THE AUSTRALIAN HOMEBUILT SAILPLANE

Editor: James Garay

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G' day Folks!

Well!...here we are again at the end of another year and you have in your hands another issue of this periodical which is our only way of communication between us. In our last issue 'number 26', I did recall asking for feedback because my folders are always empty and I have been struggling and begging for articles of interest to us.

I have received lots of letters since the last newsletter which are published here for your interest and also so that you can see what I, the Editor, have to put up with! Please keep working!

One of our new members, Martin Simmons, has published Volume 2 of his book on Sailplanes (see more in the Mailbox section). We hope to have a book review in the next newsletter.

Mike Williams (Lara, Victoria) is building a Monerai and sent in an article about how he came to start the project. He has done more work since then so we are looking forward to further news about this project.

Scott Johnson, wrote to tell us that his BG 12 A is getting close to completion (90 %). This is another one of the projects which is "out there", but should soon be finished due to the skill and diligence of its builder.

There may be others of you who have partly finished sailplanes. Write in and tell us about them, especially if the project has been stagnate for a long time. Other members might live close by who can help you to get your project going again.

I sent the Newsletter to Peter Champness for proof reading. He pulled out his copy of Fowler's Modern English Usage and then applied the red pen with vigor! As you already know, English is not my native language and I have the tendency to construct the phrases back to forwards! So if you think that an article looks all wrong now. Peter is to blame. Thanks! Peter.

This issue that you are now reading, has been prepared with the collaboration of Peter Champness, Jim Jenz, Michael Williams, Alan Bradley and Alan Patching. To all of them...I give to them my sincere thanks!

Again we are joining The Vintage Gliders for our summer camp, it will be at the Barrosa Valley Gliding Club airfield in Stonefield in South Australia. **Remember the date: Saturday 4th to Saturday 11th January 2003.** You'll find more details somewhere inside this issue.

I take this opportunity of season greetings to talk on behalf of those wonderful peoples who are behind me to produce this newsletter, they are my silent partners who are devoting their time absolutely free of charge, without them this journal could not be possible. They are Eddy, Virginia, Sergio and Leo. To all of them! Thanks a lot!

Christmas is the season of love and joy. For sharing beautiful moments... and creating warm and wonderful memories

From all of us, MERRY CHRISTMAS AND HAPPY NEW YEAR

Address
all correspondence to:
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Australia

Inside This Issue

MAIL BOX

Dear James,
I am working on the SHA workshop report BUT have just read the article on aluminium alloys and it must be an old Handbook because Lead Pencil is NOT used to mark out - a circle drawn on a sheet of al alloy will drop out after a few years!!! These days a fine felt pen is used or tape placed on the sheet. Check with JB at Bacchus Marsh. He recently did a course at Kangan Tafe. Regards Alan Patching.

Dear James,
I am writing to notify you of my change of address. I would be grateful if you would note the change in your records. You might note also that I do not have E-Mail service on my own computer but the above address will get to me through my daughter's computer. We will be in regular contact with her, probably several times each week, and she will pass on any message to us quickly as necessary.

Congratulations to all concerned on the continued good work and growth of the AHS. I look forward to each issue of the magazine as it is published. With regards. Allan Ash.

Ed's Note:
Allan's new address is Unit 70, Village Baxter. 8 Robinson Road. Baxter Vic. 3911
E-Mail ; afash@optusnet.com.au

Allan is an icon in the Australian gliding history, he became interested in gliding in 1942. He spent three years helping build a glider, then taught himself to fly it. As secretary of the New South Wales Gliding Association he helped to re-establish the sport of gliding and soaring after World War 2. He also served a term as secretary of the Gliding Federation of Australia.

He was co-founder of the Australian Gliding magazine in 1951 (now Australian Soaring) and edited it for its first ten years. Then in 1981 he resumed the editor's seat and continues to produce the monthly magazine, which is now one of the leading gliding journals in the world.

As an aviation journalist, he has visited many of the gliding clubs operating in Australia, flown with many of them and written about their activities in newspapers and magazines in Australia, North America, Britain and several European countries.

Allan and his wife now live in a retirement village - write to him if you want to know something about the Australian gliding movement in his early stage.

Allan... We salute you in this new stage of your life!

On behalf of all the team behind me, who are helping to produce this Newsletter we wish you and your wife a ***MERRY CHRISTMAS AND HAPPY NEW YEAR!***

Dear James,
Hi, ho to you "down there"!! Machiko & I are still in Japan. We have been here for about a year and a half but will be coming back to OZ for an 11 day stay from October 1st and then coming back here again.

We could be for another couple of years before we come back to OZ to settle down.

Regarding the "Minimoa" the place I am working is called the Japan Motor Glider Club. It is the main repair station in Japan for gliders and Motor gliders. I know they have one book there which has an article on the Minimoa here in Japan. If you can wait, I will chase it up and get Machiko (my wife) to try to find the owners name etc, etc. I can also ask the mob here if they know the owner, I am almost certain that they would. I will make myself a note but if you don't hear back from me in about 3 weeks time, give me a reminder nudge, this are very busy up here about 85% of the time.

Any way, thanks for the newsletter, I will admit that is still nice to see how the Association is going after I founded it and after you took over. You and your trusty band of helpers are as always doing a top job with the newsletter.

My E-Mail address is: tomiya@di.mbn.or.jp please use that one when you want to contact me. Till later, safe soaring in your "Woody-Roo" (Congratulations by the way!!!)
Kind Regards, Mark Stanley.

Dear James,

Please find enclose a Money Order being for subscription to the Australian Homebuilt Sailplane Newsletter. If there any past issues of your newsletter with articles on Jim Maupin's "Woodstock" please let me know. Regards. Derek Hardie.

Dear James,

You may have seen, or heard about, my books Sailplanes 1920-1945 and Sailplanes 1945-65. The first volume, published last year in Germany by Eqip in Koenigswinter eqip@eqip.de described sailplanes flown between 1920 and 1945, the second volume, earlier this year, covered the years 1945-65.

I am now starting work on Volume 3 which will be about sailplanes flown after 1965. I am not yet sure when the cut off date will be, not when it will be published. Maybe 2003.

Like previous volumes, about 120 different sailplane types will be included, from many countries and manufacturers, as well as some homebuilt aircraft. Each will be illustrated with a detailed three view drawing, photographs and text. (I have already written to Gary Sunderland about drawings of the Moba 2. Also ***(Ed's note.*** *The famous and very well known).* Douglas Vanstan was very helpful when I was working on Volume 2.

I am very anxious to include the Duster and Wood stock. I could hardly produce the new book without them.

My chief problem is getting enough details to make good drawings. The ordinary three view outline sketches printed in

magazines, brochures and various other books, do not give me enough detail.
I attach an example(Zefir) which shows what I am seeking- not only the bare outline, but some internal structure, locations of cross frames, wing spars etc as well a cross sections of wings and fuselage and others details and variations where relevant. I have been in touch with Hank Thor in the USA and Can Martin, but getting the necessary drawings from them is not very easy.

Can you or anyone else in the Home Built Sailplane help? I gather from the web page that you and Peter Raphael built a Woodstock and I know several complete set of plans for the Duster were sent to this country but I do not know what became of them. I do not need full set of construction plans but the main layout drawings are very important. Probably only three or four sheets from the set will be enough. I really do need some larger scale drawings with exact information. Can you help? Yours sincerely. Martin Simons.

Ed's Note. I already, sent to Martin my set of Woodstock plans. Also I sent the Duster's plans courtesy of Malcolm Bennett who lent it to me (to be photo copied) on a CD ROM.

Dear James,

Many thanks for the Woodstock drawings which arrived just few minutes ago. They give me everything I could possible need. It will take me a week or two to do my drawing but I will send the package back as soon as possible, with a copy of my own effort..

Thanks for the Minimoa photos. I suspect this Minimoa was carried to Buenos Aires on board the German Hindenburg airship, which flew across the Atlantic so South America seven times. There is a picture of it in my book "Sailplanes 192o-1945", just after it was unloaded, with the airship above it in a hangar. Possible my photo shows it before being loaded in Germany, it isn't possible to say for sure. There might possibly have been another Minimoa in Latin America, but I never heard of it. I will be fascinated to learn more. Many thanks again and all best wishes. Martin Simons.

Dear James.

Many thanks indeed for your help with the Woodstock. When unrolled the drawings fully of course I found your newsletter inside. I missed them the first time through not going through the whole collection. I stopped unrolling when I came to the Minimoa pictures.

