit and Falcon Safety Inquiry Meeting. This is a very serious matter leading to find answers concerning structural problems on the Advanced Soaring Concepts Inc. Spirit and Falcon Kits sailplanes, USA. So far we know of 2 currently under construction here in Australia. We would like to hear from them and we'd like to keep them alive.

Please be advised that I am not returning any messages left on my answering machine (please send me a self addressed stamped envelope) if you would like a reply. These days besides working on this newsletter and building my glider (Woodstock) I enjoy a little rest & relaxation, so if you really need to speak with me please try and ring at a reasonable time, say maybe during office hours! And do not forget... it is voluntary work for everybody involved in the production of this journal. AHSA is a non profit association and the subscription is just to cover the printing cost and postage.

That's all for now folks !

James Garay

Inside This Issue

MAIL BOX

Dear Ed.

Firstly, many thanks for putting together a great journal.
I wrote to Jim Maupin LTD recently asking for information on the "WINDROSE " and received a reply in the form of some photos and some basic information.
I showed this to the CFI at Byron Power Gliding Club where I am learning to stretch my wings(His name is Ian Mc Phee).
He tells me he knows Gary Sunderland, He expressed interest and suggested I get in touch with Jonathan Shand at the Gliding Federation of Australia. Apparently, it used to be possible to get a loan of plans, to assist if you wanted to go ahead and build or not.
Unfortunately Jonathan informed me, that due to a few naughty and irresponsible people in the past that did not return the plans, this service has been discontinued. He did however recommend that I get in touch with you. Which was my next step anyway.
So here I am writing to you hoping you can steer me in the right direction to gather the necessary information on the 15 M ! WINDROSE " to make a judgment " **To Build or not to Build** "

Your faithfully, Rod Dash.

Ed,Note, All the necessary information has already been sent.

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Dear Ed.

Thank you for your letter and the invitation to join the Australian Homebuilt Sailplane Association. Please find enclosed my subscription cheque. Yours sincerely. Graham C. Betts.

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Dear Ed.
Ref. - Letter from G. Betts (see page 13)

I was glad to read that Graham Betts survived his first " frights " and eventually sorted out his Carbon Dragon.

It is always a good idea to do the rigging checks, weight and balance and instruments calibration **before** doing the test flights rather than after!.

Documented quality control measures, such us first-of type inspections, and GFA form 2 checks, may seem like " bureaucratic ribbon to some folks, but to me they are just plain common sense.

Let be more careful up there!... Members are more valuable, we do not want to lose them!!. Gary Sunderland.

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Dear Ed.
I though you would be interested in the enclosed photocopy which a friend sent from the UK. Seems to bear a very strong resemblance to my " Blue Woodsy ", How can I get 29: 1 I wonder? I have written away for details and will forward on to you when I receive, them .Thanks for a very professionally produced magazine. John Stockwell, Hong Kong, China

TECHNICALITIES

PERSPEX

I.C.I. Technical Information, Courtesy J. Ashford,

Perspex is the registered trade name for Polymethyl Methacrylate sheets and rods manufactured by I.C.I. {Imperial Chemical Industries Limited }.

CIRCULAR SAWS.

Circular saw should be hollow-ground or have a slight 'set' to assist clearing the swarf to prevent binding and to avoid overheating. The blade must run true, and 'set ' should be side ground on the machine after setting and sharpening, to ensure that all teeth are in proper alignment. A method of sharpening is illustrated in Fig.1.

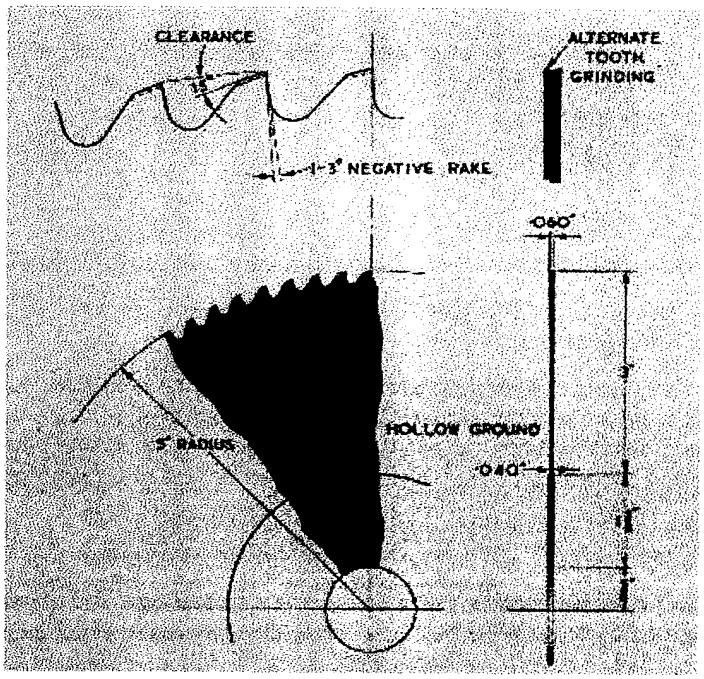

Fig.1. Method of grinding a 10 in, diameter hollow ground saw of high speed steel for cutting "Perspex" acrylic sheet.

For general work, saw blades made from high speed steel and machine sharpened are recommended. The pitch of the saw will vary with thickness of sheet to be cut, varying from 8 to 10 teeth per inch {2.5 cm) for 1/8 in. (3 mm,) Perspex, up to 3 to 5 teeth per inch (2.5 cm,) for ½ in. (12.7 mm) thick Perspex or over. The peripheral speed should be of the order of 10,000ft per minute (3,000 m. per minute) or over (a 10 in. (25 cm) diameter blade should run approximately 4,000 r.p.m.) Adequate power must be available to ensure that there is no reduction of speed during cutting. For example, with a 10 in, (25 cm) diameter saw blade, a motor of at least 3 H.P. should be used.
The feed should be adjusted so that chipping does not occur on the edge (the faster the feed the greater the degree of chipping).
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The height of the saw should be adjusted to be just greater than the thickness of sheet to be cut. The use of coolants is not necessary, but it is a great advantage to blow compressed air at the point of sawing, to cool the blade, to clear the swarf and to reduce gumming or binding.
Some colours made by pigmentation will cause the saw to wear and become blunt more rapidly than does clear material, and with these unusual colours tipped saws are recommended.

To be continued.

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Flutter
By Mike Burns.

Flutter is a common denominator. All aircraft can suffer a flutter incident, ranging from benign wobble to a catastrophic buzz and structure failure. This information brings together many aspects of flutter, its causes and its preventions. Hopefully this contributes to better understanding, lessening of the occurrence and when it does occur the pilot involved may be better equipped to cope with it.

As a designer or homebuilder it is important to be continually aware of the criteria developed in the following material and the need to apply it to any project you are working on, not only homebuild design or construction but also maintenance and repair.

FLUTTER RECOGNITION.

Those pilots who have not experienced flutter in flight, are prone to the attitude "it won't happen to me". The other frequent comment is "my aircraft doesn't flutter". The answer to both is "not yet" !

One major misconception is that flutter will ONLY occur at HIGH SPEED. Wrong!! Flutter can occur at any speed ranging from below the stall speed to above your placared Vne. The speed totally depending on the " trigger " or reason for the flutter to start.

If you fall into the above categories then it is suggested you go and find a pilot who has had the flutter experience, the conversation should change your mind. The author has experienced one good dose of elevator/tailplane flutter in a Cessna 185. That lives indelibly in my mind and always will. What few of us realize is, that flutter in its many forms occurs quite commonly, ranging from quite benign low frequency oscillation of control surfaces to a catastrophic high frequency buzz with can disintegrate the structure partially or completely.
The one sobering point to remember is that provided the sailplane is built correctly and flown correctly, flutter is **EXTREMELY unlikely.**

FLUTTER MODES.

(1) The simplest forms are:

(a) Trim tab vibration . (b) Rudder oscillation.
© Aileron oscillation. (d) Elevator oscillation.

(2) **The more complex forms:**

Once a control surface starts to get out of control the result are illustrated in Fig (2)

(a) Wing bending driven by aileron oscillation.
(b) Wing twist driven by the aileron.
(c) Fuselage bending driven by elevator oscillation.
(d) Fuselage bending and twisting driven by rudder oscillation.

(3) **The most complex forms** :

Take any of the above and combine them. For example a mild aileron oscillation can develop into a wing bending mode which creates a dynamic effect in the fin and rudder which start to harmonize and cause fuselage bending or twisting. In fact **ONCE** a flutter source is triggered the result can be spread throughout the aircraft.

