# THE AUSTRALIAN HOMEBUILT SAILPLANE

*Editor: James Garay*

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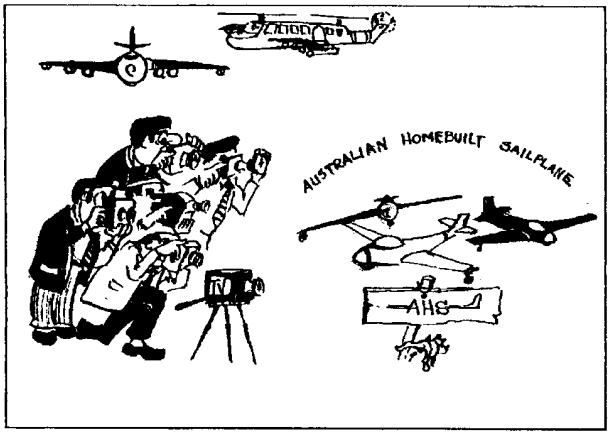
## EDITORIAL




*G'day folks,*

With this issue I just completed my seven years as Editor of this humble journal that you are reading now. So far it's been a task that's been very hard to fulfill but nonetheless pleasing to everybody. I have had a great fortune to have the support of those who are behind me...the ones that I call *"the silent partners"... they know what I mean and who they are, so thanks.*

On February we had the opportunity to take part in the International Air Show Down Under at Avalon. Our presence caused a lot of interest and we spent three days answering questions relating to how to home build a sailplane. Malcolm Bennett was there with his "Monerai" and also Peter Raphael (The Erudite) with his beautiful "Duster" and I took my "Woody-Roo". Also, on Saturday we had the company of Peter Champness. Read the full report of this event by Peter Raphael in this issue.

This issue is jam packed with good articles, if you have to build a trailer for your glider, do not miss the 'Technicalities' section, courtesy of my good friends John Buchanan and William Johnston.

Our "Erudite" Peter Raphael built a very nice trailer for his "Duster" with the help of Malcolm Bennett and here he is telling us how he did it in relation to the bending of metal square tube particularly the one in the body frame of the glider trailer.

Our Master Craftman Malcolm Bennett is very well advanced with his Super Woodstock. I will try to compromise him with to get a full report for the next issue. Following an article "Getting smooth cuts in timber" in issue #27 December 2002 Malcolm is clarifying some Facts About Circular Saw Blades and he also gives some clues on how to bend thin plywood.

**Peter Champness *has contacts***, read all about it in our section 'Shop Talk'...you will be surprised at how Peter Champness and Michael Williams are convinced that without contacts you are nothing..!

*(I think that it is true..! Do I have contacts? Yes..! I think that I do).*

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*This is the last issue of your annual subscription, renewals are due now and again I am asking you for your support, because we rely on you the subscriber. You will find the renewal form at the back of this issue. Please return it with your remittance as soon as possible to ensure the ongoing receipt of this humble journal. So far it is well received and every body is happy, keep sending in your articles to share the knowledge and expertise.*

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This issue was prepared with the help of Malcolm Bennet, Peter Raphael, Sergio Jacobi, Alan Ash and Peter Champness.

To all of them my sincere thanks.

Jim Garay
**Editor**




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*Inside This Issue*

# MAIL BOX

Dear James,

Thank you for forwarding the sample Newsletter. Very inspiring. Please find enclosed my subscription.

As I mentioned en the phone, I am very keen to meet members who are building sailplanes around the Melbourne area. I am not a pilot and have no experience with full size construction but I have a working knowledge of techniques and aerodynamics and could offer enthusiastic help with any ongoing project should it be required.

If anything I have always been more interested in the design room and workshop disciplines than actually flying the things.

I look forward to meeting you, please pass on my phone number to anyone who might like a helping hand. Yours faithfully. Mat Shears.

Dear James,

Thanks for all the information you sent, it was all very interesting. Because of the work situation at the moment, all I can do is read about sailplane homebuilding activities,

I would like to obtain the Sailplane Design book. I didn't know such a book existed till I saw the ad, Best wishes John Tufrey

Dear James,

The latest issue of the newsletter was very interesting, as usual. I was somewhat embarrassed by the eulogy of my humble contribution to the gliding movement. Like many others, I did what I was able to do and I don't feel that it can be compared with the service that dozens, nay hundreds, of others have given to help the growth of our sport.

I noted the comment by Alan Bradley and I can assure him, and others, that the photos, drawings, magazines, books and other items I have hoarded over the past 60 years will eventually find their way into the archives of Australian Gliding Museum. Some items have already been delivered and more are currently being sorted and packed for probable delivery during 2003.

In addition I have books, photos and other items on powered aircraft that are destined to go eventually to the Moorabin Aviation Museum. My dear wife is looking forward to the big clean-out that will free up a lot of storage space. With regards. Allan Ash

Dear James,

I can say something about a couple of points arising in the Newsletter No.27.

**MINIMOA IN JAPAN**

There is quite a story to tell about the Minimoa which is in Japan now. I used to know it quite well. I was friendly with the group in Munster that used to own it.

It was one of several hundred sailplanes captured by the French armies when they took control, of the French Occupation zone in Germany at the end of World War 2. It was operated in France for some time, then neglected, until the Munster gliding club heard about it. One of their members drove to Montargis, the place in France where it was stored, gave the owners a crate of beer for it and brought it back to Germany by road.

The Muster club worked to restore it, paying all the cost. Most of the work was done by one of their older members, Max Muller, "Uncle Max". It was regarded as a property of the group. When the Minimoa was flying again it was christened "Spatheimkehrer". This word, meaning 'late home comer" was applied to former prisoners of war who were (eventually) returned to Germany from the USSR. It was registered as D-1163.

It was in first rate flying condition by 1973 and attended vintage meetings, including the one in 1974 at the Wasserkuppe, which is where I saw it.(there were two other flyable Minimoas there and I flew one of them. This belonged to an English group and the aircraft is at present again being restored by Peter Underwood in his workshop at Eaton Bray near Dunstable.)

"Uncle" Max watched over the Mini devotedly but he died after some years. D-1163 remained with the Munsterclub, by now nicknamed the "Munster Mafia". It was overhauled again in 1984-5 and attended the International Vintage Glider Club rally in 1991.

Suddenly in 1994 the Minimoa disappeared. The late home comer had left home Again! It was already in Japan before the club officers realized it had gone. It seems that the member who had brought the "prisoner" back from France regarded the Minimoa as his property. When he had a very generous offer from Japan he accepted it and arranged shipment without consulting the other members.

No blame attaches to the Japanese buyers, a company called Aero Sport Promotions controlled by a Mr Honda (no relation to the motorcycle Honda). They bought in good faith and no-one disputes ownership. But the Munster group deeply regretted the sale. There was an unholy row, which ended in a German court, Lifelong friends became embittered and estranged. Some gave up gliding altogether and things have not been the same in Munster since.

Wolf Hirt took at least one of the first three "high wing" prototype Minimoas to Japan in 1935. An account of this excursion, translated into English, was published in the American Vintage Soaring Association magazine, Bungee Cord, in Spring 2000 and reprinted in the international Vintage Glider Club News No. 100 in Summer of the same year. This article can be made available to anyone who wants it. Although Hirt left the Minimoa behind when he returned to Germany I do not think it survive. There is a report of it being badly damaged later and probably it was not repaired. Regards Martin Simons.

Dear James,

Peter Champness asks about the meaning of the numbers for the NACA 23012 and 43012 wing profiles.

The five digit NACA profiles are different from the earlier four digit series and of course different again from the later "laminar" or "6" series.

The four digit profile are very simple. The percentage camber is given by the first digit, the chordwise location of the maximum camber is the second digit multiplied by 10, and the profile thickness is the last two digits.

Hence, 2412 indicates 2% camber at 40% of the chord and the thickness 12% of the chord.

6409 is 6% camber at 40% and 9% thick.

These profiles, which were very successful in their day and are still perfectly safe although not especially low in drag, were designed in a rather simple fashion. Camber and thickness were varied in systematic fashion and the result tested in a wind tunnel to discover what effect each change had, The most promising section for a particular aircraft and wing form were then selected from the published results. The whole process was "cut and try".