The newsletters are very interesting and informative. I would like to subscribe so I enclose my cheque.

The phone numbers for Anthony Smith, who is arranging a bulk shipment of my books, are:
At work: (08) 8393-3319
Mobile: 04-2835-9268
I am not sure if he has collected enough orders for the next batch, but one lot already arrived last month. I will starting on the Woodstock drawings almost immediately. I do hope to have the Duster information as well. All the best and thanks again. M. Simons
Dear James,

Many thanks indeed for the disc. I can open it on my machine so there is every thing there I need for my drawing. Printing it all out is another matter-beyond the capacity of my printer, I won't need to do that, fortunately. Cheque is enclosed to cover the cost, time and trouble. I will send you a copy of my drawing when it is done.
I have also had a very helpful response from Hank Thor (Duster designer) so it is looking good. I enclosed my revised Woodstock drawing. I had the benefit of comments from Cam Martin on the first draft. That does not mean my revised version is free of errors so please, if there is anything else I should change, let me know.
One thing Cam asked me, which I don't' know. Did you or anyone else you know about increasing the height of the canopy when building the Woodstock? Evidently some American owners found it too low and made alterations. Cam mentions that many builders had a lot of trouble getting their canopies right. (I certainly didn't find the shape easy to draw). However, many US builders did add wheel fairings. The Australian Woodstock are also the only ones he knows which have had the clear vision windows added. I certainly would not want to fly any glider without this.

Thanks again for your help. I might write something for you when I have made a bit more progress with the book! I spoke to Harry Schneider yesterday and he seems highly delighted with his copy of Volume 2. So he should, since his aircraft occupy about 18 pages. All the best. Martin Simons.

Ed's Note.

The late Jim Maupin Ltd business has now ceased to exist. His widow decided to close the business so you can not get plans for the Woodstock or Windrose.

Yes, I and Peter Raphael (The Erudite), we increased the height of the Woodstock's canopy, which in the original design is to low. Also we did some extra modifications such as removable tail plane (the original is fixed and required a special trailer). Removable ailerons mass balance. Push roods for aileron control. Wing tip wheel. Tail wheel and as you mention clear vision windows. All these features have being described in past articles in the Newsletter.
Malcolm Bennett is finishing a Super-Woodstock and he is incorporating many other items that will be noted in a future article.

Dear James,

I don't know the date of the Alcoa handbook referred to on page 4 of Volume 7 issue 26 but the history of aluminium in aircraft structures goes back a lot more than 60 years now. Best wishes & keep up the good work! Ged Terry. England.

Dear James,

Sorry for the delay in getting the annual subscription in to you, and thank you for the complementary copy of the newsletter.

The BG 12A that I am working on is now down to the last 90% of work. That is right, all closed up, now for the sanding, filling, painting, and fit out of the cockpit.

Mike Burns was very diplomatic when I told him that it should only take about 2 years to complete " about an hour or two a night should see you do it then". No worries I thought.

If you want I can send some photos of the completed "two years" project (started in about 1995). Scott Johnson

Ed's note.
Yes..! Of course I know the feeling. Took me 10 years to complete my Woody-Roo. Mike Burns also was very diplomatic when I said it will be finished in a couple of years. Luckily I found the help of Peter Raphael, Malcolm Bennett and the Australian Homebuilt Sailplane.
Also I am begging for contribution for the Journal, send those photos in. They are very welcome!

Dear James,

Always I look forward to receive my copy of our great magazine AHS and in the last issue # 26 I found your plea for some news, or other contributions, so here is my two bobs worth.

Firstly the article by Peter Champness, ref the Monarch, his mention of the Mitchell wing using the NACA 43012 wing section I don't think is correct, I quote from an old home built magazine where Mitchell says he does not use reflexed trailing edge on his ribs, but rather, uses the elevons set below the wing and with the up side down wing section used to do the same thing as reflex, of course the area of the elevons have to be just right for the entire wing so as to balance it correctly, this is from a 1980 magazine just after Mitchell wing was designed.
Peter mentions the Super Floater, now there are two Super Floaters, the first one, plans are available for, but the one from Cumulis is only available as ready to fly glider. I have plans for the original Floate (as does Peter).
I recently had a drive over Tocumwal (I don't live too far from there) whilst my wife had a hens party at our place (just had to get away) I called on John Lynch who has a self launching glider a Pilatus I think. He has a Koning engine on it, John has also built a Pioneer 2 sailplane which he has flown and owing to his lack of launching he his considering powering it with 2 model jet engines for self launch. He is a clever bloke. He also blows canopies if anyone wants one. He also owns and flies a RV4 or 5.
When are we going to have another day like Bacchus Marsh or Tocumwal? They were great. Keep up the good work and happy flying in the Woody-Roo. Regards. Jim Jensz.

Eds.Note. A letter to Jim Jensz from Peter Champness.

Dear Jim.

Thank you for your comment about the Mitchel Wing airfoil. The airfoil seemed familiar. However I re-checked my article "Mitchel Wing Madness" published earlier in an earlier edition and found that the B-10 had an NACA 230-15 section. The NACA 430-12 on the Monach is clearly a different airfoil but looks similar. I think the 15 means 15% thickness (12% on the Monarch).

I don't know what the other figures mean (? max camber of 2% at 30% chord) Perhaps our new member Martin Simmons can help on this one. Regards. Peter Champness.

Dear James,

I can not understand why the newsletter was returned to you, all my mail has been redirected by the P.O. to my new address. I moved on the 12th of last month to an interim place because our present home was occupied by a tenant who found another home within 2 weeks, so now we are finally here.

And let me tell you I am not moving again. Too much work and all done, twice. I am exhausted.
I am also having a 6mx9m hangar shed build so I can work on my aircraft; finally a place dedicated only to aircrafts, and not having to move the mowers to access the plywood rack, this will be a blessing.
I received Dr. Peter Champness flying wing plans two days before we moved and will hopefully soon have some time to look at them in detail.

From what I have seen it is a very complicated aircraft. I feel like redrawing it into a much simple design, I am sure that 50 years in and out of aviation should be handy. I have a very good friend who designed flying wings for years, mostly R.C. models but in 1987 he designed a record breaking ultralight flying wing who went in to break the world altitude record. He is happy to take the challenge of redesigning the Mitchell U-2. Well James this is all for me now. I hope the next newsletter reaches me soon. Bye by now. Take care and happy landings. Andre Maertens.

Dear James,

Please find enclosed my subscription for the newsletter. About my project (the last Monerai to be built). I will send you more episodes later. All the best. M. Williams.

Dear James,

I don't have any stories relating to gliding for publication, sorry, but by this time next year I may well have some relating to rebuilding or building aeroplanes. On our new property I am having a 6m x 9m shed totally dedicated to aviation. I am not quite ready to re start building the little biplane Woodpecker ultralight. I have been asked to make new ribs for Drifters and Chinock ultralights so. The idea is to build "rigid" wings instead of the present not so rigid system and to improve the performance (high speed and stall) by using a new wing profile. Have done a lot of thinking on the subject and I will look at the foam ribs between plywood flanges and aluminium rib between full rib and also a ply leading edge. The whole covered in Sttits or Dacron. The new wings will have either flaperons or ailerons plus flap.
The tail feathers will also be rebuilt, symmetric ribs will be inserted in the surfaces and they will be Dacron or Sttits covered. Attention will be given to lift struts anchor points, profiling with aerodynamic panels, leading and trailing edges aerodynamically improved as well as some work on the cockpit,

windshield area, wing roots etc .etc. should improve the two above mentioned aircrafts performance and appearance too.

The Chinock fuselage is easy to improve and the landing gear is something near Neantherthal, realy draggy, so that area would get some of my tender ministrations. By the way ,anyone know of any Chinooks for sale, going or not, needing work is OK, or damaged OK, in any decrepit condition OK. Only few conditions such as: have all books, have been AUF registered and be cheap. It does cost a fortune to transport a light plane to QLD. Well James that is my contribution for the magazine if you can use it. Bye now. Andre Maertens.

Dear James.

Thanks for the helpful information you gave me over the phone a few weeks ago, regarding homebuilt sailplanes, such as the Carbon Dragon. I have made contact with Graham Betts and found him very helpful. I would like to join the group and enclose cheque for my subscription. I hope you have been having some good soaring flights in your Woodstock. Regards. John Tufrey.

