

Gliding *Australian* SKYSAILOR



In this Issue:

Not Quite 300

Paragliding
in WA

Flight of the Owl



Life is
Beautiful!



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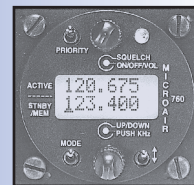
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Contributions for the combined magazine should be sent to the appropriate sub editor:

AUSTRALIAN GFA Acting editor: Bob Thomas

GLIDING Box 1650 GPO, Adelaide SA 5001, Fax: (08) 8390 0161

Website: www.gfa.org.au

AG Advertising Manager Bob Thomas

Ph: (08) 8390 3022, Fax: (08) 8390 0161, Email: bobthomas@senet.com.au

SKYSAILOR HGFA editor: Justin Beplate

28/22 Roslyn Gardens, Elizabeth Bay NSW 2011

Email: skysail@ozemail.com.au Website: www.ozemail.com.au/~skysail/

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The Gliding Federation of Australia – ACN 008 560 263 & GFA Sales:
130 Wirraway Road, Essendon Airport, VIC 3041, Ph: (03) 9379 7411,
Fax: (03) 9379 5519, Email: AdminOfficer@gfa.org.au Website: www.gfa.org.au
Hang Gliding Federation of Australia
PO Box 558, Tumut NSW 2720, Ph: (02) 6947 2888, Fax: (02) 6947 4328
Email: hgfa@tpgi.com.au

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...the corner of Neale's and Foote Road...

JOHN INGRAM

Saturday the 16th of January 1999 was a reasonable day, so Ted said, "Let's go to Black Springs for your first cross-country."

So, the decision was made. Kevin said, "Go".

I had previously made a water bottle; calculated the 'available height and times' for the barograph; checked the radio, bought the surrounding maps, bought a disposable camera, bought 'heavy duty' aluminium foil (I'd hate to see the light weight stuff!) at least it wasn't quilted, and on this Saturday anticipated doing a 50km out and return. But where? Ted determined the goal. So that was it...

Smoking the barograph was nearly painless, if you could ignore the choking black fumes given off from the kero burner, and the flickering flame that always wanted to burn your fingers whichever way you tried to hold the cylinder, and the wind that wanted to blow the soot everywhere but on the foil; but it got smoked sufficiently. Would the stylus jam and cut the thin foil?

Ah, the Declaration Board. Chalk? Chalk? What chalk? Some was found and the board duly filled in, but for the signature: My signature is normally written with a pen about 8mm diameter and the writing maybe 5mm or less. How the hell can one write a legitimate signature with a crowbar with 10 feet letters? Well it looked something like it should.

A disposable camera is designed to always be handheld; and has no tripod mounting; so Gaffa tape makes a reasonable mount.

Was I nervous? No, not really. I was getting hot and, wanting to be a lot cooler, I anticipated the 5,000ft plus in height!

I was the first to be launched. The launch was not slow; my speed varied from 50kt to 70kt at some stages on the launch, with a lot of porpoising and bouncing about (rough air), but I hung on to the end, getting 1,400ft indicated; bunged off, now where was the promised lift? Launching from the 'hangar end' I normally turn right if there is no lift over the winch. Neutral air over the dam, so next to the church where there was some lift to nearly 2,000ft, but no more, so I moved on (I was looking at circuit height still). At last some lift, tight but 4kt... I took it to over 3,000ft before Ted was airborne.

At my 3,500ft Ted had caught up; he was under me when he took off north-west towards Black Springs, so I followed. Sink. Sink. Sink. Where was the lift? "Ted, we used it all up starting!" Only on small portions of the low ranges were there small pockets of lift, which we took. I wanted to ask Ted at what height we should go to before breaking off from a thermal, but I was too busy keeping what I had...

Just on the northern side of those ranges I was low. "Foxtrot Lima, this is Golf Oscar, it looks like I'm going down."

There was a large farm complex nearby and a good clear paddock to land in; but wait, LIFT! Centering to 6kt and going up I looked around for Ted; he was out to the side and well above me. I concentrated to get the best height, and lost sight of him; Ted was off to the north-west again. At 4,700ft I followed, but the sink; nose down for 70kt.

Again I got low, but I knew where I was, on the map; it was on the Eudunda to Morgan road where the powerlines cross. (I mapped a course to follow these powerlines to where they split and turn left then right to get to Black Springs...)

I lost sight of Foxtrot Lima, and I was ALONE.

Not having much luck with finding reliable lift, I called up Ted to tell him I was heading back. I heard Ted faintly "Give two clicks for returning or three clicks for going on", I gave him two clicks. (Our communications were not working well.) At 3,000ft above ground, I wondered which way to go. Head towards Eudunda? Cathy (Ted's wife) might have a cuppa or turn down hill out to isolation? Eudunda sounded more promising. So I took a picture of Eudunda from the powerlines and Morgan road site. I gained a little height, but Eudunda was looking disturbingly close. As you say, "When you are that low you fly from paddock to paddock." I could land in that one, or that one, (one was plenty large enough; it is on the north-eastern side of Eudunda), but I wanted to take a picture of the north-western side!

After the picture was taken I again flew over to that paddock; 1,000ft above ground? But there was LIFT. I could catch a wild (cricket) ball from this height! At 500ft extra I decided to try for home: it was over there, somewhere. From paddock to paddock, I went... some sink, some lift got me to Neale's Flat. I was watching for SWR lines, stock, slope... My altimeter said 2,500ft. I said, "Bugger that! The ground is not even 1,000ft!" From about two thirds of the way from the powerlines to Eudunda I forgot about the altimeter and flew by eye, until I landed. (From that point on it was survival flying.)

That farm looked too small; I could not see any movement down there; there were SWR lines across that paddock; it looked like there was cattle there (cattle eat gliders). And then there was SINK; the paddock I was heading for was too far away, so that triangular one would have to do.

Circuit performed, but no airbrakes until the trees were cleared; 55kt, too fast? At flare-out there was a couple of feet gained, but one touchdown, and full airbrakes brought Golf Oscar to a wings level halt; the right wing lowered, onto stubble; and I heard the crunch of stubble under the wingtip. Thought was, "That could puncture fabric!"

The canopy was opened, and after climbing out and taking the parachute off, I stopped the barograph and noted the landing time. Tying down consisted of chocking the rudder, weighting the control column with the parachute and staking the right wingtip. A couple of pictures were taken of Golf Oscar in reference to the hills, and to the farm complex to which I was eventually to head...

The cross road signs said, "Neale's Road" and "Footes Road". So I tramped, water bottle in hand, the half kilometre to the farmhouse, a prefabricated building. No answer from the front door (not a good sign), so I ventured around the back. There were sufficient cars to suggest someone should be home.

"Giddyay," came from an open window, along with paint fumes. I welcomed the house interior with its airconditioning. After greetings were exchanged I rang BVGC to ask for a retrieval team, and then the woman asked where I was from; where I lived. I said, "Gawler. Cheek Avenue", and she replied, "We lived at the back of your place, but one." Would you believe they were my neighbours from about 20 years ago?

The retrieval team duly arrived, Golf Oscar was boxed, and Kevin headed back to base. A wise decision was made by Ted, to leave Golf Oscar in the box until another day, as the wind was too strong for safe rigging. (Ted made it home just as Kevin was about to leave on the retrieval.) Many thanks to Ted, Kevin and Brenton.

In retrospect, did I do anything wrong? No. All the decisions were rational and logical. At no time did I feel I was doing anything unsafe. I would have (will make) the same decisions. Maybe I would want more height at each thermal before I would go on, but that may be the thermal's height anyway. Next time? There WILL be a next time.



National Trailer Towing Limits

J. ASHFORD

The battle to get a nationwide acceptance of uniform glider trailer overhang limits continues, but meanwhile some important changes have been made regarding towed mass and speed limits wherein we find that we all now live in the same country instead of six landlocked islands and one real one.

In a news release of December 1998, it was announced that all states would introduce uniform legislation regarding mass and speed limits of trailers early in 1999.

As applied to vehicles not exceeding 4.5 tonnes, these are:

1. The trailer mass shall not exceed the capacity of the towing apparatus fitted to the towing vehicle; or
2. A relevant trailer mass specified by the vehicle manufacturer.

If the motor vehicle manufacturer has not specified a maximum trailer mass or the limit cannot be identified the following shall apply:

3. The trailer mass including any load shall not exceed one and one half times the unladen mass of the motor vehicle if the trailer is equipped with brakes; or
4. The trailer mass including any load shall not exceed the mass of the unladen motor vehicle if the trailer is not equipped with brakes.

People who tow glider trailers should establish from the manufacturer of their car what the limits are and not rely on folklore. The limits vary from model to model and you may find that what applies to an automatic transmission vehicle may not be the same for a manual transmission version of the same vehicle. You should also establish what the allowable drawbar vertical load at the towbar ball is allowed to be in addition to the all up towed mass as this may have important implications for the stability of the combination.

