THE AUSTRALIAN HOMEBUILT SAILPLANE

Editor: James Garay

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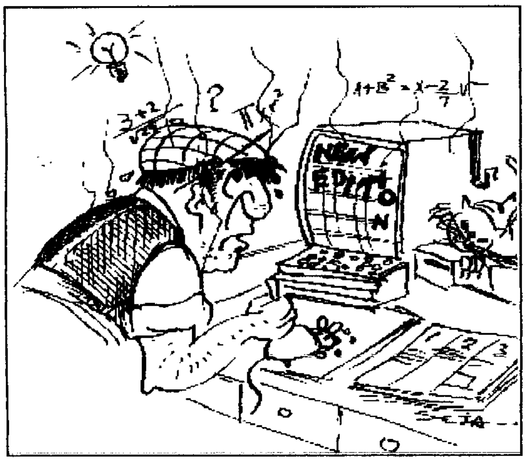
EDITORS CORNER

G' day Folks!



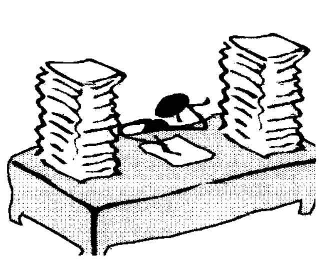
Welcome again to The Australian Homebuilt Sailplane Newsletter, it's amazing how time is passing us by quickly... yes...mate..! we're already in the middle of the year and it's for certain, we can't bring back time!

I've been flying my "Woody-Roo" when the weather is good but now we are entering the cold and rainy winter months. I will be out of action for about two months on my doctor's orders. The reason being...I had surgery on my right eye to fix a cataract and also I have glaucoma which has been affecting my eyes for a long time.. yes... this is the price that you have to pay when you are getting old...but I'm not complaining. I'm a happy person and I've made it a point to trust in everyone, even when I've been told that I shouldn't. I also enjoy being the Editor of our newsletter even if it's very demanding and very hard to satisfy everybody, however, I don't know how much longer I will be doing it for...I will let you know when the time has come.

With this issue I am trying to entertain you by providing you with some good reading and I don't want to make our newsletter seem monotonous . In one of our sections you will find a reading that will bring your mind to a boiling point. So,...be advised and be prepared, it sounds like a fantasy - if you have any comment do not hesitate and write to me.

With issue 24 I sent a notice saying that this is the last issue of your annual subscription - renewal is now due.
If you are reading this with the remark **"complimentary copy"** it means that you have not renewed your subscription. Our group relies on your support as a subscriber. You will find the renewal form at the back of issue number 24.

James Garay
AHS Editor.



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Address all correspondence to:
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Australia

Inside This Issue

MAIL BOX

Dear James,

I am still awaiting advise on the wings for my Ornithopter....Remember I wrote some time ago of lying on my back at the cliffs of Darwin harbour and photographing the large black and white Pacific gulls of wing platform as they remained motion less in the air, just moving a few feathers at their wing tips.

Originally the ornithopter was to be foot launched on blade skates down an incline for lift off but with a back brace and ankle braces I had to add a motor for self launching.

I have now fitted a BD 400 motorcycle engine with a 2,5:1 recoil reduction to carry the prop, and for starting led through a series of pulleys to my right hand. Basically it is a weight shift control combined with go-kart tri steering, with crossed control lines to a rudder and operated wing warps for the wing tips.

This was the idea I received in out of the body experience with deceased Aviators when in life support for 3 ½ months after a serious accident.

It was explained to me that flapping the wings would never get me off the ground but with sufficient air speed for lift off I could use the wing warping to gain altitude against a head wind so as reach thermals that would sustain flight.

I weigh 78 Kgs, and the complete ornithopter should finish at 100 Kgs. Proportioning the plan shape of the wings I finished with 28 ft. gull wing, 5 ft 6 inches cord at fuselage then 5 ft width until the last 2 ribs which were 4 ft and 2 ft at the tips which gave me 140 Sq/ft approx. I am no aeronautical engineer. Can you advise if this wing is large enough for me to establish glide in thermals or would it be better to increase to 30 ft wing span. Regards. Terry " The Tiger" Baxter.

Eds note:

Terry wrote me four pages A-4 letter, giving details of his ornithopter, it is impossible for me to include his letter due to space restriction. If some of our readers are willing to help Terry, let me know and I will pass on the information. Also he is seeking information about The Sopwith tri plane.

AN OPEN LETTER TO TERRY BAXTER

Dear Terry,

I have contacted an engineer who read carefully your letter, studied your drawings and made the following recommendations:

- ***Please DO NOT GO AHEAD with your project, as your airplane MAY fly , but -the controls are totally insufficient: no elevator, doubtful lateral control by wing warping.***
- ***The position of the centre of gravity has not been established. As the pilot cannot shift position in this design, and you do not know which is an acceptable CG range for the unusual wing shape, the stability in pitch is likely to be insufficient.***
- ***Also, the materials used are out of question for powered flight. A 2.5" tubing as main spar, unless it be of high quality heat treated alloy (quite unlikely in your case) is TOTALLY INADEQUATE for the bending loads of a powered glider, even if you have flying wires.***

Before attempting to soar a glider in thermal conditions, you must follow and pass the requirements of a glider pilot's certificate. It's not easy. A powered glider such as this with its large drag, insufficient rigidity, inadequate control and unknown CG position is a hopeless proposition. What you are attempting is a recipe for disaster, as it is quite evident that you do not fully understand what you are doing.

In all probability you will disregard this advice, complete the airplane and attempt a full power take off. Two things can happen: because of the unknown CG position , if the CG is too far back for stability, you will enter into a power stall, dive from 15 m and kill yourself. Cannot correct as you have no elevators. The second possibility is that the plane will not take off because the CG is too far forward, then you will run out of runway space and crash against some boundary fence or building. You have no brakes or control to stop in time. Same final result.
Is that what you want?

Please consider carefully what I have told you. It reflects considered opinion of people who know what they are saying. There are of course other considerations, which you must confront fully: what you are doing is totally illegal, the plane has not been examined by a certified inspector and you have no insurance for glider or powered flight. In the event of any accident your liability is total, and lawsuits will simply take up any wealth that you may have. I can supply a list of recent cases, where awards of up to 2.5 million dollars were given for non-fatal accidents involving uninsured operators. You can imagine what would happen to your family and you (if you survive) if you are involved in a fatal accident with death(s) of a third party.
May I respectfully suggest: you should seek help from the Ultralight Association fraternity and not from us, because your craft (ornithopter) is not a glider.

What can you do now to get over this stupid obsession? Take a really cold shower ,have a cold beer and stop the self-abuse. I appreciate your support as a member of our group and I honestly, thank you. But.....! Your life is a priority. We need you in this world. Yours sincerely. James Garay.

Dear James,

I am certain that I only received 2 newsletters in the past year. However, I don't dare bother you mon ami, I won't scream too loud. I enjoy reading AHS and here included my re subscription for 2002/3.

I never got any call in regard to my queries for the remain of a 2 seat sailplane. Ho well...! I may have to start from scratch.
I have introduced a friend to the newsletter I hope he subscribes. He is a glider pilot (motor glider) and was talking homebuilt sailplane- so here is hoping!

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Congratulations on your "Woody-Roo". Where does one get plans from?. Bye for now James and don't let the lancers get to you- they can't do better anyway- so please keep it going!

Help! Help!... I am looking for the formula for tautening nitrate dope and tautening butyrate- can anyone help? I am restoring 2 old ultralights and their owners want old fashion cotton covers and dope. But it is almost impossible financially to get some. Thanks James for your kind attention. Andre Maertens.