TECHNICALITIES

MORE ON ALUMINIUM
By Ged Terry

Aluminium skinned aircraft were produced in quantity by Junkers from 1917 onwards and saw combat service in world Ward One .Dornier flew military aircraft of aluminium stressed skin design in 1918.Throught the 1920s and 30s Junkers, Dornier and others produced aluminium military and commercial aircraft. The earlier history of aluminium as an aircraft structural material is given below.

DURAL

Selection of the best metal for aircraft construction was not straightforward. Steel was heavy, and in the form suitable for aircraft use, very expensive. Aluminium was originally regarded as a precious metal but commercial aluminium had been available since the end of the 19th century, initially at 70 Pounds per Pound.
The first application was for lightweight cavalry helmets. Although of low strength, aluminium was light and easily worked so, as soon as the price fell, it came into widespread use for aircraft secondary parts such as fairings, cowlings and fuel tanks. Indeed, an aluminium framed and skinned airship the Schwarz Metalballon, had been build in Germany by the Austrian David Schwarz and flown in 1897.
The first German importer and fabricator of aluminium on a commercial basis was Karl Berg a Eveking near Ludenscheid in Wesphalia. Berg supplied the finished material for the Schwarz Metalballon, Zeppelin had components and stock made by Berg at Eveking and delivered to Friedrichshafen by rail. Colsman, Zeppelin's manager was Berg's son in law.
Dural, a stronger, copper based aluminium alloy, was developed in Germany. In 1909 Dr Alfred Wilm, a research metallurgist, discovered the alloy (approximately 94% aluminium, 4% copper, 0,4% magnesium and some manganese silicon and iron) during empirical investigations to improve cartridge cases for the Prussian Government. The sole rights for the alloy were acquired by Durener Metallwerker of Duren who marketed it as Dural towards the end of 1909.

Dural subsequently became a generic term for all such alloys. However, Dural was not yet suitable for all round use, being inconsistent in quality with erratic properties and corrosion problems. For example, in Britain the Admiralty, disturbed by airship developments in Germany, instigated the construction of the British naval airship HMA No 1, "Mayfly" in 1910. Vickers, the builders decided on a Dural framework but, as there was little experience with Dural outside Germany, subcontracted many of the components there. Even so, considerable difficulty was experienced in working the material. Seventy five per cent of the parts were rejected after rolling to shape and only ten per cent of the first shipment was usable. Similarly, to quote a Dornier engineer. Dural was a brand new material in 1914, available only for experimental use. It had many drawbacks. For instance, it was not produced in consistent quality, more often than not rolled Dural Sheet, would exfoliated like the leaves of a book.
Impurity inclusions caused frequent brittleness cracking and after brief periods of storage, the Dural sheet had the unpleasant tendency to disintegrate in spot to a white powder.

Zeppelin airships brought down in Britain during World War One exhibited badly corroded Dural frames, mainly because of an excessive iron content. These corroded wrecks strongly influenced the British to favor steel rather than light alloy for metal aircraft.

WHAT'S NEW

THE LATEST FROM JIM MAUPIN LTD
We received information from Janice Maupin.

Sorry, my mother Margaret Maupin, who is the owner of Jim Maupin Ltd has decided at age 82 to retire from business and close it down. She is no longer selling plans for the Woodstock, Windrose and Carbon Dragon sailplanes. I would like to thank the sailplane community for their years of support, advice and encouragement.

ABOUT B-10 and U-2

If you surf the net, there is a site on Yahoo dedicated to the B-10 and U-2.http://groups.yahoo.com/group/U-2Wing/.'

