THE AUSTRALIAN HOMEBUILT SAILPLANE ASSOCIATION

Volume 3 Issue 11 **December 1998**

EDITORIAL

Editor & Treasurer
James Garay

Co-Editor & Secretary
Peter Raphael

TECHNICAL EDITORS

Gary Sunderland **(President)**

Mike Burns

PRODUCTION

Designer

Virginia Garay

CARTOONIST

Sergio Jacobi

WEB MASTER

Peter Raphael

Eddie Garay -
Computer Systems Administrator

TEA LADY

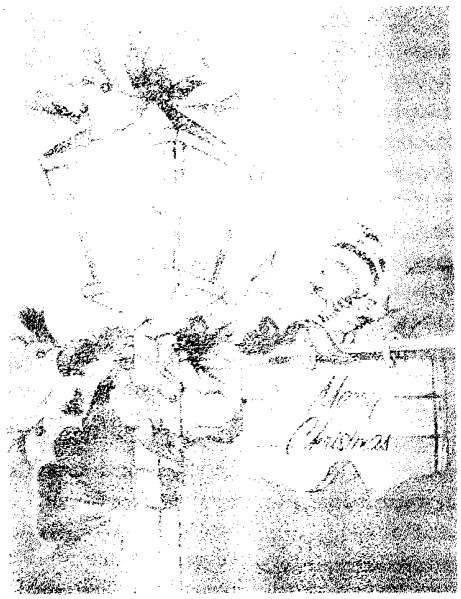
Ms Pebbles

Editorial Policy

Material published in this newsletter is contributed by members of the Association and outside sources. Accuracy and validity of opinions expressed is the responsibility of the contributor. Other publications may reproduce materials published herein provided credit is given to source. Material submitted to the editor will be returned on request. All materials subject to deletions, additions, or revisions necessary to adapt the material to the space, style and standards of this newsletter. Although reasonable care is taken, the Australian Homebuilt Sailplane Association cannot be responsible for lost or damaged photography, artwork or manuscripts.

Liability Statement

The Association has made every effort to ensure the correctness and completeness of material printed in this issue. However, use of any material published herein will be deemed your release of the Association and it's personnel from "liability" for any injury, damages or losses claimed to be caused from the use thereof.



G'day..!

Here I am again at the end of another year, time seems to fly very quickly when you're having fun, or maybe it's because we are getting old and we can't stop time. After the collapse of my Ol' Betsy (*my computer*) I'm now in front of "Betsy 2" trying to re-do this journal after loosing all the data. My apologies to any one who has been affected by this, especially our cousin in the U.S.A - Leonard E. Opdyke.

Now everything is back to normal and in future I will have a back up.

I would like to take this opportunity to thank all the A.H.S.A. servants and all those who have been helping me with the journal, I will not mention names because they all know who they are.

We have some changes in our association, our Secretary and Co-Editor Peter Raphael (The Erudite) will be in charge of the Web-Site and Eddy Garay will be the computer system administrator keeping everything running smoothly.

Our last Symposium at Nagambie was a complete success and I had the opportunity to meet new members, from Queensland and New South Wales. To those who did not attend, try to come next year, we guarantee you will have a good time.

Our next venue will be the summer camp, as usual it will be in conjunction with the Vintage Sailplane Association - 2nd to 10th January 1999. *More details inside this issue.*

Good news from our cousins in the U.S.A - The Sailplane Homebuilders Association have a New Editor for their journal - Sailplane Builder, and her name is Janice Armstrong - Daniel Armstrong's wife. We people from Down Under - the land of Kangaroos and Koalas , wish you all the best in your new venture and we are sure that under your direction, Sailplane Builder will be even better.

Well...! Seasons come and seasons go, but you are thought of with love, and with the hope that your Christmas is merry and your New Year is something special.

Merry Christmas and have a Happy New Year!

James Garay

Inside This Issue

President's Corner
From the oval Office

By Gary Sunderland

By the time you read this, it will be a short time to Christmas. So best wishes to all members for the holiday season and happy building and flying in the Summer months.

Unfortunately I can not get to the rally at Locksley, but I trust the thermals will be abundant and all pilots and crews have a great time.

Since the last letter we have held a meeting with the V.G.A.A. to discuss mutual interests. Ian and Alan Patching represented the V.G.A.A. and James and I spoke for the A.H.S.A. We agreed that both of our organizations need to obtain a higher profile within G.F.A. and we decided to meet with the new chairman of the technical committee, Roger Macrury. We are still waiting for this meeting, but in the meantime the V.G.A and the A./H.S.A. are actively seeking to promote combined activities. Apart from the fly-in at Locksley, we have invited V.G.A.A. members to our symposium on Melbourne Cup weekend at Smithfield.

The V.G.A.A. Newsletter "Vintage Times" has a long list of wooden gliders for sale, including a number of homebuilts like the BG 12 a. They even have a partly built H-17 on offer including the trailer, so it is possible to build a new Vintage Homebuilt.

Seriously though, many of these older wooden gliders are selling at below the cost of new materials, and are a practical alternative to scratch building.

I also managed to call in at the ferries-Mac Donald field, near Murray bridge in South Australia, where Emilis Prelgauskas showed me around. Emilis has rebuilt and reconditioned many old gliders, but his future project is to finish off a half built Miller Tern which he now owns. This Tern will be the second to fly in Australia when it is completed.

My reason for visiting Ferries Mac Donald was to have a look at the library run by Emilis, and see what they can offer us. I am pleased to report that they have all the wood construction handbooks, including the B.G.A and Polish repair manuals, and the G.F.A.-N.G.S. Lecture notes. Emilis can supply these for the cost of photo-copying and postage.

A similar service is offered by the Vintage Glider Association, so for copies of the G.F.A- N.G.S notes, write to either Ian Patching. V.G.A.A. 11 Sunnyside Cres. Wattle Glen 3096. Phone/Fax. (03) 9438-3510 **OR** Emilis Prelgauskas. P.O.Box 1, Bridgewater 5155. *e-mail*: emilis@emilis.sa.on.net

Still on the subject of information and training I recently called in to see Jess Smith at the Kangan Batman Tafe, in Broadmedows, where they offer a course in construction of amateur built aircraft. This course is aimed at the S.A.A.A. members, but will be of interest to A.H.S.A. members who plan to build a composite sailplane that is the type of foam and fibreglasss construction used in the Windrose, and other amateurs designs, rather than the usual G.R.P. production sailplane methods. The fee for the 50 hours theory and practical course is AU$ 435. For more information contact me, or Kangan direct on the Internet WWW.kangan.edu.au

They also offer many other aviation short courses, including welding, basic composites, and computer aided design, all of which should be of interest to some members.

That is all for now, I hope to see you all in the new year.

Happy Soaring in good thermals!

MAIL BOX

Dear Ed,

Firstly I must appologise for not renewing on time but I have been overseas in Mexico and Cuba. Shortly after I returned I moved house and things are just beginning to sort themselves out. With regard the two projects that you mention in the letter that you sent me, I have continued to work on them on and off, however I have had little time over the past years due to my heavy involvement in negotiations with C.A.S.A. Re. The new experimental category. At this point they are both still paper airplanes however I am determined to build both one day.

Unfortunately neither project is really commercially viable and I have recently started work on the design of a powered aircraft that I intent putting in production and both the sailplane projects will have to take a back seat whilst I get this up running.

Over the last few years I have been investing heavily in equipment to set up a factory building kit and certificate aircraft and at this point I simply cannot justify working on an aircraft with the limited marketability of a single seat motorglider or a small glider... however I guess Monnett(Monerai & Moni) was reasonable successful so may take a look at a variation on one of the aircraft that I intent as a kit in the near future.

So I guess the short answer to you question is that I cannot really offer you an article at this stage.

What I can offer however is a short piece on the experimental category I think this would be of interest to members of the A.H.S.A. I will try to put something together over the next month(In time for the next issue) I will attempt to answer a lot of questions builders have in their minds. On an other subject I think I remember a letter that A.H.S.A. send around asking our qualifications and whether we would like them published for the benefit of all members.

I am a graduate Aero Engineer and hold CAR 22,35 & 36 Delegations from CASA for the design of Aircraft. In particular I have a lot of experience in the design, and analysis and load testing of aircraft's. Unfortunately I am not in a position at this time to help others builders,. I am currently working flat out on my own aircraft design. Regards. Stephen Mitchell.

Dear James and Peter, as requested please find enclosed the "Yellow Witch" story, it may be long winded, edit as you wish. I'm a --- typist, sorry about that. The form for Peter is also enclosed, I will help where I can, but you really have a whole lot of expertise together now and I am not all that hot. But I do have a nose for locating faults, after all I manufactured a few myself, so has anyone who has done anything at all. Sometimes we can prevent someone from making the same mistakes. I will be at Smithfield IF I can get my Sapphire flying beforehand. Also I have been to Oshkosh, England and came home sooner with a bad back, not from doing THAT, worse luck. It is slowly coming good, but really restricted me a lot until the last couple of days.

Only saw one glider at Oshkosh, a very old single seat Schweizer. It was well worth the trip but what I expected to see was not there. I went to a few gliding sites in England, flew at Sutton Moor, it was magic, and at Carlton Moor with Ged Terry, also out of this world. The English countryside was really an eye-opener to me; it was beautiful.
That's all for now, hope to see you soon, also the videos of Paul's Windrose.
Happy Safe Soaring
Keith Nolan

Dear Ed,
Even after speaking to you via the phone ref my subscription status, I've managed to double up my subscription. I had A.H.S.A on a list of outstanding debts, forgetting to scrub off A.H.S.A after my call to you, a slip up. Oh well, I guess I am good to about the year 2000.
Regards, JJ. Hancock.

Dear Ed,
I have just read with pleasure the September issue of the Australian Homebuilt Sailplane Association. We have been carrying an ad for you in WW1 AERO and perhaps SKYWAYS also, but I am not seeing our ad with you. Do you have one? Let me know - we all need to do whatever we can in the way of mutual promotion!
Very best wishes, Leonard E. Opdycke

ED Note: *The September issue of our journal was hardly done by this humble Editor and all was due to my OL' BETSY dying suddenly from a complete crash in the hard disc drive and to top the situation the printer also collapsed. Please accept my sincere apologies for the inconvenience it may have caused.*

Dear Ed,
A few weeks ago I received your invitation to assist with the Wood Course at Nagambie late October and unfortunately must decline the invitation, my personal and work commitments are quite heavy and will be for the rest of 1998.

I do feel that the opportunity to run an annual " Symposium" at which new material can be presented should not be lost and perhaps running a school coincident with the proposed symposium could do just that. To me they are separate things with different purposes.

Wood as a subject has been beaten to death, the home building movement really needs to look into the future. New designs, new materials, modifications etc,etc. It is over 20 years since Woodstock first flew, forty two (42) years since the BG-12 first flew, we really have not progressed very far at all.