The 5 digit profiles were more theory driven, built around a different type of camber. Each section was designed for a specific value of lift coefficient. This "ideal lift coefficient" (Cli) is indicated by the first digit. But the relationship is not perfectly simple. The Cli is found by multiplying the first digit by 3 and dividing bt 20. So for 23012, the design lift coefficient is 2*3/20=0,3. When the first digit is 4, the Cli=4*3/20=o.6, an so on. The ideal lift coefficient is related to the most efficient angle of attack for flight with low drag. Hence the 230 sections are intended for efficiency at fairly high cruising speeds, and the 430 profiles for lower speeds.

The next two digits, after a little arithmetic, give the location of the maximum camber point. Divide by 2, so 30 is to be read as 15%, 50 as 25% and so on. (I do not know why the NACA didn't make this a little easier by saying 15 when they mean 15, but there it is.)

Finally, the last two digits as usual give the percentage thickness, 12=12%, 15=15% etc.

Very briefly, the entire family of five digit sections was developed to give high maximum lift coefficients, hence low stalling speeds, combined with low drag at typical cruising trim for the type of aircraft concerned. At the same time small negative pitching moments were desired, to help with balance at differing airspeeds, and reducing loads on the tailplane (or fereplane). As with the four digits series, the 5 digit profiles have been widely used on light aeroplanes and some sailplanes.

The position of the maximum camber point on all the 5 digit profiles is well forward. The curvature is concentrated over the first few percent of the chord, the rear of the profile is built around a straight mean line to the trailing edge. The forward camber can cause a fairly sharp type of stall.

The later, low drag or "laminar" profiles are another story again but the last two digits always yield the percentage thickness.

The full explanation is given in the standard reference work, Theory of Wing Sections by I.H.Abbott and A.E. Von Doenhoff. This was first published in 1949 but has been reprinted several times since and is readily available in most State and University libraries. Regards. Martin Simons.

# TECHNICALITIES

## BUILDING AN ENCLOSED GLIDER TRILER

By J. Buchanan & W. Johnston

The central theme is that the trailer should act as a roll cage to minimize damage in the event of a collision or other loss of control. It follows that the all components of the glider should be suitable restrained.

A nose cone is constructed to restrain the fuselage at the front while at the rear the tail is held down by a bolt which is passed through the tail wheel. Two hinged flaps pivot from the floor to house the bolt.

A fin box is part of the design and there can be a locking plate pivoting above the fin if it is not possible to pass a bolt through the tail wheel.

A hoop-shaped fitting which holds the rear fuselage down on top, and just ahead of , the fin is another method. Using a luggage strap for this purpose really isn't strong enough.

The fuselage rest on a dolly which is in turn restrained by a plate into which a tongue slides, This dolly should be secured to the fuselage so it can not move aft.

The wing root determines the general height of the trailer. In relation to the wing, jigs are located about two-thirds out from the root rib so that the weight is not taken at the tip.

The jigs are made from engineers felt and polyester resin. A foot is built into the leading edge of the jig which permits a suitable restrain. This wing jig foot goes into a socket in the floor and is pinned utilizing and extended locking pin; this enables locking from outside of the trailer.

Wooden tracks guide the wings and fuselage dollies, These tracks start on the inside of the back door. The root jigs have three wheels, the third to keep it upright, and locating spigots are built into it. The associated pins have cords leads.

The tailplane is carried in a jig which also doubles as a triangular wing support as a leg folds out. The tailplane jig also carries the towing out bar in a secure manner.

The tailplane jig itself is guided by tracks at the rear of the trailer and fits in between the fuselage and starboard wing. It is restrained by a spigot which is locked with a tractor pin on a chain or cord.

To tilt the trailer one can either hinge the pivoting drawbar using two round tubes or use square tube and the rack and opinion from a car starter motor with a wind up handle.

A possible problem with this however is that if your hands slips of the handle the load could spin the handle at high speed and smash your wrist. A better deal could be done adapting a screw car jack as Jim Garay has in his Woody-Roo trailer (details of this set up in the next issue).

A foot step is welded on each side at the rear which serves as a ground clearance and allows a person to stand on the rear of the trailer if tilting the trailer does not employ a rack and pinion or screw car jack device.

**MATERIALS**

The aim is to have 50to70 Kg on the draw bar. The Holden 14-inches wheels are placed three feet aft of the centre line depending on the distribution of load in the trailer. A double axle with an equalizer (centre pivot) gives insurance should a tyre blow, etc. Mudguards can be formed from flat galvanized steel of about 18 gauge.

The sides are made first if it is a square shaped trailer; they are joined together with a floor and roof cross members. However if it is to be a rounded top trailer, rather than square, the base (floor) is made first to fix the hoops to. The hoops can be formed on a ply jig . Sixteen millimeters (five eight) square tube of 1.6 m/m thickness (16 gauge) is used for the hoops and the upper longitudinals and diagonals floor frame/base. The lower stringers for the floor are 19 by 38by 1.6 m/m as are the cross members for the floor are 16 gauge ¾ inch by 1.5 inch steel at 600 m/m. Square trailers, which is the form general used for bigger, heavier gliders is made of large section material.

The floor is usually AC grade plywood of half-inch pinus covered on the bottom with coal tar (Hydroseal). It can be purchase in sheets of 1.200 by2.400 m/m. AC ply has an A grade surface and a C surface.

Ensure that the A grade surface is on the top. A galvanized ribbed floor decking is possible but is not elegant

Colorbond sheeting is the preferred cladding. To minimize corrosion do not finish off the sheeting level with the bottom of the floor; carry the sheeting down an extra ¾ inch or one inch (25 m/m). The fin box should have rounded corners based on flat strap and steel plate. The sheeting should also extend 20 m/m forward and aft of the trailer ends to assist in the weather proofing of the ends. A rounded section should be put on these ends to prevent cutting and injury.

In our current layout the retractable undercarriage gliders rig and de-rig with the fuselage dolly resting on the back door of the trailer. This allows the undercarriage to be lowered before sliding it out of the dolly.

The fixed wheel gliders have to be wheeled half a wingspan back of the trailer.

This because they generally have wide fuselages and thick wings which allows insufficient room to get the wings past the fuselage.

Rivets are 1/8" zinc plated steel. They are sealed with Selastic by filling the centre and wiping them trough a bead of Selastic

A knapsack spray holder is built. The knapsack spray holder should provided on the left hand side of the trailer, aft of the wheels, as when on the right it tends to block the drivers view in his right hand mirror.

It is a good idea to install a large army ammunition box with bolts in the front of the trailer to hold down steel tie down pegs, dolly wheel, etc. It is also possible to build light cages to hold water bottles, water ballast hoses, tie down pegs, the tail dolly and a shelf for a grease tin, etc. A window can be provided to allow for a registration label to be affixed.

And finally, it takes 1,500 hours to complete; 750 hours to build the trailer and 750 hours for jigs and fittings.

# The Bending of Trailer Bows

***By Peter Ralphael***

I have had a query from one of our members in relation to the bending of metal tube particularly the in the frame of a glider trailer. Having recently completed the construction of the trailer for the Duster, something that I hope to make the subject of a future report, I will describe my technique for producing these bows.

Significant reasons for producing a trailer frame with radiuses corners are the ability to wrap the cladding around the bend , improved structural integrity, weatherproofing, and not the least, aesthetic appeal.

Specifically I have used 20mm square tube in the upper frame of both the Woodstock and Duster Trailers and in conjunction with a cladding of 0.42mm Spandek Colorbond Steel this has been structurally adequate.

My secret weapon in forming the bends is a form tool in which the tube is pulled around a former to the required angle. While the picture best explains, this is simply a piece of 200mm bar stock bent to a suitable radius and fitted with side plates, the purpose of which are to prevent the tube from collapsing in the process of bending. The radius I have chosen for my bender is about 140mm on the inside of the bend and this has proven to be suitable in the construction of a couple of trailers and several roof racks. A handle about 2 metres long provides sufficient leverage to complete the operation. A clamp akin to a U bolt is used to hold a tube into the former at one end. Once the tube is positioned and the clamp in place with the application of body weight and a foot applied at the back of the bender the handle is brought up and over and the job is done. While that same principle can be applied to larger cross sections of tube the limitation would be the amount of force required to execute the bend and this therefore would probably enter the province of the hydraulic bender.