Also you can visit the website for Mike Sandlin's Bug 4
http://home.att.net/~m-sandlin/bug.htm
Or...M_sandlin@worldnet.att.net

~~~ Merry Christmas & Happy New Year ~~~

HINTS & TIPS

MINI GREASE GUN

By Peter Champness

Many bearings in gliders are in relatively inaccessible places and require only small quantities of oil or grease at annual inspection time. I was recently at the Gliding Club of Victoria workshop and observed the engineers greasing the bearings using a plastic syringe and hypodermic needle.

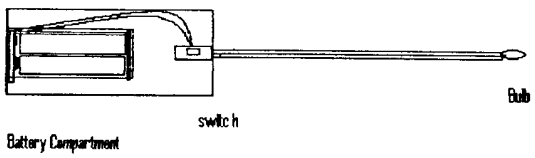
The grease is thinned with petrol until it is like very thick oil and then injected on to the surface of the bearing with the syringe and needle. Surprisingly the petrol does not seem to affect the plastic syringe adversely. The thinned grease flows into the bearing and the volatile petrol then evaporates leaving the grease behind in the bearing.

The end of the hypodermic needle is fairly easily bent to an angle of about 30 degrees which makes it easier to reach around to the back of the bearings and to get into tight spots. If readers have difficulty finding the larger diameter needles, I can obtain them fairly easily. Nursing friends are a good source for such items. The sharp end needs to be ground off before use!

MINI INSPECTION LIGHT

By Peter Champness

It is sometimes helpful to be able to insert a tiny bright light into a very small opening to get a good look inside. A particular instance is the aileron hinges of some fiberglass gliders which are tightly shrouded. A very useful item in such cases is the mini inspection light.



The Mag-light series of torches use a very small and very bright halogen globe. The torches are quite expensive but replacement globes can be obtained form Tandy or Dick Smith stores for about $3 each. Other components required for the project are a plastic battery holder for 2 AA cells, a connector to suit the battery holder, a switch and some two core flex (wire).

On my first light I used a transistor connector to hold the bulb but this is unnecessary. The holder was about twice the diameter of the bulb which limited its usefulness. The two prongs at the base of the globe can simply be pushed into the cut end of the flex wire and retained with a dab of epoxy (probably any sort of glue would work as well). To change the bulb cut off the end of the wire and start again.

A little bit of wood work with scraps of timber is required to make a nice handle containing the batteries and the switch.

GETTING SMOOTH CUTS IN TIMBER

Neatness and accuracy being as important as it is in aircraft work, there is much interest in proper tools and methods for getting clean cuts in wood. Most of us have used ordinary table saws with rip and combination blades and have been unhappy with the rough cuts which result. Yet, it is quite possible to get cuts with a table saw that are so smooth that a few light passes with sand paper afterwards will eliminate tooth marks nearly 100 per cent

Low price saw blades are often of thin metal, and blades made for general ripping work are also quite thin so that their kerfs will be as narrow as possible with subsequent savings of wood.

The trouble with any thin blade is that it is apt to "chatter" at high speed and thus throws tooth marks into the wood. It can also produce wavy cuts by reason of a tendency to follow the grain.
Ripsaws almost always have some set to their teeth, to make the kerf wider than the blade and minimize binding, warping and crooked cutting.

The correct saw to use for aircraft work is a "cabinet maker's blade". They come in different designs; some are hollow ground with thick teeth, thin disc, and thick hub. Some have thick hubs with a step-down out near the teeth to keep kerf reasonably narrow. The teeth have no set to them and usually are quite thick as compared to the lighter general purpose blades

Some have very small teeth but others have fairly large ones, while retaining the essential feature of no set and a thick, stiff disc.

When cutting long, thin strips it is desirable to make some kind of guide, perhaps of wood with spring "fingers", which will hold the wood snugly against both the table and the fence and keep it from bending. When wood bends or chatters, tooth marks are put into it. Feed wood in at as nearly uniform a rate as possible because halts and jerks also make tooth marks.

Many firms make good cabinet maker's blades but to get started on the right track it can be mentioned here that many wood working stores have cabinet maker's blades which upon trial has produced wonderfully smooth cuts in spruce, fir, pine and. Mahogany.

Owner of cabinet maker's blades should not use them to cut plywood. The glue lines in plywood are surprisingly hard and brittle and can dull a fine saw rather quickly. Special blades for cutting plywood are also available, which feature very small teeth to keep edge splintering to a minimum

TIPS ON AIRCRAFT WOODWORK

By Arthur W.J.G.Ord-Hume.
Reprinted courtesy of Popular Flying Association of Great Britain.

In aircraft construction it is often required to bend wood to a curve. There are two methods of forming wood to a bow, one is by bending and other is by laminating several thin strips of wood together in a jig.

Both spruce and ash bend readily to a certain degree. Any bend in excess of this amount will result in fracture of fibres. Also, when bent, the wood is sufficiently elastic to cause it to spring straight again. By softening the wood, however, not only will the timber remain bent but it will be possible to increase considerably the safe radius of the bend.

Wood may be softened in two ways- water softening, which may be done either hot or cold, and by steaming. The later is the most effective but, since it usually necessitates the use of a steam box if the piece is long, it is more usual to plasticize the wood by saturation in water.

Soak the portion to be bent in water for up two hours until its is soft enough. Bend it very slowly to the shape required, working the bend in with the fingers to prevent stretch of the fibres.

The process is speeded up by immersing the piece in boiling water or, if the piece is small enough, actually boiling it in a pan of water for a few minutes. Remove the wood with gloves and again bend it slowly If the bend is acute or the material thick, repeat the boiling treatment until the bend is completed.

It will be found that upon drying there is a tendency for the wood to spring slightly out of the bend. To counteract this, increase the bend from 15 to 20 per cent more than is required so that the wood when dry will adopt a "set" just about at the bend required. In steaming wood to be bent the effect on the wood is similar to that when the wood is treated as above. The fibres soften readily without any loss of strength upon drying. If only a small area of wood of thin section has to be treated, it can be done in the steam from the spout of a kettle. However, for larger pieces a steam box must be resorted to. This consist of a long metal box or large diameter tube of sufficient size to accommodate the wood to be steamed. It is sealed at one end with a sealable door at the other.

The wood or tube is connected via a pipe to a water boiler heated by a gas burner. As the water boils, the steam is forced under pressure into the box containing the timber.

A suitable safety valve must be fitted into the boiler. Great care must be exercised when exhausting the steam from the box, a scald from steam is a most serious and painful experience.

Timber in a steam box should be left from one to two hours before removing. Subjection to longer periods of steaming results in the destruction of the suppleness of wood after it is dried. Before glueing any wood which has been steamed or wetted in any way, always let the piece dry thoroughly in the open air. On no account try to accelerate the drying by artificial methods.

Air drying will preserve the correct moisture content of the timber. Plywood may be bent in the same manner. It is easiest to bend ply with boiling water saturation. Bend the ply as far as it will safely go and, while still holding the bend, get assistance to pour boiling water from a kettle over the outside of the bend. Immediately the ply will soften and start to fold tighter.

Do not hurry the process, for the wood may yet split. By repeated applications of boiling water, gradually work the ply to the curve desired and them clamp it between two boards to dry overnight.

Where it is desired to make a large curve of accurate dimensions with a comparatively thick cross section, the designer will usually call for the piece to be laminated.

Formers, wing tip bows, keel members and similar pieces call for lamination.

A jig must be made to locate the strips for glueing. Obtain a large flat board of commercial wood sufficiently large to take the curve of the member to be made, plus a margin of several inches. For very large members, a wooden floor may be used. With a hard pencil mark out the curve. Now cut wooden blocks about 1 x 2 x 3 and glue and screw these to the inner edge of the curve at intervals of every 3 or 4".

If the curve is sharp, these blocks will need shaping. To prevent the adhesion of the glue to the jig, paint the jig with two coats of hot paraffin and allow to dry.

Cut the strips of wood to be laminated and allow several inches more in length than is actually required, the excess may be removed later.

Glue up the laminations separately on a flat surface, shuffling each strip to the next to exclude air.

When the desired number of pieces has been glued up, place the bundle into position on the jig board.

On the outside of the bundle, opposite each block, put a piece of scrap wood to use as a clamping block. Alternatively, a strip of steel may be bent into place on the outside rather like an additional lamination to take the pressure of the clamps.

Clamp up each block with C-clamps and leave it for 24 hours to dry. After removal and cleaning up, examine for any signs of de-lamination. If there is any gap, run thin glue into the split, working it well in with a thin strip of metal such as a feeler gauge. Re-clamp and leave until dry.