Whatever happened to local Australian design ??...I have just completed the structural and flight testing program for an Australian designed 2/3 Scale Spitfire replica and could not help thinking " When was the last time an Australian designed homebuilt glider or powered sailplane flew"..??. In fact the ultralight movement, for originality, construction and design leaves the gliding movement in Australia a long way behind..WHY???.
Now that the experimental categories are " Law" that for instance would make a go topic for briefing and discussions since, as I see it, it will really suit anyone wishing to build a powered sailplane even 2 seat. The home building fraternity has never before had the opportunity to design and build with such minimum requirements and procedures.

I note that already some powered sailplanes are being re-registered under AUF's new category of "Recreational" a 544 Kg weight limit applies.

Peter/Jim. I am trying to help Brian Berwick sort out the Woodstock's weight carrying ability providing a few options for him to consider. The comment about "experimental' could make a good item for the journal if G.F.A. could provide you with the guidelines etc. Regards. Mike Burns.

Dear Ed,
Thank you for the invitation to the seminar at Wahring. I am afraid it is not possible for me to be there.

Never the less I am very interested in all things to do with home building and repairs, and still hold great hopes of building my own craft in the future. Not to far distant I hope.

I expect I am not alone in having difficulty finding time and money to travel long distances to attend these seminars. So would it be possible to videotape the talks and demonstrations? Perhaps they could be marketed through the newsletter and through gliding clubs across the country. I believe the homebuilders groups in the USA do this quite a lot.

They would become a valuable reference library even to people who were able to attend. Yours sincerely. Rod Dash.

Ed Note: *Peter Raphael already has agreed to tape the event on video and it will be available to members in the near future just for the cost of production. and postage.*

Dear Ed,
Thank you for your note of September 11th and pardon us for being so late in getting back to you. We have been out of town, and we are significantly behind in our paper work...but working to get caught up !

As you are heading into summer, it is turning cold here. I have had a wonderful flying year this year- I have 120 hours thus far in hang gliders, sailplanes, and a little bit in power planes.

We appreciate the news from your end of the world (are you up side-down or are we?). We will put some of it in our newsletter.

We are watching the amalgamation of hang gliding and soaring in Australia with great interest and would enjoy hearing how it goes from your perspective. Glad to hear your Woodstock is coming along! I recently published some background information on my new design, the WinDancer, in May-June issue of Sailplane Builder, feel free to use that information. In addition, in the upcoming (September-October) issue of Sailplane Builder, there will be more information and the three-view-feel free to republish that also. I am making great progress on the WinDancer, hope to have the prototype ready to take to the SSA Convention in Tennessee in February.

Thanks again for the note and keep us informed of all news- we enjoy greatly the AHSA newsletter!
Sincerely, Dan and Janice Armstrong. USA.

Dear Ed,
Out there in your part of the world there was a Blue Wren. I believe it was self launch. If you have an address would you please write to Thanks you.Norman Dibble.

TECHNICALITIES

PERSPEX

I.C.I Technical Information
Courtesy J. Ashford

Perspex is the registered trade name for Polymethyl Methacrylate sheets and rods manufactures by I.C.I. (Imperial Chemical Industries Limited.)

MACHINE POLISHING

The Perspex, after smoothing by sanding or scraping, is most conveniently polished on mechanically driven calico buffs from 6 in. (15cm) to 14 in. (35cm) in diameter rotating at speed of about 1.400 r.p.m.. A high speed is not recommended, as this may cause over-heating of the surface with consequent difficulty in producing a polish. The polishing of Perspex requires a compromise between the speed of the buff and the pressure applied, and the operative must judge the most useful pressure which will not cause overheating an yet which will produce a good polish as speedily as possible. It is usual to apply to the mop a wax dressing containing a mild abrasive such as kieselguhr or rouge. A final cleaning may be given on a swansdown mop with no wax dressing, but this is not always necessary.

HAND POLISHING

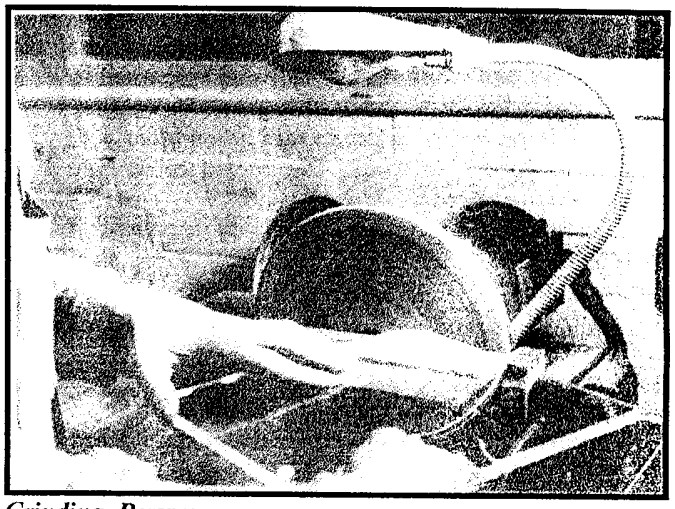
Perspex surfaces after being carefully smoothed can be polished by hand using Perspex Polish No. 1 applied to a soft fabric pad. Harsh fabrics must not be used.

Rubbing should be done firmly and the direction changed frequently. When a good bright polish has been obtained the surface should be given a further polish with Perspex Polish No.2 which must be applied very sparingly.

Although polishing will restore a good surface to Perspex, it is obviously preferable to preserve the initial high polish on the sheet in order to reduce to a minimum the relatively costly operation of polishing. Top this end, masking of the surface should be maintained in place as long as possible and all care should be taken to avoid scratching or otherwise spoiling the original surface.

FLAME POLISHING

Flame polishing can be used for polishing machined edges of Perspex but this method cannot be fully recommended because of the tendency to cause crazing (which may not become apparent until some time after completing the operation). On the other hand, narrow slots which cannot be polished by normal means may be polished by this method.



Grinding Perspex

An Oxy-hydrogen flame, which does not deposit carbon on burning, is advised and will produce glass-clear surfaces. Flames such as Oxy-acetylene induce a yellow or brown tint on the polished surface.

To avoid damaging adjacent surfaces it is advisable to mount the Perspex between to steel bars, one on each side of the edge and just below the level of the surface. A flame about 6-8 inches (15-20cm) long, of a width dependent on the thickness of material, is required. The rate of travel across the surface is about 20 ft. (6m) per minute. A good polish should be obtained in one passage of the flame without causing the surface to bubble. Best results are obtained if the Perspex is smooth and free from deep ridges, but the final polish is generally not as good as normal polishing on a buff.

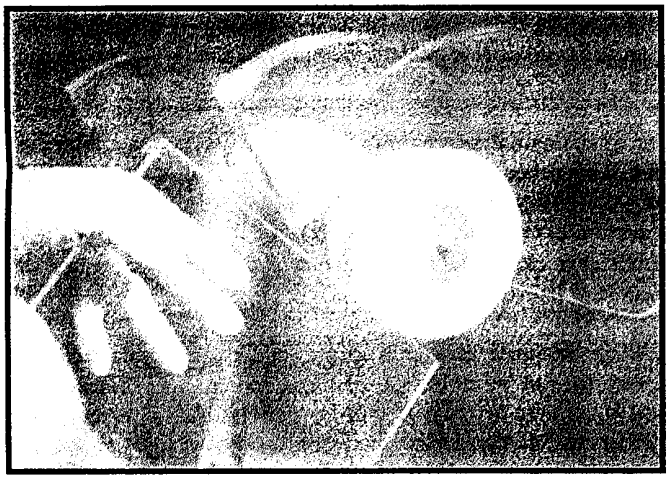
SOLVENT POLISHING

The mechanical polishing of Perspex is undoubtedly the best method for bringing the surface of a Perspex component back to a high finish and, in addition, is the only method which can be fully recommended. There is, however, a limited number of applications, of which the most important is prismatic refractor plates for street lighting lanterns, where a mechanical polishing process is not possible because of deformation produced, and

where hand polishing is not economical. For such types of work it is current practice to use a solvent polishing process. It is emphasized that the use of solvent in a polishing process entails risk of subsequent crazing and whitening (which may not become apparent for some time) and although the procedure is designed to reduce these risks to a minimum, it cannot be said that complete immunity is assured. Further, solvent polishing presuppose a high standard of machining, and merely serves to remove machining haze from an otherwise perfect surface. It should not be used as a mean of removing machine chatter marks, surface scratches or other discrete blemishes.

The technique consists of dipping the components, which has been preheated to a temperature of about 80°C, into triclorethylene vapour which is a solvent for Perspex and is used as the polishing medium.

The dipping process, lasting only3 or 4 seconds, has to be carefully timed to give effective polishing without excessive softening of the surface. The component is then removed from the vapour and immediately stoved in a oven at about 80°C. to remove all traces of residual solvent. There are certain hazards to health in the use of solvent vapours, and the precautions advised by the manufacturers of the plant must be rigorously adhered to.



Edge polishing a sheet of Perspex on a buffing wheel

STATIC CHARGES ON PERSPEX

Because of the high volume and surface resistivities of Perspex an electrostatic charge is built up on it when it is rubbed with a dry cloth. This may cause it to become covered with dust in a relatively short time, and cleaning with a dry cloth will tend to aggravate the trouble. Treating the surface with Perspex Polish No 3 will prevent the development of static charge, and thus eliminate or reduce the collection of dust. A small quantity of the polish (which may be thinned down with water if desired) is applied to the sheet and spread evenly, using a soft cloth.

Finally the sheet is rubbed with a soft, clean cloth until a bright polish is obtained, as in furniture-polishing. Harsh fabrics must not be used.

Alternatively, Perspex can be washed in a solution of about 10 per cent of Perspex Polish No 3 in water and then dried with a soft cloth.

This treatment eliminates the static charge and so reduces dust collection for at least two months under normally dry indoor conditions. Frequent polishing with a dry cloth does not impair the efficacy of the treatment, but washing completely destroys the anti-static effect, and polish must be reapplied afterwards. It is important to ensure that all surfaces of the article are treated.

To be continued...

WHAT'S NEW?

NEW MEMBERS

We have new members to welcome to the group:

Neil Arthur Biddle - Innsvale-Back Yamma via Parkes. N.S.W. 2870.
Trevor Hancock - 65 Manzeene Ave.Lara.Vic. 3212.
Claus Endres - 10 Facey Rd. Devon Meadows. Vic. 3977.
Ai Gerber - 14 Bridgewater St.Morningside.Qld.4170.
Bill Weston - 25 Hurley St.Longwood.Vic.3665.

WELCOME ABOARD Fellows! and we look forward to a long and mutually satisfactory association.

New Records.