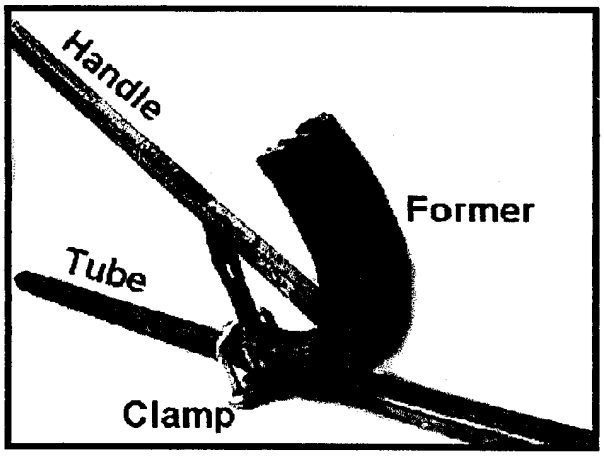
OK. So I have made a bender and lo and behold I have produced a nice right angle radius bend in my length of tube.

Now the curly question . How do I decide where to start my second bend so I arrive at the separation?

In the production of your first bend you should have taken a

reference measurement along the tube and placed a mark with which you lined up the starting end of the bender. After executing the first bend and with the use of a straightedge you can determine just how far the outside of the bend projects beyond this mark or how much longer the first leg is overall. This measurement will be the setback that you will deduct from the required distance to the outside of the next bend and future bends. Using this calculated length measure off from the outside of the first bend and place a mark on which to line up the bender. While the most critical distance will be between bends as the legs can be trimmed after bending, should you be a few millimeters in error some reworking is possible by straightening and repositioning.

One tip to ensure consistency is to maintain your completed bows in the same orientation in terms of the bending sequence in case your radius is not absolutely symmetrical when reversed.




## WHAT'S NEW

### "SPARROWHAWK" Ultralight Sailplane

An empty weight of only 155LBS allows the SparowHawk to be more than an ultralight. Easy assembly, transport, and storage are just a few of the benefits. Wing panels that weight only 40 LBS and a fuselage of only 75 LBS.

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The cockpit cell utilizes four carbon longerons with four transverse bulkheads in addition to the carbon monocoque shell for the ultimate in crash protection.

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The wing planform and airfoils are designed for optimal performance with extremely bening and controllable stall characteristics. Climbing and running, from the low to the last turn on final and the flare the Sparrow Hawk wing flat out performs.

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This advancement in engineering and manufacturing technology has never been seen in sailplanes before now.

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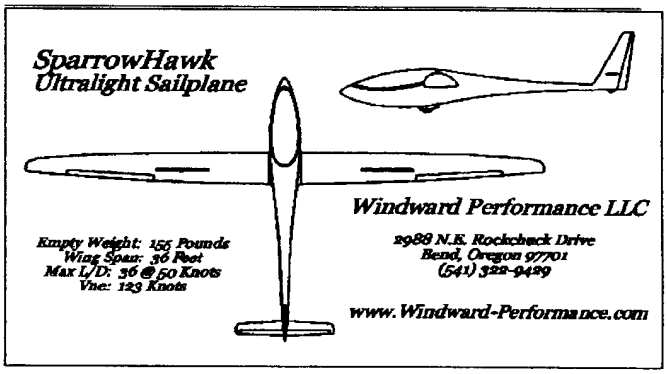


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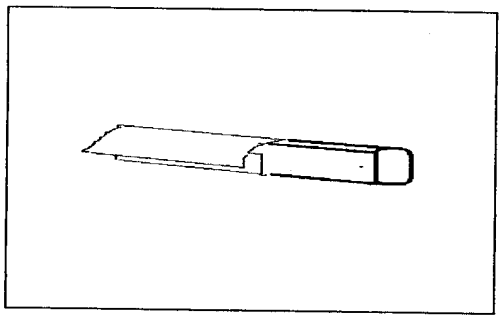
## HINTS & TIPS

### Cutting Square and Round Tube

***By Peter Champness***

I was cutting some square metal tubing and was dismayed by my inability to cut the end off square using my hand held angle grinder. I was initially confident that with a bit of care the ends would be tolerably square but after several attempts, carefully cutting along each edge in turn, I would get back to the start of the cut with quite a gap (up to ½ cm or more).



One helpful technique is to mark out each edge of the cut before starting and this is quite easily done without resorting to set squares, metal scribes and the like. Take a piece of paper with one straight edge and wrap the paper around the tube. Make sure that the edge lines up with its self after wrapping right around the tube and it will mark out a line exactly square to the tube. In this particular case I used adhesive tape (which I normally use for sealing the wing gaps on my glider – no need to mark the line), then cut along the edge of the tape. Result – Square cut!

### Scale Drawings

***By Peter Champness***

One is always trying to keep down the cost of new projects and one way to do that is to reduce waste by only buying sufficient material to do the job. A scale drawing can help to accurately estimate to amount of material, especially if the shapes of the components are complex (as they usually are).

I recently became enthused about the idea of building a small rowing boat when I found a relatively simple plan in the Australian Boatbuilder Magazine. Why buy a set of plans when the scale plans are published in the magazine? Saving number one of about $100. Since the published drawing included all dimensions in mm the shape of the full sized parts will be drawn directly on the timber and then cut out.

The accompanying article said that four sheets of 4mm ply would be required and one sheet of 9mm ply for the transom and frames. Well how big are the sheets? I rang Marine Timbers and they gave me the dimensions 2500x1440mm. I was about to order the five sheets when I thought "Wait a minute. Maybe I could get away with a bit less if I am careful about how I arrange the pieces and cut them out." I found a ruler and checked the size of the drawing. The scale turned out to be 1:20. The next step was to draw the plywood sheets to the same scale on a piece of paper. The frames, transom and curved sheets of the hull were then traced on to a piece of paper and cut out. A photo-stat machine is handy if you have access to one because it saves tracing all the parts.

The fun part now is the arrange the scale parts onto the scale outline of the plywood sheets and see how many parts you can get out of one sheet with minimum wastage. I was surprised by the result. I will be able to cut all the frames and also the floor from the one sheet of 9mm ply. The hull sides can be cut from two sheets of ply with some left over. So I was able to reduce my order from 4 sheets of 4mm ply to two! I enquired about the cost of Gaboon ply which is the lightest. It costs $116 per 4mm sheet so the saving would have been $232. Saving number two. However it transpired that 4mm ply is not available because the supplier has gone out of business. 5mm sheets are still available but would be 20% heavier. Pacific Maple ply however costs $38 per sheet and is just as strong. The Pacific Maple is about 10% heavier but because it is 20% thinner the result will be lighter weight and a saving of another $152 for two sheets.

I could go on and on about the use of scale plans to avoid expensive mistakes. I used scale cutouts on my house plan to see if some furniture would fit into my lounge room. It did but better to check before buying it and taking it home. Another time I was helping to design a new x-ray department at the hospital. Hospitals abound with design errors such as doors and corridors made too narrow to accommodate hospital beds and trolleys. I made scale cutouts of a hospital bed and a trolley to the same scale as the plans (1:50) and drove them though all the corridors and doorways. Potential difficulties were adjusted before the first brick was laid.

Aircraft grade timber is expensive so don't rush out and buy lots of it for your next Woodstock glider without checking how much you will actually need. Remember however that you can't substitute materials as I have done with the rowing boat unless you get proper advice. Also remember that the grain direction is specified for most parts and this must be taken into account when you are deciding how to cut the parts from the sheet with minimum wastage.

### Some Facts About Circular Saw Blades

**By M.Bennett**

The stability of a saw blade and its ability to cut clean smooth lines is governed by the following:-

The revs the saw is run at and the cup rolled into the blade by the manufacturer.
The thickness of the blade does not make the saw more stable unless it is excessive. The blade stretches when running and this lengthening of the toothed edge is not balanced by the cup in the blade then the saw goes 'drunk' and wobbles, leaving a rough uneven kerf.
When run at the correct speed the saw becomes flat and cuts cleanly. Tooth shape, set and number depends on the use of the blade. If it is for ripping along the grain then a coarser tooth spacing is required because the waste is longer grained and more material need to be disposed of to not jam the blade or heat up the blade which will cause it to go drunk.
Cross cut saws have finer spacing of the teeth and also finer sawdust, more easily cleared from the kerf by the gullet. Also the tips of the teeth are square topped, not sharp pointed to alternate sides.

## Bending Thin Ply

By M.Bennett

Steaming and bending of ply does not require pressure vessels to generate the steam as this method of softening of timber can be carried out in a length of metal tube such as a piece of galvanised downpipe with an end soldered in and set up at an angle with the bottom in a fire and say a gallon of water in the tube boiling.
The timber is placed in the tube and the top end plugged with rags to keep the steam in the tube. After a reasonably short time the timber strips are able to be bent quite easily around as with a former.