In addition, speed limits shall be as posted on the roads, the arbitrary maximum of 80km/h in some states is to be discarded. You should be careful about the stability of the combination however before adopting higher speeds than you are used to and some clubs may still require you to keep the speed down particularly with poorly braked trailers.

As at the end of February 1999 Tasmania had adopted the above and legislated for it. My prediction is that NSW will be the last!



Life is Beautiful!

GRAHAM SUTHERLAND

I lobbed off the west launch at Mt Borah (Manilla, NSW) into a strongish wind that was well off to the south. After some scratching about on the hill I ended up over the bomb-out at about 50m, when I cranked it into a tight little express train. I was climbing at 6m/s (1,200ft/min) with the wing banked right up and two wraps on my right brake. The thermal was so tight that twice I lost the left side 30% of my wing (collapsed). I wasn't going to let it throw me out though, so I just leant harder into the turn and applied more right brake. I was too busy staying in the core, so I just let the collapses work themselves out. Back up to launch height the thermal hit the inversion and either died or I got peeled off and couldn't follow it through the inversion.

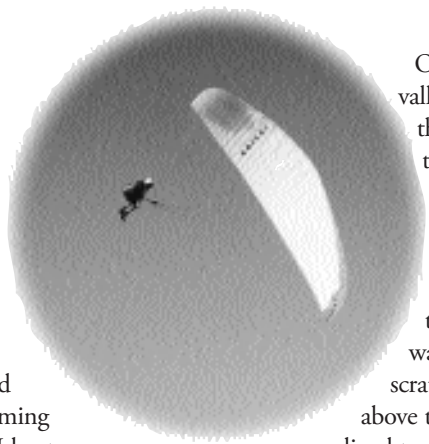
Some months previously I had seen Nikki Hamilton slide off downwind along the western side of the ridge in similar conditions, so I thought I'd give it a go. A couple of days previously I'd decked it at the end of the western side of the ridge at Borah Downs and I didn't relish the idea of the long walk out, but I felt it was my only chance of getting away. As I headed off downwind I saw the others that had followed me into the thermal wimp out and turn back into wind. With the strongish wind they all flew under any later thermals from the same trigger, and they all bombed.

Steadily losing height I moved out over the paddocks, as I thought the wind was too southerly to push the thermals back onto the ridge. At about 200m I started scratching in little bubbles that were mostly zeros. At least I was mostly maintaining height. Drifting with the wind, I was turning in anything that wasn't going down. Searching downwind or a little upwind whenever the lift dropped off. I scratched and drifted all the way down the west side at between 100 and 200 metres off the deck. At the end of the ridge I had just enough height to safely drift over the trees and to follow the bubbles through the gap and towards Tarpoly. At Tarpoly I drifted over a big grassy field with a tree line at the downwind end. Woof! up it went, the whole hot airmass that I had been drifting in went up. I was 15km from launch and I had finally got above hill height. I had drifted for about 10km at between 100 and 200 metres.

Graham Sutherland "touching up" planet Earth at Rainbow Beach.
Photo: Andy Abbott

At cloudbase I headed out after Godfrey, who was a few kilometres out in front and who kept calling me on, saying that the cu he was under was great. I'd jump on the speedbar and head off, but my timing was all wrong and I kept arriving just as the cu's were dying. Maybe if I had been flying a high performance wing I could have kept up, but my sure and steady intermediate DHV2 wing (Airwave Fusion) was not up to it. I would have to scratch again to get back to cloudbase. Luckily the inversion had broken by this time and it wasn't too hard. I just had to let Godfrey go or I would fly myself into the ground.

As I flew past Blue Knobby and into the Horton Valley I was joined by three wedge-tailed eagles, the biggest of which proceeded to dive bomb me. I was in a thermal and I wasn't going to lose it. I kept thermalling by the sound of the vario while looking up and back. It would come in low above my canopy with its wings tucked in (wedgie 'Big Ears'), I would give a big fast chicken flap with the brakes and the noise and movement would make it change course. It was hard trying to watch all three and thermal as well, but we had fun playing chicken, me and the three eagles.



Out in the middle of the Horton valley now, Godfrey called me on the radio to say he had been on the deck for some time. He had tried to make it through the next pass at Rocky Creek and had lost too much height trying to punch into the headwind that was there. A while later I was scratching at about 400-500m above the ground when Godfrey radioed to say that he wouldn't want to be landing right now as the wind in the valley had picked up to 30 knots. What? 30 knots? Gulp! I'd better scratch real hard until I drift to the north out of the strong valley wind. Luckily, I slowly clawed my way back up as I drifted out of the valley to the north. By the time I was well out of the valley I had reached my highest cloudbase of the day at 3,000m (10,000ft).

I had quite a tailwind now and the next 30km went past pretty quick. When I reached the Gwydir Highway I was low and there was a big cloud bank completely shadowing the way forward. So I decided to spiral down to the little town below. I landed descending vertically into the strong wind. Landing just across the road from a woman watering her front yard, I said, "Where am I?" (I rarely bother with a map). She said, "Graves End." I dug my map out of my pack and measured it off. 120+km, my personal best, in four and a half hours.

I packed up my wing, made a phone call to Godfrey's, and started hitching back. I was picked up by two guys making their fortnightly two hour run to the McDonalds at Moree to pick up a box of Big Macs for them and their friends to microwave when they got back. They shoved a beer into my hand and later dropped me at Warialda. I thought, if these guys are so dedicated to Maccas I had better try a Big Mac or two to see if they actually taste good or if it is just the marketing that is good (I'm mostly vegetarian). The people that pick up hitchhikers are definitely more interesting or entertaining than those that just drive past.

My next lift was a short one to Warialda rail, where I stood on the side of the road 'til it got dark. I made a short walk to the pub, where I had a couple of beers and some food while entertaining the locals with tales from cloudbase and chatting up the women. Then I walked back up the road to have another unsuccessful attempt to hitch at night. The wing was then thrown over the fence into a field, where I rolled up one side of it to act as a mattress. The other side was folded over a few times to make the doona. At first the low porosity fabric made it a little sweaty, but then I put my cotton lined flying suit on. The result was a good night's sleep under the stars with my head in the clouds.

Next morning, I quickly got a couple of lifts the rest of the way back. Where I had time to have a hearty breakfast before going back up the hill to do another 60km. Life truly is beautiful, and getting back can be almost as much fun as the flying.



Cruising down the coast with a friend at Rainbow Beach.
Photo: Graham Sutherland



Finding what needs doing and

MAURIE BRADNEY

In the September/October 1998 issue of AG, Jack Iggulden's letter filling in some of the GFA history and Emilis Prelgauskas' comments on club management, it has prompted me to do a little of my own research. The same issue has the 97/98 statistics. Looking at the comparative figures for 73/75, just one generation, 25 years ago, gives an interesting result. The numbers that we have now and for around the last five years, are very close to those of 25 years ago. Perhaps that is closer to the numbers we should expect, rather than the boom that happened in the years between?

I selected this time comparison for in addition to the 25 year, one generation period, it was prior to the first world comps in Australia and probably, the numbers are a realistic reflection of the state of the clubs at the time. There was likely some benefit to the South Australian clubs, but it would not have been very great at that stage.

Looking at the stats of the individual clubs for more detail shows that almost all the NSW difference is from Southern Cross Club dropping 141 members. Of course there were many other changes in the region. Some clubs have gone and some new ones are there.

SA has been the other big loser. Adelaide Soaring Club is 160 members fewer, Waikerie only 12 fewer and the Sunraysia Club is now in the VIC region to move 37 members from SA to VIC (or 71 from the 73/74 figure). In SA, a number of the smaller clubs have closed and only Balaklava and Alice Springs clubs have more members now.

Waikerie had been operating a mixed club/commercial operation since the summer of 67/68, so that had just begun to make some small effect on its numbers.

SA has been virtually static in population growth for the whole period. It is comparatively poor in natural resources and has had employment hit harder than any other state except for Tasmania.

I do suggest that those and the current numbers are more what we should expect rather than the boom period in between. This has had two world comps, and the AUS\$ at exchange rates that made sailplanes relatively cheap. For the first half of the period we even had no 22% sales tax which, because of the way it is calculated, becomes an effective 26% tax. A lovely example of government perfidy.

This argument is very simplistic and, of course, things are more complicated. The population of Australia has increased considerably since 1973. However, with the people in the newer sport aviation bodies, the number of people in sport flying is probably about the same proportion of the population as at the earlier time. In 1973, parachuting was already well developed, but the other groups were

just developing. The aviation inclined people are now shared by more aviation sport groups. I therefore suggest that we have not been doing as badly as some would have us believe.

The numbers are only a background to what has happened. About mid 1967, when I was CFI of the Southern Cross Club, I gave a cheer when I found that more than half the club members had become solo pilots! It was normal in those days to have the greater proportion of members in pre-solo training than as solo pilots. In contrast, it would be unusual now for any club to have more than 5% of its members pre-solo, except perhaps the University club at the beginning of a new year!