The FAI has now ratified the following class D (gliding) record:

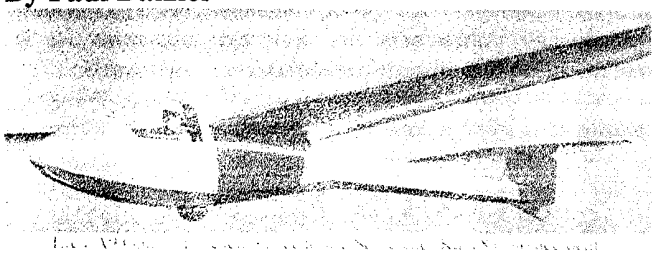
Claim number: 5360
Sub Class: DU (ultralight class)
Category: General
Type of record: Straight Distance
Performance: 547.18 km
Course : Hutchinson, KS (USA) to Bonham. TX (USA)
Date : 21 April 1998
Pilot: William Gary Osoba (USA)
Glider: **WOODSTOCK**.
Current Records : No record registered yet

Claim Number : 5361
Sub Class: DU (ultralight class)
Category: General
Type of record: Straight Distance to a Declared Goal
Performance: 547.18 km
Course: Hutchinson,KS (USA) to Bonham,TX (USA)
Date: 21 April 1998
Pilot: William Gary Osoba (USA)
Glider: **WOODSTOCK**
Current record: No record registered yet

Claim number: 5362
Sub Class: DU (ultralight class)
Category: General
Type of record: Free Distance Via up to 3 Turns Points
Performance: 547.18 km
Course: Hutchinson,KS(USA) to Bonham,TX (USA)
Date: 21 April 1998
Pilot: William Gary Osoba
Glider: **WOODSTOCK**
Current Record: No record registered yet.

Edgley EA9

By Paul Dalziel



Reproduced with permission from an article by Derek Piggott appearing in "Pilot" (UK Magazine) December 1995.

John Edgley's new glider, with its innovative construction using pre-cured sandwich panels, is appraised and flown in competition by Derek Piggott.

SOME SIX YEARS ago John Edgley, who designed and built the original Optica aircraft, paid a visit to Lasham. He was there to discuss a project to build a set of wings for a glider, using a new type of construction. The idea was to make extensive use of pre-cured sandwich panels rather than a wet lay up, in order to reduce the weight and also to facilitate production using simple low-cost jigs rather than expensive moulds.

Because of the difficulties in competing with the high-performance machines being produced in Europe, I made the suggestion that he should try to obtain an ASK18 and build a pair of wings for that, reasoning that it was, and probably still is, the best 'club' glider ever produced. Designed by Kaiser using the experience of the K8 and K6 gliders, it was an instant winner. However, at the same time the Astir and Club Libelle came on the market, and it proved impossible to produce the ASK18 at a competitive price. So, unfortunately for the gliding movement, the K18 went out of production after only a few had been sold. Ever since, the K18s have been highly valued by their lucky owners.

The Edgley project involved using Fibrelam, a sandwich material made by CIBA Composites, using glass fibre skins and a honeycomb filling. This is commonly used in various thicknesses for flooring in airliners and for cabin panels. It is also used for the fuselage structure of the CFM Shadow microlight. The material comes in sheets, which for the EA9 were cut to size (to within a few thousandths of an inch) using a CNC computer-controlled routing machine. The beauty of this method is that once the tapes have been made and proved, series production is simple anywhere in the world. It could also be produced in kit form, with the pre-cut sheets of material in a flat pack.

The first major task was to evaluate the strength of the material and the joints and fixings to be used. This involved breaking many specimens to obtain a well-established strength, as it had not been used so extensively for primary structure before. In addition, the degree to which limited single curvature can be introduced into the Fibrelam was investigated, and a method for jointing such curved panels was developed.

The possibilities of using the material for a complete glider became obvious, and the design stage was completed allowing the construction to begin–although looking similar to a K18, the EA9 is a completely new design. By 1993 the aircraft was taking shape and the BGA Technical Committee were watching the progress and giving useful advice.

The ability to slightly curve the Fibrelam panels was used to create a fuselage structure which is true monocoque. Like the K8 and K18, it is multi-faceted with single curvature panels–seven in all on the EA9. Perhaps this is not so elegant as a moulded fuselage, but it is unlikely to have any significant effect on the performance. These panels are jointed by cutting out all the panels and frames with tabs and slots, so that the whole is largely self-jigging, in much the same way as a cardboard cut-out model is made.

The wing skins are also from pre-cured sandwich panel material, but with one side of the sandwich supplied unbonded, the whole being formed to the correct two dimensional shape before final bonding. As in the fuselage, a tab and slot technique is used. Unlike the K18, and similar to a conventional wet lay up D-box, very few internal ribs are needed. The planform is similar to the K18, but the aerofoil was changed to a Wortmann section. Like the K18, the rear portion behind the spar has normal ribs and is fabric-covered.

The tailplane is mounted about a quarter of the way up the fin. This reduces the risk of damage when landing in long grass or crops, and also gives less unblanketed area of the fin for good spin recovery.

In order to evaluate the technique in as many ways as possible, the Fibrelam, and other pre-cured sandwich panel, was used almost exclusively. The only wet lay up in the EA9 is the nose cone and centre section cover–both non-structural items. The prototype has aluminium spar caps, but these have already been redesigned in carbon fibre pultrusion.

The EA9 is designed as a club glider, and considerable thought was given to the question of damage repair. To repair the Fibrelam it is intended that it will be permissible to remove the damaged areas, let in an exact size piece, and cover the whole with an extra 0.4 mm thick skin on both sides. Such a technique is bound to be much cheaper than scarfing, with very little increase in weight.

In addition, the airframe has been designed on a modular basis. The wing is in five subassemblies, all riveted together. The fuselage tail boom is bolted to the front fuselage, the fin is bolted to the tail boom, and so on. This is intended to make it easy to replace badly damaged items, rather than carry out expensive repairs. Increasingly this is becoming a problem with conventional composite gliders where, for instance, a badly damaged rear fuselage can lead to a complete replacement being more economic than a repair.

Fortunately John was able to obtain SMART Grants from the DTI towards the cost of building the aircraft, and after some six years of work the aircraft was ready to fly in November 1994. First flights showed that the handling was very similar to that of the K18, with a docile stall and excellent control response. However the flight tests revealed a lack of longitudinal stability at high speeds, although it was very stable at lower speeds. This was thought to be due to a lack of torsional stiffness in the wings.

Further tests, photographing a probe mounted at one wingtip, showed that at high speeds the wing was twisting significantly, and that it would be prudent to limit the testing to speeds of below ninety knots.

John had realised before the first flight that wing torsion might be a problem, and his team had already done extensive work on investigating how the wing could be stiffened. A port side wing D-box for the new design (complete with a pultruded carbon fibre main spar) had already been made, but there were insufficient funds to allow the prototype to be modified. This would have necessitated extensive re-building of the original wings.

Early in 1995 I mentioned to John that I probably would not be able to fly my Astir in the Regionals this year, and that I would be interested in flying the EA9 if that was possible. He was enthusiastic about the idea, and promised the aircraft a day or two before the start of the competition. An opportunity to fly either a K6E or a K18 had always been an ambition of mine, so I was excited at this chance to fly the EA9.

We got it rigged and I made a flight to check the XK10 variometer and rate of climb averager, and to get used to the handling. Like the Kl8, the EA9 is an excellent climber, and the only problems I had on the first few days of the competition was the lack of a speed director or even a McCready ring on the variometer to give an indication of the most efficient speeds to fly. As a result I had no idea what speed to fly when the vario was reading seven knots or more *down* in the strong sink. Mostly I used 65 to 70 knots, hoping this was a sensible speed.

Fortunately, I was using my Garmin GPS, so until the second day of the competition I failed to notice that the compass read east on all headings! This was due to fitting the electric variometer, which has a powerful magnetic field, too close to the compass.

After two days of competition flying, wondering what speed to fly, I took an early morning high tow and using the averager, measured the rates of sink at various speeds to enable me to draw an approximate polar curve. From this I made a table of speeds to fly, including speeds for strong sink. For the competition the EA9 was given the same handicap as a Kl8, and seems to have much the same performance. I was fortunate to win two days; one was a 324.5 kilometre racing day, and the other a 100-km triangle in difficult conditions, when I was one of only three to complete the task.

We had two days with tasks of over 300km, which were completed without problems, and the EA9 proved a very good scraper in weak lift. Only once in the nine day competition was I forced down into a farmer's field for a road retrieve. As we were using an old open trailer and had to tie the glider down to it, I was relieved that we did not have more land-outs.

Of course, because of the wing twisting problem I had to limit my speeds on the final glides, and could not save time by using up my reserve of height by flying the last few miles back to the finishing line at high speed. However, since efficient final glides are really a matter of trying to gauge the conditions ahead and not wasting time by taking unnecessary height, this was no handicap.

I had a most enjoyable time with good tasks on all nine days, and placed third overall, in spite of the EA9 having the lowest handicap of all the competing gliders. This was in competition against a number of much better gliders including an LS4 and several Pegasus, both of which have glide ratios approaching 40:1–a considerable advantage on my 32:1 when it comes to marginal conditions and a question of being able to reach the next area of lift.

It was only afterwards, flying my Astir, that I realised how much better I could have done with a speed director, or even just a variometer showing air mass, to help recognise when the glider was flying in rising or sinking air and so when to slow down and speed up, and how fast to fly.

That the EA9 is easy to fly can be seen by the fact that I had not flown a glider cross-country since the 1994 Regionals. In fact, apart from some test flights in the winter, I had scarcely flown the machine before the first day.

So what is the future for this machine? There is certainly still a need for this class of glider, as it can be used like a K8 for first solos, yet has a vastly superior performance. It gets a higher winch launch than most other types, circles slowly and so offers the pilot the best chance of catching and staying in a thermal.

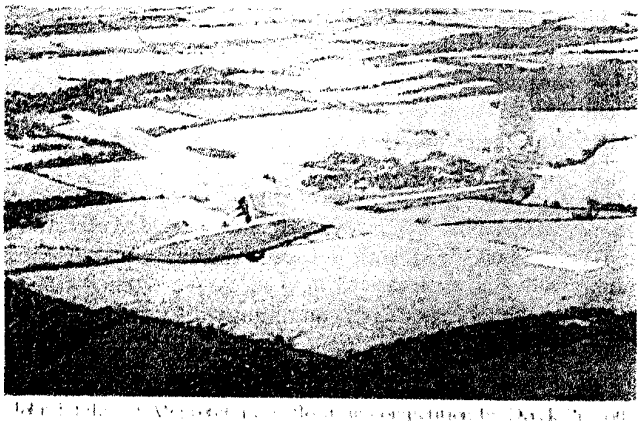
The type of construction results in a very light structure, as light or lighter than wood, and much lighter than any type of normal glass fibre construction. A minimum of jigging is required compared with other glass fibre designs. It lends itself to easy assembly, making it ideal for kit construction. The material and system of construction is also promising for other types of aircraft and other uses. The prototype machine requires a stiffer wing before completing the test-flying for a full C of A, so it is not for sale. More money is needed to go ahead with this, or perhaps even a two-seater, using the experience gained.