(4) **More.**

Flutter may also start without any input from a control surface. This may be in the form of wing bending or twisting,, vertical fin bending or twisting, horizontal tailplane bending or twisting.

(5) **Combinations.**

In reality each flutter incident is more complex than the simple cases above. For instance case 2d may actually start from heavy landing with unnoticed damage to the vertical fin reducing its torsional stiffness. That might combine with a rudder that is not correctly balanced, those two things in combination with the right airspeed and perhaps some rough air and flutter starts. Benign or catastrophic will depend on how bad each of the basic defects are and pilot reaction.

FLUTTER UNDERSTANDING.

Have a good look at the diagrams in Fig. 3 they illustrate one typical and possible the most common flutter sequence in sailplanes, so lets go through it stage by stage.

a) This illustrates an airfoil with flap, let call it an elevator and tailplane. The elevator is not mass balanced, having its centre of gravity a fair way back from the elevator hinges.
b) A gust disturbs the tailplane, the tailplane reacts by moving down, as it does, the elevator is " left behind " due to its natural inertia. This makes the tailplane think it has "up elevator" that up elevator creates a down force which bends the tailplane down as far as it will go.
c) The up elevator causes the tailplane to twist nose up, the down movement stops, the recoil action of the bent structure, plus air loads driving the tailplane in the opposite direction.
d) As the tailplane reverses direction the elevator, again gets left behind, making the tailkplane think it has down elevator. The down elevator creates forces driving the tailplane up until it reaches the limit of its structural resistance, stops and starts to come down again, the elevator again twisting the tailplane,
e) This "up", "down" cycle will keep bending and twisting the tailplane as far as it will go. If the air loads and the bending resistance balance each other then the cycle will continue at
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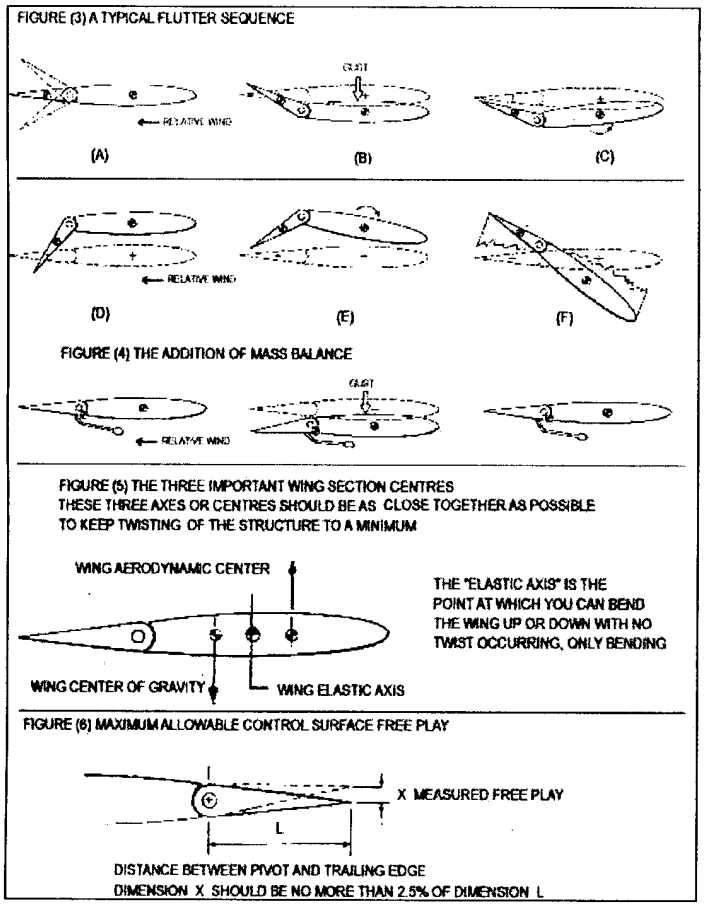
the same cycles per minute until something stops it. If however the air loads are stronger than the bending resistance, each time the tailplane cycles it will bend and the twist further resulting finally in the failure of the tailplane structure.



OBSERVATIONS.

If the elevator was balanced it wouldn't " lag behind " preventing it from generating the force to drive the tailplane up and down and it wouldn't cause the tailplane to twist Fig. 4 illustrates the way a mass balance stabilises the elevator.

The stronger the tailplane is in torsion the less effect the elevator would have.

If, say, loose elevator cables were involved, the action would be more violent because the elevator would lag behind further away from the neutral position causing higher twisting and bending loads.

Imagine the tailplane parked in the open, the elevator hangs down, and rain fills the trailing edge with water. That could change the balance so much that flutter would be likely at much lower speed.

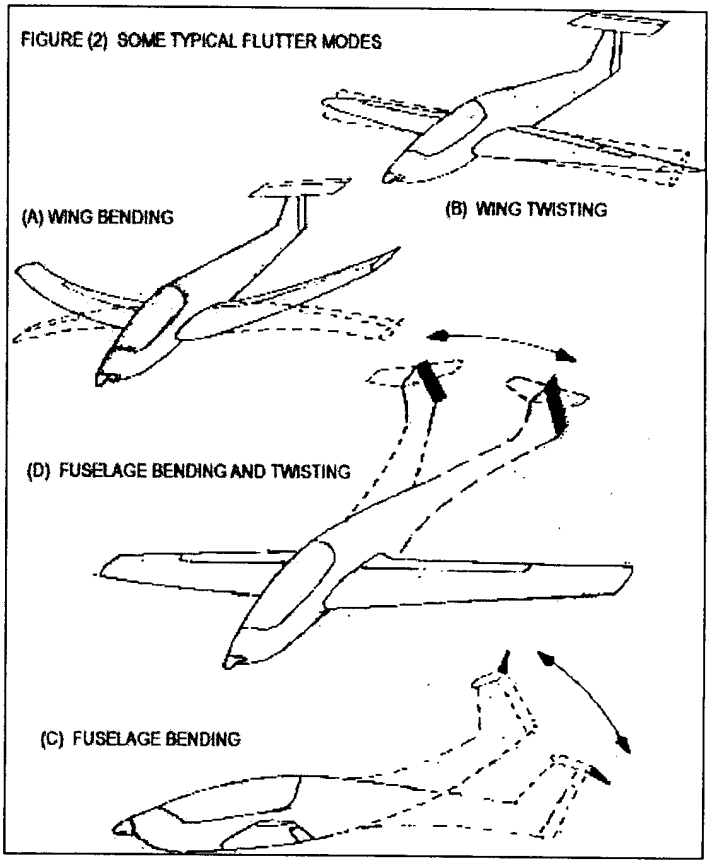
Where a control surface is not mass balanced its ability to flutter is controlled by the stiffness/resistance of cables or pushrod control system.

MASS BALANCED CONTROLS

Figure 4 shows the same tailplane with mass balance on the elevator, which now does not lag behind when disturbed by a gust.

One side benefit of control surface mass balance is the improvement in pilot " feel ", the controls appear to the pilot to be " lighter ", certainly smoother and less likely to " drive " the pilot in turbulent conditions. A recent exercise in mass balancing an IS 18b2 aileron system showed this very clearly.

To be continued.



WHAT'S NEW!

"SPIRIT" AND "FALCON" SAFETY INQUIRY MEETING.

By Bruce Carmichael. President SHA.

Ed's Note: This is an excerpt from Sailplane Builder. Official Publication of Sailplane Home Builders Association. A Division of the Soaring Society of America.

A meeting was held at the Western Workshop to attempt to find answers concerning the structural problems and state of fixes to the problem on the Advanced Soaring Concepts Inc. Spirit and Falcon Kit Sailplanes. About 40 members attended. Rick Seargeant and Tom Riley were the two kit purchasers and builders present and they each had extensive on ground load test

experience. An e-mail was sent to ASC President, Tor Jensen informing him of the meeting and inviting him to attend.
He did not attend....(*Ed's Note.* Why .. Not.??)
Rick Seargeant said the kit were first advertised about October 92. He bought his in December 93. He spent 400 hours of the 2500 hours he spent constructing the kit repairing factory furnished parts. While performing a static load test he encountered a failure at 3.5 g at the point where one spar stub engages the other root rib. The 3 plies of glass in that area were insufficient. The factory suggested increasing the plies to 15.
Tom Riley applied the 15 plies to his kit but worried about secondary bond failure. In his on ground load test the spar cap failed at 5 g in compression. He gave the failed wing to Tor who said it looked like the sheer web failed first. It took 3 to 4 months for Tor to publish a fix. Tor gave Tom new skins thickened in the inboard region. Tom added ¼ inch thick carbon caps external to contour which will have to be faired in. This wing withstood 6,9 g without failure in a straight bending test. The previous wing test was combined bending and torsion. The 6.9 g was for a 550 pounds weight of all but the wing. In the discussion it was mentioned that a non-fatal in flight failure had occurred somewhere in the country. No on ground proof load tests have been reported to date by the factory either before or after the fix, to the knowledge of the attendees.
The kits were still advertised in Soaring in May and September 1997. When contacted, Soaring said they would continue to publish ads if submitted.
Many questions remain to be answered. Corrected fixed beyond the 15 plies have been released by the factory. Have any ground proof load test been run other than those reported here? How many kits have been purchased? How many kits have been completed? Are any of these flying and what is the nature of the problem fix on them? There are 4 Falcons and 7 Spirits listed in the FAA registry.
This complete report is believed justified in an effort to save lives. Readers please send any additional information to the editor of Sailplane Builders or "The Australian Homebuilt Sailplane Association"

The Collected Works of Stan Hall

By Gary Sunderland.