Bending ply for 'D' boxes can be done as follows

1. Bend the ply and immerse the bend line into a trough of water and let soak for say an hour. When saturated the ply is applied to the job and eased around the leading edge while being heated with a heat gun run back and forwards along the bend line in the sheet. This is steaming in place in effect.
2. Another method is to bend the sheet leaving it in a 'V' shape. Put a rolled up towel in the sheet along the bend line and pour boiling water onto the towel. After a couple of applications the sheet can be fitted to the 'D' nose and quickly pulled into place with web straps. Leave to cool and dry in place.

## SHOP TALK

## In the Workshop

***By Peter Champness***

My introduction to workshop practice is due to the kind assistance of James Garay who offered his help when I was trying to solve a mechanical problem. The cable release from my glider did not fit the available testing device which is required to determine its suitability for continued service.

The cable release from my Schneider Super Arrow was due to be tested for the annual inspection (GFA Form 2). The Super Arrow has an unusual release produced by Ken Davies as a copy of the English Ottfur release. Both the Davies and the Ottfur release are out of production now and are not often seen. The German Tost release is the Australian Gliding Standard and has been produced in various versions. The Davies/Ottfur release works on the same principal (an over centre lever and caged hook) as the Tost Release and this mechanism is the only type which is approved by the GFA.

The problem was that the test unit had been designed to accommodate the Tost release and the Davies unit did not fit. Therefore I was going to have to make an adapter of some sort. I had a piece of one inch angle iron which I thought might bolt on to the sides of the tester frame in some manner using the existing bolt holes. The Davies release had to be mounted at about a 30 degree angle to the frame and there where other considerations such as height above the frame and setback from the load ring.

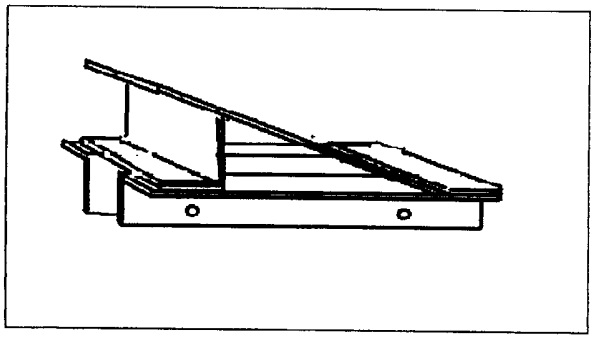
As I was pondering the problem and trying to imagine a suitable and easily constructed adapter James Garay appeared and immediately took charge. "No Problem", he said, "all you need are these two measurements". With this he pulled from his pocket a measuring gauge with which he measured the frame as one inch (25mm) wide, followed by a piece of paper which he used to mark the position of the bolt holes (distance apart and from top of frame). Now he said "Come by my place on your way home. By the time you get there I will have it half made!"

When I got there James had been to the Supermarket so that he could offer me tea and biscuits. These preliminaries over we went to his workshop which has a very fine collection of power tools and assorted materials. In most cases he has two examples of each tool (pedestal drill, bench grinder etc) and sometimes three, the result of a lifetime of birthday and Christmas presents ***(I usually get socks!).***

The angle iron was cut into two using a cut off saw fitted with a metal cutting disc and each piece was drilled using the bolt hole measurements from our piece of paper. The pieces of angle iron were then firmly bolted each side of a piece of 25mm square tubing to match the frame of the tester. Metal straps from 25x2mm steel bar were cut to mount transversely across the angle iron sides and a piece of steel plate 2mm thick was cut and drilled to match the base of the Davies release. Fortunately James just happened to have all these bits of steel just lying around in corners of the workshop! At one point the hacksaw slipped (my fault), and James almost lost half a finger but fortunately it was just a flesh wound. Obviously you can't be too careful when working with tools!

Finally James pulled out his welding machine and a purpose made steel welding bench and all the pieces were assembled and welded together. ***All this activity was accompanied by fine music on the workshop stereo system.*** Time flies when you are having fun and the construction time was about 3 ½ hours. I got home at about midnight. As I had told my wife I would be home early she was unimpressed and I have been confined to barracks since then. Testing has been successfully completed using the new adapter. It was rather a tight fit ( the frame might have been made with imperial one inch steel (25.4mm) rather than the 25mm which we used), but it did go on with some persuasion with a hammer.
***Editors note, all this affair just happened to have a happy solution, and as Michael Williams said...!- You have got to***

***have contacts. Because...! Without contacts you are nothing!***



## AHS Meet at Stonefield, South Australia

*By Peter Raphael*

Once again the homebuilders have been represented at the Annual Vintage Gliding Regatta. This year the venue was, as last year, at Stonefield South Australia, the home of the Barossa Valley Gliding Club. While this was the second consecutive year that this club was to host the event, on the previous occasion we had rescheduled our meet to Wangaratta due to the unavailability of aerotow. This year the expectation that a Tug would be present was enough encouragement for Mal Bennett and myself to decide to haul two gliders, Woodstock and Duster, across and participate.

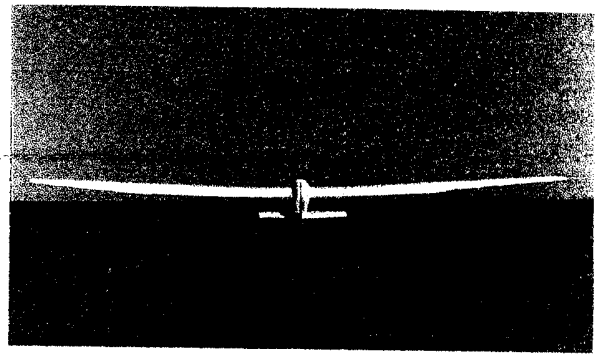
Our preparation was not without its difficulties as we had been building a long awaited trailer for the Duster in the weeks prior to the event and only managed to complete registration and fit out in the few days prior to departure.

With a long drive ahead of us we made an early departure from Melbourne travelling via Bendigo to pick up the Woodstock, a quick chat with the Bendigo guys then it was on to Ouyen before we headed west to Murray Bridge. An earlier unanticipated meeting with the Fruit Fly Checkpoint meant a short stop here to replenish some confiscated groceries then it was on the trail north to find Stonefield.

Arriving in the vicinity on dusk it was only the observation of a Blanik descending on the last launch of the day that enabled us to locate the airfield, and after reacquainting ourselves with a number of the Vintage Pilots our camp was established and it was time to hit the sack. 890 kilometres under the wheels and more than 13 hours on the road was enough to ensure that exhaustion outweighed excitement and we both enjoyed a fitful nights sleep.

Barossa Valley Gliding Club is situated at Stonefield, between Truro and Blanchtown, an hour and a quarter's drive from Adelaide. Here they have an excellent setup with a club house developed from an original stone farmhouse. Additionally, there is a recently renovated bunkhouse along with a couple of hangers. The Club also has powered caravan sites at the airfield. Reticulated water and power also mean that a reasonable level of amenity can be enjoyed. Resident caretaker, Kevin Sedgeman, even has his own lush green lawn nurtured, I believe, as an inducement for Alan Patching to return with the Vintage Gliders for the second year in a row. Shades of a corruption scandal!

As luck would have it the Tug that was at the field the day before our arrival, a Cessna 172, was deemed not necessary, if not unsuitable for towing vintage aircraft, and departed. This meant that the Woodstock would be unable to launch, being aerotow only, however Mal had installed a winch hook in the Duster over winter and pending its proving we would be able to share this glider.

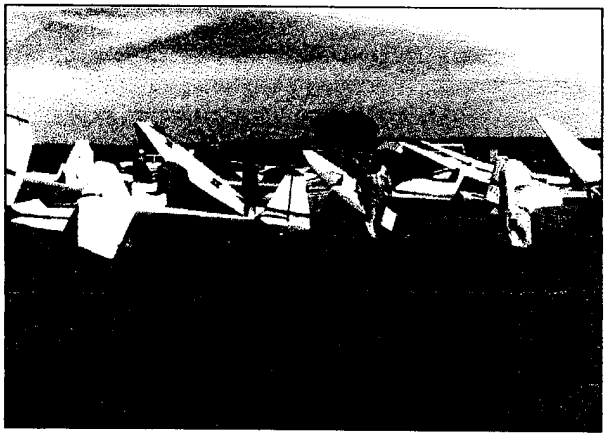


The Barossa Club have two winches, one Truck and one Trailer, however tangling problems with some new wire meant that the trailer winch was not able to be used and the truck was kept quite busy. Due to the rocky ground the practice is to drive the truck back to the launch point and lay the wires on the way back upwind. This minimises wear on the wires but does add delay to the launch process.