Clubs were then (mostly very poorly) organised as training vehicles. What clubs are doing now is quite different, but they are still organised and run as if pre-solo training is their main activity. Regrettably most are still poorly organised at it! It is no surprise that there are many aspects of club management that need changing.

With around 95% of the people in gliding being trained pilots, gliding has reached maturity. It has been there for some years now, but members and committees are still managing the "old" immature gliding. It is as if we have concentrated so much on the means of achieving an acceptably safe sport that we have forgotten that our initial intention was to do some gliding.

The GFA has not helped much as it still requires an operational structure that is based on the training model. The allowance of independent operators at Level 2 is a move to recognise that some changes have occurred.

Very few clubs have evolved along with the changes in what their members are actually doing. For a club to now catch up, it will need to undergo a revolution. This is always a difficult process and often destroys parts that we do not want to give up. However, if clubs are to survive beyond the flying life of their current ageing members, then that will be necessary.

Of course, some clubs may choose to simply fade away as their members do the same. In most cases, they made the effort to move gliding from a risky pioneering operation to one which has sound, safe airworthiness and operational procedures. This has been a major achievement. They may no longer be able to or do not want to take the next step. That generation has been used up by that process. Others need to pick up the challenge to move their club to a continuing business that can survive the changes that the community and government can put upon it.

One of the items that has shown up in some of my current survey work, is that 99% of gliding people say they would do more gliding if they had more time. People will allocate time if they are persuaded that it is well spent. This applies to the new training members even more so, as they are yet to experience the rewards of flying for enjoyment.

Some clubs are responding to the changes. While training is no longer their main occupation, they have realised that time effective training is the way to hold the new people they recruit. The time necessary for gliding training has always been a major problem and remains so. Clubs that organise themselves so that all training pilots can receive at least four or preferably six flights when they are doing circuits on any day they attend, are making the correct move. In addition to the daily instructor, each student needs a person to oversee and advise on their progress through to the C certificate. These clubs stand a good chance of retaining those people to solo and probably beyond. Such clubs will be doing their underutilised instructors a favour too.

getting the priorities right



Recruitment is necessary to find those people who are going to continue the club. It is also necessary for the older members to step out of management as soon as they can and let the new ones get on with it. They may not like the new styles or directions, but as long as there are gliders and a way of launching why worry? Change is not only the third certainty in life, it is the most necessary one.

No one else but the club itself can do the recruitment. Except in the most general way the GFA cannot recruit people into your club. Only the club can do it.

Few clubs organise themselves to handle their recruits, so that, except for the totally converted, they want to stay. People very soon tire of hanging around airfields, usually with minimal comforts in the dust and flies, and achieving little. This is a management problem, and clubs which do not address it effectively are on the threatened species list. Fortunately some clubs have taken this in hand, some, I fear, are too late.

An alternative is to abandon training altogether. Some clubs have already done this and have become, in effect, a syndicate. These clubs do still have the need to be able to do some passenger (friend, joy ride of TIF) flying but that is all. Agreement with a nearby club to handle training would help both. The GFA operations panel needs to come to the party by devising a club operational structure that could handle this.

It takes a dedicated group to shift the training mechanism of a club from a desultory series of flights to a smooth continuous flow that has participants looking forward to the next training session with keen anticipation.

This also needs a shift in instructor attitude. "You will do it this way and no other", may well have been a good attitude for instructors in another age. In this age it goes down like the proverbial lead balloon. Galileo, an astonishingly wise and perceptive man, put it correctly for all ages, "You cannot teach a man anything. You can only help him discover it within himself." This requires more patience and skill but the end result is incomparably superior and does not fail in brief moments of panic.

I watched helplessly as I saw my own club lose an enthusiastic student pilot by applying a mixture of the first instructor attitude and bumbling flightline organisation to lose the flights the student needed to progress. That person could have been an excellent ambassador for

gliding as she is now frequently on the national news reporting events from Canberra and other more exciting places.

This may seem that I am returning to training as the major purpose of the club. No, it is just an important area that must be well managed. We can see the results where it is not in almost any club in the country.

The real business of clubs is providing flying for their members, and that is now mostly solo flying. Many pilots do not wish to chase badges or achievement flights, but prefer to be taking their friends flying. A good availability and facility for this is necessary. This can be a difficult area as often such pilots fall out of currency and can give concern for safety. Another area which needs an individual (the CFI?) to keep track of people and ensure such anxieties are avoided.

Some 76% of the pilots that I have surveyed stated that they flew more in summer than winter. No surprise in that. However, clubs could look at organising to use

this factor better. Instead of trying to get pilots to maintain currency all year round, let them rest in the winter and run a number of refreshers in the spring. This just may activate the hibernating pilots into regular flying throughout the summer. Fortnightly was the most frequent period of attendance, so it is worth some (club) effort to get members into that habit for the summer at least.

There is a perception that once a person has joined a gliding club and progressed well into training, they have undergone something like a religious conversion. They are then expected to continue gliding for the term of their natural life. While many of the people in gliding have embraced this sentence, the facts are different. Some wish to fly solo once and no more. Others who get that far are inspired enough to proceed to a silver or even a Gold C. Certainly, in city membership based clubs, which is most of the people in gliding, the life term members are a minority group of those who have joined.

Some 15 years back I did a survey of Waikerie Gliding Club membership over a spread of years. I was surprised to find that a large number of the members were there for eight years. This took many from trainee through all the certificates and often to instructor, tug pilot and/or committee member. Most retained inactive membership for a number of years after reducing activity to keep contact with the club. Then they disappeared. Occasionally these ex members show up again for a passenger flight but rarely recommence flying. I wonder if other clubs have similar membership cycles?

While managing Waikerie, as a mixed club/commercial operation I kept track of how much individuals spent on their gliding each year. This often provided surprises from the casual view of activity. I found this was a very useful tool in predicting income from the club and repeat commercial customers.

All of these suggestions are management business. One of the necessary tools of good management is knowing about the behaviour of members. For only with good information can appropriate decisions be made. How often do they fly? When do they fly? What is their annual flying expenditure? How long do people stay in the club? Why do members leave? While all clubs have plenty of anecdotal evidence, how many have real data? It needs a number of people (the committee?) who can put time into very detailed dissection of what is (or what is not, but should be) going on in their club.



Depreciation and Insurance

MAURIE BRADNEY

The concept of depreciation is relatively simple. The initial cost of a machine is factored into its operating cost and that amount is accumulated. When the machine becomes worn out or has reached a stage where the cost of repairs and maintenance are becoming prohibitive, the accumulated funds, plus any residual value of the machine purchases a new replacement.

As most gliders have a life expressed in flying hours rather than years, it may be useful to calculate depreciation per hour. 12,000 hours is the current limit for most gliders. At 400 hours per year, this is 30 years. Whichever way it is calculated the arithmetic must come to the same answer.

When buying a new glider this seems so far off in the future that it can be ignored. However, for whoever is in the club 30 years on it will be a pressing problem. If the club is expected to be a continuing entity, then the current members must make some provision for its continuance.

A nice idea. I wonder how many organisations make it work? A major difficulty is that the value of money changes, so that what is correct one year is wrong in the next. The club Blanik, purchased for \$10,000 in 1974, can now be sold for \$20,000. No need for depreciation when the machine has appreciated 100%!

Wrong! For a new or near new replacement machine cannot be purchased for \$20,000! Only a similar machine with equivalent wear. The club now needs \$60,000.

The private owner ignores depreciation and accepts that the reduction in glider value is the cost of convenience or being competitive. If the glider can be fitted into some aspect of business, then its depreciation may have some taxation value and the costs regained indirectly. However, the glider must be sold before its capital value becomes a major loss.

If the club had made some depreciation plan and accumulated that money to go with the \$20,000 they get for their Blanik, just how they went about it would govern whether it was adequate or not.

A simple depreciation scheme would be to assume a life of the machine (say 20 years) and collect that proportion of the cost each year. For our \$10,000 machine, \$500 per year. After 20 years the club would have \$10,000 and the (now \$20,000 value) Blanik. However, it is still short by \$30,000! Inflation during the 20 years has changed the value of the money. A simple scheme is not enough.

A variation that can get much closer is to revalue the machine to current replacement cost each year and collect that amount for the depreciation fund. This gets much closer, but as it trails by a year, usually falls a little short.

If the club borrowed money to get the machine in the first place, they have to repay the loan as well as allow for depreciation. This may not be too difficult, for when the loan is repaid, the extra allowed for



Puchacz. Photo: Mandy Wilson

that is continued and then fed into depreciation. At least the members are used to paying something more than the bare operating costs and will go some way to allowing for replacement.

External factors like governments changing duties and taxes and the changing of international exchange rates make the business impossible to predict accurately. So as well as depreciation a club needs some amount for contingencies.

This may be all very well but then the necessary cost amount must be accepted by the customer (club member) for any money to be accumulated at all. History so far has shown that this has not been the case and members have difficulty in accepting anything more than a bare operating cost.