The Homebuilders " Bible ", otherwise known as the " Homebuilders Hall " is now printed and available from the USA. These are the collected works of Stan Hall, the guru of the amateur built glider movement in the USA, as published originally in Soaring magazine.

Stan Hall was an engineer at Boeing with a lifetime interest in designing, building and promoting Homebuilt sailplanes. Stan designed the " Cherokee " sailplane, which was one of the first gliders designed specifically for amateur constructors.

For many years Stan wrote a monthly column in Soaring magazine, full of clear and understandable technical information and common sense engineering. Although we never met, Stan Hall had a great influence on my life and thinking. I already have most of Stan's articles, carefully cut out of the magazines and kept in my scrap books for reference.

Certainly many of the technical tables and " short- cuts " were invaluable when I designed my own glider and some details were " Borrowed " from Stan Hall's ideas.
For example the double-spar tailplane on " MOBA " is a straight copy of the tail of the " Cherokee ".

For those members whose interest do not include design as such, these writings also have much of great value. For example there are articles on the use of Douglas Fir in Homebuilt sailplane, and features on metal-to-metal adhesive bonding practice and problems.

Stan Hall's writings are available from:

Dan Armstrong.
2100 Angel St.
Tehachapi.
California. 93561. USA.

We have new members to welcome to the association.. They are:
Graham C. Betts.30 Murray Farm Rd, Carlingford. N.S.W 2118.
Jerry A. Walden. 231 West Main St, Chester, CT 06412. USA.
Welcome Aboard! We look forward to a long and mutually satisfactory association.

OBITUARY.

Kenneth Richard Davies.

Ken's recent death after a long illness came as very sorry news to me. I had known him and his family for over 60 years and he was one of those unforgettable characters who, sadly, seems to be so rare these days.

He always had the respect and assistance of his family and I well remember his great pleasure when he witnessed his daughter April go solo in a glider at Benalla. His wife Iris supported him and she is also a rather rare commodity these days.

His interest in aviation was sparked when his mother took him to the Glenhuntly Aerodrome near the railway station. This is a long forgotten area to most people. That was in the very early twenties.

Ken was a member of the club since its inception, - He... was a sailplane home builder. He and another member Arthur Nicholls purchased a set of Sopwith Camel wings from the Footscray Technical School and made a primary glider. It was taken to a site on the New Footscray Road and assembled. They stepped back to photograph it when a gust of wind blew it over and demolished it.

Never to be beaten Kent went on to build an Olympia with Arthur Harding and a Hutter H-17 with the late Harry Bartram. In recent years he got a Woodstock well advanced in construction when ill health caught up with him.

He was into record breaking in the early days. He did the first loops in Australia in a sailplane. The glider Grunau Baby II was

used to do this in December 1938. He got the Australian altitude and Victorian distance record. The height was 3700 feet and the distance 17 miles from Bevridge and North Essendon. Again in the Grunau in September 1938, Both launches were by shock cord off Mt Frazer.

He was always an inspiration to we younger fry (Ken was 26) and he was flying gliders over a decade before us. He had never to be repeated experiences such as being auto towed along Kilby Road Kew on a Sunday afternoon with all it's traffic !!.

I know the late Jim Robinson and I always marvelled that Ken could own two motor cycles, a car, buying a house in Kew and building a glider in the midst of depression. In addition one of the motor bikes was a racer and Ken regularly grand prix raced it.

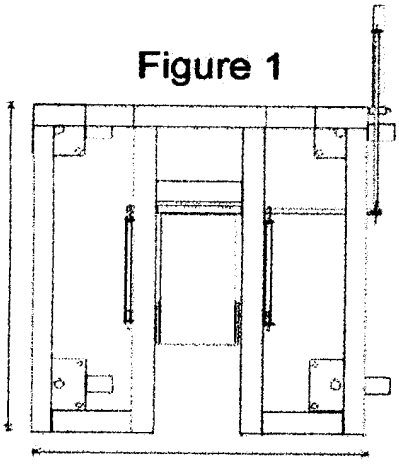
I doubt if we shall ever see the like again and mores the pity. His contribution to the GCV (Gliding Club of Victoria) was really enormous, It is not possible to list all of Ken's contributions to the gliding movement and the GCV in such a small article. All the effort on committee and work on the club gliders, winches and tugs. Suffice to say a lot of us appreciate it.
OUR DEEPEST SYMPATHY TO HIS WIFE IRIS AN FAMILY Chas. G. Lambeth.

HINTS & TIPS

PETER RAPHAEL'S PRACTICAL SIDEWAY TROLLEY.

Being a part of a small gliding club with limited hangarage available brings with it the problem of best utilizing the space available. To assist in resolving this dilemma, in our little club, I developed this trolley which allows easy loading and maneuvering of the gliders. Two different models were built, one to deal with the two-seaters and fibreglass aircraft and a lighter version customised for the lightweight homebuilts.

Figure 1



Basically the design consists of four 120 mm dia. castoring wheels on the corners of a "C" shaped frame, constructed of 50 mm square steel tube . A bucket or scoop mounted in the middle of this allows the main wheel to be rolled into position before it and the glider are lifted clear of the ground by the simple action of the handlever. Examination of the drawings showing Pos'n 1 & 2 should reveal the action required to lift the bucket. Either side, at the front of the bucket, are a pair of steel rod runners welded to the outside faces. In these run a pair of 25 mm dia. 6mm thick phenolic board cam rollers, grooves in which conform to the curve of the rod. These rollers are free to rotate on the end of a short crank which is connected across the inner tubes to a similar bellcrank on the outside. A short linkage carries from here back to a similar pair of arms welded to a torque rod extending out to the edge of the trolley. this rod also serves as the shaft on which the bucket can pivot . A longer arm at the outer end of this torque rod, along with advantage to the actuating lever, provides for additional mechanical advantage to be gained. The dimensions of the bucket are 170mm by 300mm and this appears to be a suitable size for the large gliders. The things to watch out for are brake levers and undercarriage doors.

Frame	50mm RHS Steel Tube
Bucket	6mm sides, 2 mm base,
1/2 i.d. pivot tube	
Bellcrank arms	6mm steel
Torque rods	12mm steel rod
Actuating Arm	20mm waterpipe
Cam rollers	6 mm phenolic board

Link rods can be strip and clevis pin, slotted tubes or bent rods.

The centre distances I used are -	60mm for the short
bellcranks (6)	
Intermediate arm	200 mm (1)
Actuating Lever	300mm (1)
Bucket pivot to lifter pivot	255mm

With a few of these trolleys lying around the hanger people don't seem to duck for cover when it comes time to put the gliders away, and in fact, too many people can actually hinder the operation, as the gliders slide easily into position. Gliders are awkward to store at the best of times, but it is surprising how many you can stack away when they are free to move in all directions.

I have not intended to make this a definitive construction article, but instead to present an idea of how to overcome a problem and hopefully, provide sufficient information to allow the enthusiastic to duplicate it. Everybody wants to build a better mousetrap and this is just my way of approaching the problem. I look forward to seeing any other ideas people may have.

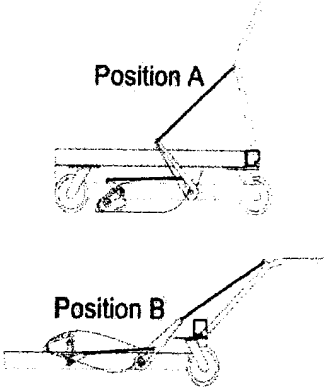
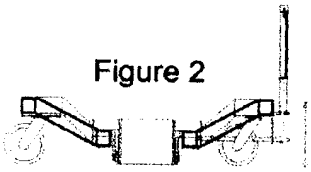


Figure 2



SHOP TALK

WOODSTOCK BUILDERS FORUM.
By Clint Brooks.