When sawing aircraft timber, support it adequately to prevent it from splitting when the saw approaches the other side. Where possible, clamp a piece of scrap wood to the underside so that the saw finishes its cut in that timber rather than in the required piece of wood.

This produces a clean cut. Similarly, when cutting plywood, the saw will leave a rough, split lower edge.

It is not always possible to "back up" a cut in plywood as detailed above but by cutting no closer than 3/32" to the line, this rough edge may afterwards be removed with plane and sandpaper. Remember that wood splits easily and is weakest along the grain when it is being cut. If one is attempting to cut along the grain or at a slight angle to it, take great care for if the

saw slips or one tries to hurry the cut, the wood will split, invariably ruining the portion wanted.

Planning wood is another operation necessitating care. Always plane with and not into the grain when surfacing a piece of wood. Examination of the grain will show that, even on the best boards, it tends to converge slightly to one edge. If one tries to plane toward the grain the blade will dig into the end of the grain where it meets the surface. Run the plane so that it slices the grain from behind.

The essence of good aircraft carpentry is careful workmanship, the accurate following of drawings and, until experience is gained, an unhurried approach. The best instructor in the world cannot supply the most vital ingredient-***experience.***

Both carpentry and metalwork are subjects which demand practice and experience to gain proficiency. That goal may be reached with patience and care. Remember- ***sound work is a sure step towards success.***

SHOP TALK

SHA Workshop - Tehachapi, California, USA

by Alan Patching

Despite my intention of not travelling overseas again an invitation from Dan and Janice Armstrong to the OSTIV Sailplane Development Panel followed by the Sailplane Homebuilders Workshop in August 2002, was irresistable. John Ashford and myself arrived early, both to recover from the trip and to help prepare for all the meetings

This turned out to be quite a task as both Dan and Janice had other unexpected commitments. We soon found ourselves building a stained glass door - with a gliding motif of course- erecting a flag pole, cleaning out Jeff Byards hangar- it contains a collection of Vintage gliders and a Genesis, buying food for the Barbeques to be held in the hangar every night, setting up meeting rooms, collecting people from the airport etc.etc.

The main thrust of the workshop was Ultralight gliders. These were redefined during the SDP meeting into two types- Light -a glider with a MTOW not greater than 220kg and- Ultralight -a glider with wing loading not less than 18 kg/sq.m.

I guess the best description of the event was that it was a magnificent smorgsaboard of gliders and speakers lasting four days. Gliders ranged from a biplane primary designed to be roll launched from hang gliding sites, to electric powered SLS, to flexible wings to high performance.

The highest performance was the Sparrowhawk made from prepreg carbon fibre with 11 m span,70 kg empty, 188 kg MTOW, L/D 36 to 1, Never exceed 140knots.
Design claimed to exceed JAR22, with two made so far but structural and flight testing yet to be completed.

An interesting feature was use of plastic cord (used for yacht rigging) in control systems tied with half hitches!!!

Gary Osoba has set world records for 300km of 84km/h and 500km of 80km/h.

Lecturers included Prof. Loek Boermans, President of OSTIV and designer of aerofoils for Schleicher gliders, who spoke about recent progress in suction laminarization. There are still a few problems, such as making small clean holes in composites of about 0.1 to 0.2 mm in dia. He has
also found that too much suck blocks the holes while too little gives too much turbulence. So our 80 to 1 glider is still a little way off yet. Loek did the aerodynaamics for the solar car which won the last Darwin to Adelaide race.
Gary Osaba who holds World records in his Woodstock gave his theories on dynamic soaring. He claims it should be possible to stay up in sink and just neutral air. The rate of change in velocity is important and the technique is to fly at a high speed 90kt with high g manoeuvres, like +3 to -1g i.e.aggressive flying. Anyone who has seen the video of models flying in the hill curlover may or may not want to try this technique.

The talk led to a discussion on microlift or lift below 500 feet as if it was a new thing. I recalled when my club raised the minimum circling altitude from 200 to 400 feet. Modern plastic gliders have not been flown this low - for good reasons.

Al Bowers, Chief of the NASA Flight Test Center at the Edwards Air Force Base, who started his gliding at Alice Springs while his father was at Pine Gap and is now also a keen hang glider pilot talked about the minimum induced drag of wings.He started with birdflight as a model going through the history of span loading and finishing with modern aerofoils.

Danny Howell told us about the Light Hawk, also a high performer which was airborne and the pilot answered questions, especially as to how it was flying without the wing joint cover which had only been taped on. He landed three hours later when the thermals had died down a bit, since he found directional control a bit low!!

David Raspet described some of projects done by his father at MIT some years ago on a very limited budget, but with enthusiasts such as Dick Johnson.

Robert Hoey gave an interesting talk on his making and flying of radio controlled models of birds.

Eric Raymond described and later flew his electric powered sustainer glider- not enough power to self launch. The solar cells used to recharge NiCads are in both the wing and tailplane He has a problem keeping the cells cool enough.

Dave Marsden who has designed and built his own two seater and a glider tug also developed Sigma until it performed as designed, spoke on the benefits of winglets. They not only effect the flow across the whole wing but give- forward thrust, reduction in drag, more lift towards the tip, increased max. lift coefficient near the tip, increased aileron effectiveness at low speed and reduction in tip drag(induced drag reduction). He gave results of improvements in both gliders and aeroplanes.

There were other speakers on related topics including me who gave an overview of homebuilding in Australia.
On the last night at the Ralph S Barnaby Lecture we had the pleasure of hearing Gerhard Weibul, designer of the ASW

gliders trace the development of gliders and making predictions of what we can expect in 2050.

His data along with the latest from the <Eta> shows we will be flying 80 to 1 gliders but they will almost certainly be factory made. John stayed with Dan and Janice while I used the vacant home of Jim Staniforth, a pilot who comes to Lake Keepit each year to have a quiet time I think after the huge desert thermals. We were both given trucks normally used to transport hang gliders to move everything, including people. Unfortunately we only had one glider flight each because of nearby forest fires adding smoke to the smog seriously reducing the visibility.

Thanks to the hospitality that we had already experienced in 2000 this was a most enjoyable and interesting visit to the USA.

MARSKE MONARCH UPDATE

By Peter Champness

Since the last newsletter the plans have arrived and have been resting quietly in their box for most of the past three months as I have been rather distracted by other matters. 28 drawings were received with full size drawings of the ribs and the smaller fittings. The drawings are dated Jan 2000. I had thought that there might have been some updates by now as 2 G models have now been completed. There was also two weighing sheets for use when the aircraft is completed and several invoice statements including some statements for some parts sent to someone called "Keith Ashford" in Coventry , England. The plans seem to be well drawn.

It was soon evident that there are no building instructions! James Garay took the plans to show Mike Valentine, the CTOA of the GFA. Mike thought it might be possible to build the aircraft from the plans but they will require careful study to determine the materials to be used for each part.

I rang Mike Valentine to see what he thought. His says the aircraft can be built under the "Experimental" legislation, but is unlikely to ever qualify for a VH registration. One of his first questions was "has the aircraft been designed to an internationally recognized airworthiness standard eg. JAR 22 or the American FAR." I Emailed the Marske web site but have received no reply.

As it happened John Ashford and Allan Patching were visiting the USA in October and staying with Dan Armstrong of the American homebuilt sailplane association. I emailed John to see what he could find out. The answer seems to be the Monarch is designed to the American "Experimental" airworthiness standard. This standard does not seem to be written down anywhere!

Allan Patching advised me to read the back copies of the American "Sailplane Builder" for further information. James Garay has a fairly large set of old copies which I have looked through. "Sailplane Builder" had a regular column of Marske news from the website for a while but I did not find any independent reviews or articles. About 18 months ago the Windrose belonging to Matt Redsell crashed. Happily Matt was able to use his parachute and survived. Matt is the director of Marske Sailplanes. There must have been some commentary about the crash in "Sailplane Builder" because Matt then wrote a letter to Janice Armstrong, the editor, demanding apologies and saying he would sue her if she wrote anything further about it. Since then the Marske News column has not appeared in "Sailplane Builder".

The result of my search is that I have not turned up much information about the Monarch apart from what can be found on the website. Matt claims that the Carbon Fiber wing is strong enough to take 12 G but I don't think that there has been any testing. One wing may have been tested to 5 G but I am not sure if it was wood or Carbon Fiber.