Eds note:
I already sent the past issues and please accept my apologies but the gremlins got in the system causing this disturbance. Also no long ago I sent you information related to tautening dope.
Plans for the " WOODSTOCK". Jim Maupin, Ltd. 24201 Rowel Court, Tehachapi, CA 93561.
Www.jcpress.com/JMaupinLtd

Dear James,
I think that you are doing a great job on putting the newsletter together. I would like to know who is building or designing their own light weight glider?
On the 24/1/02 I did send you a cheque for may subscription renewal, but it seems it has not been paid (by my bank statements) But by the Mail Box in issue 24 it does seem that you did receive it. (please advise if you did not get the cheque).
Regards Jim Jenz.

Eds note.
Jim..I did receive the subscription . but it took me a while to deposit it in the bank. Every thing is now OK.

Dear James,
Please find money order enclosed for sub renewal. Hope you are flying the pants off the "Woody-Roo" and adding plenty of flying hrs in the log book. Good on ya.... I don't think a lot of people realize how much time and effort goes into building a sailplane from scratch, and finally see it up in the air.. Most modern types would just go out and buy a glider ready to go out and buy a glider ready to go, and bugger the cost. Enjoy it all mate..! it might inspire a few others to have a go.

What is your next project ? ..Or would you rather tell me where to go.

The newsletter is great and I look forward to them, as it keeps us all up to date on what is going out there. Good stuff Jim.... Here is to fun soaring-I have been kicking the idea about on building a Marske "Monarch". Regards Douglas Cole.

Eds note.
Thanks Doug for your encouragement . I am really enjoying myself flying my "Woody-Roo". I must tell you that I had plenty of help from Malcolm Bennett and Peter Raphael. Go ahead with the "Monarch" we have the expertise in the group to help.

Dear James,
Could you please pass it to "The Erudite".

Thank you Peter Raphael for your article about charging sealed lead acid batteries. Despite the initial problems caused by my misuse of the cigarette lighter in the car to charge my Glider Battery I have persisted with the technique. So far the battery is lasting well. One reason for using it is that I get home late from a days gliding and I am very liable to forget to put my battery on the charger when I get home. Leaving the battery in a flat condition has, in my experience, been much more damaging than charging it on the way home in the car. Regards Peter Champness.

Dear James,
You are doing a great job with the newsletter and in between flying your "Woody-Roo".

Just a couple of things:

1. How about organising a design competition for a single seat ultra light self launching sailplane for the true week end pilot, this has to be the way to go.
2. Can we have a couple of hangar gas-bag sessions in country pubs...? { just like at Raywood years ago) Yours sincerely. J.Biggs.

Dear James,
Being medically grounded, with various World War 2 related problems, I have reluctantly decided not to renew my subscription for the ensuing year.

Nevertheless I congratulate you on the high standard of the newsletter under your editorship and have enjoyed our occasional meeting at your residence with memorable hospitality shown by you and members of your family .

For the time being I am satisfying my interest in things aeronautical by constructing a radio controlled sailplane of 2500 m/m wingspan with electric motor and folding propeller. The model is almost ready for covering. A smaller model is ready to fly and will take to the air when I am fit enough to handle the transmitter.

My hand launched gliders are gathering dust, however my boomerang design and construction thereof is in progress, including one for my left handed brother which requires leading and trailing edges reversed to the usual R.H boomerang.

My other interest is construction and flying kites and a recent competition showed how a knowledge of aeronautics and weather proved effective against all the young bucks with their rip-stop mylar, and carbon fibre struts, twin lines and what - have you. These guy just could not get their kite airborne and ignored my advice with much cursing as they struggled to cope with the light breeze.

Well. James, all the very best for the future and safe and happy flying in your excellent "Woody-roo".Yours sincerely William Wood.

Dear James,
Please find enclosed my subscription for the newsletter. Sorry.... I am late but I am running late for most things these days.

I have written a few notes to bring you up to date on my Woody. Firstly our house boat now occupies half my shed. I thought this would be a problem but I found that the fuselage sits nicely on the original construction bench and in fact is better than where it was on its own stands as the machinery is closer.

Being fairly tall the height is not a problem.. After going through a dithering stage I am now working efficiently again (for an old bloke that is) I had been given a nice aluminium wheel but after phoning almost every tyre supplier with no success I gave up. I then phoned an ex gliding associate some of you would know- Keith Jarvis-
and he put me on to Ross Edwards at 18 Murray St.Albert Park S.A Ph83471941. Ross makes alloy go-cart wheels mainly for export. He was approached by the ultralight people to make a 5"Dia x 4" wide wheel for them, it is a beauty..! and cost about AU$ 43.

Incidentally Keith gave up gliding and now does his building under ultralight or experimental categories. He is currently close to flying his 13 Mts. home built. I believe it is officially # 12 A.

Back to my Woody. The fin is now ready for the covering. The rudder has been hinged and is also ready for the ply trim. The stabilizer and elevator have been assembled . I hope to pick up some hinges when I am in Melbourne shortly to get experience helping Malcolm Bennett skin his wing leading edge's D-box. In the mean time I have rigidly fastened the two pieces together and done most of the fairing. I will finish this when the two are hinged.

All of the metal fittings have been cut and cleaned up while those for the fuselage and tail surfaces folded and welded.

All of the fuselage controls fittings have now been temporarily fitted and I am running temporary control lines to locate pulleys and fairleads etc. etc. The wheel assembly is also complete ready for installation .

This is where progress stops for some 3 months unfortunately as we are now getting ready for our annual caravan trip to the warm weather in Queensland. This and a half dozen weeks on the Murray river in our Houseboat is the price I must pay for my C.RE.O to give approval for my personal indulgence to proceed I guess it is a small price to pay. One other thing-..... I also make the bed every morning. This was a stroke of genius as it gets every day off to a good start.

If you know of any other simple things I can do to get my merits points up to 9 I would be happy to hear from you. Regards. Alan Bradley.

Dear James,
Please find the enclosed cheque for my subscription for 2002-3.

I hope you soon recover from your recent operation and can resume flying your Woodstock shortly. Regards. Brian Berwick.

TECHNICALITIES

CHARGING LEAD ACID BATTERIES
By Peter Champness

Since my last letter I have made a number of improvements to the charging lead:

1. I have incorporated a fuse holder in the battery lead with a 2 Amp fuse. Hopefully this will blow before the fuse in the car, which is a 5 Amp fuse, and thereby prevent the problem with the windscreen wipers and the car radio.
2. The lead and the battery are now connected by a plug instead of alligator clips. Since the plug can only be connected one way it makes it much harder to connect the battery the wrong way round.
3. A resistor has been added to the circuit to limit the maximum charging rate. The resistor is a 6 Volt torch globe rated at 0.3 Amp. Using the electrical formula ($V = I*R$) I calculate the resistance to be about 20 Ohms. When the battery is flat the torch bulb glows brightly but as the battery becomes fully charged its resistance increases and the charging current drops to a low level and the bulb becomes very dim.

Because the maximum charging current is now only about 0.3 Amps it takes longer to charge the battery so I have to leave it in the car for a few days until it is fully charged. The lead is long enough for the battery to stay in the car boot. If anything went wrong I would not want an explosion in the cabin of the car.

Naturally I don't recommend this idea as I don't want to be sued if anything goes wrong for someone else!

FIBREGLASS
INTRODUCTION

The use of resin impregnated glass cloth laminates in glider construction is now wide spread. Its uses include main load carrying members, non-load-bearing skins such as nose cap and wheel fairing, and protective covering against damage in wheel-well and on wing tips.

Many gliders built in Europe are using fibreglass for the basic airframe structure. The main difficulties with fibreglass are involved in repair of the structure after damage and the questionable performance of existing resins under high temperatures.

GLASS CLOTH
Laminates used in gliders are composed of a glass cloth in. Most of the strength of the laminate is due to the glass content, the resin merely serves to hold the fibres in relation to one another.