Back again!

I'm just able to write again after breaking my right wrist, the repair of which lasted about six weeks. I have done no soaring, Woodstock building or writing in that time, and I'm ready for all three to start happening.

I received a copy of a nice letter from Graham Betts in Australia regarding the outcome of his Carbon Dragon project, I'll let his letter tell the story, which was sent to James Garay of the A.H.S.A. originally (**See Page 13**)
Congratulations for a fine job Graham. I'm trying to determine how the safety harness is installed in the C.D., as the drawings are not too detailed in this regard. If someone would care to lend me some photos of this installation, I would be glad to formulate an article on this for 'Sailplane Builder'. I will return all photos when complete.

The last column left off with locating and determining the fuselage control pulleys and cable runs. The seat intercostals are pre-fitted and all blocking common to the keel and frames is installed.

I made a template for the seat back support doubler from art board, and used that to position the plywood doublers for the seat back positioning donuts, made from the same template. I measured down from the upper longeron, and back from sta 57 frame, giving it the 'eyeball' location for the upper end of the doubler. You only have to measure in the aft direction to set the bottom end. I scaled the fuselage drawing for approximate start dimensions, then tweaked the template location until it looked right. Tape the doubler template in place, measure as noted, and apply the same dimensions to the opposing side of the fuselage for the opposite hand doubler. Trace around the template with pencil, and lightly sand the area of bonding with 150 grit paper to remove gloss. You don't want the doubler to crack loose in flight, so do some joint preparation on the bonded side of the doublers in addition to the skins. I used T-88 to bond the doublers in place, with spreader bars made from scrap ply wedged against the inside surfaces of the fuselage to provide clamp pressure. Take two pieces of lumber, at least 6" or so longer than the 1/2 span of the fuselage, and use 'C' clamps to hold them together with the length of the combined two set to wedge against the two doublers. When the glue has cured, remove the clamps and the spreaders fall away. You can use this trick all over in places that are hard to staple or get a regular clamp onto.

I used a hole saw to cut plywood donut blanks. 3/8 mahogany ply was used, as well as one layer of 1/8 A/C ply on the surface of the donut that will receive the hole for the seat back tubes. I have heard that these donuts tend to crack apart if built according to the drawing, so I elected to use a better grade of plywood, with the 1/8 ply acting as a doubler around the hole.

The blanks were glued together with T-88, pinning them on the center hole made by the hole saw for alignment, clamped and allowed to cure. I had made corresponding holes in the plywood doublers prior to bonding them to the fuselage, so the location of each donut was physically present in the doublers.

After curing, a 1/4" bolt was passed through each donut with washers and a nut, after measuring from center to establish a pencil mark for the small end radius of the taper. Chuck the donut into the drill press and spin at high speed, the pencil mark now visible as a circle. Use a wood rasp to shape the donut down to taper between the bottom edge and the pencil mark for the radius at the top. It takes about ten minutes per donut to machine; finish turning with 150 and 220 grit paper.

After this, you will open up four of the donuts to 5/8" diameter on the center, and the other four to 3/4" diameter for the seat back tubes. As a side note, I prepared my seat back tubes with the 5/8" OD side about 6" longer than shown, to allow some tailoring of the tube to occur after setting all four positions. I didn't want to end up with the inner tube too short at the widest point in the fuselage.

Pre-fit the tubes into the donuts. I used wood boring bits with the depth set on the drill press to leave the hole bottom about 1/8" off the bottom of the donut, so I would still have my matching 1/4" diameter holes to locate the donut to the doubler. The tube should fit fairly snug at this point, which is helpful when bonding the donuts onto the fuselage.
The fun part now begins. The easiest donut to pre-fit is the uppermost, as the sides of the fuselage are almost perpendicular to the axis of the seat tubes. Mount a donut on each end of the tube assembly, and push apart to establish contact with the doublers. I used pieces of 1/4" diameter dowel to pin the donuts to the doublers, although you don't get very much engagement on the hole. Eyeball the level condition of the tube assembly in comparison to other level members in the fuselage, as viewed from front to rear. If you were careful, it will probably be very close if not perfect. Now inspect the joint area between the donut and the doubler; you will probably have to sand a slight bevel onto the backside to get it to seat correctly all the way around, with the tube installed. Just sand a flat bevel, you can turn the donut around on the axis of the tube to get a best fit.

The tricky part is, the lower you go in the fuselage, the more the sides slope in regard to the tube center line, so each successive donut requires greater bevel than the previous set. Remove small amounts at a time, in order not to spoil a donut by gross overcutting. Mark donut outlines on the doublers as they are fitted up.

I bonded each set of pre-fitted donuts using T-88. The tubes were installed and used as a spreader bar to keep the donuts in place. I applied masking tape over the donut edges and onto the doublers to prevent shifting. You might want to apply additional masking tape under each donut to collect any excess glue that runs out of the joint during the cure. When finished, remove the tubes and repeat the procedure for the next set of donuts.

Finish the holes in the donuts with sand paper to allow the tubes to slip in and out reasonably easy. I have not drilled the pin holes for the seat settings in the tubes yet. I was planning to put a locking pin into the outer tube that will engage a slot in the inner tube to keep alignment for the four different holes in the inner tube and minimize fumbling around trying to find the holes when adjusting the seat back position. A small ball detent pin or large safety clip can be used to secure the tubes once positioned.

Add the upper longeron caps between sta 15.5, 30.5 and 47 and ending at the forward side of sta 57 frame. Plane or sand flush to the frames to provide a bonding surface for the 1/16" ply triangular gussets bonded to the upper longeron and sta 30.5 and 47 frames. After bonding the gussets, add the one piece cap over everything after notching 1/16" deep to allow the full cap to seat against the filler caps when placed over the gussets.

Build up the spoiler handle boss in a similar fashion used for the seat donuts, except bond the handle bolt weldment in between the plywood blanks. I counterbored to a depth a little deeper than the washer, and used T-88 filled with microballoons to bed and fill around the washer. I also installed a small wood screw through the washer into the plywood boss to prevent the bolt from turning should the washer break loose from the glue while tightening the nut.

Chuck the bonded boss assembly into the drill press using the bolt shank and use a wood rasp to shape as done for the seat donuts. I mounted the boss directly to the inside surface of the skin. This puts the axis of the handle bolt perpendicular to the skin in that area, and allows the spoiler handle to travel more or less parallel to the upper longeron. Use the handle and bearing to judge the position of the boss, moving it forward and aft to check the range of movement, and also set the vertical location relative to the cable housing hole drilled in the frame for the spoiler cable. I actually installed the canted forward frame common to the canopy prior to installing the spoiler handle boss, just to make sure that full forward movement doesn't result in the handle hitting or getting too close to the canopy frame.

It is helpful to have made the laminated plywood handle guide to assist in fitting the spoiler handle. I pre-fitted this item to fit against the lower side of the upper longeron (the flat runout part of the guide), and against the forward side of sta 30.5 frame. When satisfied with the handle position, bond the boss in place after sanding the bond area with 150 grit paper and solvent cleaning. Again, I used masking tape and a scrap wood spreader bar to apply pressure to the boss during the glue cure.

Before bonding the handle guide in place, you may want to varnish behind the gusset and pocket formed between the gusset, frame and side skin as this will be hard to access with the guide in place.

When the boss has been installed, pre-fit and install the 3/8" square stiffeners that run forward and aft on the center plane of the boss.

After fitting the boss and guide, I found I had to bend the lower end of the handle outboard slightly to get it in line with the spoiler cable hole in sta 30.5 frame.

Install the tow release handle guide next. Spend some time sitting in the cockpit with the cable housing tube installed temporarily between the tow hook location and the hole through the 15.5 frame above the rudder cable hole. I found that full aft on the spoiler handle kind of gets in the way of a comfortable release knob location. I ended up installing a built up bracket against the aft side of 15.5 frame and the side skin in such a way that the cable housing tube was projected slightly inboard to clear the spoiler handle, and slightly up to provide a more natural axis of pull, although I had to lean forward to grasp the handle, which I found uncomfortable.

After some time had passed, and I continued my cockpit ergonomic checkouts, I decided to abandon the side mounted release and run the cable through the instrument panel itself, which seems a lot better ergonomically.

As for the release cable assembly, I am planning to make an aluminum 'T' handle that will swivel in a MS20667-3 fork swaged onto one end of the 3/32 diameter cable. Wood inserts or 'cheeks' will be mounted above and below the fork end on the handle to give more of a grip on the 1/16" thick aluminum handle.