An alternative is to obtain the additional finance from outside the earning capacity of the machine. Clubs do this in all sorts of ways. Another is to accept that when the machine is worn out the club ceases.

Another way is to assume an unlimited life and forget depreciation altogether. If adequately maintained it will fly just the same and do all the same tasks when 20 years old as it did when new. Experience is that maintenance costs do get higher as the machine ages, and sometimes parts get hard to find. There are also changes in the expectations of new members. What satisfied father rarely will satisfy them. This may be a major cause of youngsters looking to other more progressive sports.

How a club views its depreciation situation should affect how it views its insurance. If the club does not connect these two factors then it is surely condemned to difficulties that it is much better off without.

If they forget depreciation all together and insure at the market value of the glider each year, at least if it is written off they should be able to purchase an equivalent replacement.

Of course, it would be better to insure for the cost of a new replacement each year, but I doubt that insurance companies would accept this except for the first few years of a new glider.

It would be a mistake to insure it at cost. A few years down the track the pay out for a write off, could not replace the glider with an equivalent machine. Perhaps one of a lower standard may be covered, but that would be a definite loss to the club. Unless the club has adequate depreciation allowance or uncommitted funds it is always a mistake to insure anything for less than current market value.

If the club is collecting some money for depreciation, then it could afford to insure at less than market (or new) value as the collected funds would in effect have the club carrying some of the risk. However, it really must have the funds there when needed.

If the club was very rich (Oh, to be so well managed, lucky, or both!) it could forget insurance altogether except for third party risks. ✂

Buying at the Best Price

EMILIS PRELGAUSKAS

(All quotes are taken from personal experience.)

The modern consumer society is essentially adversarial in nature. This purchasing emphasis is based on the following precepts:

- I am important
- You have, I want
- I assess that you (the supplier) need to sell to stay in business, and that puts me (the buyer) in the box seat.

From this has arisen the category of the 'canny' consumer. This consumer will barter for the best price for what they want. The beating down process is based on a presumption that the commodity being offered by a number of parties is the same with each one. This approach replaces the traditional approach of fair value and a contract between supplier and purchaser.

This underlying attitude has interesting outcomes for gliding. Gliding is seen as just another recreational flight. No different to a ride in a trike, ultralight, light aircraft or booking an Antarctica/return trip on a Jumbo.

Traditionally a newcomer joined a gliding club as a tyro. The club was the setting for social and flying. Everyone starting did the 'menial' tasks. This as their contribution toward permitting the club to function and provide everyone with flying, while the senior people do the complex tasks which take training and ratings. In the process everyone kicked in about the same amount of money, everyone got some flying, although even at that time the sense of a 'treadmill' existed.

Today, the consumer approaches a gliding club and applies their perceived position of strength as they do with a commercial commodity manufacturer or supplier. "You need members" they say. "What inducements do you offer me to join your club?" The implications are clear, and often verbalised: "I can join any club I like;" "I don't ground handle gliders;" "I can't stay all day;" "Where's my flying?" "Why isn't it my turn yet?" The shift from the traditional is very stark.

Today the gliding club, its assets built up by the sweat of past members; and even the current members themselves, are all seen as legitimate resources to be used by the incoming consumer. The club supplies, the newcomer consumes. You club members, your function is to ground handle, launch and service my gliding. This extends to the smashing of the glider.

Today, not only will there be no 'sorry', no 'what do I need to do'; but instead "I'll sue because you clearly enticed me into a sport which is dangerous," or from the spouse "How dare you put at risk our families' breadwinner?"

There is clearly no recognition by the consumer:

- that different gliding clubs offer different types of gliding experience

- that amateur sport is entered by the individual at their own volition and own responsibility
- that clubs are cooperatives where existing members need to have outcomes too.

Thus, all in all, there are strong disincentives for gliding clubs to promote the sport of gliding, offer discounts to ab-initios, or offer TIFs or be open for membership. Each of these actions can be held against us.

The canny consumer approach shows through even in the first contact with gliding (often on the phone). "Fax me the details, I want to confirm the flight for this afternoon". "But I can get the flight cheaper at club X, you'll have to do better than that". "How long is the flight for the money (if it is a good one, we'll consider becoming members)." Yea, right.

No recognition of the value of the uniqueness of the experience;

gliding the consumer purchase is measured quite simply with a stop watch. No 'slipping the surly bonds...' here thank you. Not even a recognition that the weather plays a part in the flight, for heaven's sake.

On the flying field, the canny consumer attitude is visible too. Male intending intrepid aviator brings family with him. This validates his intrepidity, and provides the cheer squad. For 'mum' it's a day out, so let the toddlers go play amongst the aeroplanes. Haughty offense is taken if a glider pilot should suggest that this might not be safe for the child (or the gliders). Kids throwing frizbees in front of a taxiing tug are etched forever in my mind. A toddler kicking the glider's fuselage to create a foothold to climb up is another.

Some gliding clubs are geared to serve the customer. Some are not. Some clubs have an operation, fleet and membership size where the consumer can have gliding without disadvantaging the existing members, or the club. As this requires dedicated assets and people, the club's charges need to reflect this. This needs to reflect

the work put in by the members, and their own flying foregone so that the consumer could have their jolly. And it had better be supplied on time, the family has important commitments for afternoon tea.

Some smaller clubs have decided that serving existing members is what they are about. The consumer doesn't fit the mutual help emphasis of such club. Irrespective that the consumer be a TIF, a pilot, or private owner. Attempts to explain the difference at first phone call have largely been unsuccessful. The caller simply becomes confused, then angry: "But you're a gliding club; you have to give me a flight". But then glider pilots too can find it hard to 'hear' that a club has needs as well.

So over time the patter has changed from "Our club is geared to serving its existing members" to "We rarely do flights for the public" to "Which part of the word 'no' don't you understand?"

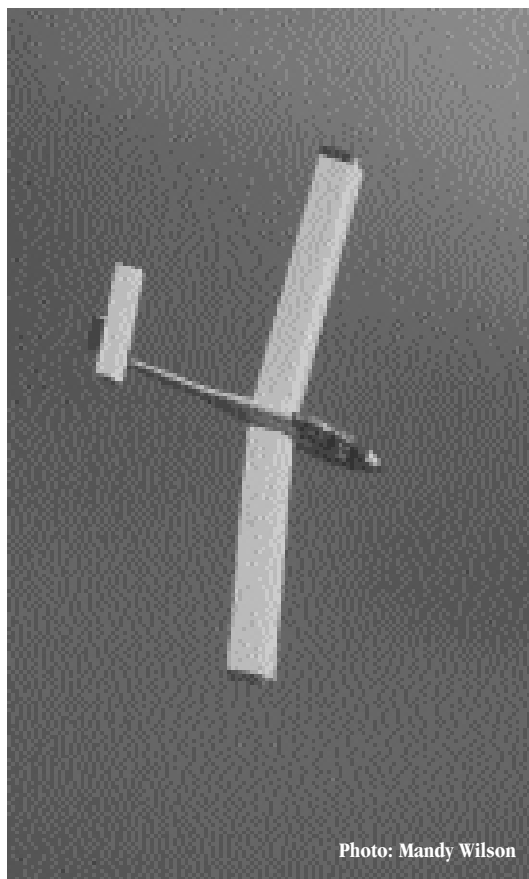


Photo: Mandy Wilson



J. R. ELCOCK

My mother recently said to me, “I don’t know where you came from.” I said, “What do you mean?” She promptly went on to explain that since I was a little boy of seven or eight I was always off on some wild adventurous escapade, canoeing down rivers and climbing mountains or anything that represented some challenge. I thought that was pretty normal for a boy. Having said that, she told me there was no one else in the family line with my adventurous spirit. Now, at the age of 45, the ‘boy’ is still there, thankfully. This is my story about being a powered hang glider pilot with serious intentions to fly the Tasman – 892 nautical miles from Hobart to Milford Sound in New Zealand, the country I grew up in and still love.

I always had the desire to fly, and loved watching any kind of bird with its mastery on the wing. Eight years ago I saw what amounts to a close human comparison: a trike, powered hang glider or microlight, whatever you want to call it. That played on my mind for a whole year, then I decided to do a trial instructional flight with Bob Silver at Noosa. From that time on it was firmly etched in my mind to become a trike pilot. Oh! the places I would go and see under my own wings.

Having recently remarried, I was pretty focused on making a new home run smoothly with two new step-sons to boot. First things first of course, however, after talking to my wife Kathleen, I decided, with her agreement, to borrow on the house and buy a brand new trike.

From that time on, flight and adventurous horizons could be seen as reality. I worked hard to get my licence, and after nine hours I was solo, gradually gaining confidence with passenger carrying, radio and cross-country endorsements. Originally trained by Bob Silver at Noosa, I have flown my Airborne trike for five years and, thankfully, had safe flying all that time. I have done many long flights in all types of weather, including a coastal sojourn from Avalon (western Melbourne) to Caloundra (QLD) in 1997. People who often fly these small aircraft do it because it works in with their budget, and I was no exception. Paying off a house and raising a family was no easy task.