John Edgley would welcome suggestions and offers of help. Otherwise this may just be another enterprising British project to be left for some other country to develop.
Edgley Aeronautics phone: 0 1980 620 324

Dimensions		
Wingspan		15.7 m
Length		6.95 m
Aspect ratio		18.85
Wing area		13.06 m²
Aerofoil	Wortmann (root)	FX61-184
	(tip)	FX60-126
Weights and loadings		
Max wing loading		25.6 kg/ m²
Empty weight		210 kg
Max auw		345 kg
Useful load		135 kg
Performance		
Best LID at 41 kt		34
Min sink at 35 kt		0.6 m/sec
Stall		32 kt
Vne		125 kt

Manufacturer: Edgley Sailplanes Ltd,

Handy Cross, Clovelly Road, Bideford,
Devon EX39 3EU. Tel: 01237 422251,
fax: 01237 422253.



Evel Knievel Jimmy Garay - showing off his motorcycle stunt at the last symposium in Nagambie; he used to do it when he was young...!**but this time something went wrong** and the result cost him a broken rib.

HINTS & TIPS

Tost release overhaul tool kit

by Kevin Donoghue

Reproduced from the Australian Gliding Sep/Oct 98.

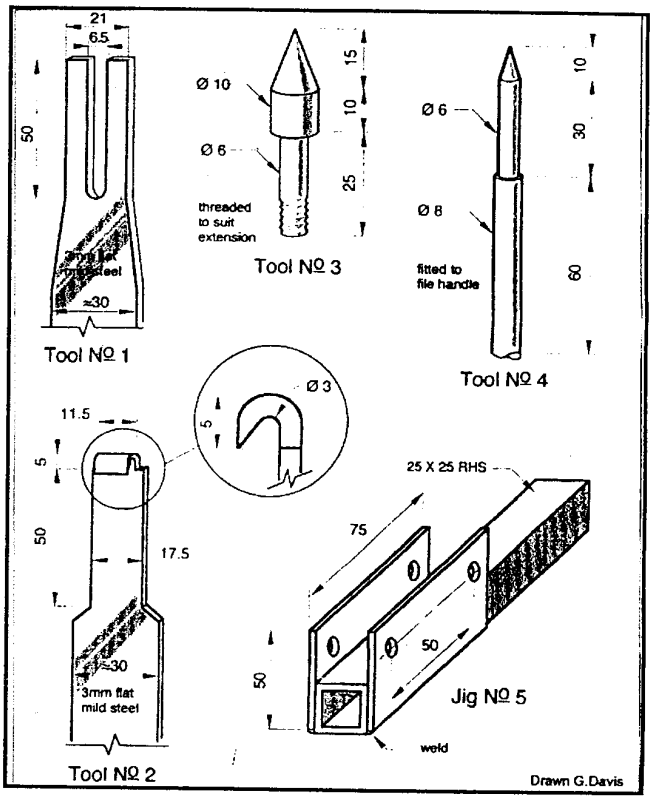
It was at a sailplane maintenance school at Kingaroy several years ago that I observed a Tost spring replacement tool used. It was designed by Craig Tuit from Brisbane, and made the task so easy it was almost enjoyable. Not enjoying doing things the hard way I decided to invent a kit to make overhauling releases more rewarding.

Tool No. I is used for replacing the main return spring. Tool No.2 is used to hold the release spring back out of the way when replacing cage in to release assembly. These tools are made using 3mm thick F.M.S about 30mm wide, length about 200mm. Dimensions provided in the diagram are accurate enough but it is handy to have a release on hand to allow fine tuning for a neat fit.

Tool No. 3 is a pilot to replace the parrot beak/back release cage pivot bush. There is sometimes a problem aligning shim washers in this mechanism and this tool makes it easy. The tool can be made out of any round bar and lathed to size, a 6mm nut can be fixed to some type of handle and when the bush is fitted to the pilot it can be screwed on behind it to push into the assembly.

Tool No. 4 is a general alignment tool also made out of round bar. Dimensions shown are accurate enough, length is not critical and a handle is also fitted. Plastic file handles are good.

Tool No. 5 is used to hold the release while working on it. The release is bolted into the holder which is then clamped in a vice, this stops damage to the release cage. It is made by welding two side plates of 75 x 50 x 3mm flat plate to a length of 25 x 25mm RHS. Holes are pre-drilled to suit the release. Drill holes slightly oversize to make fitting the release easier. Full size plans are available from the Grafton Gliding Club.



SHOP TALK

A little bit of Gliding in Australia

By Allan Ash. (Cont)

Disheartened, Hargrave offered them to anyone who would preserve them, saying, " *Science knows no international boundaries*" He wrote to his old correspondent Herman Moedebeck to offering 146 items. They were accepted and placed on display in the Deutsche Museum in Munich. One of Hargrave's kites was given to the Science Museum in London, and his notebooks, sketches and records went to the Royal Aeronautical Society in London.

In the devastation of Munich during World War 2, the Museum was bombed and most of the Hargrave exhibits were destroyed. Shortly after the end of hostilities, Stanley Brodgen, a well known Australian aviation writer, was in Germany.

As a result of a letter of introduction from Lord Casey, who was then Mr. Richard Casey, Australian Minister for External Affairs, Brodgen was able to visit the museum in Munich and see the remaining 18 Hargrave models.

The museum official asked Brodgen if he would like to have the models, but he believed these should not be accepted by a private person. He wrote to Mr. Casey, who quickly ordered his staff to approach the Munich Museum and arrange for the models to be accepted by the Commonwealth . In due course, the models were returned to Australia by Qantas Airways, which donate the cargo space.

A little later, the Royal Aeronautical Society in London returned the material it had received from Hargrave. These models and records are now in the Lawrence Hargrave Collection at the Power House Museum in Sydney. Also in this collection is an exact replica of the Hargrave kite that is still housed in the Science Museum in London.

On Hargrave's death in 1915, a professor at Sydney University commented that Sydney would one day be famous, not for its magnificent harbor, but for the fact that it was the home of the man who solved the problem of human flight.

Regrettably, that prophecy is yet to be fulfilled.
Sources: Powerhouse Museum,Sydney; the Australian Encyclopaedia;Stanley Brodgen.

Allan Betteridge

As early as 1907, Allan Betteridge of Adelaide built a glider and attempted to fly it, but could not get it of the ground. He built another in 1908 but it was no successful either.

John Duigan

John Duigan of Melbourne was an early experimenter with aircraft. From a postcard picture of Wright aeroplane he designed and built a glider of 20 feet span in 1909. In it, Duigan made several short flights while it was tethered to a post by 120 feet of wire. Some months later he obtained a copy of Hiram Maxim's book *Natural and Artificial Flight* and the information he obtained from it was used to design another glider which made several successful flights to about four feet while being towed down a hill. These flights were made in the early part of 1910. Later the same year, Duigan designed and built an aircraft with 20 h.p. engine of his own design and made a number of flights in it.

Charles Lindsay Campbell and the Queensland Aero Club.

In May 1910, an aircraft exhibition was held at Longreach, Queensland, which included three gliders, an aeroplane and several model aircraft.

Two of the gliders were designed by Charles Lindsay Campbell. One was a monoplane of which no details are available. The other was a biplane of 22 feet span and 6 inches chord. It had elevators in the front of the wing and had an undercarriage consisting of three bicycle wheels. There is no report of any of the gliders at Longreach doing any flying.

In June the same year, a group of people in Brisbane, including Campbell, formed the Queensland Aero Club with 40 members and several gliders. One of the club's gliders was designed and built by Tom Macleod, later to become prominent barrister. This glider had a span of 22 feet and had elevators mounted ahead of the wings. Though there is no report of the club's glider being flown, it is quite likely that they were. The club later became the Queensland branch of the Aerial League of Australia.

R.G.Bowen.

Another Queenslander, R.G.Bowen, is reported to have flown a biplane glider of his own design at Cape Moreton in 1911. The wings consisted of two curved planes of 30 feet span and 5 feet chord. On the first flight a gust of wind capsized the glider and wrecked it. Later it was rebuilt with a span of 28 feet.

Charles and Len Schultz.

Charles Schultz was a master builder an ran a contracting business in Sydney. His youngest son,Len, then only a small child, later became prominent as a radio engineer. Len learned to fly in 1929 and in the following 20 years became president and leading instructor of the Royal Aero Club of New South Wales and an active member of the Sydney Soaring Club.

The Aerial League of Australia

Lawrence Hargrave, described as a small, bearded man with a quiet demeanor and an inquiring mind, was one of a group of Sydney businessmen who established the Aerial League of Australia in April 1909.

The instigator of the League was George Augustine Taylor, an architect, artist, journalist and inventor, and member of what was called in those days " the Bohemian set" in Sydney. He was moderately wealthy, socially popular and gifted with many bright ideas. He had only limited technical engineering knowledge or practical experience himself but he had that rare gift of being able to inspire those who did have extensive knowledge and experience. It was usually other men who put Taylor's ideas into practice,

though he received the acclaim. As a result, he has been credited in history with a number of " first ", including the first to flight in Australia. What is perhaps more correct is that he was responsible for the first flight and this, of course, is just as notable and worthy of recognition.

The Aerial League of Australia came into being because a number of people, having seen aviation getting under way in Europe and the USA, were confident that the flying machine had a big future in Australia.

To be continued...

EXPERIMENTAL CATEGORY
What it means to you !

An excerpt from **PACIFIC FLYER** November 1998

By D.J. Llewellyn

D.J.Llewellyn was the Chairman of the TC 8 Technical Committee, which developed CASR. Part 21-35. He is an Aeronautical Engineer with some 34 years of professional experience in the Australian aviation industry, and runs a CAR 35 consulting business from his home in South-East Queensland..

All right, let's get one thing straight up front-there's no such thing as an " Experimental Category ".

"EXPERIMENTAL" is a purpose, NOT a category. Parts 21 through 35 of the new regulations, temporarily named " Civil Aviation Regulations 1998 " (until such time as the Civil Aviation Act can be amended to allow them to be called CASRs), were signed into law by the Governor General on July 15, and begin to come into effect on October 1st; they affect the entire gamut from the type certification of aircraft, engines and propellers, through manufacture, including Parts Manufacture Authorisations (PMAs). Production Certificates, Certificates of Airworthiness, and much more, including new options for kit aircraft, such as are offered by Primary Category.

The accompanying Statutory Rule, containing (amongst other matters) CAR 262, spells out the operating rules for these new classes of aircraft. It's an interim regulation, and will be replaced in due course by Parts 65,91 etc of the CASRs although the net effect is not expected to change significantly in the process, except that we have the addition of the "Basic" pilot licence, which would be interchangeable, it is expected, with an AUF three-axis pilot certificate with cross country endorsement.

Buried discretely amongst these new regulations, specifically in CASR 21.191 through 21.195, is a list of the purpose for which one can obtain an Experimental Certificate experimental certificates are expressed as such, but when issued, are issued as special airworthiness certificates[experimental], and the rules pertaining to such certificates.