Where the cable passes through sta 15.5 at the tow hook, I bonded a 1" diameter disc of 1/16" ply with a 3/32 diameter hole in the center to act as a stop for the cable housing tube. The 1/4" diameter hole in the frame acts as a receptacle for the end of the housing. I don't believe any clamping of the housing tube will be necessary between the frame and the instrument panel, even though my sketchbook shows clamps (speculation on my part, at the time).

With the control stick installed, set up the wheel brake system. I thought about buying a hydraulic brake assembly for my wheel, but in the end I stuck with the simple light weight design shown on the drawing.

I bought a 'BMX' bicycle brake handle assembly and cable assembly at a local bicycle shop. I also bought some handle grips for the stick, but would recommend the stick grip sold by Aircraft Spruce, part number 11-00100, as a much better product. I would also make the upper end of the stick assembly about 1" longer if I were to make another, as things get a little crowded with the brake handle installed. The grip sticks up about an inch, and the softer bicycle grips are too rubbery if unsupported. The A/C Spruce grip is rigid, and the fact that it sticks up a little is undetectable.

From the hardware store I bought two tension springs; .047 diameter wire x .44 diameter x 2 1/8" long, with open end loops on both ends making the overall spring length about 5". These are positioned from the intercostal shear webs to provide return force on the brake strap. Instead of cup hooks, which only come (as far as I've found) with wood screw ends, I found some heavy duty picture frame hooks that I am going to through bolt with #6-32 x 1/2 stainless steel machine screws with washers and locknuts. The hook will be able to align with the spring axis by pivoting on the screw, and I'm not limited on where to place the hook, allowing best position of the springs.

Make up the aluminum brake strap with a little extra length to allow tailoring. Form one end around the 3/16" diameter bolt, and file in the radiused notch to clear the cable end. Pop rivet the end to secure in place.

Put the wheel brackets on, and fit up the wheel and axle. Mount the brake handle on the stick in a comfortable position, using the stick grip to help establish location. Route the cable and housing down and aft to the wheel well area. Clamp the brake strap to the bottom of sta 59 frame (aft side) and position the strap over the tire. Fit the ends of the springs into the small holes in the strap end near the bolt, and experiment with establishing the anchor point on the intercostals by pulling the springs out and putting the strap into tension, just clearing the tire by about 3/16" or so with the brake cable temporarily installed on the strap bolt. Try and keep the strap close to the tire in order to get the most amount of pull on the brake handle. I had to trim my overall strap length down slightly to get a good stroke out of the handle. The end of the brake cable should penetrate through sta 47 frame at a height such that when the cable is pulled, the strap is drawn forward and down onto the tire. When satisfied with everything, trim the aft end of the brake strap if necessary, add corner radius, etc., and drill holes for 3/16" diameter bolts to match the frame. I had made a template when I drilled the frame prior to assembling the fuselage, and used it to drill the holes in the strap for a perfect match.

Where the brake cable housing penetrates through sta 47 frame, I bonded a strip of 1/8" ply on the aft side to cover the hole and act as a back stop for the housing, and provided a 3/32" diameter hole through the ply patch to allow the brake cable through.

I need to clamp the cable housing to the stick in order to keep it stable and on center, and avoid fouling or pulling against the stick as I fly. I am going to purchase some nice chrome or alloy clamps from the bike shop to complete this installation. As for the cable end on the brake strap, I'm going to provide a thimble eye and nicopress end, with the bolt slipped out in the event of servicing the brake strap. All in all, the braking system is simple to rig and install, and should be very functional with minimal servicing.

At this point, the major cockpit components are located and temporarily installed. When you feel you don't need easy access to the forward fuselage anymore, it's time to install the canted canopy frame, nose skin and build a nose cone!

For you consideration, I've done a rough cost breakdown based on what I've done so far, and what I expect to expend further. I've include the cost of materials to make parts over:

$867	Hardware, including wheel, etc.
400	Tools (jigs, etc.)
270	Metals
1,037	Wood (fuselage)
1,000	Wood (wings)
340	Welding
150	Plating/heat treat
120	Adhesives
1,500	Covering/finish
120	Fiberglass/resins
95	Machined parts (rudder hinges)
80	Foam/misc.
500	Canopy
1,500	Instruments (basic w/mech. vario)
3,500	Trailer (average of homebuilt vs. ready made)

$11,479

A bit more expensive than I would have thought, but if you do a nice job, it's still a brand new glider at that price, which isn't too bad.

Stay tuned for more.

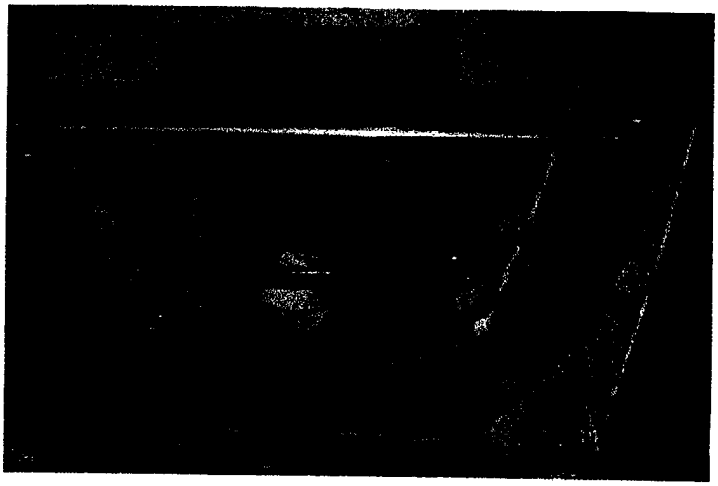


Figure 1

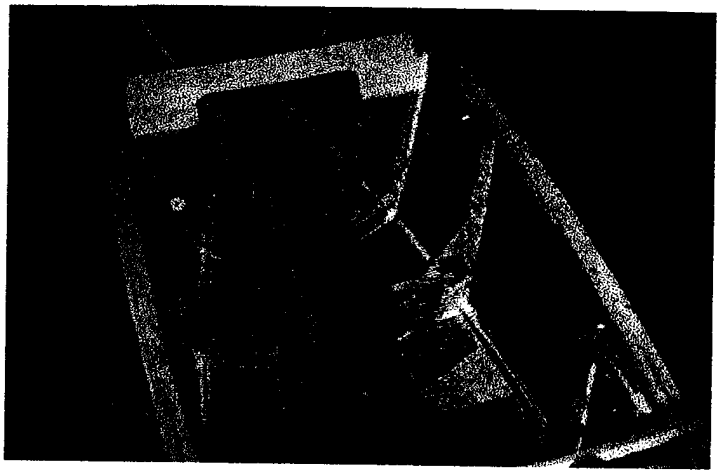


Figure 2

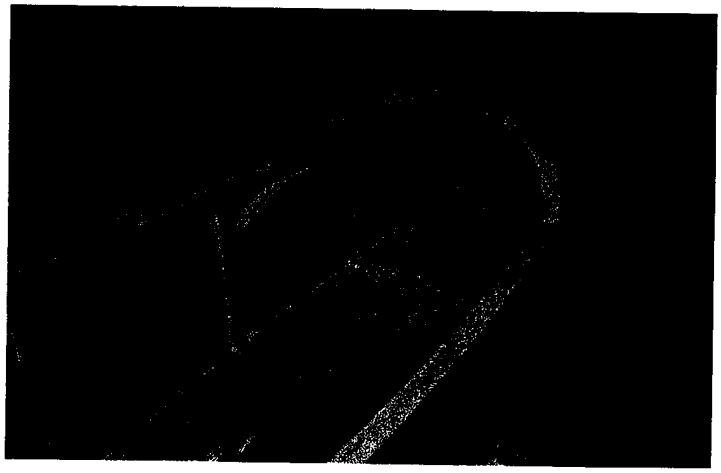


Figure 3

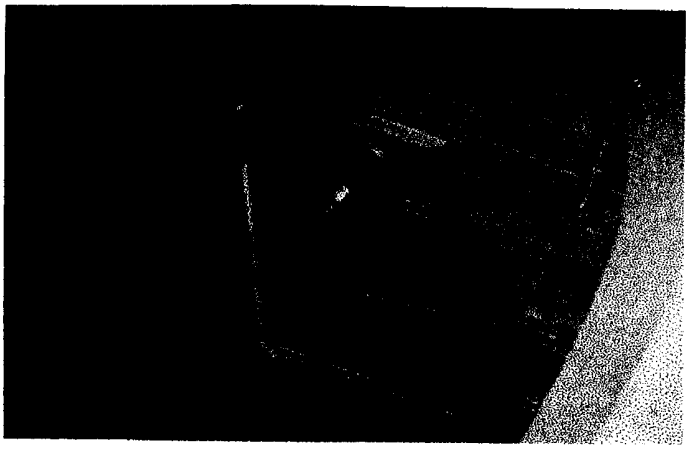


Figure 4

Where Next?