After working in aged care for a few years, caring for the sick and dying, the impact it had on me was very strong and made me realise that waiting till you retire is too late. Many a resident encouraged me to do it while I could. So, a couple of years ago I decided to go for it, otherwise the type of flight I had in mind would be beyond my physical capabilities. This is the point where I lead into this, my story.

Wednesday, 13 January 1999 at 10:20 am: Finding it hard to hold back the tears and with quite a lump in my throat, I headed off down Sugarbag Road into unknown territory. Two years in the planning of a flight that took me away from the woman I love and many friends and well-wishers. Across Bass Strait to Hobart and onto New Zealand by trike, across a hostile Tasman Sea; and for what? (Just because it’s there to be done.)

I seriously considered this adventure after flying straight from Caloundra to Narromine in one day and 11 hours, proving to myself

that I had the machine and physical endurance to stay in the air for that length of time and more. By then I had done quite a few improvements to carry extra fuel, and with high altitude carburettors I was achieving 10-11 litres/hour at 8-10kt on a Rotax 582. I was excited.

I then approached two key members of the AUF about getting support (since, at one point, an article in a past magazine had encouraged pilots to be a lot more adventurous). However, my idea fell on deaf ears. So it was up to me to research the requirements, especially with regards to the bureaucratic side of getting approval to fly over water (particularly in this case!).

I will say right from the outset that, while being thorough in their assessment and requirements, CASA Safety were a pleasure to deal with, and my fears of 'Big Brother' were unfounded. It was a great experience doing all the research myself, and has allowed me to personally meet the people behind the decision making that we hear about from time to time.

Robert Haddock – an excellent engineer and good friend of mine – has had a big impact on the research and development of improvements made to my trike in order to complete this adventure. Dozens of hours were spent developing improvements such as a carb heat system, aerodynamic tanks for fuel, an electrical system to back up all my electronics and a vital in-flight centre of gravity adjuster that gave me lift and more speed when I needed it. Robert was tireless and has

broken all the route records for that type of aircraft) loaned me his vest, and all I had left to do was purchase a raft. This came via Roger Dundas, an ABC chopper pilot who works out of Moorabbin in Melbourne.

I made a special helmet which supplied my liquid food, oxygen (if need be) and communications. While I had very good gloves, it wasn't until late in the piece that I met another trike pilot, Diane Pierpoint of Coldstream, who introduced me to her 'Pumpkin Head' mitts that slide onto the control bar. These mitts allowed me the use of my fingers to adjust my radio and instruments if need be, and they were great and warm. Every trike pilot should have a pair.

After designing special tanks for the fuel – the capacity now being 200 litres all up – I set to and made a fairing to make the whole trike more aerodynamic. It turned out great. The wing, while not the fastest around, would do the job OK. Airborne was very supportive with advice and helped me with a new sail from Wingtec (Ten out of ten Allan!). It was a superb job, and colour effective too. My power pack, a 582 Rotax, had 250 hours up on it, and after much consultation with Bert Flood it was decided that we put a new short motor on with new ignition systems. I could see that Bert had a sense of adventure and found him very supportive of what I was doing.

Other important equipment included a desalinator – for survival at sea in case of ditching and the provision of freshwater in a sea of salty water. I also carried two GPSs and a VHF marine radio, which

gave me the ability to talk to ships on my route and relay positions or any other information that needed to be

of an adventurous Trike Pilot

been paramount in furthering our desired goal.

Many other people had a personal interest in this flight too, including Norm and Barbara Keech – always encouraging me not to give up and chipping in with a great little ELB (Emergency Location Beacon). Also, there's Coral, my typist. Many an hour has been spent at the keyboard after work. Thanks Coral.

The New Zealand side of things has been well looked after by Michael Keenan (an old friend) in Hokitika, my home town and intended arrival point once I had hit the New Zealand coastline further south. Michael is the events coordinator for the Westland District Council and supported the arrangements to arrive there by doing all the ground and media work for me. Thanks Michael! It will be great to finally get there and reward your efforts. Approval from the New Zealand and Australian air safety authorities finally came after much correspondence, and I realised the venture was 'on'.

Although I had planned for departure from Hobart between 15 January and 15 February, approval from CASA came a couple of weeks late. At that point I had other hurdles to cross, so it didn't affect the overall plans apart from giving me less time to depart when it came to considering an appropriate route forecast, daylight for a VFR (Visual Flight Rules) flight and set up time. I guess they don't get requests like mine every day.

For such a long flight – which could take up to 14 hours – I would need the right gear, right advice and right attitude and, believe me, I spent many, many hours researching and looking for the appropriate information, not to mention the hours writing letters, telephoning and looking for some sponsorship. I set to work getting the appropriate gear together. A Hot & Dry Suit gave me the ability to wear all my thermal wear underneath, and in the event of a forced ditching I would be dry and warm. Thermal wear was kindly provided by Earth Sea and Sky – a 'special needs' company dealing in cold climate wear in New Zealand – and boy, it lived up to its name. I needed cool weather just to put the clothing on, otherwise I overheated and dehydrated very quickly. It was great for the cold attitude I was flying at. Then there was my life vest and life raft 'all-in-one', worn as a jacket. Qantas captain Gary Burns (who has just flown around the world in his Lancair and

passed on. Prior to my departure from Hobart, Federal Sea Safety were to fax me static and projected shipping positions on my route.

Help also came from the builder of my house, Aldo Bavacva. Aldo was one of my last options when trying to get financial support, as I had tried all manner of businesses to no avail. My own work had, for the last financial year, been lucky to bring in much more than a married man's dole payment, so it was imperative to get some backing to make the attempt possible.

The other hurdle was getting my trike and gear down to Victoria, as my car wasn't really up to it. I had a good trailer, but not the best vehicle to tow it. I was then surprised when Brian McGuinness, who owns and runs a Queensland bus sales business here in Caloundra, made available a great Toyota Hiace van, no strings attached, for as long as I needed it. Well, that was fantastic. I had previously taken Brian for a flight and told him about my planned adventure, and he offered to help in any way he could. This exercise taught me not to give up, as there were times when it seemed just too big a job to get the project together. Thanks, Brian.

The one person I needed support from the most was Kathleen, my wife. Even just to feel good about doing what I wanted to do, since it really is a single man's quest.

On Wednesday the 13th I packed up drove to Macksville (NSW), sleeping in the back of the van at a roadhouse that night. Then it was on to Sydney the next day, calling into McIntyre Marine to pick up my desalinator, and on to Canberra where once again I slept in the van, in a lovely park there.

I spent the following morning being briefed at the Sea and Aviation Rescue Centre. These guys were a real team, and I was amazed at just how efficient and professional they are in carrying out their search and rescue procedures. They were a great help and made me feel very confident in the event of an emergency ditching. The afternoon was spent on the road to Melbourne, heading for Kathleen's mum and dad's place, called 'Griffin's Grotto'. Paula, Kathleen's mum, is quite eccentric and has an amazing and interesting personality. Her entire backyard is devoted to caring for dozens of little animals and birds. It was good to

sleep in a bed again; home comforts can be taken for granted until you have to go without them for a while.

The next morning I started to sort out my gear and check my trike, after trailering it all the way from Queensland. I proceeded to drive all over Melbourne, organising survival gear etc, and finally meeting with Kevin Smith, the CASA Safety Officer responsible for looking after my file, covering all aspects of preparation, communications, safety and navigation. Kevin wanted to be sure I could work out my critical point and equal time point; issues relating to flying time, fuel used, and head and tailwinds, and that would give me a safety margin when working out my time in the air and whether I would need to turn back home. After talking to Kevin I was able to prove my ability to carry out this task to his satisfaction. This was a little nerve racking, since I needed to perform this task effectively to get my clearance. Kevin made me feel very comfortable when discussing navigational issues, and while I could see he was a very exacting and professional person in his job, I couldn't have hoped to deal with a nicer guy. This whole experience was introducing me to new and interesting people, and it inspired me to keep on going.

I then had a meeting with Guan Oon, Operations Manager at Satellite Information Technology. Guan had set me up with an Argos GPS transmitter that tracked my aircraft en-route, and relayed my position at 20 minute intervals. This device was an amazing piece of technology, and would keep a watchful eye on my progress once I was out of radio control. The test flight across Bass Strait proved very reliable and effective. These guys have been more than generous in their advice and I would recommend this device for anyone flying over isolated areas who is concerned about their own navigational back-up systems.