They are virtually identical to the corresponding American rules, down to the nature of the "Special Certificate of Airworthiness", with its attendant conditions just one word of caution,though this form of C of A is not entitled to automatic acceptance outside Australia; if your dream is to fly around the world in the creation of you own hands, some serious homework is involved, it is not automatic in these categories of aircraft.

CASR Parts 21-35 etc. Can be downloaded from the CASA website, if you are an internet person, see http://www.casa.gov.au Also, look for the following Advisory Circulars, if it is Experimental " category " you are interested in: A.C.21.4 (0) and A.C.21.10 (0).

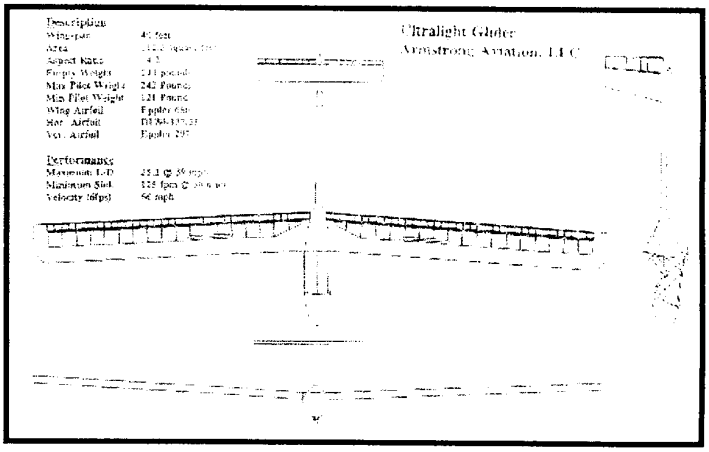
Briefly one can obtain an experimental certificate for the following purposes:

a Research and development
b Showing compliance with regulations
c Training the applicant's flight crew
d Exhibition
e Air racing
f Market surveys
g Operating amateur built aircraft (including those built from kits that meet the 51% rule)
h Operating a kit built aircraft (i.e. A {Primary category kit assembled aircraft, these kits do not have to comply with the " 51% rule)
j Private operations of prototype aircraft previously certificated under (a).(b) or (d).

The main stream of recreational usage of experimental aircraft falls under purposes (d),(e),(g) and (h)

WinDancer Ultralight Sailplane Design Description

By Daniel Armstrong



In the last issue of Sailplane Builder, we discussed the factors influencing the design of the WinDancer. This issue we will describe the design and how the design features are expected to meet the goals and requirements. A three-view of the WinDancer is shown below showing a general layout similar to most modem sailplanes. The pilot sits forward of the wing, there is a T-tail mounted at the rear end of the fuselage and the controls are very similar to current sailplanes. The center of gravity is aft of the main wheel, giving a tail dragger configuration.

Some differences are also apparent. The cockpit is open with hang tubes and a central keel and the wing is constant chord and swept forward. These similarities and differences and the rational for each feature will be discussed below.

The main goals for the WinDancer are to provide plans for an ultralight sailplane that can be towed using a large variety of methods and can also be foot launched. The design should be straight forward to build from the plans and should fulfill the requirements listed in last month's article.

The basic configuration is determined by the goal to have excellent handling qualities and require only basic flying skills to fly safely. The cockpit configuration allows foot launching in moderate winds and also provides excellent visibility. The configuration of the cockpit area should provide better visibility than virtually all current gliders.

The T-tail keeps the horizontal stabilizer and elevator up in clear air flow during foot launches, and out of the brush on out landings. It also allows quick, easy assembly and a single piece horizontal.

The wing is constant chord with no twist to allow easy construction and benign stall characteristics. The airfoils chosen provide very benign stall characteristics too, while also having relatively low drag and high lift. The wing is swept forward to allow balancing heavier pilots with small amounts of tail ballast. The vast majority of ultralight sailplanes of conventional configuration have ended up nose heavy due to the pilot being a much higher percentage of the gross weight than conventional sailplanes.

The wing has a carbon D-tube shell forward of the spar and fabric covering aft of the spar and on the control surfaces to reduce weight and mass balancing requirements. The spar is carbon fiber to reduce weight while meeting the strength requirements associated with heavier pilots and speeds. The wing spar is a tongue and fork configuration using two main pins for very quick and easy setup. All controls hook up automatically for safety and for easy setup.

The wing configuration allows for very little compromise in penetration ability due to the lack of twist required to ensure good stall qualities. The largest problem for most ultralight sailplanes is penetration ability and this problem is minimized on the WinDancer. Good climbing ability is assured by low parasite drag, low span loading and a good low drag high lift airfoil. A small climbing penalty due to the higher induced drag of the constant chord wing is more than offset by the improvement in ease of building. Even with a constant chord wing, the WinDancer should be one of the best climbers currently available.

The roll rate and roll power should be enhanced by the full span flaperons and the torsionally stiff carbon D-tube. In addition, the flaperons should enhance the penetration and climbing ability above that of an unflapped section.

Another consideration involving the wing platform is the ease of transport. A constant chord wing allows a relatively short height and constant section trailer. With a chord of 33.9 inches, the chord is short enough to allow carrying the glider on top of a car, if desired.

Many current ultralight gliders have relatively poor glide path control. To allow cross country flights and safe landings in small fields, excellent glide path control is required. Schempp-Hirth type spoilers are used on the WinDancer because they are very effective, have small pitch effects, are relatively simple to build and because most pilots are trained in their use. In addition, light wing loading reduces turning radius and approach speeds which enhances safety during landings in small fields. Light wing loading may be the single biggest factor in reducing the pilot skill required to fly ultralight gliders.

The structures of the WinDancer are being designed to allow easy construction using homebuilder technologies. All of the skins can be laid up on simple male plugs hot wire cut from STYROFOAM. Tooling requirements are being kept in mind for the construction and assembly of the structures. Molds in particular can become extremely labor intensive.

The layout and marking of the controls will be standard and follow the requirements of JAR-22 and OSTIVAS. This is being done to allow easy transition from other types of gliders, particularly from training gliders. The flap handle will be on the left side, as will the spoiler handle. The end of the spoiler travel will actuate the wheel brake. The control stick will be mounted on the right side. The tow release will be on the left side of the control panel. The tow release will actuate both the nose and CG tow hooks.

The landing gear arrangement is optimized for easy takeoffs and landings from ground tow. A glider with the main wheel forward of the center of gravity has no tendency to bang the tail down to the ground on sudden accelerations, like those from winch and auto tows. This is a problem for gliders like the 2-33 which have a strong tendency to bang the tail on hard acceleration. There is also a nose skid to allow rocking forward safely when braking very hard under emergency conditions. This allows the wing lift to be reduced for better braking and the drag of the skid reduces braking distance. Normal braking should not cause the nose skid to touch. Ultralight sailplanes have low touchdown speeds and short braking distances in general and the WinDancer configuration should allow very slow speeds and short distances.

This is a brief description of the design features of the WinDancer ultralight sailplane. I will be writing regular updates on the progress of construction and will publish them in Sailplane Builder. I am currently building sample parts and testing them. Janice and I plan on bringing the prototype WinDancer to the Soaring Society of America National Convention in Knoxville, Tennessee at the end of February 1999.

SYMPOSIUM 98 - Nagambie

The V.S.A. Wood repair short course

By Gary Sunderland.

This course was run in conjunction with the Australian Home Built Sailplane Association's 1998 Technical Symposium at Smithfield near Nagambie, and was developed at the request of several A.H.S.A. members, who are experienced and skilled wood

airframe constructors. They requested some recognition of this experience within the formal airworthiness system, so a short wood repair course was planned to suit the time available.

In view of the long period since the V.S.A. has run a wood repair course the A.H.S.A also agreed to throw the course open to other GFA members, and the course was widely promoted through AHSA, VGA and advertised in Australian Gliding magazine.

The AHSA meeting was a great success, with more than 25 people and six homebuilt sailplanes attending. Not all stayed for the four days.The formal VSA course had thirteen applicants, who attended for the four days of lectures and practical workshop exercises.

They Were:
Trevor Hancock. Narrogin G.C. (WA)
Bill Weston. Mangalore G.C.
Peter Champness. G.C.V.
Terry Whitford. Smithfield S.G.
Malcolm Bennett. Southern Riverina G.C.
Brian Berwick .South Gippsland G.C.
Alvin Petersen. South Gippsland G.C.
Claus Endres. South Gippsland. G.C.
Al Gerber. Caboolture G.C. Qld.
Paul Dalziel. Darling Downs G.C. Qld.
Peter Raphael. Smithfield S.G.
James Garay. Beaufort G.C.
Bob Mc, Dicken. Hunter Valley G.C. NSW.

All course members are actively involved in wooden gliders, either within their clubs, or as builders or restorers of wooden sailplanes

The course consisted of morning lectures on timber, plywood and glues,defects, inspection and repairs,fabric work, quality control and GFA procedures.

Lecturers were provided by Doug Lyon (Past.CTO/A) and Gary Sunderland (RTO/A).

Practical repairs were carried out on some ES 60 tail components, with experienced AHSA members Peter Raphael, Malcolm Bennett and Terry Whitford acting as demonstrators and supervisors.

All the repairs passed the destruction test and the course members were authorized for minor repairs. Those applicants who had practical experience in jigging and aligning complete structures were cleared for mayors repairs.

This course would not have been possible without the effort of members of the AHSA over many months. My particular thanks to the organizers, James Garay and Peter Raphael, to demonstrators Malcolm Bennett and Terry Whitford and to the caterer and **Chef EXTRAORDINAIRE. Monsieur Dominic Lowe.**

Thanks are also in order to lecturer Doug Lyon, who gave us the benefit of over 50 years experience in designing, building, repairing and maintaining wooden sailplanes. Also special thanks to Mary Mc. Dicken , who had no interest in proceedings, but took it upon herself to assist the ***Chef extraordinaire Monsieur Dominic*** and keep the kitchen in order.

Will we do it again..? The number of wooden sailplanes now operating makes this mandatory. Even new fibreglass gliders, such as the Puchacz, contain a significant amount of wooden structure hidden inside, so the need for capable wood repair people will continue into the next century.

Both the RMIT and KANGAN Institute (Broadmeadows) offer short courses in metal, composites and steel tube (welding) construction. The KANGAN Institute is also investigating a short course in wood aircraft construction which may satisfy our future requirements.

Ed Note.
Trevor Hancock is the son of the late Reg Hancock, who older members will remember as a BOCIAN repairer and rebuilder. Trevor now plans a move back to Victoria and is also getting involved in restoration of wooden sailplanes.

SMILE ☺

"LOST"
A man is flying in a hot air balloon and realizes he is lost. He reduces height and spots a man down below. He lowers the balloon further and shouts "Excuse me, can you tell me where I am?"