By Gary Sunderland.

Our recent SYMPOSIUM at Smithfield was a stimulating occasion. Not just a lot of talk about amateur built sailplanes, but an excellent display of a "Duster" under construction, and also practical demonstrations.

Full marks to James Garay and all the members who participated.

The home-built sailplane movement in Australia seems to be stirring from a long recess with new members, new enthusiasm and practical achievements, like a successful newsletter and regattas, and now the first technical symposium in Australia devoted to just amateur built gliders.

On the drive home from Smithfield I got to thinking about these developments and where we might progress into the future. We all need to work together on the best direction to take in the next century.

The world-wide amateur built aircraft movement is based on the proposition that our pastime is for "just educational and recreational" purposes.

The recreation comes in building and flying our sailplanes, but the educational aspect is probably more lasting and important.

As the Regional Technical Officer for Airworthiness in Western Victoria, one of my tasks is to organize the training and authorization of glider inspectors. The basic training for a yearly inspector consists of a one week course of theory and practice, plus club maintenance work, devoted to "strip -clean - inspect - lubricate - replace", and little more. This compares with a four year formal apprenticeship for aircraft mechanics in the rest of general aviation, so we really place a lot of emphasis on one short course.

This also means that the GFA's airworthiness inspectors, for the most part, have no training or experience in minor repair work, let alone major repairs.

The more complex tasks within our airworthiness system, at this moment, are carried out by people, who either gained their experience back in the days when clubs built and repaired gliders, or who were amateur builders.

Currently we have people like Alan Patching, Doug Lyon, Mike Burns Doug Vanstan and Gerry Downs still active in the gliding movement.

What of the future, next century,when all the older generation are, one way or another, no longer available?

You don't need to be a rocket scientist to work out that the current AHSA is a vital part of GFA, and its members are the nucleus of the next generation of airworthiness specialists and leaders.

As the first step I would suggest that future technical symposiums could be more formally structured with the goal of providing GFA qualifications to participants such as an airworthiness authority for minor repairs in wood and/or metal, for those people who already have the experience in building.

We have plenty of experienced people, like Alan Patching, Doug Lyon and myself who can conduct such training symposiums, to suit whatever experience people may already have.

From there we need to look at further training, to yearly inspector, major repairs and survey level, and as far as people want to go. (design and certification if you want!)

Another possibility may be to arrange for the AHSA to provide future training and demonstrations to the existing GFA yearly inspectors. You have the enthusiasm and expertise, so you may as well use it, for everyone's advantage. We may even get a few more members along the way.

The AHSA may consider more formal arrangements to assist new members in starting their projects. I guess we can all still remember the enormous leap into the dark when we started the project, not quite sure whether we were up to the task ahead. Friends who looked at you strangely, when you said you were building an aircraft, did not help much. The GFA does a bit in this direction, by way of advice, but some more active assistance from AHSA will be well worthwhile.

Over to you.

AHSA FLY-IN . Gawler January 1998,

This was an event that was so unobtrusive it was (almost) invisible!

Even the hosts, the Adelaide Soaring Club, were unsure who we were and what I was doing there!

However we were in excellent company, with our friends in the VSA, and we made some new contacts in S.A., and a brand new Australian design project!. That really made the trip worthwhile.

Homebuilts and Homebuilders are of course well represented in the Vintage Soaring Association, and Keith Jarvis flew to Gawler in a Minicab, one of twelve (yes, 12!) aircraft that Keith has completed and flown.

The VGA Patron, Kevin Sedgeman is currently flying the "Sunbird" ultra-light also originally built by Keith Jarvis, and now owned and operated by Kevin.

Apart from myself, Paul Johnston also attended, and he showed me the latest photos of his "Windrose" project. This is almost complete and should fly soon.

Unfortunately Mark Stanley was not able to attend at the last moment , so I guess work took precedence.

The good news was a presentation by a group from the Adelaide University Club, who are starting to design a new, fully aerobatic, sailplane

This will be 14 metre span with a wooden wing and steel tube fuselage. The design will feature wing extensions, to provide a span of 17 metres for non- aerobatic soaring flight. They also intend to provide for a self-contained "power-pod " to be added for self launching and ferry flying the glider in either span.

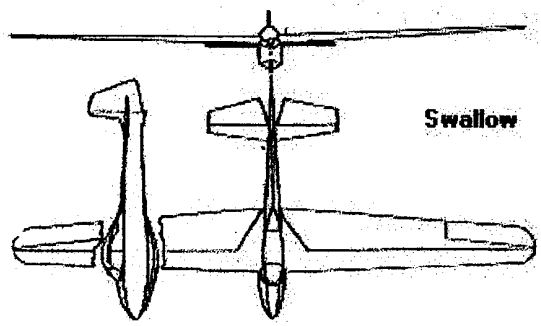
The group members seem to be very keen as well as practical and realistic.

Naturally I suggested that they join our Association, and they accepted this idea. So Hopefully we shall soon see a new

homebuilt project in S.A. Evidently Mark Stanley has the only other building project there at the moment.
Anyway MOBA had a lot of flying in excellent Gawler thermals and I hope that the "crow-eaters" may have some (slight) impression that homebuilding is not just something of the past.

A little bit of Gliding in Australia

By Allan Ash.



THE SWALLOW

The decade of the 1950s produced a number of interesting sailplane designs by local enthusiasts. This was a period when Australians pilots had gained some flying experience in homebuilt sailplanes of foreign design (mostly Grunau Babies, Dunstable, Kestrels and Hutter H 17s) and were looking for something that would have a better performance and better handling qualities but could still be homebuilt.

Among those that were designed, built and flown successfully was the Swallow, the creation of Sydney pilot named Ron Sharp. His Swallow was designed during 1953 and made its first flight at Camden on 14 August 1955. As it is today, the primary design objective was to create something that would be easy and cheap for amateur builder to tackle.

This was a period when small spans held the interest of glider pilots and Ron Sharp's Swallow followed this trend by having a span of only 33 ft 3 in (10 metres) and a wing area of 120 square feet { 11.2 sq.m }. The empty weight was 225 pounds (102 Kg) and the maximum all-up weight of 395 pounds (179 kg) gave a wing loading of 3.3 ppsf (16 kg/sq,m), which is light by today's standards but was normal for intermediate sailplanes of that era.

Today's pilots will see from the illustration that the design bears quite a resemblance to the Duster and Woodstock design currently in vogue with many homebuilders.

The design calculations gave a best glide ratio of about 20:1, but test flights indicated that the ratio was better than that. No accurate performance tests were done on the Swallow but experienced pilots estimated that the ratio was probably 22:1, with a minimum sinking speed of 3 fps.

Construction was entirely of timber and plywood, with fabric covering on the wings and tail surfaces. The wing was in two pieces with a single spar and torsion-box leading edge. It had a skidded undercarriage and was without spoilers or air brakes. All of this was very much the norm for the 1950s.

Before the test flights, the Swallow was thoroughly inspected by GFA inspectors and a qualified aircraft engineer and was pronounced by all to be well made. The wing was subjected to static loads up to 90 % of the maximum design load without failure.

The test flight comprised a couple of careful low straight flights, followed by some circuits. Two weeks later, Ron Sharp took a car tow launch to 500 ft at Camden in the Swallow, caught a thermal immediately and climbed to cloudbase at 5100 feet for a total duration of an hour.

During this flight, the Swallow was tested in stalls from straight flight and from turns in both directions. The application of opposite ruder was sufficient to make a recovery from stalls in turns and Ron was delighted to find that the little sailplane responded well to its controls in all modes of flight. Stalls from straight flight occurred at an indicated 30 mph and speed increases did not result in very much additional loss of altitude.

Ron Sharp, who was a member of the Hinkler Soaring Club, continued to fly the Swallow at Camden for several years. Then about 1960 he sold the sailplane to a group of pilots in the Leichhardt Soaring Club at Mount Isa. Queensland. One of the members drove down to Sydney to collect the Swallow and took it back to Mount Isa without incident.

The Mount Isa group decided to overhaul the sailplane and carry out some modifications which they considered would improve the design. After six months in the workshop, the Swallow emerged no only with some changes but also with a new name. The group felt that so many improvements had been made that the sailplane deserved a new name. So they called it the Swift.