Once all these formalities had been covered I spent two days at Bert Flood Imports fitting a new Rotax 582, and then finally I got to take my flying machine out to the local Coldstream airport. This place is a story in itself. Jimmy Doakes, the owner, is a real Aussie icon and both funny and 'down to earth' (if you can call a pilot that). Jimmy welcomed me along with all the other personalities that make this great little airstrip a place worth visiting. Eddy Lachwicz provided hangar space since I couldn't collapse the wing down with all the tanks, etc, built on to it. Another pilot, Mark McDonald, gave me a place to stay prior to my departure for Georgetown in Tasmania. Mark is a Fire Bomber pilot, on stand-by in case fires get out of control in the Dandenongs and surrounding areas.

At this point of my venture I had my van and all my clothing, tools, etc sent over on the Devil Cat to Georgetown, not knowing what was to follow, as I was ready to go across Bass Strait the next day. I had already spent time on the motor to run it in and also did an interview for the ABC with in-flight vision. I was getting copious amounts of calls from the media, which at that stage proved to be quite distracting, since I was gearing up for the first Bass Strait crossing in a trike.

That night I slept at the club house and got up early to get an early forecast. Bingo! It was good.

I suited up and pre-flighted all systems before taxiing to runway 1.7. Then it was lift off – Coldstream tracking for Georgetown via the Prom and Flinders Island. All was going well till Leongatha; after climbing steadily to 7,000ft I found in front of me thick blanket cloud. A break at Shoal Bay revealed the wind on the ground was 30kt from the east. I was hoping that my departure from the prom would give me clearer ground vision and after giving my SAR time to Melbourne centre I realised it wasn't safe to continue, as the cloud mass was even greater out at sea. While equipped with GPS, and confident up to this point, I decided to return to Coldstream and not jeopardise the first leg of this flight after only two hours. I cancelled my SAR time

and flew back. The trike went well, apart from using more fuel than I had planned.

All my gear was in Tasmania by now, and this is when I realised that I needed ground crew or someone to help when needed. While many a forecast had predicted favourable conditions, it wasn't to be. The next week was spent waiting; no van, no tools, not a thing I could do except hang around. I found it quite demoralising. Mark invited me to stay the night in the bed and breakfast cottage he had rented while on stand-by, 1km from the airstrip.

Finally the day arrived, and after an early rise, I phoned for the Bass Strait forecast. It was good (or that was the prediction). Geared up and ready to go again I took off. Once over Leongatha I again saw cloud, but it disappeared off the Prom. My ground speed was 50kt, which meant I had a headwind of 10kt. The forecast had been for 20kt of tailwind. The week of hanging around had made me aware of how difficult it must be to get weather and wind forecasts correct with all the instability we experience in global weather these days. I don't envy the forecaster's job. However, having left the land and on track for Flinders, I felt quite comfortable over the water. The route from Coldstream to Georgetown amounted to 325 nautical miles, or 5.5 hours of flying – 1.5 hours longer than I had planned.

I arrived at Georgetown to a strong crosswind on a hot, blustery day. It made hard work of landing. Media contingents were there, as well as Eugene Reid (the AUF Tasmanian Area Officer), who made me feel welcome. Because of the strong wind I was concerned about my wing being buffeted around, and had to seek shelter. However, the hangar was too low, and my trike wouldn't fit. I taxied around on the rough ground behind the hangar, but even then it was touch and go.

Finally the wind dropped and I had a decision to make: Was it prudent to continue from here? I had no ground crew and the trike had consumed 90 litres for the flight, though it wasn't the fuel flow I was concerned about, considering 10-11 litres per hour was the normal burn rate at trim. Two weeks prior to departure from Caloundra, my trike had fallen off the back of the trailer. While there was no structural damage, my prop took the brunt of the fall, chipping the blades quite badly. I had them repaired, but they were never the same. Hence, I bought some new blades, with a different brand obviously resulting in a loss of economy. Pitching the blades needed time, and by this stage of my trip I was committed to leave the following week. Having only 10 days to depart Hobart, I felt I was pushing it, and didn't feel right. The fuel flow problem left me with no margin on time and a couple of other minor problems at the time told me 'stop here and be content with the Bass Strait crossing'. So I did.

Disappointed a little, but sure it was the right move, I packed up the trike and stayed with Eugene that night. The crew at Georgetown Airstrip were great and gave me good moral support. The following morning I headed back to Melbourne, looked up a few friends and supporters, thanked them for their support so far, and headed on home, that long 2,000km drive home.

My next move? Well, all going well after a pre-flight run across the Nullarbor next September/October (to make sure all is well with the trike regarding distance and fuel) I intend departing Hobart early December/January – again, with CASA's approval and weather permitting. My present moves are to get the trike up and running to peak performance again, and look for a bit more financial support to do it all again.

My hearty thanks to all those who made the first leg successful, and I look forward to completing the task ahead.



Coldstream hangar on departure day for Coldstream.



Cross Dressing

ANDREW POLIDANO

Please do not read this if:

- A. You are ignorant
- B. You don't want to optimise your flying time
- C. You feel complete in your flying career
- D. You're getting enough

Wanting to get the most out of flying this coming season, I decided to broaden my horizons. Having moved to an ideal location 18 months ago, I wanted to squeeze in as much air time as possible. Having seen only two paragunters flying up close (Stephen Boxy and Godfrey Wenness), I based my judgement on limited sources.

I have, in the past, been aligned to the fear campaign that most hangies are aligned to regarding the safety and airworthiness of para-panties. I decided to face my worse fears and book in to a conversion course. I convinced two mates (Bill, a HG and GA pilot, and Jack, a lapsed GA pilot) to come along. Having been out thermalled and out flown by a punter pilot while competing in the State Titles at Manilla, I was keen to rejuvenate my sense of self worth as a pilot (OK, the guy was an above average pilot, but he was flying a tea bag and I was in my Xtralite! I cringe as I write this on paper). I landed after 55km; he made it to goal (twice the distance). What gives?

This was how I faced my fears of punting. First fear: ground handling. This can be practiced as an art form nearly anywhere. There are simple and effective techniques to reduce the risk of making a fool of yourself. (I had broken a keel on my Mission 170 at Lennox after a great flight and so I wanted to leave this hang up behind.) Second fear: getting comfortable in the harness. It was so comfortable I was impressed. Third fear: trust. OK, during the first 'sleddy' I was scared – end of 'trust' dilemma! Fourth: confusing the controls with rigid wing flight. After visualising the controls for a few sessions on my lounge chair I was over that one too. Fifth: top landing. After fearing this for all of 30 seconds, I had landed, walked up, and launched again without the para touching the ground. It was easier than in my Xtralite... just a bit. Sixth: landing. Easy enough to make you cry. Seventh: thermalling. Paragliders can slow up so you never have to leave the core. Think about that one. Below the ridge, no need to 360.

OK, I think you get my drift, but my worse fear is: how are my hangie mates going to handle my defection to the other side? How will they react when I out fly them? Out climb them? Out run them? How will they handle watching me fly on those 'so so' days? I'm already over that one.

Going to best place in the world to learn, with the best team, impeccable local knowledge, and hospitality to make your eyes water was a snack. Thanks to Godfrey, Rhett, Elizabeth and my mates, who all shared in one of the greatest weeks of my flying career.



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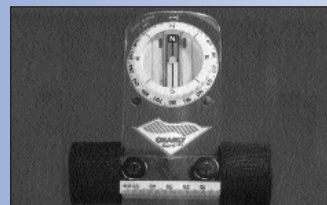
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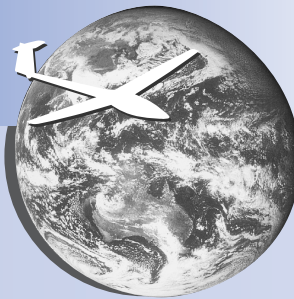
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Local News

The Solar Challenge

Darwin to Adelaide – October 1999

The Solar Challenge leaves Darwin on 16 October 1999 and ends in Adelaide a week later.

This event is an International event with some entries already received and the organisers wish to encourage Australian pilots to enter to ensure a good cross section of pilots (Local pilots already entering include Jansen and Matthews).

The weeks trip has an entry fee of \$1,800 which cover the organisers costs and the tow planes. Three tugs will provide launching for up to twenty gliders all of which will be of 15 meter span and in a performance range similar to an ASW20B.

The Challenge consists of seven legs and 'race horse starts', i.e. first across the line wins the day.

Entries close 31 May 99. (The organisers can put you in touch with a camper van hire firm and the vans are fitted with tow bars and aircon.) For more information contact Darcy Hogan on email: darcy@hotkey.net.au or phone: 03 9415 6808.

Will it work?

At a recent meeting of the NSW Gliding Association the proposed merger became a hot topic. About an hour was spent discussing the administrative structure of a combined body before a consideration of the merger itself was talked about. This article, written by a member of the Gliding Federation, is an attempt to analyse its problems but much of what it has to say will find an echo in the HGFA body as well.

We have two bodies with about 2,500-3,000 members each, both suffering a decline over the last dozen years or so, but with the rate of membership loss slowing somewhat. In the Gliding Federation, this has resulted in a shortage of people available to fill the various functions and positions required to carry out the widespread activities delegated to it. There is also an ageing membership.