The cloth is composed of woven strands of glass fibres and the grade of cloth is specified as a type of weave and the weight or thickness. For most purposes a plain weave cloth would be specified. Cloths are specified by weight. Thus a "5 ounces" cloth weighs 5 ounces per square yard and is approximately nine thousandths of an inch in thickness.

During the manufacture of cloth the glass strands are protected by "sizing" which must be removed to allow adhesion of the resin. This is removed by a variety of process which affect the final cost of the cloth. The cheapest grades are merely heat cleaned, resulting in a straw coloured cloth. The most expensive grade is given what is known as a "Volan" treatment.

It is stressed that the cloth should not be handled overmuch, to avoid contamination by the natural oils of the skin, and should be stored in a dry place, free from contamination by dust or oil..

RESINS

Resins used for fibreglass laminating in gliders are invariably cold setting (i,e. They cure at room temperature) polyester or epoxy resins. The epoxy resins used for laminating offer superior resistance to temperature and fatigue but are about three times the price of polyester resins. For normal use the polyester resins are quite satisfactory and are widely used. However, polyester resins do not adhere to cured polyester very successfully, and do not bond to epoxy resins at all. Hence it is convenient to use epoxy resins for repair work.

The polyester resin is usually mixed with a catalyst and a hardener in proportion 10:1:1.

Various grade of resins are produced for a variety of uses. Among those developed for laminating are Polyester resins and epoxy reins.

The above instructions are only given as a general guide. The supplier of the resin will, upon request, provide details of mixing relevant to the particular resin purchased.

Storage for the resin calls for particular attention. Most resins deteriorate with age and this process accelerates with temperature. If the resin is to be kept for a length of time it should be stored in a refrigerator. It would be as well to confirm that the supplier has taken this elementary precaution. If the resin has deteriorated this may not become apparent without mechanical testing of sample of the finished laminate.

THE MOULD

It is assumed that the part to be constructed requires a female mould.(e.g. a nose cap). The first step is to construct a pattern of wood or similar easily worked material to the shape required. As the finish of the pattern affects the finish of the final laminate, care should be taken in its construction and the surface should be filled and polished.

After waxing the pattern thoroughly a female mould is build up using plaster of Paris, suitably reinforced. When the plaster is separated from the pattern it is cleaned and coated inside with Shellac , after which it is waxed. If the mould is large a proprietary release agent is then painted on but this is usually not necessary.

LAMINATING

When the glass cloth has been cut roughly to size the resin can be mixed. It is stressed at this point that the materials should not be touched. If they must be handled during the process protective gloves should be wore
This is because:

(a) Chemicals used in the hardener and catalyst are dangerous and may cause damage to the skin.
(b) Natural oils in the skin will prevent adhesion of the resin if they are transferred to the work.

In the event of contact with the skin any contaminated clothing should be removed and the skin washed with soap and water.
A small balance will be required to weigh the catalyst and hardener. The resin is then mixed thoroughly.

At this stage polyester resin has a "working" or "pot life" of about 20 minutes, (epoxy resins rather more) at normal room temperatures, so that just enough resin should be mixed for the job. Avoid either very hot or very cold days. Laminating resins are very sensitive to temperature and humidity.

If the mould has any sharp corners alight cloth should be used first to follow the contour. For best results the proportion of resin in the laminate should be about 40% by weight. If the resin is being applied with a brush this quantity will be just sufficient to completely "wet" the cloth, rendering it transparent.

Proceed with the laminate, taking care to use just sufficient resin for each layer of cloth. Excess resin will result in a weak, brittle laminate with tendency to "craze" in the resin rich areas.

Relatives quantities for use would be nine square yards of 11 oz. cloth to 1.1/2 gallons of resin.

Polyester resins are poor adhesives and it is recommended that each layer should be applied while the previous layer is still "green". If, for any reason, this procedure is not followed it will help if any dry laminated is roughened with emery paper to provide a "key" for the resin.

The laminate will be completely hardened in one or two hours, depending on the temperature and proportions mixed. The use of heating lamps or radiators during curing is strongly recommended.

FINISHING

Once removed from the mould the lay up can be stiffened, if necessary, with wood and plywood rib, covered with another layer of impregnated cloth.
Machining of glass fibre laminates presents no problem and the job is easily sawn to size and drilled.

One point that should be noted here is the technique of gluing in metal inserts. Such detail as pressure tubes are easily installed, if properly cleaned and degreased with Trichlorethelene or Acetone, using Araldite as an adhesive. However, if the join is to carry any appreciable stress, such as an attachment fitting, the fitting should be mechanically fastened, as cold setting resins have poor adhesion (despite claims to the contrary) with non porous materials. Oven curing will give improved results.

Paints show poor adhesion to polyester, hence it is necessary to prepare the surface for painting, specially if the fibreglass tends to flex and break away from the paint layer. The fibreglass should be degreased to remove any wax and then the surface should be "cut" using a wet and dry paper of a fine grade to provide a "key" for the paint. Use enamel in preference to cellulose lacquer.

REPAIR
Repair of fibreglass laminates is quite straight forward, keeping in mind the general principals of using the material.(see note below).

The so called "Repair Kits" of fibreglass of various brands are not much use as the contents are of questionable quality.

A convenient resin for repair work can be obtained at most hardware stores

WHAT'S NEW?

Windrose Statement from Jim Maupin, Ltd.

Dear friends and Windrose Builders:
The following is my mother's statement regarding the Windrose. Please feel free to respond with comments and I will pass them on her. We plan to send this to all Windrose builders and put it on our web site:
Janice Maupin <*maupinwood@attbi.com*>

To: *Builders of the 15 Meter Windrose Sailplane:*
Please be advised that some amateur-built 15 -meter Windrose sailplanes have exhibited abrupt stall/spin tendencies, apparently when proper airspeed may not have been maintained. The 15 meter version of the Windrose is a higher performance sailplane, for experienced pilots. All persons flying the 15 meter Windrosse should be proficient in spin recovery, and should determine the stall spin characteristics of each individual Windrose at a safe altitude prior to engaging in typical soaring flight.
Jim Maupin Ltd

A PRACTICAL ION SAILPLANE
By Prof. Belvedere Samplestester

There have been many attempts to fathom the working of so -called "flying objects". Some have actually discussed air flow mechanisms using ion accelerators.

There has never been, however, a public report which showed the "forbidden" (or unknown) secret.... of how to maintain a high energy state device without a continuously equal high energy output per time.

Recall the case of the hot air balloon. It takes a certain amount of energy to heat the air inside the balloon. With "proper" heat insulation, the balloonist can stay aloft for several hours on one heating. Does that sound like it takes a continuous high-density energy expenditure? Of course not.

What about the hydrogen-filled balloon... If released at ground level, it will rise to its "specific gravitational" level. If taken from that level and drawn farther into space by a few miles and then let it go, what happens to it? It "falls" back to its "specific gravitational" level?.....Of course not.

Even *Leonardo* da Vinci long time ago knew that. He once stated ***"Gravity comes into being when an element is placed above another more rarefied element: Gravity is caused by one element having been drawn into another element... A light thing is always above a heavy thing when both are at liberty. The heavier part of the bodies is the guide of the lighter part."***

ELECTRO-DYNAMIC PROPULSION
The translation of an inertial mass from one position to another is a process usually accomplished by one of the following:

1) Pulling the mass from point (a) to point (b).
2) Pushing the mass from point (a) to point (b) or,
3) A combination of pushing and pulling the mass from point (a) to point (b).

Rockets, automobiles, and other brute force motion devices employ process (2) above.

Ramjet, turbines, helicopters, and other push-pull motion devices utilize process (3) above.

As yet, the pure attraction-only motion system (1) find very limited use. These usually employ magnetic, electrostatic, or gravitational acceleration as a motion source.

Electro-dynamic propulsion (EDP) falls into category (3). It can be accomplished by optimizing the ramjet process over the entire leading surface of the mass to be moved if there is a medium through which to move. In the traditional ramjet, air is sucked into the front of the craft; with added fuel, is ignited inside the craft and expelled out the back of the craft.