The next morning we duly rigged the Duster, caught up with fellow homebuilder member, Peter Champness, who had brought his Super Arrow across, then after briefing and familiarizing ourselves with the operation we towed out to the launch point. Two launches and Mal had pronounced the release a success, however while soaring it was apparent that the single electric Vario in the glider was defective and not providing a visual indication, only audio. The following two days were of mixed fortune, the conditions were oppressive with high winds and extreme temperatures reaching 46 degrees causing most to choose not to fly. We chose to tinker with the instrument panel and our brief forays out to the aircraft reinforced our wisdom in avoiding superfluous activity. The upside for us was that Ian Patching had brought along a selection of instruments for sale and while we were unable to rectify the RICO we were able to select a Cambridge vario to substitute in the glider.

Wednesday dawned to a more pleasant outlook and it was time for me to take a launch. The Duster lifted easily on the wire and once the climb was established a quick "too fast " signal to the winch saw a steady 50 knot climb to 1600 feet. Once released the advantages of taking the second wire became obvious as I was able to locate the previously launched K4 and fly over to share his thermal. It was not long before it became apparent that the new vario, while functional, would not indicate much more than about 1 m/s in climb or sink indicating that the capacity we were using was too small for it. However, by observing other

gliders marking thermals an extended flight was achieved. The thermals, as observed from the ground were by no means elusive as they manifested themselves in spiraling columns of dust at ground level, almost opaque in form and revealing their character as they drew up into the sky. Often, ground crews were galvanised into action as a willy willy would walk through the flight line, rattling wings and lifting hats. In order to further address our instrument problems we made a quick dash to the Woody to liberate a larger flask . Mal was able to launch, get away and confirm that this was the solution. (anyone have a spare vario capacity lying around?).

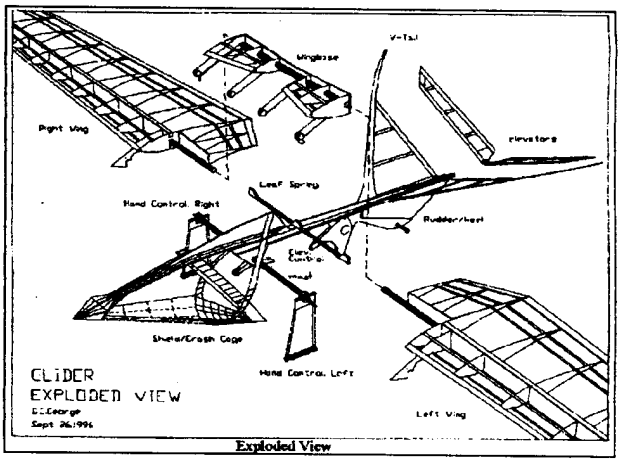


While our intention had been to leave on the Saturday in order to break our journey on the way home the prospect of missing out on the Evening Dinner and presentations planned for Saturday night overrode our plans. We were treated to an excellent dinner prepared by the club members and shared the excitement of the winners of awards in the various categories created to inject enthusiasm and friendly competition within the group. Leigh Bunting rightly took Concourse D'Elegance for his recently completed restoration of a Grunau complete with open cockpit.
Sunday morning saw us on the road again back tracking to Murray Bridge. Here we altered course returning via Bordertown. Once back in Victoria we were subjected to a drive in smoke impaired visibility which persisted all the way back to Bendigo, apparently fed by the recent bushfires in the Big Desert.
One of the great aspects of associating with and being a member of the Vintage Gliding Association is the ability to share the wealth of experience that this aging group possess. It was interesting to note the continued growth in the Vintage Gliding movement at a time when gliding in general appears to be suffering a downturn. We look forward to the proposed event in Ararat next year and with a closer proximity to Melbourne, hope to see a few more of the homebuilder members there.

# A Fantasy of Flight

*by Douglas C. George*
*Copyright 1996*
***Editors note. This is an excerpt from Sailplane Builder Issue # 10-97.October 1997.With thanks.***
Man's age-old dream of flying has not been realized. It's a wonderfull thing to fly an airplane through the clouds and over the tree tops. I don't intend to demean these accomplishments, but it's not the same as the dream. Our machines are not transparent enough to our senses, not yet coupled intimately to our nerves and our sense of balance to satisfy the feeling of really flying, the flying of our dreams.
Over the years, the development of the ultra-light aircraft has moved us inexorably closer to the goal, but we are not there yet. Mostly, we have been waiting for the technology. Flying is a complicated business for us human dreamers. We're built more like a wet log than like a bird: our bones aren't hollow. We have problems.

Because the human body is so massive there isn't much of an allowance remaining in the flight equation that's left for the weight of the aircraft. The aircraft of our dreams has to weigh almost nothing and this has been a bottleneck. There have been breakthroughs. The science of strong lightweight materials has made great strides in recent years. It seems reasonable to conclude that eventually, the technology will provide the means to build it strong enough and light enough. In the mean time then and just for the fun of it, I have attempted to design an aircraft that will begin to fulfill the fantasy, the dream of flying.



Exploded View

This glider design is an attempt to create what I call a "close-coupled" aircraft, an aircraft that is closely linked to the pilot's nervous system. Control of the craft would be a matter of reflex action and unconscious execution of balancing motions.

Flying this aircraft would be quite like surfing or bicycling wherein there is a minimum of moment to moment conscious thought involved. The mechanisms are designed to be transparent to the pilot's consciousness. The aircraft is intended to be an extension of the central nervous system.

One major objective of this design is to allow for adequate control at extremely low speeds. The intended flight-speed envelope is from a low of around twelve miles per hour up to about fifty miles per hour. It is at the bottom end of this speed range, when the aircraft is delicately balanced on the edge of an aerodynamic stall, that the close-coupled aspect of the design will be important. The aircraft has large control surfaces and the design will allow the center of gravity to be shifted by using leg motions.

In general, the aircraft is a strap-on, foot-launched glider. Because it is designed to be foot-launched, it will need to weigh about thirty-five pounds or less. The wing span is thirty-two feet. and the wing area is about one hundred fifty square feet. The airfoil is relatively thick, intended for high lift at low

speeds. The illustrations in this article are based upon a one-sixth scale model made of balsa wood that I built a few years ago. The model is fully functional in that all of the controls and features are present and work as described below. It required about four hundred hours of construction time. It's a curious mixture of design fantasy and serious engineering. I believe that if it were built full size it would fly. On the other hand, it is in large part an artistic endeavor done, as I said, simply for the fun of it.

As shown in the illustrations, the glider is strapped to the pilot in two places, the upper torso and the rear pelvic region. The method of attachment allows for bending and arching motions of the spinal column and translates those movements into up and down motions of the elevators. There is a drag link mechanism incorporated into the upper torso attachment that compensates for the change of length between the two attachment points caused by bending of the pilot's back.

Roll movement is affected by the hand-operated controls located under each wing. Each hand-operated control mechanism serves to rotate the entire corresponding wing about an axis though the center of lift of that wing. The entire wing rotates except for the short section in the center called the 'wing base'. The wings plug into the wing base and can be detached for transport. Because both wings can be rotated at the same time as well as independently, these controls may be used to effect pitch motion of the glider as well roll motion. In fact this pitch control will be more extreme in its effect than that caused by the elevators.

The two hand-controls also enable the pilot to flair out upon landing. This is possible because the mechanisms are two-stage devices. Though the range of movement used during normal flight, the contols exert a high leverage over small changes in the angle of attack of the wings. If the controls are pushed outward beyond the normal range, by the full extension of the arms, two high-lift cams become engaged resulting in a large rotation of the wings. The net effect will be for the aircraft to stall or flair out.

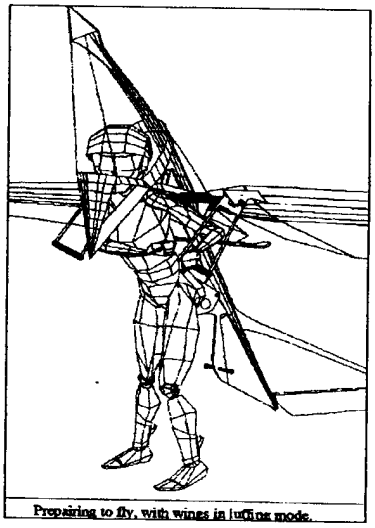
Yaw control is coupled to roll control. If only one of the hand-control mechanisms is moved it will cause the glider to roll and yaw to the side of the active hand-control. This is due to the increased wind resistance on the wing which is being rotated and is normally referred to as 'adverse yaw'. A left turn, say, would be initiated by use of the left hand control. This would result in both a leftward yaw and a counter clockwise roll. Another rather unusual aspect of this glider design is that the wings are spring mounted relative to the fuselage.