The man below says "Yes, you're in a hot air balloon, hovering 30 feet above this field."

"You must work in Information Technology or you must be the A.H.S.A Editor" says the balloonist. "I do," replies the man. "How did you know?"

"Well," says the balloonist, "everything you have told me is technically correct, but it's no use to anyone."

The man below replies, "You must be in Management." "I am," replies the balloonist, "but how did you know?"

"Well," says the man, "you don't know where you are, or where you're going but you expect me to be able to help. You're in the same position you were before we met, but now it's my fault."

THE YELLOW WITCH STORY
By K. Nolan

In 1940 the Olympic Games were to be held in Finland and gliding was to be an Olympic sport for the first time. In 1938 a design contest was held to decide the winning glider all nations would fly. A German design by Hans Jacobs, The Meise, won and was named the Olympia. Due to the onset of World War 2 the games did not

occur, but the Olympia set the parameters for Standard Class which exists today, with the only change, water ballast and retractable undercarriage allowable. The use of F.R.P. since the mid 60's has seen the demise of wood as ultra high performance material, mainly because F.R.P. holds its section shapes better and of course the labour factor is much less than wood. But who cares, unless you aspire to be a top Nationals pilot a nice handling wooden glider will give you years of satisfaction. Most are capable of 300k, and some 500k if you are to be able to achieve the designs possibilities, but what is wrong with just being up there on a lovely sunny day?

How did the Chilton Olympia come about? The story was told to me by Fred Lindsley who now lives in Brisbane, but worked as a designer and engineer/ draughtsman for Chilton Aircraft in England during the war.

1942 the war is at its peak, a British destroyer captures a German cargo submarine in mid Atlantic. It is bound for Brazil with a manifest of mouth organs and aircraft plans. They contact the Admiralty and are told to return to port immediately with the aircraft plans. The War Cabinet's expert team eagerly unfolded the aircraft plans, expecting of course the details of Hitlers latest fighter! As the plans unfolded one of the experts was a glider pilot (Dudley Hiscox I believe) and his actual words were "a common garden variety glider", He rolled up the plans and kept them. In 1944 when the war was going our way the Government allowed some firms to develop post war projects. Dudley Hiscox contracted Chilton Aircraft to build him an Olympia for one pound sterling per one pound weight. The British Air Regulation Board would not pass the design, "not good enough for us old chap". Fred Lindsley had the job of redesigning. The silhouette and wing sections were as the Meise but they added about 65 Lbs. in heavier spars and of course bulkheads etc. had to be heavier to carry these loads, Its the old story, more weight means yet more of the same. Before he died I had a letter from Hans Jacobs and he told be that the Meise was stressed for +10g and -4g in order to compete at the Olympics as aerobatics as well as soaring (which could not always occur) were essential. The Chilton Olympia is probably a 12g glider. It is still aerobatted fairly regularly. But this cut no ice with the A.R.B our D.C.A. and its numerous name changes, G.F.A, certain administrators and the N.Z.C.A.B. as they have all at certain times in the past tried to ground or severely restrict the "Yellow Witch". However they have all come and gone (good riddance) and the "Olly" flies on.

Chilton Aircraft did not actually complete a glider. On Christmas Day 1946 the owner was killed in an aircraft accident, but 3 sets of plans were sold to Australia. One set to Arthur Hardinge and Ken Davies who commenced building in 1946 behind a house in Rose St. Coburg Vic. in a shed which today would not be approved as a chookhouse, let alone approved as a builders workshop. Allowance is seldom made for the skill enthusiasm or ingenuity of the builders, only their determination wins through.

During the building time, which took 2 years, Ken and Iris Davies' infant son was diagnosed with leukemia and naturally Ken was unable to give more time to complete the project, but his contribution was substantial. Arthur worked full time on it and made the first flight on the 28th December 1948 at Berwick, Victoria, so a 50th anniversary is coming up, and yes we are going to have a celebration at Locksley where she now lives.

Arthur had problems during the test flights because of overseas reports of accidents supposedly caused by these new-fangled dive brakes (a lot of Oly's in England had broken backs. Too slow on finals?) With the help of Doug Lyon and the Beaufort and V.F.M.G members, he was advised to do as we all do today, 1½ times stall and no problem. But remember these were early days and the Oly was in a different league to the Grunau which "was" top shelf. She was named the "Yellow Witch" during the test flight program, you weren't allowed to say "Bitch" in those more gentle times. Fanny was then a girl's name!

Arthur soon took Oly on the worlds first barnstorming tour. March to June 1949 he successfully toured both islands of New Zealand, but not before he had to overcome the N.Z. Aviation Authorities who would have none of this "back yard" glider. His tour looked doomed by ignorance in officialdom. The Hon. R.G.Casey, the Minister for External Affairs, a pilot, qualified engineer and also owned the airfield where the Beaufort and V.M.F.G. Clubs operated was on site and on side. He contacted the Governor General of New Zealand, Sir Bernard Fryberg VC, and he "persuaded" the officials to %&*&$##$@#$, as he knew a lot about engineering and had information on the airworthiness of the Olympia and apparently had faith in Arthur and Kens work. Beware of Administrators who are not enthusiastic aviators in the real sense, the will nearly always fail you. If they do nothing then they can do no wrong, and the backside survives another dreary day.

Anyhow, Arthur's tour was highly successful, both soaring and aero's drew great crowds and he had the support of the aviation community who organised and towed etc. Resulting from this demonstration of a modern high performance sailplane, the gliding movement in N.Z. went ahead in leaps and bounds and a completely new modern fleet was had in short time. In fact N.Z. had a more modern fleet than Australia until the World Comps. At Waikerie in 1974 when we kept a lot of gliders here, also had a great influx of new members as well. We had a lot of old club gliders when Arthur did his tour but N.Z. only had a lot of old primaries so they had a lot of catching up to do.

Arthur was virtually broke when he returned and sold the Oly to Waikerie in 1950. They had another Oly which was called "The Red Oly", don't know its history but it was unfortunately destroyed in an overnight workshop fire. Somebody might know its history; John Rowe told me it was a better Oly than mine. I bought her from Waikerie in 1967 to make room for their first Libelle. I was living in Mildura at that time and she flew many happy days at Sunraysia G.C., for the next 5 years, flown by all members of the club and a favourite first solo and badge winner. Also flew at many regattas, State Comps. and the 1969 Narromine Nationals. She has done many Gold Heights, 300k, one, 500k several +400k, many +8 Hr flights and is a joy to fly at any time.

Waikerie must have converted over 300 pilots to her and I have given up counting at 150 when my wife became unwell in 1989. We used to do over 120 Hrs/year until then, but just enough now to blow away the cobwebs, she is one glider I will never part with. Since 1967 I have owned or part-owned an ASW15, Ka6, Jantar 2,Victa Airtourer 115, Olympia GLY a Chilton a Sapphire Ultralight and a DG300 Elan, but none compares to the Oly for a pleasant sunny days aerial armchair. Fly her at Locksley if you can

get your hands on her. By the way she has survived a mid air at Waikerie where she lost 25% of the port wing, loss of one aileron during a tail slide, broken back/hard landing, tail end broken off/outlanding in scrub, fuse damaged groundlooping/ outlanding, water damage due to poor storage and various hanger rash type damage. But wood is good and she should go on indefinitely, UNLESS we again become burdened with another administrator who "knoweth not what he doeth" and once again cause us a lot of unnecessary expense and again to prove that wooden gliders are unlikely to have a "life" if properly built, maintained, housed to prevent water damage. Even if it does happen it is perfectly safe using proven G.F.A repair schemes to repair and restore to ORIGINAL status, placards, speeds, aerobatics etc.

I'm on the last lap, but you younger ones, be on your guard against those who will tell you what you can't do, and seek out those who will help you to DO DO DO. A faint heart never won a fair maiden, so with the help of the A.H.S.A. you have a lot of expertise to back you up, provided of course, you have right on your side. We certainly need administrators who are committed to serve US and not being easily bluffed by their opposite numbers in Public Service Organisations, or well-heeled lawyers, litigation lovers and OVER insurance pedlars. If they are GENUINE flying enthusiasts they could be OK but if not what then is their motivation? To whom goes the progress and who is their master?

Keith Nolan at a vintage regatta with the Yellow Witch

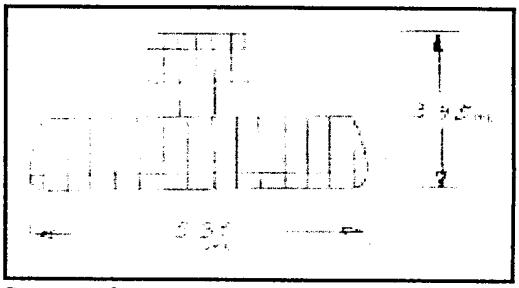
1999 Summer activities in conjunction with the Vintage Glider Association at Locksley. (Victoria) 2nd to 10th January.

A.H.S.A. will join as usual The Vintage Glider Association at Locksley not far away from Nagambie. The planning for the 1999 rally is progressing well. Locksley is located on the edge of the Great Dividing Range in central Victoria offering great soaring conditions and a wide variety of tourist activities for the family and friends.

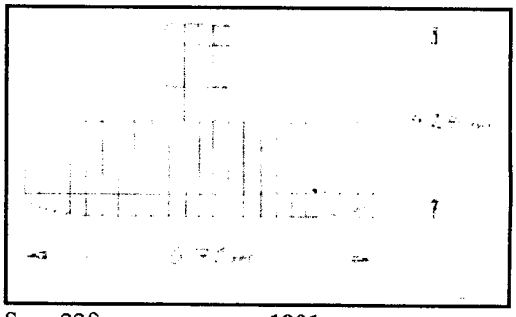
A.H.S.A. will be based in Nagambie and we will fly to Lockley and vice versa. For those with no accommodation, there are two excellent Hotels approx. 10 Km from the field. Owner of the operation Peter Johnston has kindly reduced the cost of winch launch to $ 10.00 to vintage gliders. Aerotow is also available. The well know **Olympia Yellow Witch** based at Locksley will be fifty years young on 28 December 1998 a few days before the next vintage regatta. Pilots who have flown the Yellow Witch and would like to do so again, or those who would like to fly it, are invited to visit Locksley. Winch, aerotow, and check flights in K-13 are available, camp site is still available at Locksley.

FOOT LAUNCHED GLIDERS - Part 3

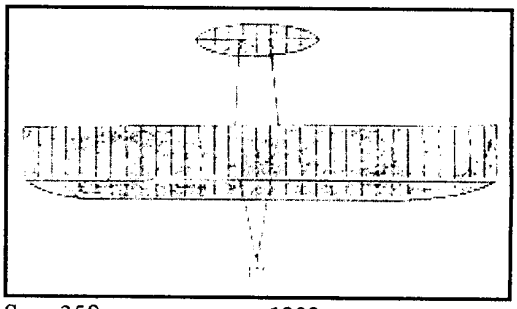
By Peter Champness



Span 16.5ft **1901**



Span 22ft **1901**



Span 35ft **1902**

Plan views of the Wright gliders of 1900, 1901 & 1902.