The major problem in this system is the same as with push-only propulsion systems...namely, that all the leading surfaces of the rest of the craft encounter direct inertial resistance from the air that is not passing ***through*** the craft-but ***around it***.
The philosophical concept of making little ramjet breathing opening all over the leading surface is approaching higher efficiencies to a point; however, as the ramjet needs a confining space to combust the fuel and the air, all those little breathing openings would require dead (or closed) space in between them to form the confining chamber.

The optimum lead surface efficiency in a category (3) system is one where ***the entire leading surface is the ramjet opening.*** Such a shape is difficult to image;...think about it... A straight tube would almost give a frictionless move along the length axis; but where would the fuel be place?.. what about the guidance surfaces?....If the front end of the tube is opened out enough to shield the rest of the craft from frictional exposure, then the inside of the tube itself will offer massive frictional resistance to the incoming air.

Inertial resistance cannot be removed when one mass passes through another; however, the distribution of the resistance can be so designed as to use the air, itself, as a frictional dissipator. Thus, the optimum may be approached and attained by incorporating the air (or fluid medium) into the defined field of the craft.

A localized gravitic field used as a ponderamotive force has been created in the laboratory. Disc airfoils two feet in diameter and incorporating a variation of the simple two-plate electrical condensed charged with fifty kilovolts and a total continuous energy input of fifty watts have achieved a speed of seventeen feet per second in a circular air course twenty feet in diameter.

More lately these disc have been increased in diameter to three feet and run in a fifty feet diameter air course under a charge of hundred and fifty kilovolts with results so impressive as to be highly classified.

Variations of this work done under a vacuum have produced much greater efficiencies that can only be described as startling. Work is now under way developing a flame-jet generator to supply power up to fifteen million volts.

Such a force raised exponentially to levels capable of pushing man-carrying craft through the air at very high speed is now the object of concerted effort in several countries.

CHANGE OF ADDRESS

Our cousins in USA have moved.

Mrs. Janice Armstrong. Editor extraordinary for "Sailplane Builders" Official Publication of the Sailplane Homebuilders Association and her husband Daniel Armstrong have a new address:

Mail: 25101 Bear Valley Road, PMB 20
Tehachapi, CA 93561 USA.
E-Mail remains the same:<danarmstro@aol.com>

EXPRESIONS OF INTEREST

Brian Berwick who is building a Woodstock is seeking for member interested to form a syndicate to finish his project which at the moment is stagnated due to the lack of time to finish it.

If you are seriously interested to be part of the syndicate give Brian a call or write to him at the address below:

Brian Berwick
4 Granview Road
Belgrave Heights
Vic 3160 Tel (03) 9754 5510 Fax (03) 9754 1073

THE GLIDER WITH UNLIMITED RANGE

Experiments with plasma control of the boundary layer

Prof. Sighard Breusers.
Aerodynamics Institute, University of Aachen, Germany.

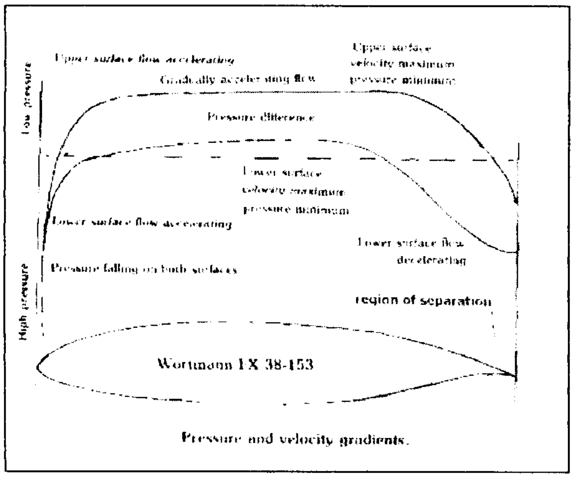
(This paper is a condensed version of the talk given by Professor Breusers at the opening of the last meeting of the American Soaring Association, Hershey, Pennsylvania in October 2001).

We believe that the concept of plasma control of the boundary layer will find increased application in gliders, large R/C models and in the new domain of flying-entities, a type of self-sustaining bodies that do not rely on aerodynamic lift. Several governments, especially China, North Korea and India have already tested this concept with moderate success)

Ladies and gentlemen, since the 1920's and due to the pioneering efforts of the German aerodynamicists, such as Prandtl, Lippisch, Schlichting and Jedelsky, the design of the glider has been refined to the point that it is difficult to conceive major new sources of improvement. German Laboratories, such as AVA, in Berlin-Furstenau, Gottingen, Schmolders and so many others are responsible for new families of airfoils of extremely high efficiency, all designed with the aid of the computer programs developed in Germany by my colleagues in several leading Universities. German factories have responded nobly to this scientific challenge and have created ingenious types of monocoque structures using extremely smooth and durable composite construction, so that drag coefficients have been reduced to the theoretical minimum. At present, it can be stated without fear of contradiction that German technology and knowledge stands unrivalled in the field of glider design and construction and the record books are ample proof of the superiority of German technicians in this and many other aeronautical fields.
It is not, however typical of the German character and psyche to rest on laurels that, on the main have been obtained rather easily, as the research on this field conducted by other nations is so, so vastly inferior, possibly as a result of inbuilt deficiencies. It is not my point in this talk to dwell on such deficiencies or the best methods to treat them. There are many good history books that point the way in a clear and very conclusive manner.

I will concentrate instead in detailing the work that my Department at Aachen has done to eliminate the drag due to Boundary Layer formation.
What is a boundary layer?
Boundary layer, a concept created by Professor Prandtl of Goettingen, defines the thin layer of fluid in contact with a solid body moving through the atmosphere .

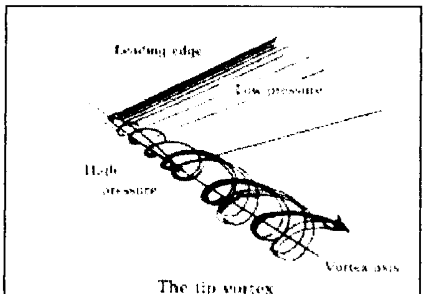
The flow within the boundary layer is influenced by the roughness of the surface and the viscosity of the fluid., and much effort has been spent to control the behaviour of the boundary layer in order to prevent the separation from the airflow, to retain its laminar regime or, as I will show, to eliminate it altogether, suppressing the drag on the airfoil completely.



Pressure and velocity gradients.

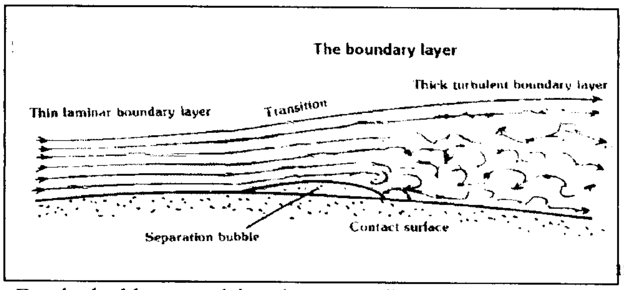
We are al familiar with German inventions that are today extensively used even in other countries, such as the Lachmann-Handley-Page slot, the Schtunke boundary layer aspiration system which sucks the boundary layer through a porous leading edge of the airfoil, the Betz blown flap which allows total adherence of the boundary layer up to very high angles of attack. These important inventions have indeed extended the range of use of airfoils to angles that were inconceivable beforehand , but in general they suffer from problems associated with mechanical complexity, weight increase and lack of precision when built in countries with inferior technology. Thus, although such devices attained a high degree of success in their country of origin (Germany), the same cannot be said when our extremely high technical standards are relaxed to cope with some of the inbuilt deficiencies I alluded before.