Modifications to the structure included fitting dive brakes and more streamlined canopy, a landing wheel and nose skid,filling, sanding and polishing the wings and the streamlining of the structure in various ways.
Test flights of the Swift were carried out by club's CFI, Neil Hart, and it was pronounced excellent. Club members carried out a lot of local soaring in the Swift for about a year and the Maurie Bradney, who was then a member and instructor in the Leichhardt club, took it on a cross country flight. He made very good speed

and eventually landed on the bitumen road in the Northern Territory, beyond Camooweal, to gain his Gold Badge distance. His ground crew, in radio contact, arrived quickly at the landing point and retrieved the Swift by road.

Some months later, on a similar attempt on gold distance, another club instructor, Don Stewart, set off in the Swift on much the same route that Maurie Bradney had taken. Much later in the day he arrived back at the airfield by road. He had run out of thermals over dense bush terrain about halfway to Camooweal and flat-stalled the Swift into a bushy tree. He climbed down unhurt from the sailplane and hitched a ride back to Mount Isa with a passing motorist.

The sailplane was declared to be unrepairable but some of the parts were later cannibalised to fly again in other aircraft.

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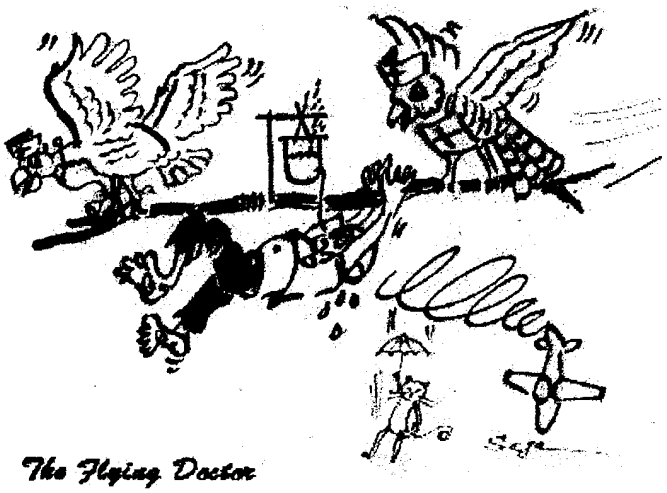

The Use of Medications While Flying

By Dr. J. Farrow.

As a general rule drugs and flying should not be mixed. Unfortunately there will be times when an exception to this rule will have to be considered. A pilot may find that they are in the circumstance where long term medication is necessary, or where a short term ailment that can be safely and effectively treated which would otherwise disable the pilot. This short article is to intended to give some advice in this regard.

General Principals

As a first principal it should be stated there are no absolutely "safe" drugs. Aspirin can probably be taken by the majority of the population with little risk of side effects, but in a few individuals it can cause problems with hearing, balance, nausea or a severe allergic reaction. It is imperative then that even a "safe" drug be trialed for a few days; at least a minimum of twenty fours hours, before using it while flying for the first time. A retrial is also indicated if the individual's general circumstances have changed such as while dieting or following significant illness.

When considering the potential effects of a medication on flying abilities the following factors need to be considered:

- Is the illness for which the medication is being taken compatible with flying. Because the risks of sudden disablement are to high, the individual with established epilepsy cannot pilot an aircraft, it does not matter how free of side effects their anticonvulsant medication is.
- Will the primary effect for which the medication be taken interfere with the pilot's abilities. A relaxant, eg. diazepam or "Valium", is designed to slow reaction times and diminish the individual's alertness, an unacceptable state while flying.
- Can the medication's side effects interfere with the pilot's abilities. This requires that the medications are predictable in their effects. Unacceptable medications will usually have effects on the nervous system; sedation, depression, or balance or vision disorders, or cardiovascular system; eg. low blood pressure.

In many cases the medication will carry a warning to the possible side effects; sedation and interference with driving or operating machinery, blurring of vision or dizziness and these warnings should be heeded. If you have any doubts then discuss the medication with your pharmacist or doctor. If you have been prescribed a medication, especially for long term use, then discuss it's possible effects on flying with your doctor, there are often more acceptable alternatives.

Cessation of a medication taken over a period of time can also be associated with side effects. As such do not cease a medication immediately prior to flying.

The following notes are provided as guide to some of the more common medications.

Analgesics

The safest analgesic is parecetamol, the other non-narcotic analgesics such as aspirin and ibuprofen being acceptable in those individuals not exhibiting side effects (usually nausea). The stronger pain killers containing codeine and dextropropoxephene (eg; Digesic) should not be used while flying due to increased risk of sedation.

The main concern with analgesics is for the condition for which the medication is being taken. Obviously if the pain is severe enough to be distracting then you shouldn't be flying.

Antibiotics

Generally the antibiotics themselves don't preclude flying, though the condition for which they are taken often does. Gastrointestinal side effects are a common problem hence the course must have been started at least a day prior to flying.

Tetracyclines can be associated with a skin reaction following prolonged exposure to sunlight, a potential problem with longer glider flights.

Hay Fever Medications

The earlier antihistamines are contraindicated for flying due to potential sedation. These (and narcotic analgesics) are a common ingredient in many over the counter cough and cold remedies. The more recent non-sedating antihistamines (eg; Telfast, Teldane, Hisminal) appear not to have any significant side effects and can be safely used while flying.

Nasal sprays, either decongestants or nasal steroids are also considered safe for use.
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Again the main limitation in this condition is it's effect on the sinus's and ears and the ability to adequately equalise with pressure changes.

Antihypertensives
Most modern antihypertensive agents are acceptable, once the pilot is established on the treatment and no adverse side effects have been demonstrated. Agents in this group include diuretics, ACE inhibitors, calcium channel blockers, prazosin and beta-blockers. Earlier antihypertensives can be associated with unacceptable risk of sedation or low blood pressure and dizziness.

Because of their interference on blood pressure regulation and G tolerance beta-blockers and prazosin are not acceptable for pilots indulging in aerobatics.

Gastrointestinal Medications
Antacids are generally regarded as a safe medication. H_2 antagonists, eg; Tagamet, Zantac, used in the treatment of non-ulcer (an active ulcer would preclude flying) disease are also regarded as safe.

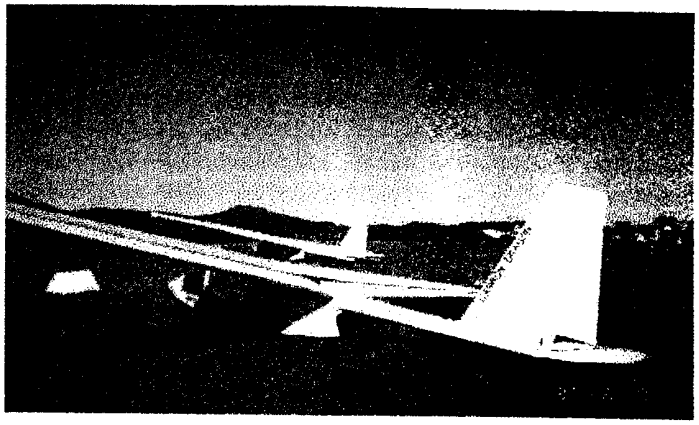
Many of the antidiarrhoeal medications contain either narcotics or anti-cholinergics (a class of drug often associated with blurring of vision as a side effect) and are contraindicated. Diarrhoea and vomiting is the commonest cause of sudden in flight incapacitation (at least in the GA scene) and is hence a contraindication anyway.

Asthmatic Medications
Inhaled steroids (eg; Becotide, Aldecin, Pulmicort), cromglycate (eg; Intal), or occasional bronchodilators (eg; Ventolin, Bricanyl, Respolin) for the control of asthma where there is no history of severe or disabling attacks is acceptable. The use of oral medications such as steroids would imply a more severe degree of asthma which would possibly preclude flying.

Sleepers
The newer shorter acting hypnotics such as temazepam (eg; Euhypnos, Normison, Temaze) are acceptable if taken at least ten hours before flying. Note that these medications should only be used for short periods. The older hypnotics such as nitrazepam (eg; Mogodon) persist in the body for an unacceptable period and are contraindicated.

Again it is important to emphasis that even the "safe" drugs listed above require a trial on the ground before using them while flying. Also the guide above is only for the medications used individually, used in combination the potential for side effects increases further and unpredictably and must be avoided.