As mentioned above, the wings plug into a short central section called the 'wing base', The wing base in turn is attached to the fuselage by two methods. First, four separate arms extending from under its leading edge grip and swivel about a tube (called the 'mast') upon which the hand-control devices are mounted. The trailing edge of the wing base is (reversibly) attached to a leaf spring. The leaf spring, in turn, is mounted firmly to the fuselage just behind the center of lift.

The reason the wing base is secured to a leaf spring as opposed to being rigidly attached to the fuselage is that the leaf spring allows the glider to function as a 'constant lift' flying machine. That is to say it can automatically dump excess loads such as those caused by turbulence and gusts of wind. Birds are constant lift fliers. Because they have flexible and easily articulated wings, birds routinely shed excess loads caused by turbulent air. Normal airplanes on the other hand, with their rigidly attached wings, try to fly at a constant angle of attack to the wind with the consequent sudden changes in direction that result from gusts.

The leaf-spring mounted wing, in. addition to allowing for constant lift flying, also serves as a feedback device which continually conveys information to the pilot through small motions of the hand-operated control mechanism

Another feature to be noted is that the wing base is designed to allow for 'luffing'. When the aircraft is on the ground being prepared for flight, or when one has just landed, there is a need for some way to quickly disengage the wings. Those readers familiar with sailboats are aware of the analogous problem and its solution, namely, luffing of the mainsail



Preparing to fly, with wings in luffing mode.

To accomplish luffing, the wing base is free to rotate about the mast except when it is locked down to the leaf spring. The manner of locking the wing base to the leaf spring is by spring-loaded deadbolts. The deadbolts are released by pulling on lines attached to them allowing the whole wing base assembly and the attached wings to rotate freely about the mast. Needless to say, this is only to be done when the craft is safely on the ground.

Additional features include an air speed indicator and altimeter (perhaps projected onto the wind screen by a head-up display); a crash pad and flotation device located directly under the pilot's chest; a combination wind screen and shield; ankle hooks attached to the backside of the flight boots (so the pilot can hang up his legs during extended gliding periods) and the corresponding hook support hangers attached to the lower end of the fixed keel. Quick release buckles are provided for all harnesses.

It is conceivable that a maneuver could be performed while flying this craft that would enable the pilot to gain altitude. The maneuver would consist of putting the craft into a shallow dive to gain air speed and then, near the bottom of the dive, the pilot would push forcefully outward with both arms. This action would result in an impulse of energy being imparted to the craft which would impel it back up to or, possibly, higher than the altitude at which the maneuver began. The idea is quite analogous to the action of pumping a child's swing higher and higher by imparting an impulse at the appropriate point in the

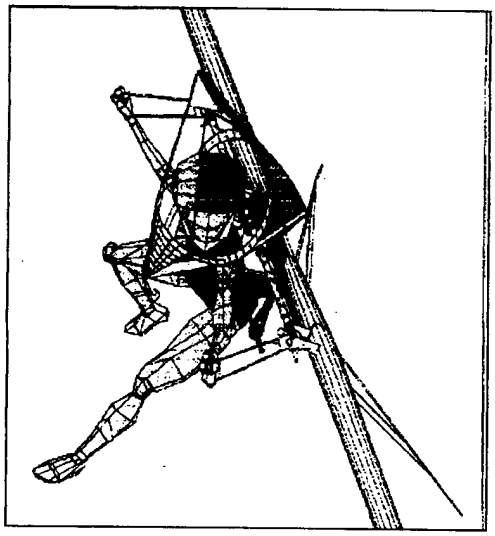
cycle.

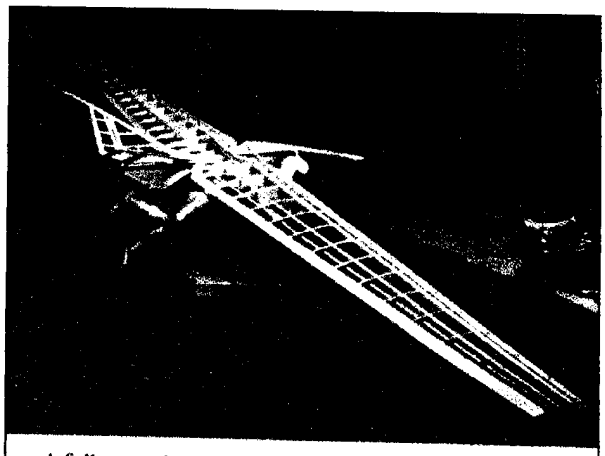
This would entail considerable effort, of course, but a well conditioned athlete can, for example do lots of push-ups without resting. The effort expended in this maneuver would be roughly equivalent to doing push-ups with a thirty pound backpack on. This isn't something one would do constantly, but it could be done at intervals in order to extend one's glide range.

The level of technology that is envisioned for this glider is roughly that which is used to build sailboats or sailplanes, a level that is possible for the dedicated hobbyist. It does, however, need state of the art technology in the realm of materials. In order to meet the strict weight requirements, construction demands the use of the very lightest and strongest materials available. Graphite composites, Mylar wing covering, Kevlar laminates and whatever advances in materials that are available are absolutely necessary.
It might be possible; it might not be.

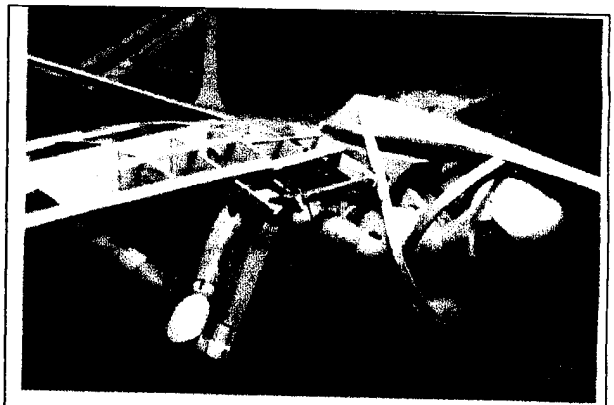
Thirty-five pounds is a tough target to reach but I would guess that it can be done. After all, the Daedalus, the famous pedal-powered aircraft, had a wingspan of some one hundred fourteen feet, yet it weighs only seventy pounds. The structural requirements for a cantilevered wing are more stringent, but it should be possible to build one light enough.

An aircraft of this type would be, to make an understatement, highly maneuverable. It would be roughly equivalent to surfing, a completely involving experience. Yet, when it comes down to it, basic surfing isn't so hard. Once you catch on to flying this machine, you wouldn't have to think about it much; you would simply be flying, just like in your fantasies





A full span view of Douglas C. George's wonderful model.



A close up of the control mechanism and upper attachment for the wing.

This is a close up of the lower attachment point. The wings have been removed for clarity.

The Fantasy of Flight comes in for a smooth landing on Mr. George's drafting table.

**AIR SHOW DOWN UNDER SPECTACULAR**
*By Peter Raphael*

2003, The centenary of Flight, was the year the Homebuilt movement was invited participate in the The Air Shows Down Under spectacular at Avalon Airfield, purported to be the largest air show in the southern hemisphere. The public component of this show was to be held on the 13-15 February after the trade days had been wound up.
As the nominated organiser for GFA, Ian Patching was chasing support for the event. As well as advertising in Soaring Australia and with the support of Vintage Gliders Australia he had also approached the Homebuilder Group. As a result we were able to offer 3 aircraft from the homebuilt arena to augment the static display. These were to comprise, the Monerai, Woodstock (Woody Roo) and Duster, a diverse selection guaranteed to add some colour to the display.