Dr. Drache, my assistant at Aachen, has been successful in the application of a new concept in boundary layer control, a concept that is not entirely new, nor, regrettably, even first developed in Germany. Let us go back to the boundary layers. The flow within these layers can be slowed up, retarded and the whole boundary layer separated from the airfoil when the momentum of the air particles is diminished by forces opposed to the motion. Ladies and gentlemen, it is quite clear that such forces can be generated by the outside pressure forces on the upper camber of the airfoil, and especially by the viscosity of the air, small as it is. The Lachmann slot can be used in some circumstances, by bringing to the top of the airfoil the high-energy flow from the lower part. But that is a mechanical device, so, so imprecise! How can we accelerate the air particles so they resist separation under all conditions? You must consider that when the acceleration has reached a certain critical point (the well known Prus-Chacinski limit), the total drag of the airfoil is suddenly reduced to zero. The ideal of the D'Alembert paradox has been obtained! Finite lift with no



The tip vortex

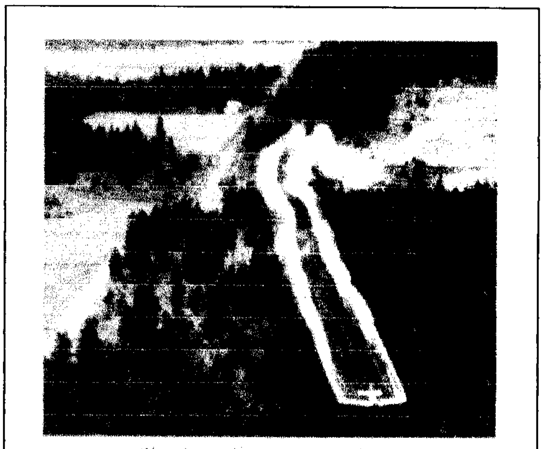
drag. Almost limitless acceleration, controlled only by the added-mass of the glider.



Dr Drache had been studying the Maxwell electromagnetic equations for his Doctoral Dissertation at our University, with a view to the improvements of the ion-exchange engine. Ion engines are now frequently used in space vehicles, because with the extremely low pressure existing in outer space it is possible to develop non-negligible thrusts from such engines. The use of Ion engines within the atmosphere has been problematic, until Dr. Drache, Frida von Libermann and myself (aided, I must stress, by a large grant from the German government) presented a possible solution to this difficult dilemma.

To understand the application of the tip-vortex tube, you must remember something of Professor Prandtl lifting line theory. Due to the fact that the airfoil generates lift by establishing a differential of pressures between its upper and lower surfaces, it follows that at the tip of the wing, the air spills from the lower surfaces, forming the well known tip-vortex, which is very undesirable as it promotes induced drag, drag due to lift. At the core of the tip vortex the pressures are diminished, in accordance with the Prandtl momentum equations. Of course, as some of my more astute listeners will readily concede, the pressures have not decreased to the point where the ion engine can work, but, ladies and gentlemen, if we enclose the tip vortex in a slightly tapering tube, the tip vortex can be speeded up by a factor of between 4 and 6, and pressure in its core can reach nano-Pascals!! Dr Drache found by theoretical means the adequate taper of the tip vortex tubes.

To test this idea they were fitted to a Standard 4 glider which was towed to the upper atmosphere behind a Dornier tug plane. Frau von Libermann was at the controls, monitoring pressures within the tip vortex tubes and the operation of the Aachen ion engine. She was soaring in a cumulus cloud formation, when she noted that the pressure gauge attached to the vortex tubes began moving rapidly down. She kept us informed, noting also that, in spite of a shallow climbing pattern the glider was accelerating very fast, already exceeding its NE speed at an altitude of 12000 m. After about five or six minutes she called again,


Wing tip vortices in an aircraft

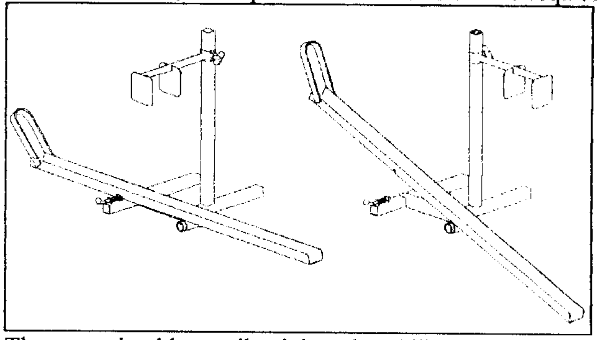
sadly, for the last time, noting that the glider was out of control and the left wing had been ripped out by the air pressures. She estimated the speed at over 200kt.
An analysis of this accident showed that the vortex tubes allowed the ion engines to develop an estimated 500 N each of thrust at this altitude. The next step was to divide the ion engine power into six smaller engines located along the wingspan. Their mission was to energize the boundary layer over the wing to re-laminarize the flow, drastically decreasing the drag and allowing an extended range.
The second series of experimented was conducted from the nearby Bierset airport near Liege in Belgium, also in a specially modified Standard 4 glider, this time with Dr Drache as a pilot. The glider was towed to 5000 m. Dr Drache put the glider into a shallow dive until the pressure inside the vortex tubes was reduced to 0.3 Pascals and started the ion engines, a procedure to be detailed later. As soon as the ion engines started, he noted that considerable forward stick was needed, an indication of the increased lift of the wing. The glider again climbed rapidly, in spite of having shut down 4 of the 6 ion engines. The whole top of the wing glowed with the plasma halo created by the special Tesla coils added to the ion engines. Dr Drache tried to decelerate the glider by fully extending the spoilers, but the glider continued to accelerate. He noted that the airflow past the spoilers appeared undisturbed, at great variance with the usual behaviour, in which a large, very turbulent wake is created. An observation plane following the glider was able to take several minutes of film, including the curious glow from the wings, but was unable to match the speed of the glider which climbed rapidly out of range of the observation plane and entered into a bank of cumulus clouds. Dr Drache repeatedly called indicating his unsuccessful efforts at bringing down the speed of the glider, whose wing drag had practically been nullified by the ion energizers. We were learning the hard way this process was not a dual mode one. Once the zero-drag condition was reached, it was not possible to return to the normal drag regime. Sad to say, Dr Drache disappeared in the same way as Frau Libermann, the Standard 4 disintegrated at an altitude estimated by the pilot of the observation plane of over 14000 m.
This is the present status of the Aachen experiments on zero drag. Recently obtained information from American sources indicate that Chinese and North Korean efforts in this regard have met similar fate, the airplanes to which these ion engines were fitted became uncontrollable after some minutes.
Where does the energy for the ion engines come from? As you know well, a large amount of energy is still necessary for the adequate operation of the Tesla coils that ionise the air around the ion engines. The energy source can only be described in general terms as the whole process is being patented. It uses basically the Biot-Savart observation that an electrical conductor that moves in a magnetic field will carry an electrical current that depends on the speed with which the conductor cuts the magnetic lines of force. The magnetic field is initially the earth's magnetic field, which is rather weak, but which allows a starting current to be generated, to weakly ionise the air above the wings. Then as noted before, there is a vortex formed at the wing tips, a vortex that is now ionised. The rapidly rotating ionised air creates the resonance conditions for the large secondary Tesla coil to operate, allow me not to reveal the exact details, then the plasma halo forms over the wings and the zero-drag condition is reached. There are no moving parts in this device.
For the first time in history we have an integration of electromagnetic theory and aerodynamic theory, one of the ardent wishes of the German scientist Dr Albert Einstein. This integration has taken a heavy toll, as the deaths of my two collaborators will attest. But the possibilities of this new invention will shed further glory on the laurels of German Science.