"CARBON DRAGON"



Graham C. Betts . "Beautiful Betsy"

Further to my letter to Clint Brooks in early 1995 where I outline some of the difficulties I had during construction I am happy to report the Carbon Dragon is finished and flying. First flight was by auto-tow on the 2/1/96. Everything "seemed OK", I did notice though the controls were much lighter than an IS 28 I had been flying but the airspeed seemed a bit higher than the manual had suggested. After about a dozen tows over a few months I decided to go for an aero-tow so on the 7th of June 1996 I took off behind a Airborne Edge Trike. I was towed to 2000 ft. When I released the nose immediately dropped requiring a fair bit of back stick to bring the speed back to 40 mph (We since found the ASI reading to be about10 mph higher than it should have been.) at that stage with the stick about 3/4 of the way back I imagined the C.D. to be falling out of the sky although a glance at the variometer showed a descent rate of only 200 ft per min. After about 10 min of orbiting I set up for a landing pattern. As I had never flown an ultralight glider before I was a little unsure of the correct height from which to start my descent. I started my downwind at about 600 ft turned on final at about 250 ft about 100m from the fence. I used full spoiler and made a fairly good touchdown. At the post flight briefing I said I was not happy with the nose heavy way it flew. We decided I should sit back a few inches to try and bring the C of G back. Next day we launched to 4000 ft but the nose was still heavy. We then packed up and went home. Later in the week I rang a few experts to try and find the problem. For one thing I knew my weight of 90 kg would be a big factor as according to the flight trials 70 kg was considered ideal. The advice was sure weight was a factor but if the C.G is within the limits this is not a problem. We hung the Dragon from a tree in my backyard I got in and checked the C.G. although well forward it was still within the limits. The next thing was to check the rigging, this was done by placing the aircraft with the tailplane on the horizontal, the wings then should have an A of A of 4 degrees. When we checked the A of A using a water level we found the tailplane had an A of A of 2 degrees. This would surely contribute to the nose down attitude. It seems this 2 degree angle is built into the craft as the tailplane lays on top of the boom which has a 2 degree taper. If you check the plans you can see it right there. I doubt that it was intentional just an oversight. With a bit of difficulty I managed to lower the attachment 10 mm this then brought the tailplane back to zero pitch. I also rearranged the seating via a foam cushion and a plywood plate positioned in the main door resulting in my being able to sit 100 mm further back bringing the C of G further aft. I

then put blocks on the rudder pedals as I was unable to reach them . The test flight resulted in the elevator stick forces being about 60% lighter. The Carbon Dragon is now a joy to fly. If your weight is around 70 kg or less the tailplane attitude is not a problem, however as weight increases so does the nose heaviness. The cost of building the C.D. was about 3000 dollars with about another 3000 dollars for instruments, chute and enclosed trailer. The instrument package is a Ball 6SZ Hang glider unit the 26 foot emergency chute is hand deployed, it is attached to the left hand side lift point and brings down the whole structure. The instrument package is hung form the main canopy bow, a perfect HUD. I cut a small hole in the top of the canopy to pass the wind turbine for the ASI through. I am a member of the Gliding Federation of Australia and fly with the Southern Cross Gliding Club at Camden

CLASSIFIEDS

For Sale: Woodstock project at boat stage with tail feathers attached. Main spars completed. Some instruments and most timber/metal to complete the project.
Comes with log book with appropriate pieces signed out.
Selling for personal reasons, but would like to see it flying, not stagnating!
Asking price AU $ 2000 the lot. Phone/Fax Mark Stanley on (08)85413227

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For Sale: Plans for Light weight gliders.

"Monarch" Flying wing L/D. 20:1 ..... A$ 200
"Volmer Jensens" VJ-23. L/D. 9:1 ..... A$ 35
Note: Postage extra and more to overseas.
"Super Floater" Foot launched. L/D. 12:1. Ring for more information. James Jensz. R.M.B. 5100. Wangaratta. Vic 3678. Ph. (03) 5725 1519 (evenings).

VINTAGE Times

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Editor/Secretary Ian Patching
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"SAILPLANE BUILDERS"

Official Publication of
The Sailplane Builders Association USA
$29 airmail US $46.00
Dan Armstrong Secretary/Treasurer
21100 Angel Street
Tehachapi, California 93561USA

"**TWITT**" (the wing is the thing)
TWITT is a non profit organization whose membership seeks to promote the research and development of flying and other tailless aircraft. Yearly subscription rates: US$ 18 inside US , outside is US $ 22 . 12 issues per year .
For more information write to PO Box 20430 El Cajon , CA 92021 USA

"Acrifix 192" Acrylic cement. Peter Raphael recently had acquired the dealership for this well known stuff, if you want some for canopy repairs, give Peter a call he is selling it at AU.$ 15.00 a tube plus postage.
Peter Raphael.34 Ivan Ave. Edithvale.Vic. 3196 Ph. 97723929

Attention "Woodstock" Builders...here is the good stuff! "Woodstock" sailplane sketchbook illustrated construction manual US $25. Also available are drawings for simple jig used to construct various components . Package deal of sketchbook and jig drawings US$85. Overseas customers add US$ 15 for airmail delivery. Send SASE for more information to:
C. Brooks. 2231 Vuelta Grande, Long Beach CA 90815 USA.

Australian Homebuilt Sailplane Association

Journal published on the first month of each quarter.
Sections on:
- *Shop Talk*
- *Technicalities*
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Mail Address:
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3 Magnolia Avenue
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Australia.

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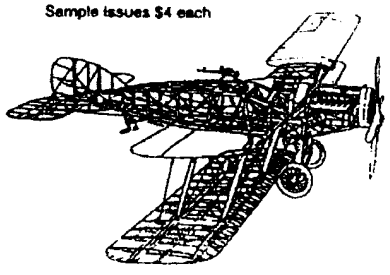

BUILD ONE! A REAL ONE!

Sole distributors for P3V, a computer program to generate a 3-view from a photograph

Published by: WORLD WAR 1 Aeroplanes, INC.
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Payments may be made directly in Australian dollars to Colin A. Owers, Box 73, Boorowa NSW 2586, Australia, for Down Under members-thus saving bank charges.

BOOK REVIEW

"Personal Aircraft Drag Reduction" By Bruce Carmichael. 207 pages and illustrations contain information on aircraft drag reduction beyond streamlining. The cost US $35. Publisher:- Bruce Carmichael, 34795 Camino Capistrano, Capistrano Beach, California 92624 USA

ULTRALIGHT SOARING NEWS

The United State Ultralight Soaring Association's newsletter is now available. Their purpose is to foster a heightened consciousness about ultralight soaring to encourage an exchange of knowledge and information making possible the growth of this sector of soaring, and to serve members in their common ultralight soaring needs.

Donations are being accepted to cover the cost of sending the newsletter: suggested amount is $ 15 for one year(may be later credited towards first year's membership dues) or you can send $ 25 for your " Founding Membership"
Please make cheque payable to:
Chuck Rhodes.
130 Los Padres Drive.
Camp Pendleton, CA. 92054. U.S.A.

The Australian Homebuilt Sailplane Association is now on the Internet!

By Eddy Garay (Web Master)

Our new home Page can be found at:
http://www.geocities.com/CapeCanaveral/hangar/3510

This new medium will be used to periodically include new information regarding our association as it comes to hand.
Thus far, it includes :

- A builder's profile - Peter Raphael and Terry Whitford's "Woodstock" VH-HNW and will shortly have one on Malcolm Bennet's "MONERAI" VH-HDF.
  (Please feel free to send your "profile" for inclusion)
- A list of approved (in Australia) types for home construction.
- Graphic images
- Subscription information
- Links to the Gliding Federation of Australia and other Gliding related Web sites.
- E-mail

If you have any suggestions on what else we may include on our Web Page please E-mail me (fasteddie@majestic.net.au) or write a letter to James Garay.

All correspondence to:

James Garay

3 Magnolia Avenue

Kings Park, Victoria, 3021 Australia.

THE AUSTRALIAN HOMEBUILT SAILPLANE ASSOCIATION

3 Magnolia Avenue
Kings Park, Victoria, 3021, Australia

Membership Re-Application Form

I, _____

of (address) _____

Signed: _____ Date: _____

Wish to rejoin/not rejoin the A.H.S.A for one year. If you don't wish to rejoin could you still forward this form to the above address so we can adjust our records.

If rejoining, please forward this form plus membership fee to the above address.

The MEMBERSHIP FEE FOR THIS YEAR IS $_____ (Australian).

Thank you for your assistance in keeping our records up to date.

Please note : This is your final newsletter unless you rejoin A.H.S.A

Note:

The A.H.S.A will be having it's annual General Meeting at the Smithfield headquarters, Nagambie on the 26th of April 1998 to elect it's new committee office bearers. Try to attend as important matters will be discussed. Meals will be provided. Please inform your editor if you will be attending.