Many reasons have been advanced for this decline, which is not confined to Australia. To name the most important, we have the instant gratification syndrome, more avenues of sport flying available than previously, undue stress on the competition activities, cost, clubs not catering for new members, time spent in travelling to and from sites and a host of others. The order in which these factors are listed reflects my opinion of their importance, but there may of course be other views.

Speaking for the Gliding Federation, we need to evaluate whether amalgamation will have any effect on the decline, and the same will apply to the HGFA.

Let us look at various outcomes:

We do nothing.

The possible results are:

- A miracle happens and membership will go up again.
- The decline stops at the present level. This would, in time, change the nature of gliding radically, as the numbers will make it impossible to carry out the full range of present functions. Training and maintenance would be carried out commercially. In the USA, such a state of things is the rule. There is little in the way of clubs – commercial firms train and hire out aircraft. Private owners often travel from gliderport to gliderport.
- The decline continues unabated. We would face extinction in our present set up.

We merge.

Likely scenarios are:

- The miracle happens. We have a body bigger than the two we had before we combined.
- The decline stops. We now have some advantages. There will be sufficient people to fill posts and some economies of scale might result. There will also be some problems of organising the new body.
- Decline continues, and some members in each body who do not like the merger leave for other forms of aviation. Both bodies go down together.

You will notice that none of these outcomes addresses the basic problem of declining membership. For the same reason, I have not mentioned the somewhat problematical effects of a united voice, cross-fertilisation between the two bodies and similar matters. Again, I speak here in relation to the GFA, but I suspect that things in the HGFA are not very different.

The worst hurdles we have to clear, whether combined or apart, concern the competition offered by other forms of aviation. But here we are dealing with a fact of modern life. Whether you want to sell petrol, toothpaste or television time, you have to compete, and do it effectively. That is precisely what we do not do. No modern firm would waste its money on hit or miss methods of 50 years ago. Marketing is now a task for experts, not for amateurs.

If you engage such experts, they will begin by establishing your market segment, and they have very effective techniques. It is useless to attempt selling skateboards to pensioners, or refrigerators to teenagers. I suspect that our customers will be male, over 35 years old and reasonably well off, but I stress again, that has to be researched.

Next, markets will establish how to reach your market segment. Do they watch TV, listen to radio, read which newspaper or magazine, go to the cinema and so on? This will minimise waste of resources in carrying out campaigns.

Next, they will research your product. Does it fill the needs of your market effectively? (Remember the complaints of new members, who are left standing around all day, etc?) It may well be that some clubs should not be involved with prospects.

Lastly, they will conduct follow ups, to find out if changes in approach are required.

Such services do not come cheap, just as you have to pay a doctor to cure your maladies. It would be advisable to obtain an opinion as to prospects of successful campaigns and likely costs from experts, rather than stumble around blindly, even if we had to forget about some of our usual activities for a year or two. The mission statement published by the joint meeting of the two bodies mentions 'promotion of all forms of soaring', a laudable aim. But let us get help from people who know how to do it properly.

Finally, some words about management of GFA. I have nothing but respect for the unceasing work and effort we get from our executive, and know only too well from personal experience the cost to their private lives. Whether one agrees or disagrees with any of their decisions, that fact should never be forgotten. Without their devotion to our interests you would have been administered departmentally long ago.

The points I want to make here are offered in this, I hope constructive, spirit.

GFA has had more than five years of almost constant change, producing an overload on members. A leading body, in immediate touch with issues, sees change differently from those on whom it is imposed. Unless it is very carefully prepared, and people are involved in decision making, they will invariably be antagonistic. You know about the horse which can be led to water, but not made to drink. It might even kick. It is very easy for a leading group to get too far ahead of those they lead. The resulting bewilderment turns into resentment, which in turn is seen as apathy.



We had a clear demonstration of it with this magazine. When it came out under a new title and described as official magazine of the GFA and HGFA, the reaction amongst GFA members was hostile. The move was seen as pre-empting the issue of amalgamation. One has to be careful with such innovations. It does no good to protest that this was not the intention if you produce the opposite impression.

Whatever the outcome of the merger proposal, some of the problems facing us will remain, and will demand measures and solutions unrelated to amalgamation.

K. Solter

Some of our aircraft are missing Number Two

No-one came forward to collect the prize offered by John Ashford for the first person to demonstrate a working model of a mental telegraphy system so we have to resort to this journal to try and find out where missing aircraft and members go to.

Does anyone out there know anything about the following glider or its Certificate Holder who has on the face of it disappeared. Who has it now? Is it crashed or what? Any rumour or innuendo will be listened to: VH-GGX Standard Libelle – Mr R. Tolhurst, Lot 1, Krista Place Tahmoor NSW 2573 (1989)

Please, please, please, if you sell your glider (or otherwise dispose of it!) write and tell us. This is quite a serious matter. Without an address which gets through, important life saving Airworthiness Directives will not get acted upon and if you happen to be the owner or part of a syndicate, you could be flying around in something potentially dangerous.



Overseas News

From Alvaro de Bourbon

Reprinted from Free Flight

We all hear unusual gliding stories, but I guess you've never heard the following one.

A bit of background: Last year at the World Championships in St Auban, I became friendly with Gonzalo Echeverry, a Columbian crewing for Ron Tabbery of the US team. Gonzalo is a software engineer and glider pilot in Austin, Texas. He sent me an email to arrange a meeting; we finally couldn't meet, but today we spoke on the phone and, among other things, he told me that he took part in the first Columbian National Gliding Championships.

The championships were held at a military airbase in Cali, with a fleet of four IS28 Larks (two military ones), a Janus CM and other gliders. What was unusual were the outlandings

– Gonzalo matter of factly told me how, due to the 'unstable local situation', whenever a pilot landed out (apparently quite often) a Blackhawk attack helicopter with 10-12 fully armed troops would reach him within minutes to ensure a peaceful retrieval.

Now, I can think of at least one instance in my outlandings where such a help might have been handy – that time when an irate farmer wanted to impound my glider for the three or four 'Kartoffeln' (potatoes) that were prematurely harvested by my glider.

I must go outlanding in Columbia and see it with my own eyes.



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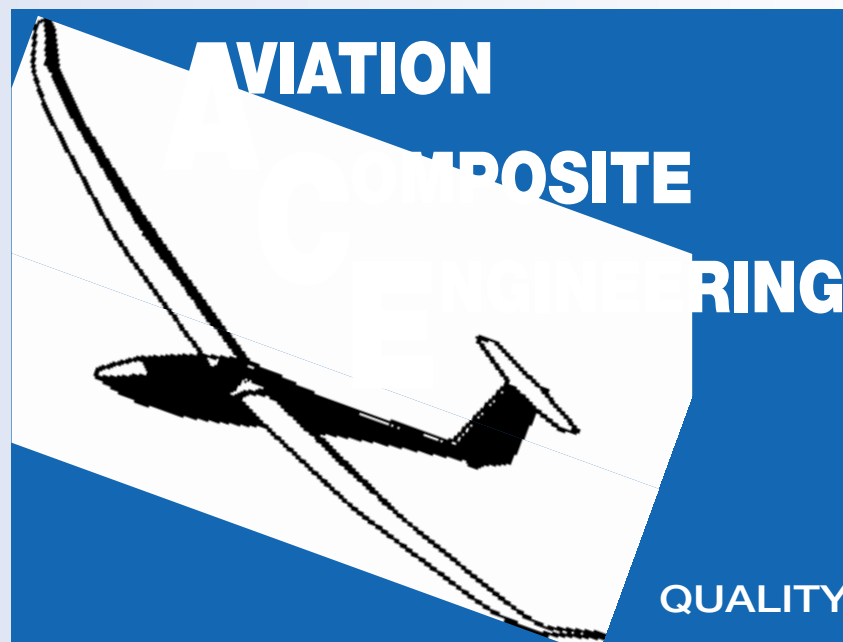
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Letters to the Editor

► Dear Sir,

What a pity people are not prepared to take a breath and get rid of any anger and then put pen to paper. Ron Baker, I think the new mag is great, I am sure we can gain knowledge from each other's sport. I can say that I have picked up some useful information from hang gliding articles in the new format and from fellow hang gliding pilots already.

Having given lectures to one of the WA hang gliding clubs, I hope that they have learnt from us as well, we can all gain knowledge, with joint cooperation. For those who wish to remain insular, then please do so, but insulting other aviators does nobody any good at all. I would like to suggest that AG and HGFA return stropic letters for re-wording.

James Cooper

► Fellow Aviators

I read with regret the amount of ill informed and angry discussion which seems fashionable at present, and which permeates through what is by all accounts, a bold experiment – That of potentially harmonising two important leisure time aviation sports. I wonder what motivates people to become innately suspicious and counterproductively negative about trying anything new.