(A complete transcript of Professor Breusers talk can be downloaded from www.aachenuni.de/aero/zerodrag.html)

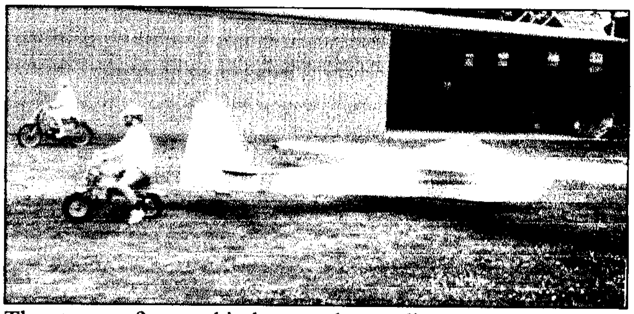
HINTS & TIPS

Motorbike Tow Rack
by Peter Raphael (The Erudite)

Here's an idea not directly related to the homebuilding of gliders but relevant nevertheless. As I use a small motorbike to tow my glider out to the field James felt it was relevant to describe a rack that can be used to carry such a bike on the tow hitch of a vehicle or rear of a trailer. The pictures are fairly self-explanatory, and of course the bike you intend to carry will have a great deal to do with the final design. My bike for instance is a Honda Minitrail while James himself has a Honda 90 "Postie" bike, both quite different in there size requirements.



The ramp is able to tilt giving the ability to run the bike up easily while a spring-loaded plunger is used to lock it into horizontal position. The post and clap is then placed over the seat of the bike to hold it vertical and a retaining strap behind the rear wheel will keep everything in position laterally.



The type of tow hitch you have dictates the construction method but the Hayman Reece style allows the use of 40 mm square tube for most of the frame structure. A piece of 100 X 50 channel is ideal to run the bike up on and a minor assortment of other pieces completes the job.
A consideration when doing something like this are to fulfill the requirements of the law, particularly with respect to loading and lighting requirements, as is the case when carrying, say, bicycles.

We have new subscribers to welcome to the group.
David Howse. 10 Galvin Rd. Werribee. Vic 3030
Derek Hardie. 117 Empire Bay Dve. Empire Bay. NSW.2257

SHOP TALK

BRIAN BERWICK'S WOODSTOCK

My own Woody project has stagnated since the demise of Ansett Australia, not for the lack of funds, but the lack of time to work on it.

The engineering side of Ansett, continues under administration. Now known as Ansett Aviation Engineering Services. We are extremely busy maintaining our idle fleet, and preparing aircraft for sale or return to lessors, I was lucky enough to crew an A 320 ferry flight to the Mojave Desert during March.

The mayor change to our employment is that we are no longer shift workers. We work an 8 hours 5 day week and that does not allow sufficient time for my project with all the travel time and other household things to be done.

With the above in mind, I am canvassing the idea of setting up a syndicate to finish the project. The structure is about 80% complete comprising Fuselage and Empenage. Which are as far advanced as possible up to the wing fitting stage. The wing is framed up less the drag spar. The right wing is the Main spar leading edge. The wing joining hardware is installed to both spars, which are modified to Mike Burns' scheme to increase the cockpit weight to a useful 110 Kg, Materials are at hand to finish structure. Wanted items are, canopy, tow hooks, instruments, control pushrods and bearings, covering and finishing materials, and the most important.....TIME.

If any readers are conveniently close and interested in syndicating, I can be contacted at the address below for serious queries.

Brian Berwick
4 Grandview Road
Belgrave Heights
VIC 3160 Ph. 03 9754 5510 Fax 03 9754 1073

FLIGHT SAFETY AUSTRALIA

Review by Peter Champness

Flight Safety Australia, otherwise known as the "crash comic" is a publication of the Civil Aviation Safety Authority (CASA). CASA is a statutory authority of the Federal Government, responsible for the regulation of Civil Aviation in Australia and its Territories including commercial and recreational flying.

Flight Safety is an A4 sized magazine of about 40 pages and is published monthly. The magazine is printed on fairly poor quality paper (better than newsprint) but includes colour pictures and illustrations. The magazine is distributed free to all registered pilots, flying schools, flying clubs and maintenance organisations. The aim of the magazine is not expressly stated anywhere but can be assumed to be the improvement of flying safety by the spread of information about the flying accidents and the education of pilots and maintenance personnel.

Glider pilots are not included on the Flight Safety mailing list unfortunately unless they have at some stage begun training as a light aircraft pilot and thereby acquired an Aviation Reference Number (ARN). However the magazine is often seen on the premises of gliding clubs so the club probably receives a copy.

About half of every magazine is devoted to the analysis of flying accidents. Each accident is reviewed in some detail, usually in the form of a narrative by an imaginary observer who has seen all the action, often from before the takeoff to the crash scene. Since the pilot and passengers have often all been killed in the accident it is clear that the author of each story takes the facts from the file of the subsequent investigation including statements from multiple witnesses.

Each narrative has a moral. The moral is that every accident is the result of a mistake (or more often a series of mistakes) and could have been avoided. The assumption is that pilots and engineers will learn from the mistakes of others before them and hence avoid making the same mistakes again.

I have been reading Flight Safety for quite a long time now (about 35 years). A long time ago Flight Safety was called the Aviation Safety Digest but it was still the same magazine. The editor in those days was Macarthur Job who presented me with my pilot's wings a few years ago. He still likes writing about flying accidents. In all that time the causes of flying accidents seem to have remained more or less the same; flying in bad weather especially over mountainous terrain, running out of fuel, stalling at low altitude, landing with the wheels up and engine failure seem to be the most common. One might conclude therefore that Flight Safety fails in its task and that very little is learned from the mistakes of others.

I think that would be a false assumption. It is more probably the case that one can't prevent all of the accidents all of the time but Flight Safety may help to prevent some of the accidents some of the time. We are all prone to making errors, which might lead to an accident depending on the particular circumstances. Almost all pilots are fairly careful by nature and most read Flight Safety and think about the causes of the accidents they have read about.

Pilot mistakes are by far the most common causes of flying accidents. Mechanical failures (other than engine failures in light aircraft) are an infrequent cause of accidents. When they occur they are often due to some previously unsuspected failure or design problem.

The catastrophic Concorde crash a few years ago was an interesting example which was covered in Flight Safety. Initially it was thought that an engine had caught fire leading to ignition of a fuel tank. However a photograph taken by a passenger though the window of another aircraft showed the doomed Concorde just as it took off. This clearly showed that flames were coming from the ruptured fuel tank and not from the engine. Subsequent investigation found that a piece of debris had fallen from another jet onto the runway before Concorde took off. The Concorde had run over the debris, which had either been thrown up rupturing the fuel tank or had shredded the tires with the same result. The aircraft was subsequently withdrawn from service and since then the undercarriage and fuel tanks of the Concorde have been extensively redesigned.

Apart from the accidents Flight Safety also publishes articles about engineering problems, which have become a feature of the magazine over the past few years, and educational articles about aviation regulations and discussions about recent amendments and proposed rule changes. There are also articles introducing or reviewing important sources of aviation information such as the ERSA (En-route Supplement Australia), which gives airfield and runway information about airfields all over the country.

Flight Safety is very widely read by the aviation community. Although flying accidents have not been eliminated since its introduction I think it is a useful way of propagating safety information to its target audience and that it does contribute to improving flying safety in this country. It might be even more useful if it was also sent to other pilots involved in gliding, hang gliding, ultralights and paragliding as well as the traditional audience.

THIRTY YEARS LATER

Reflections by the designer on the BJ-1b Duster

By Hank Thor.

Ed's note: This is an excerpt from Sailplane Builder. Official Publication of Sailplane Homebuilders Association. A division of Soaring Society of America. .Issue #2-2002 March-April 2002. With thanks.

When the Duster appeared on the soaring scene in the early 70s, it was a pivotal time in sailplane development. The state-of-art was experiencing rapid improvement. New airfoils and the use of fibreglass was beginning to make meaningful performance enhancement possible.