The increasing aspect ratio is clearly evident as Wilbur & Orville realised that L/D improved with higher aspect ratios.

The Wright Brothers

The achievement of the brothers Wilbur and Orville Wright in making the World's first flight in a powered heavier than air machine on the 12 December 1903 is well known. The credit was richly deserved. It is remarkable to note that 'flying' (if we neglect the earlier successful gliders) is still less than 100 years old. My great aunt who died only last week was already 3 years old when the Wrights made their first flights.

The Wrights possessed a rare combination of talents, which were ideally suited to their task. They were not academics but were both well educated. Their father was a clergyman in Dayton, Ohio. They were not trained scientists yet they conducted careful and logical experiments on the lifting abilities of flat and curved surfaces and documented all their results. Most important of all they were practical men with considerable skill and experience in fabrication. They ran a bicycle making and repair shop in Dayton.

Their first step was to learn as much as they could from the experience of others. Wilbur, who initially became interested because of the publicity about Otto Lilienthal, wrote to the Smithsonian Institute requesting all the available references on flight. In this way they became familiar with the work of Lillienthal, Pilcher, Chanute, Lawrence Hargreaves and others.

The second step was to construct a glider with which they could test their designs and gain experience. The Wrights were particularly careful and methodical in their approach and did not attempt to try for the powered machine on the first attempt. In the end three gliders were constructed before the flyer of 1903. They wanted a site with moderately strong steady winds for their practical tests. The U.S. Weather Bureau records indicated that the sand dunes at Kitty Hawk, North Carolina would be a good spot. Kitty Hawk is quite a way from Dayton, Ohio taking several days travel at that time and was a very remote spot so they had to camp in a tent for 6-8 weeks each year while they built a shed, assembled the gliders and tested them.

The third step was to become accomplished pilots. Since the theory of flight was rudimentary at that time they first flew their gliders as tethered kites adjusting the controls by means of ropes, then as man carrying tethered kites (this required wind speeds over 25 miles per hour) and finally as free flying gliders off the top of the dune.

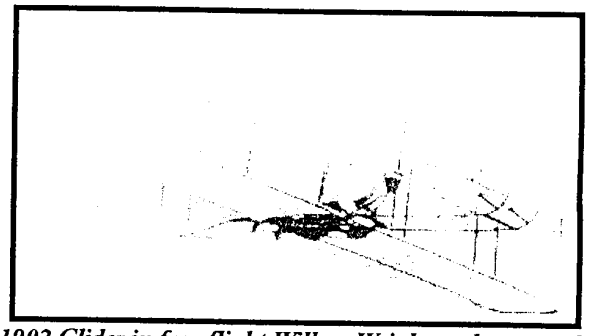
The Wright gliders were all of the biplane configuration using straight wings stepped directly one above the other, connected by struts and wire bracing. The structure is known as a Pratt truss and seems to have been adopted from Chanute. They recognized the necessity of a horizontal stabilizer but placed it at the front rather than the rear. They did not explain the reason for this but they may have thought that the stalls that killed Lillienthal and Pilcher were caused by the rear placed stabiliser. Thus they anticipated the more recent canard designs which have been promoted on the basis of the desirable stall resistant characteristics of the canard layout. The early designs of 1900 and 1901 did not have vertical stabilizers. They found that both gliders suffered from marked adverse yaw and tip stalls in turns and corrected this tendency by adding a vertical stabilizer at the rear on the 1902 glider. The vertical stabilizer was initially fixed but was improved with a moveable surface interconnected with the wing warping control.

The control in roll was by wing warping. Wilbur Wright wrote that he got this idea by twisting the cardboard box from a bicycle inner tube, and noting that this would result in an increased angle of attack on one side and a decreased angle of attack on the other. Since they had already conducted a series of experiments on the lift of plain and curved surfaces he knew that lift was proportional to angle of attack. Hence increasing the angle of attack on one wing would increase the lift one that side, raising the wing tip. The biplane wing is of course similar to a box on its side. The wing warping control wires were connected to a cradle supporting the pilots hips.

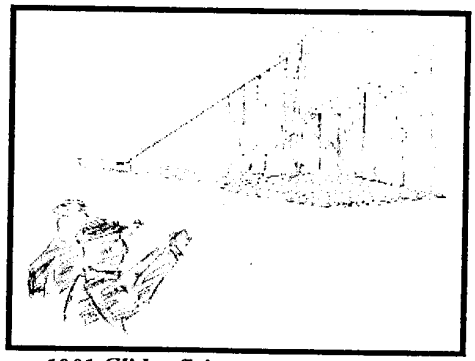
All the gliders were flown with the pilot in the prone position lying on the wing warping cradle. To roll the aircraft he had to shift his hips from side to side. The horizontal stabilizer was controlled by a lever. The vertical stabilizer (which appeared first on the 1902 glider) as already mentioned was interconnected with the wing warping so as to correct for adverse yaw automatically.

The first glider of 1900 had a 16.5 foot span and a chord of 5 feet with a wing area of 165 sq feet and an empty weight of 52 pounds. The wing section was a thin curved surface with a camber ratio of 1/22 with the peak well forward. The total glider flight time on this glider was just over 2 minutes for twelve flights. The L/D ratio was computed at 6.2 as a tethered kite (by measuring the angle of the tow line) and 6.3 as a glider.

The second glider of 1901 had a span of 22 feet, a weight of 108 pounds and a camber ratio of 1/12. It was intended that this glider should have improved performance as a man carrying kite and enable them to accumulate many hours of control experience with minimum risk. Flights as a tethered kite seem to have been conducted only a few feet above the ground. However it was almost immediately apparent during gliding flights that the highly cambered wing section induced pitching moments which were too great to balance with the horizontal foreplane. Stall and dives could only be avoided by quickly shifting the pilots body weight. The problem was eventually cured by trussing down the thin ribs to a lesser curvature. Many successful glides ensued. The flights as a tethered kite however indicated that the lift was much less than they had predicted and lead them to investigate the lift and drag of wing sections on some elaborate and sensitive instruments which of course they designed and constructed themselves when they got home.



1902 Glider in free flight Wilbur Wright at the controls



1901 Glider flying as a tethered kite

The third glider of 1902 incorporated improvements from the earlier gliders as well as the knowledge gained from the wing section experiments. The wing span was 32 feet 1 inch, chord 5 feet and the total wing area 305 sq feet. The empty weigh ht was 116.5 pounds. The wing section had a camber ratio of 1/25 with the high point well forward. Flying wing enthusiasts will be aware that shifting the point of maximum camber forward reduces the forward pitching moment of cambered airfoils. The L/D ratio was 8.77. The new elevator with an area of 15 sq feet had a higher aspect ratio than earlier designs and was very efficient requiring only 3 degrees either side to maintain complete pitch control. The new glider also incorporated the vertical rudder for the first time.

Over 1,000 gliding flights were made in this new glider in a period of 2 months. The Wrights were experienced pilots. The scene was now set for the successful first powered flights in the all new flyer of 1903. The flyer was not foot launched like earlier machines because it was too heavy. It took off from a dolly running on wooden tracks laid into the wind and landed on fixed skids under the centre section. After this success the Wright brothers built further flyers of more advanced designs, toured Europe demonstrating the aircraft and eventually sold flying machines to the U.S. Army. The subsequent machines were flown in Dayton Ohio since the steady winds of Kitty Hawk were no longer required.

The Wrights did not entirely loose interest in gliding however. In 1911 they returned to Kitty Hawk with a new glider and set a world endurance record of 9 minutes and 45 seconds which was not exceeded until 1921.

SYMPOSIUM 98

By Pedro Rafael (The Erudite)

Once again the Australian Homebuilt Sailplane Association has successfully conducted the Annual AHSA Technical Symposium at "Smithfield" (see AG Aug. 1996) near Nagambie, Victoria. This property, situated in the prosperous Goulburn Valley Wine region, is the home of the Smithfield Soaring Group under the patronage of Michael Smith. Held over the four days of Melbourne Cup weekend the gathering incorporated a VSA "Minor Wood Repair" course conducted by Victorian RTOA, Gary Sunderland. This course evolved from the wishes of a number of experienced AHSA members who were desirous of having their wood working skills formally recognized, and, as the course was widely advertised, it also resulted in the upskiling of a number of other GFA members to be qualified in undertaking minor repairs on wooden gliders

A number of people arrived on the Friday evening and set up their camps in anticipation of the weekends events, We were fortunate to have guests from as far away as Queensland . The course commenced promptly on Saturday morning after AHSA's illustrious Editor, James Garay had registered the applicants and opened proceedings
In all, more than 25 people attended across the weekend while 13 applicants completed 4 days lectures and practical workshop exercises.
The lectures covered the topics of timber, plywood and glues, defects, inspection and repairs, fabric work, quality control and GFA procedures.

These lectures were conducted by Gary Sunderland, an accomplished glider designer/ builder in his own right, along with Doug Lyon a past CTOA, and a man with over 50 years experience in designing , building, repairing, and maintaining wooden sailplanes,. Having listened to these gentlemen talk about their experience reminds me of the old adage that "those who do not learn from the mistakes of history are doomed to repeat them". It is therefore advantageous to future of the gliding movement to pass on this knowledge before it is lost forever.

During the afternoons practical repairs were undertaken on some ES 60 tail components provided by Gary, with some of the more experienced AHSA members acting as demonstrators and supervisors. The group attacked the work with enthusiasm and much pleasure appeared to have been had in the assembly and subsequent destructive testing of their pieces. At the conclusion of the weekends proceedings the repairs were examined in detail to verify their effectiveness.

On display for the weekend, and at flight status, were: The MOBA. designed and constructed by AHSA President, Gary Sunderland, Woodstock HNW and Monerai HDF, both resident at the Smithfield Club, and the Maupin Windrose belonging to Paul Johnson. This glider is currently flying by aerotow, but awaiting final development of its self-launching capability.
Aircraft on display, but still under construction were: The almost complete Duster of the Bennett, Parkinson , Raphael, Whitford Syndicate and the Woodstock fuselage belonging to Brian Berwick. A flying visit on Sunday afternoon by Keith Nolan, in his Sapphire, capped off the display. Our *Chef extraordinaire* Monsieur Dominic Lowe, a recent convert to the homebuilding and soaring movement, worked tirelessly in the kitchen to provide two deliciously satisfying evening meals.. He was ably assisted by Mary McDicken, Mary, although unconcerned with the gliding activities, made sure that the domestic responsibilities of the kitchen, which we blokes often neglect, were taken care of. In fact, I was given short shift when I attempted to rinse and stack my own breakfast bowl! Mary's husband, Bob is very well known within the Vintage Gliding Movement and owns a Ka6.

Thanks are due all round to those AHSA members who put in their time to make this all happen; to our Instructors Gary and Doug and to our host Mike Smith who provided the wonderful surroundings in which we were able to hold this event.