The Marske web site at www.continuo.com does include a section titled Monarch G Building instructions. This particular section has been unavailable for some time but has recently had some material included, mainly a set of photographs showing parts of the construction. It may be that the instructions for the Monarch F should be consulted, but again there is a lack of written instructions. I have yet to come across a Bill of Materials

I was thinking of giving the Monarch construction idea a good long rest. However I have since found out that a member of my new club, the Beaufort Gliding Club, is a great expert in fiberglass and carbon fibre construction for boats so the plan may have been revived before the next newsletter. Currently I am building two scale models of the Monarch. One is about 15 centimeters span for desktop display. The second will be about 90 cm span for a hand launched free flight "chuck glider". If this is a success I may try a larger model for radio control, possibly using fibreglass or carbon fibre for some parts to get some experience with the material.

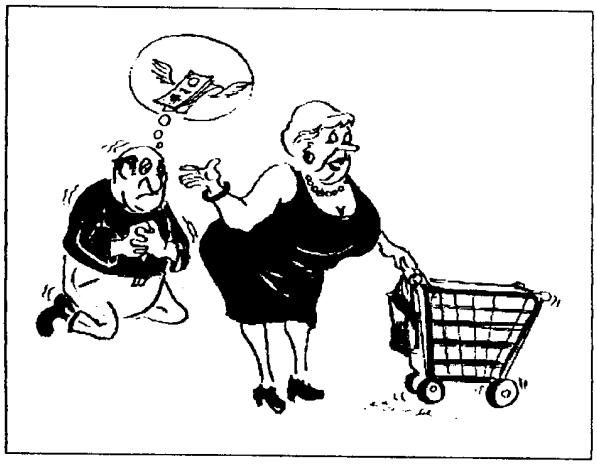
ALAN BRADLEY'S RAMBLINGS

By Alan Bradley

I am now back in Adelaide after a very successful 3 months in Queensland. I say successful because not only did we have a lot of fun but I also managed to not only maintain my brownie points but to build up a significant credit. Making the bed in the morning as mentioned back in June is without doubt a necessity if one is to build a glider. I have now added vacuuming the carpets, cleaning the caravan and of course frequently doing the dishes. I offered to go shopping with the CEO but this was immediately rejected.

I am now trying to think of things I can offer to do but have a better than average chance of being rejected. Upon reflection it

is a pity I didn't have the wisdom of a 68 year old 40 years ago as I can only guess at the opportunities I have lost over all those years.



As you know I called in to see Malcolm Bennett on the way to Queensland and spent a very fruitful day picking his brains and photographing some of the mods he is incorporating. I also appreciated the opportunity of seeing our editor James Garay and Peter Raphael (The Erudite) again. I was able to buy pulleys at Moorabbin and stainless hinge as recommended by Brian Berwick in an earlier issue of AHS. It's hopeless trying to buy anything in Adelaide.
After leaving Melbourne we drove to Tocumwal where we spent a very pleasant evening with Mike Burns and his wife before moving up to the warmer weather.
Back in Adelaide it felt very comfortable walking into the shed after a 12 week absence. The first thing I found was that both the stabilizer and elevator had developed a slight twist. The stabilizer I will be able to straighten when gluing the skins, but I decided the elevator should have one half rebuilt. Having done that I set about cutting and drilling all of the hinges using a jig for drilling as sketched by Brian Berwick and published in one of the earlier newsletters. I fitted the elevator to the stabilizer using tapping plates instead of separate nuts so the hinges can be nipped up later if necessary. Again, picked this up in another newsletter and had also seen them in Malcolms Woody....

What would I do without AHS?
At this stage both rudder and stabilizer have been temporarily fitted to the fuselage (I am incorporating removable stabilizer mod). The proper aircraft bolts arrived today so I will now remove all the fittings and controls, seal all the internal surfaces with epoxy sealer as recommended by the 'Woody Boys', apply a coat of shellac and replace all the fittings using the aircraft bolts. Cables can then be run.
The job is now opening up nicely with heaps of things I can work on to keep the project moving.
It looks as though I will be ready to start the wing spars as soon as the upgrade modification is received. This should be in the next few weeks according to Malcolm.
Incidentally, while I was away the June 2002 issue was sent up to me and the article by Allan Ash brought back memories worth relating. I was at Waikerie during Allans visit in 1951. I was 17 at the time and waiting to get my bum into a 2 seater. We were busy in Adelaide assembling a Slingsby T35 kit down at John Wotherspoons house for Waikerie who didn't have a 2 seater at the time. I remember the launching into thermals well, it was being promoted very strongly by Jock Barratt, Bob Rowe and Les Brown. The Hutter Allan spoke of was built by my father Harold with a little bit of assistance from me. There are several interesting mods in this Hutter. Firstly the fuselage construction was simplified and covered with 1/8 selected marine ply. The rear fuselage was extended 12 inches over that shown on the plans and the one built in 1983. (I believe the designer had an upgrade on later H 17's extending the fuselage). The nose was also extended. More importantly was that he moved the main wheel forward of the C of G. This was fairly radical in those days I think and is probably the earliest tail dragger that I can remember. It had no nose skid. Perhaps someone can remember an earlier one- I would be interested to know. The repositioning of the wheel allowed a simple large diameter (about 1-1/2 inch dia.) torque tube to be incorporated with the aileron bellcrank fixed directly to the rear end and pushrods up to the wings. The elevator was operated by a pushrod which went down the centre of the torque tube onto a bellcrank and then another pushrod to the elevator. Not too many pushrod gliders in those days either.
The other matter of interest was Allan's description of the Lasco Lark. I believe only 2 were built (I may be wrong) the second by Harold. I have a photo of me standing by it as a 4 year old. My father had a habit of changing things if he felt it may be worthwhile. The wing on his Lark was made in 3 pieces (perhaps it was the forerunner to Waikerie's Pelican 2 for which he designed the wing and made the two 16 foot tapered wingtips and most of the fittings). The wingtips on Dad's Lark were also tapered as the attached photo clearly shows. I only remember seeing it fly once and that was in a paddock at the end of our street only 3 miles from the centre of Adelaide. It completed a circuit (or more) from auto tow much to the delight of onlookers who included a reporter and photographer from the weekend newspaper. My father was considered to be a bit eccentric according to my older sister who said she used to feel quite embarrassed by his "strange" activities. Incidentally I still have the drawings for the Lark and Pelicans wings.
That's enough of my ramblings but it may help you to fill in a bit of the next AHS.
I would encourage Allan to make provisions so that his valuable drawings and vintage photos end up in the safekeeping of the National Gliding Museum some time in the future

THE AUSTRALIAN HOMEBUILT SAILPLANE SUMMER CAMP

Again as usual we are joining ours cousins of Vintage Gliders Australia for the Summer camp. It will be at the Barrosa Valley Gliding Club airfield in Stonefield in South Australia Ian Patching has been in recent conversations with the two Kevin's, Barnes and Sedgman at Stonefield have confirmed activity is well underway for the Rally in January 2003. Kevin Sedgman has been working on the bunkhouse making it even more comfortable than the last year. He has also been doing some work around the camping grounds to sort out a bit. Ian have asked Kevin Barnes to take a winter photo of Stonefield and have it available in the club house so visitors can see the airfield really does turn green at some stage of the year.

Remember the dates are:
Saturday 4th to Saturday 11th January 2003.

If you intent to go let me know so we can organize our participation.

We have new subscriber to welcome to the group.
Derek Hardie - Empire Bay Drive, Empire Bay NSW 2257
Martin Simons - 13 Loch Street, Stepney, South Australia 5069
Email:martinsimons@ozemail.com.au

Scale model soaring

By Colin Collyer.

(These notes are taken from ASPECTIVITY, the Newsletter of VARMS (Victorian Association Of Radio Model Soaring)

What this doing in a full size magazine, you may ask. Well, it's got a lot in common, including people that take an interest in both. Scale Models are quicker to build than full size, no where near as costly, finishing time is proportional to size, the bigger they get, the longer it takes. Most scale models can be built in 12 months. But some take lots longer.

You will get to read about aircraft that are familiar to you, Woodstock, Schweitzer 1:26, ESK -6, ASK-6, KA-8 & 13, Minimoa, Grunau Baby etc, A lot of these have been home built in full size and certainly re-furbished at home.

MODEL SOARING ACTIVITIES.

Coming up: Camperdown Slop Soaring January & March Long Weekends.
Aerotow last Saturday of the month, at High street Rd. Wantirna.
Aerotow Anzac Weekend at Swan Hill.

Full size aviation magazine can be a boom for Modellers, looking mainly at photos, for that all important colour scheme. We got six Woodstocks flying, and only one with a scale colour scheme. A shame.

SMILE 1 ☺

Courtesy of Jim Jensz.

A man was walking along a California beach and stumbled across an old lamp, he picked it up and rubbed it and out popped a genie. The genie said "Ok, you released me from the lamp, bla, bla, bla. This is the fourth time this month and I am getting a little sick of these wishes, so you can forget about three, you only get one wish!"...The man sat and thought for a while and said, I have always wanted to go to Hawaii but I am scared to fly and I get very sea sick, could you build me a bridge, so I can drive over to visit?

The genie laughed and said, "That's impossible, think of the logistics of that! How would the support reach the bottom of the Pacific Ocean? Think how much concrete....how much steel! No!...think of another wish." The man said "Ok" and tried to think of a really good wish. Finally, he said, "I have been married and divorced four times, my wives always said that I do not care and that I am insensitive, so I wish that I could understand women. I want to know how they feel inside and what they are thinking when they give me the silent treatment. I want to know why they are crying, know what they really want when they say nothing...know how to make them truly happy"...The genie said..."***DO YOU WANT THAT BRIDGE TWO LANES OR FOUR?"***

SMILE 2 ☺