However, it was apparent early-on to sailplane designers that the performance improved, the problem of obsolescence would become ever more pervasive, and this fueled a lively debate at the time. Perhaps to alleviate that problem, the idea of one-design competition, as in the world of yachting, was put forth, first as an Olympic ideal (soaring was to be included in the 1940 Olympics, but was subsequently cancelled by World War II) but changed over time into the Standard Class concept.

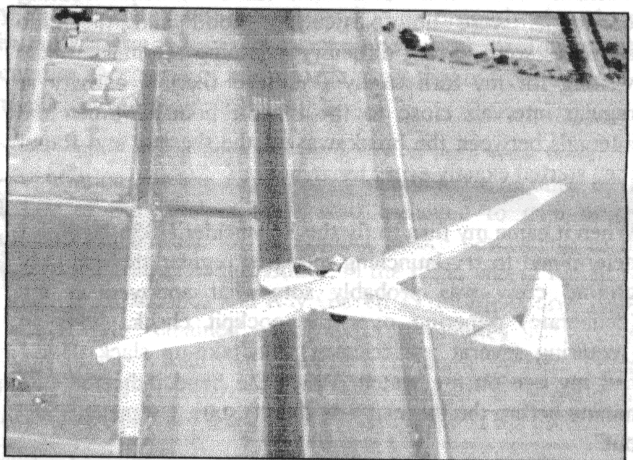
To be a one design competitor requires a mindset that minimizes the importance of relative sailplane performance and recognizes pilot performance as the important element.

A fine idea, but not popular with sailplane manufacturer, because noble as it was to keep cost down by slowing obsolescence, it was far better for business to keep improving the product, thus requiring the latest toy to be competitive. Ultimately sports class handicap racing became the logical solution to the problem of obsolescence. It allowed (more or less) a leveling of the playing field for the competitor, while leaving the manufacturers free to continue product development.

But what about the little guy for whom last year's glass was still far too expensive? What about the ex-model builder (with family) who wanted to fly and who knew what pride of authorship meant, but who would have to build a sailplane that could share the garage with the lawnmower? That was the guy the Duster was designed for.

Sailplane design is not rocket science: The trick is knowing where to draw the line on the dollars spent, so as to optimize the $L/D (the ratio of dollars per point of Lift over Drag) and yet raise the bar on cross-country performance just enough to make it fun to leave the home field and push your limits.

I think the Duster succeeded quite well in achieving that goal, and although thirty years later wood has become the "endangered species", the concept of the simplified medium-performance sailplane is a valid as ever.



Malcolm Bennett and Peter Raphael's Duster over Bacchus Marsh (photo by P. Raphael taken from his Woodstock)

A little bit of Australian gliding history. Launching by wire.

Part 4-Launching into thermals.

By Allan Ash.

There are those who say they prefer aerotow launches because there is a better chance of being towed into good lift. They claim winch launches are not able to ensure the sailplane is released into s thermal. This may be correct in most instances, but if you know how to go about it, winch launching into a sure-thing thermal is possible. There was time when it was done regularly.

Back in the 1950, members of the Waikerie Gliding Club developed this technique. They noticed that thermals frequently rustled the leaves of the trees near the winch or stirred nearby dust as they became active.

Pilots found if they launched when the trees or dust became stirred, they would release from the winch into a good thermal. Club members soon made a practice of holding back launching until a thermal indicated its presence.

Then by timing the start of the thermal activity they found they could even forecast the start of the thermal before it began to swirl skywards.

After publishing their research and results in Australian Gliding, other clubs began using the practice of watching for thermal activity and timing their frequency.

Even in places where thermals are not as vigorous or regular as they are at Waikerie, it was possible to forecast thermal activity and regularity. Pilots in many parts of Australia used this technique to winch launch into thermals.

During a visit to Waikerie at Easter 1951 I had several winch launches directly into good thermals, resulting in some plesant soaring flights, despite the fact that my aircraft was only a Hutter-17.

Then in 1966 I was at Benalla for a weekend. Soaring conditions were not particularly good and the club members were having difficulty locatoing thermals. While waiting for my turn to fly I noticed thermal activity at regular intervals close to the takeoff point. I timed the intervals between the breakaway of the thermal and found they started exactly every ten minutes.

When it came my turn to fly the Scheneider ES56 Nymph I determined to try launching into this regular thermal. My ground crew was probably somewhat annoyed at my (deliberate) dithering over the cockpit check, hook-on (requiring several test releases) and take-up slack. But I had my eye on my watch. When the hand indicated one minute before the thermal was due to start, I signalled "all-out".

At the top of the launch to 1000 feet I turned around and headed for the thermal site. I arrived just as it broke away and was soon climbing steadily to begin a very pleasant flight.

Sadly, with the move into all aerotow launching, this method of launching into thermals was neglected, then forgotten. Perhaps it is time to revive it.

William Shackleton and the Lasco Lark

There have been a number of instances where people have turned gliders into low-powered aero planes by the addition of a little engine, but some of the early soaring flights in Australia were made in a glider that was developed from a low-powered aeroplane.

In 1924, the British Air Ministry ran a competition for a low-powered aeroplane that might appeal to people who couldn't or wouldn't take to the air in the large, heavy aircraft then available, most of which were conversions of or derivations from the military planes of World War 1.

Among the contenders for the £2000 prize were such aircraft as the Short Satellite, Bristol Brownie and Avro Avis. The winner, however, came from a firm better known for building battleships than light aircraft, William Beardmore Ltd, and it was the brainchild of the company's designer, William Stancliff Shackleton.

Named the Wee Bee, it was a shoulder-wing cantilever monoplane of 38 feet span designed to carry two people with the aid of a Bristol Cherub engine. The two open cockpits were in tandem, one ahead of the leading edge of the wing and the other behind the trailing edge. The ply-covered fuselage had a square cross-section and the wings and tail were wooden structures covered with fabric.

Against strong competition, it was judged the best entry and took the prize, but the design was never put into production and only the prototype was built. It seems the Air Ministry was wrong in assuming that the public wanted a cheap, low-powered aeroplane of minimum performance. This was confirmed a year or so later when Geoffrey de Havilland produced his DH-60 Moth, which was about twice the weight and power of the Wee Bee but gained immediate public acclaim.

Shackleton continued with the Beardmore company for several years and then migrated to Australia about 1929. He was soon established as chief engineer and designer for the Larkin Aero nautical Supply Company based at Coode Island aerodrome, Melbourne. During the next few years he turned out several successful designs for Larkins - the Lascoter, a single-engined, four-seat cabin monoplane, and the Lasconder, a three-engined airliner seating six passengers.

Surveying the growing gliding scene in Victoria, Shackleton decided there was a need for a glider that was more efficient than the current crop of primaries, so he set to work in 1930 to design a sailplane. He began with the basic concept of the Wee Bee, moved the wing from the top of the fuselage to a faired pylon above the fuselage and eliminated the rear cockpit. The result was the Lark, a cantilever design with a one-piece wing of 38 feet span, 4 ft 9 inch parallel chord and no dihedral. Overall length was 18 ft 6 inches and the height of the rudder was 4 ft 7 inches.

The wing had a single spar and ply-covered leading edge with fabric covering the remainder of the wing and the differential ailerons. The wing was attached to the top of the pylon by four bolts. The rectangular-section fuselage was made of spruce longerons and bulkheads and was covered with plywood. The entire tail unit was a wooden structure, covered with fabric. The stabilizer was in two halves, each attached by bolts to the side of the rear fuselage. At the extreme front of the fuselage, the nose-cap comprised a leather cushion filled with kapok. The undercarriage was a wooden skid, sprung on rubber blocks.