Arrangements were made to form up at the Bacchus Marsh airfield on the Thursday and travel to the field as a group , hopefully to avoid any drama obtaining accreditation and passes, this was the day before the public would be permitted to attend and enabled us easy access to our display area. Ian had done very well in negotiating a high profile display area adjacent to a main thoroughfare, to the Warbirds display and the flight line. Our neighbours were the AUF and the SAAA, with the latter demonstrating covering techniques on the tail surfaces of vintage gliders in support of the Australian Gliding Museum. Once inside the show little time was wasted in assembling the aircraft and positioning and securing them in the allocated space, although the distraction of the constant arrival of display aircraft did little to help in this regard. When we had ensured everything was in place our vehicles were then escorted to an area close to the main Control Tower where we were able to leave our trailers for the duration of the show. Most of us then returned to Bacchus Marsh in order to minimise our travel over the ensuing days

Friday dawned and we headed of to the field. Our task this day was to man the pavilion and coordinate our participation in the display. One could sense the excitement building as the crowd built up and the air became filled with the noise of large piston engines and ear shattering jets. We had been allocated a 12 minute slot in the display at 4 pm. The routine was to launch the Golden Eagle, flown by Alan Patching behind the Super Dimona flown by Bert Perssons closely followed by the Janus piloted by Ian Hardy and towed by the VMFG Pawnee. After release the Eagle would return to circle in front of the crowd and after it had landed the Janus would perform a low downwind pass while dumping water. A pull up and turn into wind then concluded with the tail chute deployed during the landing approach. These flights were conducted without incident although the concurrent flight of a gyrocopter nearby did cause concern. Being part of the groundcrew, to be present at the launch and recovery of the glider was certainly a highlight of the day, particularly when you are confronted with what appeared to be thousands of people looking on.

Saturdays display spot was scheduled for around 1 pm and save for a little consternation that we would not be given enough time to bring ourselves to the flight line everything went like clockwork. We managed what could be considered a very polished display with both gliders rolling out at show centre right on target. Alan Patching was then able to enjoy the adulation of the crowd as his dedicated crew man handled the glider back to base. For the Sunday show a low ceiling saw us put on standby in case some flights were cancelled. However, the clouds eventually parted and it was obvious we would not be required in the display on this day. One interesting observation I made while walking through the crowds was that while the jets were active it was like weaving through a field of statues as time stood still. People were rivetted to the spot!

In the static area one had only to stand near the gliders to attract the attention of passing public. Interest varied from those with past experience that they wished to share, through to people with desire to become involved in the sport. John Anselmi of the Grampians Gliding Club (Ararat) was was present each day and generously spent the majority of his time fulfilling this role. At one point I had also observed James Garay assisting a young lady into the cockpit of his glider, and by all accounts he was certainly enjoying himself and the interest his glider generated. The Shortwing Kookaburra attracted much attention as it rekindled memories in a number of visitors of their first experiences of gliding and Ian embarked on a sales drive to see what the market would bear.

Over at the pavilion a roaring trade was done in distributing a free poster depicting Bernard Eckeys' ASH25 soaring above Ayers Rock, and Geoff Hearn, assisted by a number of others were kept employed rolling these up in rubber bands. Over the duration of the show thousands of these posters plus a equally large number of soaring club related brochures were distributed to the public so it will be interesting to see if this results in an influx of interested people around the local clubs.
On Sunday afternoon at the completion of the flying display the crowds quickly dispersed and with some negotiation with the ground staff we were able to weave our way through the departing hordes and access our trailers. A meandering convoy through the rapidly thinning crowds along the thoroughfares and we were returned to our aircraft to derig. While we were all tired from the demands and excesses of the past days and somewhat seared by the summer conditions, all were in agreement that it had been an enlightening and rewarding experience.

I cannot comment more highly on the effort that Ian Patching had put in to coordinating our involvement in this show. He knew who to speak to to get the job done and his affable nature kept us on side with the numerous marshalls with whom we had to negotiate constantly. His Second in Command, Caleb "Turncoat" White, (ask Ian about that one), was also outstanding in his 'behind the scenes' involvement as well, as it was evident that much work had been done before we even set foot on the field. I have not attempted nor am I capable of identifying all those individuals who were involved over the 3 days as they were many and from all walks of our sport. However, they all shared the common theme of our enjoyment of gliding and a desire to expose this to the masses. Thanks Everyone!

Participating Aircraft:-
DG 500, Duster,Golden Eagle, Janus, Monerai, Super Dimona, Piper Pawnee, Shortwing- Kookaburra, Woodstock.

## Marske Monarch Update

*By Peter Champness*

Since last time the Carbon Monarch plans have been examined by Rob Marriott and John Buchanan at Bacchus Marsh. Rob has been following the Monarch development for many years and was hoping that the airfoil might be upgraded. He says that the NACA 23012 airfoil has poor stall behaviour. According to Rob the airfoil has a sharp transition in the mean camber line which is fairly far forward. Behind this point the camber (or perhaps the upper surface) is almost flat. The result is that as the stall is approached the airflow separates suddenly over most of the upper surface. Rob may be right about this. So far I have not heard any reports about bad stall behaviour in the actual aircraft. However I would be interested to hear from any readers who have further information.

A worse problem was found during the scrutiny of the plans. I think I mentioned last time that there was no materials list or building instructions. The materials are specified on the plans in some cases but not all. The ribs are cut from some type of corrugated fiberglass sheet and cap strips are added to the upper and lower surfaces. However the type of corrugated sheet is not specified and I have no idea where to obtain it.

The latest problem to emerge is the construction of the spar caps. The spar caps are made from carbon pultrusion rods. Jim Marske has pioneered the use of pultrusion rods for glider spars. In a conventional spar layup the carbon fibers are laid in the mould and the epoxy is added to wet out the fibers using brushes or rollers. The result is almost always too much epoxy which adds unnecessary weight, and the fibers are slightly wavy. When the spar caps are placed under tension the fibers are pulled tight but some are more wavy than others so the load is taken by one fiber at a time until it breaks, then the next one becomes tight and fails in turn. In the manufacture of pultruded rods the fibres are fed through a bath of epoxy and then pulled out through a narrow hole. This squeezes out all the unnecessary epoxy but more importantly all the fibers are under tension as the epoxy sets and hence they are all straight. The result is a rod which is more than 4 times stronger than the conventional lay up.

Anyway returning to the Monarch plans, the spars are made with carbon fiber pultruded rods which is a good idea but the plans don't specify how many rods are used nor whether the full number of rods go the whole length of the spar or if they are tapered off toward the tips! The spars can be purchased ready made from Marske so I am not sure if this omission is deliberate. If I do buy them the transport costs will be an additional factor. If all the pre made items are purchased from the factory the cost is over $40,000 which is too much for this type of glider.

## STONEFIELD SOUTH AUSTRALIA, Jan 2003

*By Peter Champness*

The Homebuilders and Vintage Glider Regatta at Stonefield has been covered by Peter Raphael. I was able to attend for a few days over the first weekend including the Monday and had some very memorable flights. Mike Williams has recently become my partner and half owner of the Schneider Super Arrow. Mike is building a Monerai but it may be a few years yet until it is finished so he was looking for something that he could fly in the meantime. We had put in quite an effort to get the glider ready for the Stonefield regatta including stripping and repainting the fuselage. Mike was able to take the whole week as leave and kindly agreed to tow the glider to Stonefield and back. Since my time was limited I booked a discount airfare to Adelaide and hired a car for the few days.

When I arrived on Saturday afternoon the Super Arrow was already unloaded and rigged. I was happy to take it for a test fly right there and then and logged about two hours of local soaring. The country around Stonefield was extremely dry at the time but the scenery was quite beautiful. The Mount Lofty Ranges are about 20 km west of the field, running north and south and beyond them the sea (Gulf of St Vincent) is visible from heights above 3000 ft. To the East is the Murray River which makes a broad bend and flows south to Lake Alexandrina. The Sturt Highway runs east-west to the south of the airfield and is a very useful reference for navigation.

One of the very attractive aspects of the flight was seeing other wooden gliders in the air. Vintage gliders and Homebuilt gliders are generally very distinctive in their appearance and this aspect is enhanced by the bright colours and trim which are so lacking in the glass fibre fleet. With half a dozen such aircraft making slow circles in the local thermals it was a real treat to be part of it.

On Sunday I was able to fly the glider again because Mike needed to do his winch endorsement and he had to wait until the two-seater was available. I decided to attempt a cross country flight and decided on Waikerie and return. I chose Waikerie because it is basically a matter of following the highway, hence there was little chance of getting lost. Sunday was rather hot with a maximum temperature of about 36 degrees. Problems with the winches meant that launching was slow and it was about 3pm before I got away.