Involuntarily contributed by Dr David Whitten, "Australian Doctor Weekly", March 2000.
As we all know, Strine is the English variant spoken in Oz, although many people pretend otherwise.

Taking the time to decipher some Strine

I have always had a fascination with language, particularly language "as she is spoke", rather than the finer points of the Queens English. I was impressed with a short book released in the 1960s. It was titled *Let Stalk Strine*, by Afferbeck Lauder, which I soon realized was an invitation to the public to participate in the vocalization of the Australian language. I must admit it was several years before the penny dropped and I realized the author's name was Strine for alphabetical order.

I would sometimes read this book while munching on an emena marts semmich. While browsing on particularly humid days, I wished that we had an egg nishner in our house. With Sydney's hot summers, there was snow datter battered – we really needed one.

On the one hand, Strine was of value in understanding the everyday use of Australian language. ON the other hand, it could also take in the poetic and romantic. I recall one poem which described a young man pining for his absent girlfriend. The first lines were particularly memorable:

With air chew, With air chew, Iker Nardly liver there chew, I dreamer badger kisser sniten day.

Australia, of course, is not the only place where English can be transmogrified. I was fascinated when I read the following piece, said to be a recorded phone exchange between a guest and room service in a hotel in Asia. It was published in the Far East Economic Review. It goes as follows:

Room service (RS): Morny. Ruin sorbees.
Guest (G): Sorry, I thought I dialed room service
RS: Rye, Ruin sorbees. Morny! Djewish to odor sunteen?
G: Uh yes. I'd like some bacon and eggs.
RS: Ow July den?
G: What?
RS: Ow July den? Pry, boy, pooch?
G: Oh, the eggs! How do you like them? Sorry, scrambled please.
RS: Ow July dee baychem? Crease?
G: Crisp will be fine.
RS: Hokay. An suntoes?
G: What?
RS: San toes. July san toas?
G: I don't think so

RS: No? Judo one toes?

G: I feel really bad about this, but I don't know what "judo ones toes" means.

RS: Toes! Toes! Why djew Don Jaun toes? Ow bow singlish mopping we bother?

G: English muffin! I've got it! You were saying "toast". Fine. Yes, an English muffin will be fine.

RS: We bother?

G: No, just put the bother on the side.

RS: Wad?

G: I mean butter – just put it on the side.

RS: Copy?

G: Sorry?

RS: Copy, tea, mill?

G: Yes. Coffee please, and that's all.

RS: One Minnie. Ass strangle ache, crease baychem, singlish mopping we bother honey sigh, and copy – rye?

G: Whatever you say.

RS: Tendjewberrymud.

THE TRIALS AND TRIBULATIONS OF HOME BUILDING A SAILPLANE.

By Michael Williams

Contacts.....you have got to have contacts! Without contacts you are nothing! Fate plays too a big part when you have no contacts. I was lucky. I have an aviation background in that I have been involved in aircraft maintenance since, as they say, Pontius was a pilot.

Even so, my sort of contacts were not much help." You want to what". " Build a plane, you have got to be joking", was a typical response.

I did, however, find "gems" of contacts through talking to lots of people. " You need to talk to Peter in Geelong he's got a rubber press for making metal ribs" That was pure gold.

" You need to see Rob in Ballarat, he's an aircraft welder" Things are looking up!. " You should contact a bloke called Pettigrew in Queensland, he's got some ultra light kits lying around".

Ultralight's, well, not exactly what I am looking for, gliding is my thing, not floating around in a lawnmower driven excuse for a primary. Although, putting a lawnmower engine on a primary would improve its chances of flying.
Perhaps a phone call to Queensland, you never know what you will turn up. "Hello, is that Brian?" "Hello, how are you?" "Good, I got your number from so and so, he tells me that you may have some interesting bits and pieces you need to get rid of. No..! Not tractor parts, nor farm spraying equipment. I'm talking aviation. Half a Gemini, no I don't think so. A Sky-dart, in two pieces, are you serious? A powered Monerai kit, really! Tell me more".
From Melbourne to Warialda in North Western NSW via the radio dish telescope at Parkes, just for a look see, and return is approximately 2973,6 Kilometres and $ 345.67 in auto gas through the carby of the old HX Ute, It was an uneventful trip except for a gas tune up at the Holden shop in Moree to encourage the Ute to run like a dream instead of a nightmare.

Thanks to a Monerai kit packing list from Malcolm Bennett who is a member of the Australian Homebuillt Sailplane, it looked as though it was a complete kit, but it wasn't easy, because the box the kit was in was a shipping container full of lengths of material and timber, and bits and pieces of other projects. One complete wing set of ribs was missing, but there was a set of flat cut outs waiting to be folded, so that's OK I thought. The canopy was cracked, but it looked as though the cracked area might turn into a side sliding window cut out.

OK I will take it. By the time I had it loaded and tied down the sun was setting over Warialda Pub where a huge rump steak and a room for the night cost less than the price of an aero tow . Back in Melbourne the story continues,

A LITTLE BIT OF GLIDING IN AUSTRALIA

By Allan Ash.

The Iggulden Brothers: first thermal flight

Hearing about the new sport of gliding during the rash of publicity in 1929 a Melbourne schoolboy named Bill Iggulden, then aged 13, decided to build a glider for himself. Knowing nothing of such aircraft, his design was somewhat original.

It had tandem wings, the one in front being about 20 feet span and 3 feet chord and the one behind being slightly smaller, with cambered surfaces covered with calico on the upper surface only. A coat of household paint provided the shrinkage necessary to give a smooth surface. The fuselage was an open framework in which the pilot stood, grasping the longerons. There were no control surfaces; the pilot was expected to steer the machine by movements of his body. Perhaps it was fortunate that the machine was blown over and wrecked before it could be flown.

Undaunted, Bill Iggulden found a photograph of a glider in a copy of *Popular Mechanics* and built his own version of it with a few modifications. The finished machine had three wings — a pair in biplane configuration in front and a similar monoplane behind. Each had a span of about 14 feet and chord of about 2.5 feet. The pilot stood within the open framework of the fuselage and obtained some measure of control by movements of his body. The glider was taken to Apollo Bay in dismantled form on the roof of the family car and the youthful Bill made a number of 'flights' in it by running down a steep seaside bank and leaping into the air to cover a few yards before coming to earth again. He was assisted in these attempts by his brother Jack, a year his junior, and rather skeptical about the whole idea of gliding.

The limitations of this elementary hang glider were quite apparent and it was soon discarded. Then, during 1932, Bill and Jack were delighted to find constructional drawings of the Rhon Ranger published in Aircraft magazine. While the series of articles were still being published, the two young enthusiasts began construction. To enable them to fly it, they joined the Port Melbourne Gliding Club and received some instruction from George Allaway. By the time their glider was finished, Bill and Jack were reasonably proficient pilots. For about a year, the brothers flew at various sites around Melbourne and were eventually joined by their father, Bill Snr, who owned a small engineering firm at Brighton. Others who flew the Iggulden's

glider occasionally were Albert Fawcett, Matt and Alec Hogan and Ron Jones.

By 1934, several Melbourne clubs and groups had begun operating at Mount Fraser, near Beveridge, about 25 miles north of the city. This former volcano comprised a roughly conical hill, rising to about 300 feet with a depression at the top. In very strong winds it was just possible to soar a primary glider there. After several months of operation at this site, the Iggulden's Rhon Ranger was written off in a crash by Ron Jones.

To replace it, the three Igguldens bought a Mead Challenger from the now-defunct Warragul Gliding Club. The Mead was, in fact, a Rhon Ranger primary with the girder fuselage enclosed by a fabric covering stretched over a light framework of bulkheads and stringers. This simple modification was enough to allow the glider to soar quite well provided the wind was strong, and the three Igguldens logged a lot of good flying in it.

It was at this site in 1934 that the first thermal flight was made in Australia. Jack Iggulden had been slope soaring in the Mead (which had been named *Termagent* 2) and was making an approach to land at the foot of the hill. At about 400 feet, and well in front of the hill, he was surprised to find the glider suddenly gaining height. Startled, Jack made a 360 degree turn to lose height and bring the glider back onto an approach into the paddock but found that the glider had gained even more height. During the turn he had become aware of the change in the sound of the glider so decided to continue circling in a manner that maintained the new sound. He then realised that what he had encountered was one of the thermal currents that he had read about in over seas gliding magazines. The glider continued to climb for several minutes before Jack lost the lift and returned to land in the paddock at the foot of the slope. Observers on the ground had taken rough triangulation sights on the glider at its maximum height and estimated that the Mead had reached about 2,000 feet.

Termagent 2 was badly damaged when it crashed with Bill Snr as pilot after a metal fitting on the rudder control broke. The broken wings were repaired and Bill Iggulden designed a new fuselage of diamond cross-section and replaced the wire bracing with struts. The resulting glider was named *Termagent* 3 and weighed 120 pounds. It proved to be easy to fly, with a low stalling speed and small radius of turn. After a lot of good flying, the glider was destroyed when it was caught in the down-current over the depression at the top of the hill in 1938. The pilot Bill Snr, suffered severe injuries.