CLASSIFIEDS

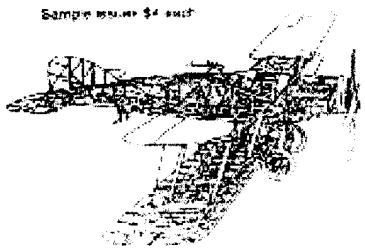
VINTAGE TIMES.

Newsletter of the Vintage Glider Association of Australia. Editor/Secretary Ian Patching. 11 Sunnyside Crescent. Wattle Glen. Victoria 3096. Australia. Annual Subscription: AU $ 15

" SAILPLANE BUILDERS "

Official publication of The Sailplane Builders Association U.S.A.
Regular Membership (third class mail) US $ 21.
All other countries (Surface mail) US $ 29
Overseas Air Mail US$ 46.
Make cheque payable to Sailplane Homebuilders Association.
Mail To: Dan Armstrong, Sec/Treas.
21100 Angel Street
Tehachapi, CA 93561

WW1 AERO (1900-1919)
SKYWAYS (1920-1940)
- reference research
- workshop notes
- information on restoration
- aeroplanes, engines, parts for sale
- your works and drawings
- information on current projects
- news of museums and airshows
- technical drawings and data
- photographs
- scale modelling notes
- news of current publications



BUILD ONE! A REAL ONE!

Published by WORLD WAR 1 Aeroplanes, INC.

AVIATION and GENERAL ENGINEERING

SAILPLANE MAINTENANCE, REPAIR, MODIFICATION, DESIGN AND MANUFACTURE PILOT'S SAFETY EQUIPMENT

MIKE BURNS

TOCUMWAL AERODROME AUSTRALIA
BOX 139 TOCUMWAL N.S.W 2714

PHONE/FAX (058) 742914
PHONE A/H (058) 742920

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

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

The Australian Homebuilt Sailplane Association is now on the Internet!

By Peter Raphael (Web Master)

Our home Page can be found at:
Cape Canaveral/hangar 3510

This new medium will be used to periodically include new information regarding our association as it comes to hand.

Thus far, it includes:

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

If you have any suggestions on what else we may include on our Web Page please E-mail or write a letter to James Garay.

"PACIFIC FLYER"

12 Monthly issues.

The only magazine to give you all the Ultralight and Homebuilt Aircraft New Flight Reviews. Building Tips. Personal Interviews. New products.
Subscriptions rate:
AU$ 45 Australia only.
AU$ 65 New Zealand. Air Mail.
AU$ 82 International. Air Mail.

(Please pay in Australian Dollars only)
Send to: **" PacificFlyer"**P.O.Box 731 Mt Eliza Vic.3930.Australia

Have you purchased your copy of The Collected Work of Stan Hall yet? Sport Aviation, the EAA magazine, reviewed it as " the most useful ,practical, understandable aero book you will buy this year" Available from SHA, get your copy now. Consider one for your flying friends .Orders To: Dan Armstrong, 21100 Angel Street, TEHACHAPI, CA. 93561

Ultralight and Light Self-Launching Sailplanes by Bruce Carmichael. 8 x 10 soft cover, 70 pgs, 44 illustrations, 243 views. Characteristics of 22 U/L and 13 light. Data on 18 Sustainer plus 56 Self Launch engines. Reducing prop drag, available plans/kits, safety. 34795 Camino Capistrano, Capistrano Beach CA 92624 USA .$ 15.00 includes postage. $ 18.00 Canada/Mexico. $ 22.00 Other Countries. Also from the same author Personal Aircraft Drag Reduction.

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

Please note..!

Direct all the correspondence to:
A.H.S.A. Editor
James Garay
3 Magnolia Ave
King's Park. Victoria. 3021
Australia

Photo 1

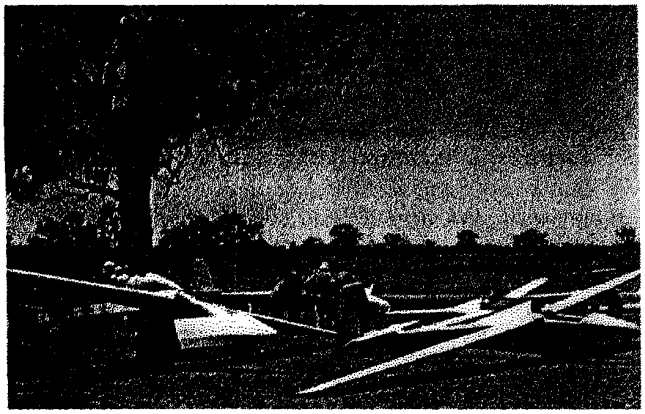


Photo 2

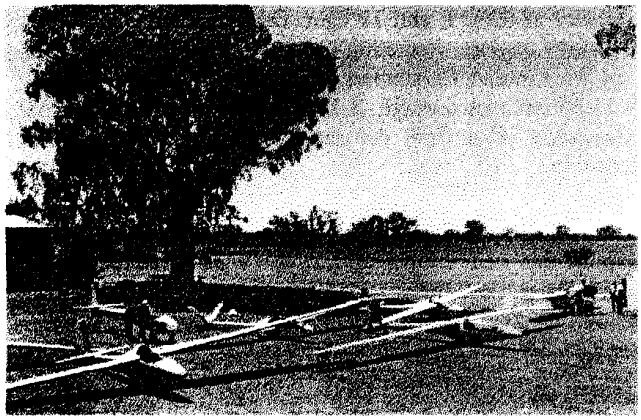


Photo 3

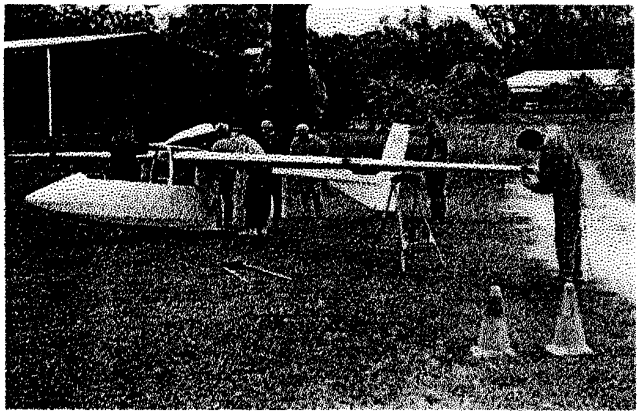


Photo 4

Photo 5

Photo 6

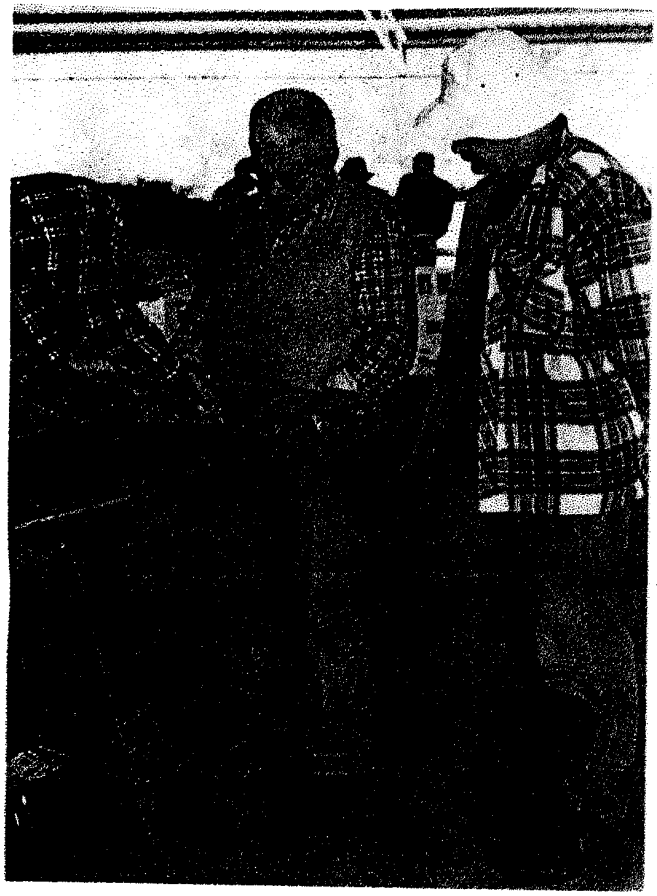


Photo 7

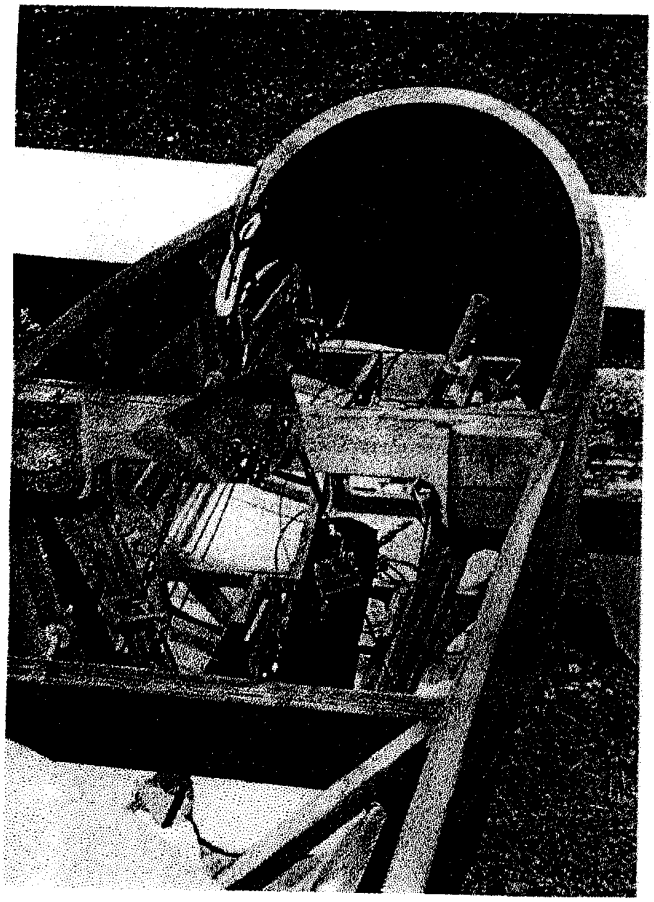


Photo 8

Photo 9

Photo 1 - AHSA members at 1998 symposium Nagambie

Photo 2 - Windrose and Duster

Photo 3 - Duster Moba Monerai and Woodstock

Photo 4 - Windrose

Photo 5 - Paul Dalziel and Bill Weston

Photo 6 - Malcolm Bennett and Trevor Hancock

Photo 7 - Malcolm Bennett Tim Berkes and Klaus Endress

Photo 8 - Brian Berwick's Woodstock

Photo 9 - Paul Johnson Windrose and Terry Whitford

Photographs courtesy of Dominic Lowe