I headed off tentatively toward the west. It was so dry that there were no clouds at all and the thermals were fairly far apart which gave me some anxiety from time to time. About 20 km east of Stonefield there is broad swath of scrub which is called the Brookfield Conservation Park in the road atlas but the locals call it "donga". There is absolutely no prospect of landing in the 'donga' so a good height is required to get across it. I started to cross the 'donga' but did not have the height to get to the other side with a proper reserve of altitude so I searched north and south within gliding distance of the landable areas to the west. After about ten minutes I was rewarded with a strong thermal which took me to 7500ft. This was enough height to easily cross the "donga', then the Murray River and then half way to Waikerie. Unfortunately I did not contact another thermal in all this time and about twenty km west of Waikerie I was getting rather low. There is very little habitation in this part of South Australia and I have previously had the experience of landing in a well settled part of Victoria near Bendigo and then being unable to find any inhabited farms for about 5 hours (by which time I was assumed to be lost by the club and SAR procedures were instituted). I also remembered that I had left my mobile phone behind. I therefore had to stay within gliding range of the Sturt Highway I planned to do a low high speed

zoom over the Highway then a pull up and land in the adjacent paddock. Passing motorists might then think that I had crashed and come and give me a lift to Waikerie.

I was about to put this plan into action when I found a little broken thermal which gave me about 500 ft and then another which took me to about 2500ft. By now I had given up on going to Waikerie and started to work back toward to Murray River at Blanchetown. It was all low and anxious flying until I had crossed the river and reached the edge of the 'donga' where I found another strong thermal which took me to 7500ft again which was more than sufficient to return to Stonefield. Overall it was about 150km in two and a half hours which was the second best flight of the day.

On Monday it was definitely Mike's turn for the glider but since I had to leave early to drive to the Adelaide airport I decided to take a few early launches on the winch. Dave House was doing some passenger flights in his K4 so the winch was out early. I got to the launch point at 0930 and had the usual porpoise like launch to 900 ft for which the Super Arrow is famous (due to its compromise tow hook position which is to far forward for a decent winch launch). I found a very small and narrow thermal soon after launch and climbed to 2000ft. The thermals were very abundant and by 1015 I was getting 4000-5000ft. I have never been in such good conditions so early in the day before. I heard a radio call from Gawler where they said that they were getting 7000. About this time I recalled that the forecast had been for a trough to pass though. Usually troughs in southern Victoria produce solid overcast at 1500ft and no soaring is possible but in these very dry conditions it was a very different situation with lots of strong thermals and no clouds. My next thermal went beyond 7000ft and I decided that it was definitely Mike's turn.

I headed straight back to the airfield and passed a thermal on the way which was marked by a column of dust over 7000ft high. The whole thermal was visible from bottom to top.

I landed at 11.00 Hrs. and then rushed around trying to organize a barograph for Mike because he had not got his Silver height. Alan Patching was kind enough to be his official observer. Unfortunately when others heard my breathless news about the prevailing conditions there was a rush to get gliders to the launch point and we wound up at the back of the queue. Because the winch queue was very slow it was about 3pm before Mike got to launch. Some tiny very brief clouds were forming at about 11-12,000ft. The thermals being so high were quite far apart by now so only one out of two gliders were getting away. I tried to spot the willy willies from the ground and guide Mike toward them using my hand held radio but as it turned out he wasn't listening. because he had a fair old struggle to stay up after to launch but in the end he made it and disappeared.

I had to leave to catch my plane then so I didn't get to see Mike land. It turned out that he climbed to almost 11,000ft. The barograph tracing recorded a climb of 9,500 but it was not calibrated. The rules allow for the barograph to be calibrated within one month of a badge claim. When we had the calibration done it turned out that the barograph reading about 1000 ft low so Mike has put in a claim for both his Silver and Gold height. This made me jealous because I have been trying for my Gold height for over 4 years but haven't got it yet!

## A LITTLE BIT OF GLIDING IN AUSTRALIA

By Allan Ash

### The Melbourne Gliding Club at Coode Island

In the autumn of 1931 the Melbourne Gliding Club arranged an agreement with the Larkin Aircraft Company to fly from Coode Island aerodrome, which was situated a few miles to the west of the main city section of Melbourne (the site of the present sprawling complex of interstate truck terminals). The Larkin company had several hangars and buildings on the aerodrome where they carried out maintenance work and ran an assembly line of imported DH9A and Moth aircraft. The site was very convenient for gliding and allowed car-tow launches to respectable heights.

As members gained experience, launches to 1,000 feet were common in the open primaries especially when the centre of gravity position for the tow-hook was introduced during 1932. To prevent the solid wire from tangling after being released Ken Davies devised a drogue parachute which was attached to the glider end of the wire and lowered it gently to earth as the tow-car slowed down. To stow the drogue during the launch the club tried several novel ideas. One was to stuff the drogue into a tin can fixed to the front of the skid. Another was to stuff it up the leg of the pilot's trousers. Both systems worked equally well. Among the members flying at this time were H.E. (Ham) Hervey, Carr Withall, Fred Gascoyne, and Ken Davies. Members paid an annual subscription of £1 plus another £1 a year if they were flying members. Launches cost a penny each by bungy and sixpence by car-tow. For comparison, an advertisement in an American magazine of that time quoted an American gliding club offering membership at $50 a year and $5 an hour for flying.

During 1933, when Carr Withall was secretary of the club, the Rhon Ranger was fitted with a nacelle consisting of a light wooden frame covered with fabric. The modification added only seven pounds to the aircraft's weight but resulted in a marked improvement in its performance, especially for slope soaring. Experts in the club estimated that the glide ratio had been improved from 11 to 14, but no proper tests were made. Later in the same year the club carried out some night flying at Coode Island, rising from the darkened airfield to complete a quick, smooth circuit. The all-over-grass field was not difficult to find in the dark. It was the pool of blackness amid the glimmering street and house lights of the surrounding city and suburbs. In addition to flying at Coode Island aerodrome, the club made several expeditions to Mount Fraser, a long-extinct volcano at Beveridge, 25 miles north of Melbourne.

To meet the increasing need for more aircraft, a second Rhon Ranger was built by the members during 1934. Some publicity was obtained by exhibiting the partly-built glider and the Zogling at the 1934 Melbourne Motor Show, and this attracted a few more members.

**Move to Mount Fraser**

When the Larkin Aircraft Company ceased operation during 1935 as a result of the lack of work, the Coode Island aerodrome was closed down and eventually redeveloped as industrial land. The Melbourne Gliding Club transferred its operations to the field at Mount Fraser which they shared with several private owner groups including Bill and Jack Iggulden, who were flying their Mead Challenger *Termagent* 2, and Frank Renehan and Arthur Baxter who had built a Baynes Scud 1 sailplane, a tiny machine with a span of about 26 feet, only 85 square feet of wing area and an empty weight of about 100 pounds. In company with these aircraft, the club's primaries performed circuits and short soaring flights along the short, smooth beat of the hill. Instructors at this time included Geoff Richardson, Jim Borgeest, Ken Davies and Carr Withall. During the winter of 1935 Ham Hervey left for England where he became associated with the London Gliding Club. Later he became the London club's first full-time manager until the outbreak of World War 2 when he joined the RAF and began a distinguished career which involved the establishment of a military glider force. Toward the end of 1935 Can Withall also left Australia for England. He also joined the London Gliding Club, and became a pilot with the RAF at the outbreak of war. He died when his Spitfire was shot down during the Battle of Britain in 1940.

Because the regulations covering the distribution of government subsidy for gliding called for the recipients to be legally constituted bodies, steps were taken during 1936 to incorporate the Melbourne Gliding Club as a registered company. As the Victorian Gliding Association had, by this time, ceased to operate, it was decided that the club should revert to its original name and it was under the title of the Gliding Club of Victoria that the incorporation was finalised.

At Mount Fraser, the club built a hangar and club house. This housed the three gliders and the tow-car and enabled members to carry out more regular flying, including slope soaring when the wind was more than 15 mph.

*To be continued...*


International Air Show Avalon –February 2003

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# SMILE

***Editors note. This corner is just for your enjoyment, if you don't like it, don't read it...but don't write or ring me about it!***

I am in deep financial trouble and need some advice" said the client to his lawyer. "I am down to my last hundred dollars and want to know if you can answer just two questions for that amount."

***"Certainly sir", said the lawyer, "what is the second question?"***

--------*0000000*--------

A new law says that solicitors and barristers must be buried in holes forty feet deep.

Deep down, they are good people.

--------*0000000*--------

You seem like an intelligent, honest man who wouldn't lie to the court." The lawyer said sarcastically to the witness.

"If I wasn't under oath I'd return the compliment" said the witness.

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