Sources: Jack Iggulden, Albert Fawcett.

SO YOU WANT TO BUILD A SAILPLANE

By Bill Carlson

An excerpt from Soaring and Motorgliding. The journal of the Soaring Society of America. Volume 44. Number 5 May 1980. With thanks.

Given the necessary desire, experience, and skills, can you find the time?. As rule of thumb, you can multiply any designer's or kit manufacturer's estimates time by two or three. Remember, they are generally optimistic, have build more than one (The second one always goes faster), and also are trying to sell their product, Don't forget that driving across town, writing letters, or making telephone calls to locate parts, rivets, glues, or information, or making jig and fixtures to hold or align parts is count as time spent on building, although not actually on the airframe itself.

Now that you have decided to build a sailplane, you have to choose which one you want. Fortunately for the home builder, there is a large selection of sailplanes to choose from; there are T-tails V-tails, upside down V-tails, conventional tails, wings from eleven metres on up, retractable or non retractable gears, and some with auxiliary motors. You also have your choice of building materials such aluminium, wood and fabric, and laminated foam and fiberglass. By the time you decide to build a sailplane, you should have enough flying experience to know which sailplane will best fulfill your needs.

Consider if you will be competition flying or sport flying, the type of building material you will feel most comfortable working with, and the amount of available working space you will have. These are all determining factors in which sailplane to select.

Once you have decided which sailplane to build, purchase a set of plans separately and study them carefully. The plans will show you the specific type of construction involved, the kind of work to actually be done by the builder, and will give you a good indication of whether you will be capable of doing the project. The price of the plans is usually deducted when the kit is ordered, and if you determine that the project is to complex, the set of plans is definitely cheaper than ordering the entire unit in the event you have misgivings. Half complete gliders can be a bargain if you know what to look for, but remember, they are selling it for a reason. Generally uncompleted gliders are sold for one of two reasons: the builder's interest in soaring did not last as long as the building process, or the individual found out that he was incapable of the precision required in building. If the latter is the case, get someone who has built that type of sailplane before to go along with you to look at the workmanship and determine if the construction is good.
You can probably get a lot of the special tools required in homebuilding as part of the deal for a fraction of the original cost.

Once you choose the sailplane, resist all temptations to "improve" the design. Very few of us are qualified in stress analysis and structural engineering or aerodynamics to make constructive changes. Sometimes those super ideas will haunt you throughout construction by getting in the way, by just not fitting at all, or by drastically changing the flight characteristics of the aircraft. Just remember, after the final inspection the authorized inspector stays in the ground and watches while you go up and fly it.

Before you make that first cut in the first part, it would be good to call your inspector. Ask him if he wants to get together before you start work. Generally, any part of the airframe will be inspected before it is enclosed or made in any way inaccessible to later inspection. If he is not satisfied with any part, you will be required to correct or remake the area in question. So take your time and do everything neatly and according to the prints and you will have no trouble with inspections. Make sure all of the proper entries are made into the aircraft logbook as the construction progresses.

Most kit manufacturers will tell you that their kit can easily be built within a certain amount of time and with only a few simple tools found in any home workshop, but it is usually does not work that way. This is not to say that it is impossible to build your own sailplane without buying out most of your local hardware store-Just difficult.

Wood gliders will need a jig saw, electric drills, router and assorted bits, lots of clamps (you never have too many), belt and orbital sander, band saw, table saw, a jointer planer, and again the normal hand tools.

The newest method of homebuilding is the use of fiberglass over foam. A combination of metal and wood working tools may be needed for kits having wood spars and welded steel tube fuselages. The only additional tool you will need is a hot wire frame for cutting from the foam blocks to shape.

This is usually a home made item built to the requirements of the specific glider. A good supply of plastic cups for mixing resins will also be needed. One last item is painting equipment. Nothing can ruin a well built glider faster than a lousy paint job, so get the best you possibly can. You will need an air compressor that will deliver a sufficient volume of air, depending upon the type of spray gun and paint being used. If you have never painted with a spray gun before, start out on the smaller part until your technique can be developed.

Whatever type of paint you select (dope, enamel, or polyurethane) follow the manufacturer's instructions to the letter. When you start substituting thinners and reducers, funny things start happening to the paint when you mix it, and you may have problems of its not adhering to the aircraft.

Next you need the space to build the sailplane. Garages are the most convenient for homebuilders, but generally are small and need a certain amount of modifications. Simple mathematics will tell you if some parts of it have to pass through a wall.

Your work area should have a heat source if you live in the colder climates and expect to work year-round. Resins and paints require temperatures specified by the manufacturer for the curing time. Good ventilation is also a must as most resins and paints give of toxic fumes and can be very hazardous to your health.

Once construction is started, it is best to begin with a small part such as the horizontal or vertical stabilizer, elevator, rudder, ailerons or flaps. These can be completed in a relatively small amount of time and, in the event of a problem, are the least expensive to replace.

This was not written to discourage anyone from building a glider, but only to call attention to points not usually thought of when considering building a sailplane. Nothing can describe the feeling of accomplishment when flying your sailplane for the first time. So, if you still want to build, your dream, get the plans today, you won't regret it.

Messages of an Anonymous Home Built Sailplane Constructor

Some thoughts to digest while constructing things, be it boats, gliders, cupboards or what have you.

Don't work on projects with items that can be broken stored under them. Example: I had a canopy of a glider under a bench and when weighing a wing on top of the bench it slid off the bench smashing the canopy and 4 ribs off the tip of the spar.

This could have been averted very easily by storing the canopy elsewhere out of harms way up the other end of the workshop and making sure the wing was secure and unable to slide off the bench when touched. It was balanced on a scale at one end at the time.

The wing repair only absorbed 30 minutes to fix but the canopy will take several days and a sheet of acrylic.

Don't leave containers of liquids be it paint thinners, resin etc. balanced on the edge of the bench or on the floor behind you when you are working. For sure you will either step back and tip it over or knock it off the bench edge when you turn around with the object you are working on and hit the can because it is obscured by the work object.

Containers of screws nuts bolts or hinge sections can finish up with the same result and you finish up on hands and knees looking for bits spread all over the floor.

Another reason to keep you floor reasonably clear of shavings, dust etc. You can at least have some hope of finding the bits spread around after dropping them

Power leads laying all over the floor are another health hazard- very easy to catch a toe and trip over your own feet especially if your hands are full at the time and vision obscured where you are planting your feet.

Always use sharp cutting tools- chisels saws etc. as their performance is much more predictable and require less effort to get the desired result. Less chance of slipping and finishing with the chisel etc. through a finger or your hand. Organise where you place your hands so if you do slip the cutting implement does not finish in you instead of off in space.

It is the same with drills; a sharp drill bit requires less pressure to cut- therefore less chance of a slip.

Don't use electric power tools with frayed cables. Cut out the damage and reterminate the cables- much safer

If using epoxies always use gloves as the effects are cumulative over time. Clean the hands etc. in warm water and soap not thinners as well as clean the surface they drive the epoxy into the skin. Not good for your body.

If spraying your project you should use a good respirator with the correct filters in a well ventilated area. Not much good having a beautiful project unusable because you can't breath as a result of the overspray and solvents used affecting your lungs
It pays to think of the outcomes before you jump in feet first and then have to worry after

(The Erudite comments) TAKE FIVE minutes and consider the risks your actions will present. An ounce of prevention is worth a pound of cure. And remember that every weekend the casualty departments are filled with enthusiastic handymen. Try to avoid them!

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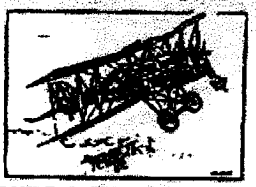
1900 to 1919



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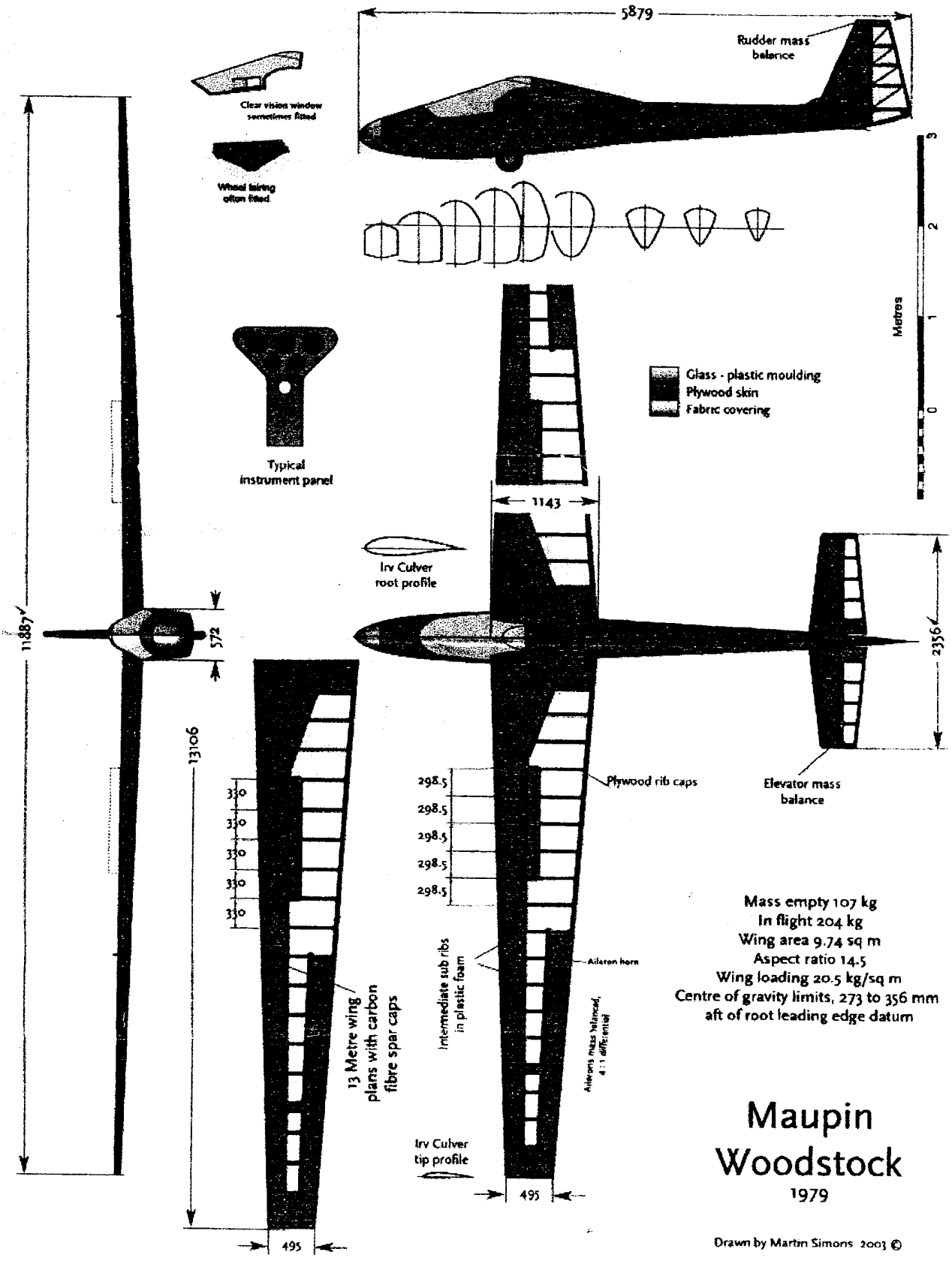
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