The empty weight of the Lark was 225 pounds. The estimated performance figures gave a maxi mum glide ratio of 17, minimum sink of 2.7 feet a second at 32 mph and a stalling speed of 28 mph. The maximum all-up weight was 400 pounds, giving a wing loading of 2.2 pounds a square foot. The pilot had no instruments and no windscreen. His head protruded through a circular hole in the top of the fuselage, into which he had to wriggle without the benefit of a removable canopy or dog-collar. The pilot's seat was adjustable four inches fore and aft to provide some measure of trim.

Painted silver with blue trim, the Lark was first flown at Coode Island aerodrome on 4 January 1931, piloted by Captain John Larkin. It was only a 480 yard hop by bungy launch but proved the aircraft would fly. Later it was given car-tow launches.

Though designed for slope soaring, the Lark was intended also for elementary training and was equipped with rather unusual 'spoilers' to reduce the glide ratio to something that was considered safe for beginners. A pair of triangular canvas 'sails' could be mounted to attachments at the top and bottom of the main bulkhead and at a point several feet out on the undersurface of the wing. These 'elephant ears' added to the drag and reduced the glide ratio to about 9. In fact, they were rarely used and the Lark spent most of its life as a sailplane, not a trainer. Those who flew it reported delightful handling qualities. It was stable yet fully controllable and was light on all controls.

Sources: 'Wonders of World Aviation', Aircraft magazine, John Newman, Ted Palmer, Sir Raymond Garrett, Harold Bradley.

The Victorian Gliding Association

As a means of co-ordinating the growth of the sport and to provide assistance where it was needed, it was suggested that a State association of clubs be formed.

A meeting was called for 25 October 1930 under the chairmanship of Flt Lt Ray Garrett. Representatives from seven clubs attended, and matters went smoothly until discussion arose about the name of the association.

Everybody agreed that the most appropriate name was the Victorian Gliding Association but it was suggested that the general public could become confused between the association and one of its members, the Gliding Club of Victoria, because of the similarity of the names. Eventually, the GCV changed its name to the Melbourne Gliding Club.

The association was formed with Ray Garrett as chairman, E.E. Gunn as honorary secretary and an annual subscription of one shilling a member. During the next few years the association did a lot to promote the sport. It held several flying meetings and advised clubs on the construction of gliders and the training of pilots.

Sources: Aircraft magazine, Ted Palmer, John Newman, Dick Duckworth.

New Clubs

By mid-1930 there were embryo gliding clubs in many cities and towns in Victoria.

For example, one was formed in Colac, Victoria, in August 1930. The president was Percy Parker of Warrnambool and the instructor was a Mr Eastgate. The club bought a Zogling from Percy Pratt and that celebrity gave demonstration flights in it at the inaugural flying day at Woodrow Vale. In the evening, Pratt gave a lecture to club members on various aspects of the sport.

About the same time, a club was formed at Ballarat, Victoria. The president was Mr A. Symons, the treasurer was J. Finlayson and the instructor was a Mr Thornton.

Another of the small clubs in Victoria was the Black Eagle Gliding Club whose members were all university students. They operated a primary glider which they bought from the Castlemaine Gliding Club. The Black Eagle Club flew for a short time from Albert Park in South Melbourne.

The first inter-club rally

The first big inter-club gliding rally in Australia was arranged by the Victorian Gliding Association as part of National Aviation Week over the four-day Easter holiday period of 1931. The site chosen was Tower Hill, the site of Percy Pratt's record flight. Ten clubs attended from various parts of Victoria, eight of them bringing gliders. Larkin Aircraft brought their new Lark and the Skycraft Club brought a nacelled primary glider which was classed as a secondary glider. In addition, there were seven primary gliders.

Fred Allchurch, instructor of the Warrnambool Gliding Club, was in charge of flying operations but he received plenty of support from clubs in the vicinity of Tower Hill as well as from non- gliding local residents of the district who saw the gliding meet as a spectacular local happening. In preparation for the meet, locals built a track from the floor of the crater to the crest of Tower Hill and provided a pair of horses to retrieve the gliders after they landed at the bottom and haul them, mounted on trollies, back up to the launching point.

Most of the gliders were brought to the site by truck, but the Kew club sent theirs as far as Warrnambool by rail. Most of Friday was spent rigging the gliders. Those of the Geelong club and the Skycraft club were delayed by transport problems and arrived on Saturday and Sunday respectively. Before each glider was flown each day it had to undergo a critical daily inspection by a team of experts to ensure it was properly rigged and airworthy. The organisers wanted no accidents to mar the activities. A couple of pilots made short flights from the top of the hill to test the aircraft.

On Saturday, flying began in earnest in a light west wind. The best duration for the day was 11 minutes 38 seconds by L. Hedley of the Geelong club who managed to gain several hundred feet altitude in the Zogling before descending to the floor of the crater. Arthur Butler, in the Lark, was in the air for 5 minutes 20 seconds and Ray Garrett in the Melbourne club's Rhon Ranger remained airborne for 4 minutes 30 seconds. Flights of more than two minutes were made by H.E. (Ham) Hervey in the Melbourne club's Rhon Ranger, S. Joyce in the Colac club's primary and Captain John Larkin in the Lark.

Sunday brought an east wind which was unsuitable for soaring but the enthusiastic pilots took bungy launches from the top of the hill and floating to the bottom to log flights of 30 to 60 seconds. Several trainees took the opportunity to quality for A and B certificates. The crowd of 3000 spectators was kept amused by a parachute jump by Jim Reece and formation flying and aerobatics by Charles Pratt in a Moth, Arthur Butler in an Avian and Ray Garrett in another Avian. Between events, musical items were provided by the Port Fairy band.

Monday turned out to be the best day of the rally, with a strong north-west wind blowing up the slope. The first to be launched was Ray Garrett, making his first soaring flight in the Lark. He rose rapidly to about 1,000 feet above the bed of the crater (about 500 feet above the crest of the hill). The silver and blue glider hovered and swooped high above the spectators and ground crews, silhouetted against the dark, heavy clouds. Here was a demonstration of what soaring was all about. Gasps of appreciation came from the spectators and sighs of envy from the pilots of lesser aircraft.

While Garrett was soaring, other pilots were launched in the primaries. Raynes Dickson, in the Kew club's Zogling, soared for 16 minutes 20 seconds. Howard Morris, in the nacelled Sky hawk, remained airborne for a remarkable 44 minutes 38 seconds and Ham Hervey in Melbourne club's Rhon Ranger stayed up 6 minutes 38 seconds.

After the passing of some rain squalls, the wind swung off the hill and Garrett was forced to land after a total of 1 hour 34 minutes. This was a minute short of Percy Pratt's flight but the state of the sport in 1931 permitted both efforts to be counted as records — Pratt's as a record for primary gliders and Garrett's as a record for secondaries. Just to clinch the matter, however, Garrett made a flight of 1 hour 54 minutes in the Lark at Tower Hill on 19 May and so became the undisputed holder of the official duration record for Australia. This flight also established an Empire gliding record for a British pilot and glider, but it was not to stand for long. On 6 June, Major Henry Petrie at Dunstable, England, set a new Empire record figure of 3 hours 28 minutes.

Sources: Slipstream magazine, Aircraft magazine, John Newman, Ted Palmer, H.E. Hervey.

CLASSIFIEDS

AUSTRALIAN GLIDING MUSEUM.

If you wish to join this project and if you have any question or wish to discuss any aspect of the Proposal or wish to volunteer to assist with any of the Museum's projects, please do not hesitate to contact.

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WANTED - Study books and/or plans for gliders. Design Building etc. Contact: John Thirwall, P.O.Box 69, Northbridge 2063 Ph. 02 9958 7311 Fax 02 9958 0350

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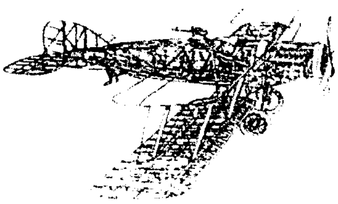

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