Many participants seem to have lost the plot on what it's all about and worse still, readily go to print with little more than a personal opinion or minimal research on which to substantiate their claims. The facts are, both gliding and hang gliding are in decline as aviation sports. Other disciplines are in the same trend. The plan to merge two of these sports in an effort to arrest the speed of decline and hopefully find new ways to reverse it, was a concept borne from inevitable need. If the protagonists out there have an alternate plan which can achieve the requirement either separately or jointly, please put it forward. If not, don't be so keen to shoot down the only plan on the table at present. Put some of your energy into developing the solution, instead of contributing to the cause.

The plan has warts, we all know that. What it needs is a unified desire to make it work by getting the warts out and getting on with the job of ensuring our respective sports survive in a form that is safe, obtainable and free from political manipulation.

If you want to pick on the efforts of a new publication to start the merger process because you feel it fails to adequately represent the views or needs of your facet of the sport of flying, do it with the knowledge that this undoubtedly occurs because critics do not provide material to share with fellow pilots. Instead they choose to whinge that there isn't sufficient representation. The solution is in your court.

Another example was the complaint from Jeremy in the April edition about his disappointment at the level of representation or quality of display at Avalon. Jeremy might do well to investigate how such displays come about at all. For the record, participation in such displays is not a national one at all. It is done by the Victorian Soaring Association at largely their cost and with their volunteers. (The GFA contributes modestly to some of the financial cost). The material effort and planning is all theirs. There are many sound reasons why it has come about this way over the many years the VSA has displayed there. If you care to do a little research you will get a better understanding of the background. Yes it could be better. It could have a cohesive working/planning committee comprised of all sport aviation disciplines to make the overall display far more representative and effective, but it takes organisation, volunteers' effort, and a lot of time. I hope Jeremy's enthusiasm will be a part of that process in 18 months when again the event must be planned.

Anyone who cares about the future survival of their beloved sport would do well to look at the bigger picture and see what they can do to facilitate its availability in what is increasingly an uncertain era for minor sports. From a political perspective, my direct involvement with the VSA, GFA, Sport & Rec Victoria and the State Gliding centre, has given me ample knowledge of the probable further restrictions, lack of monetary funding and increasing pressure from Government (State and Federal) and Aviation Authorities. If we do not find ways to reverse the current trends and gear ourselves to become more cohesive and more relevant in the total scheme as a political voice which influences the relevant powers then we have a gloomy future ahead.

I encourage all pilots to put your thoughts and efforts into a positive and constructive mode to meet the challenges which face us.

Maurice Little
Chairman, State Gliding Centre

► Dear Mr Baker,

As an Australian hang glider pilot now living in Europe, I felt compelled to reply to your entertaining letter regarding amalgamation (AG/Skysailor April 1999).

Your letter gives the impression of one who is content to put their hand up only at voting time. When the board members put effort into a project that they hope will be of benefit to their members (in this case the combined magazine), you then resurface to whinge when the outcome is not to your liking. You are certainly no ambassador for sailplaning, but don't worry, it seems there are also some equally narrow-minded hang glider pilots who share your views about keeping the magazines separate.

Of course everyone is entitled to their own opinion, but surely having a wider cross-section of articles based around the same aerodynamic principles and flying environments can only help to increase pilot knowledge of aviation – or do you know it all? Some articles have given me already valuable knowledge, e.g. such as how a sailplane pilot keeps an eye out for other air traffic ("Lookout" by John Buchanan). At times I have been in thermals with three or more sailplanes in the region of France described in Frank Pennauer's "Flying the Gap". The more I can learn about sailplane pilot habits, the safer we will be flying together – I would have thought the reverse would also be true. Informative as well as enjoyable reading, the "Gap" article even gave me a starting place should I want to begin sailplane lessons in the future (Serres airfield, where I have landed my hang glider on several occasions).

If you don't wish to read a particular article, just skip over it, but don't limit the ability of other pilots to learn by narrowing the range of articles back to those found in one magazine. Better yet, try reading some of the hang gliding/paragliding/triking articles to see what you can learn from us. As for your throwaway line about "real glider pilots who prefer to fly real gliders" – the real definition of a glider is an "aeroplane with no engine" (Oxford Dictionary), which a hang glider certainly is. One could argue that flying a hang glider is even more "real" than flying a sailplane.

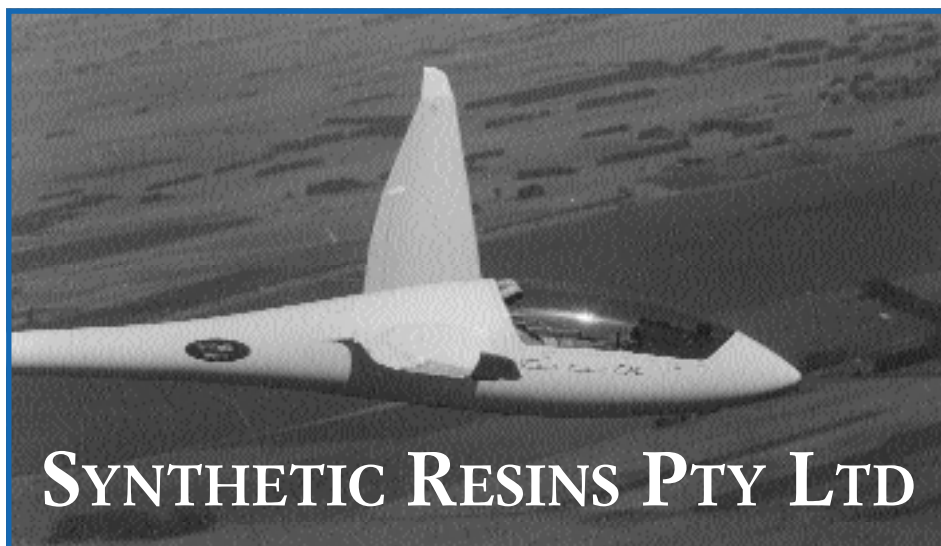
Surely the emphasis should be on the pilot's skills as opposed to the vehicle they fly. Obtaining great distances may have more to do with the particular aircraft a pilot can afford than how skilled they are. A real pilot can apply aviation skills and knowledge to a variety of disciplines. As an example, if you're a competitor, then you may have already been beaten by the talented hang glider/microlight turned sailplane pilot Tomas Suchanek.

As to your comment about HGFA members "flying naked" – if this was meant literally, then perhaps you should give it a go sometime. It might loosen you up a bit! For now I'll keep flying with European sailplane pilots to get a more favourable impression of your sport and to broaden my horizons.

Happy Flying,

Heather Mull-Sticek

P.S: Do you also have an opinion on women being pilots?



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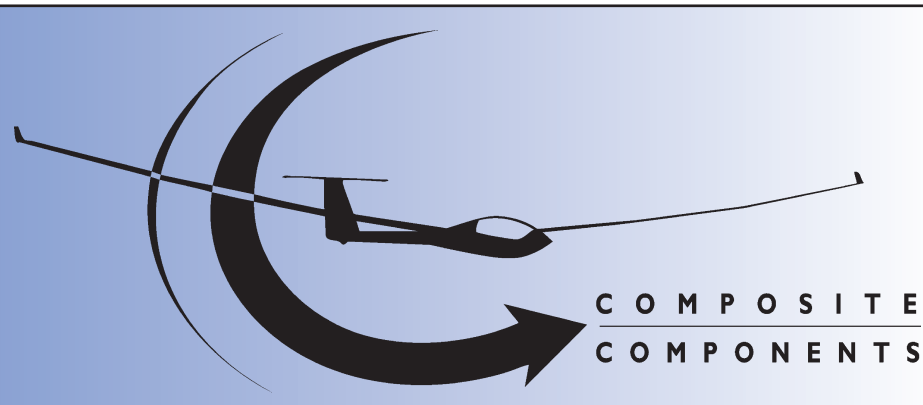
Soaring Calendar

1999 Queensland State Gliding Championships

2-9 October 1999

The Queensland Soaring Association advise that the 1999 State Gliding Championships will be held between Saturday 2 to Saturday 9 October 1999 inclusive, at the 'world class' Darling Downs Soaring Club, Jondaryan, Queensland. Practice and registration day is Saturday 2 October, followed by seven competition days that will be contested in Open, 15M and Standard Class.

The competition organisers are keen receive applications as early as possible to facilitate the provision of adequate tugs and appropriate catering. Please contact the Secretary of the organising committee, Mr Trevor Hamley, on phone: 07 3899 1834 (h) or email: hamleyt@transfield.com.au for entry forms and all necessary information.

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Letters to the Editor

Amalgamation Views

► A new soaring organisation? Yes! As one of the initiators of the proposal to create a single organisation serving the needs of all Australian soaring pilots, it is appropriate that I have a final word to you just before the vote is put. And while I've been very busy behind the scenes, it has meant I've also been very quiet publicly, particularly on this issue. This shouldn't be interpreted as a lack of enthusiasm on my part; quite the opposite. But first, some background on how this came about will help you understand why I'm so certain that we should proceed down this path.

I was elected to the position of President of the HGFA because of my commitment to look after the needs of pilots flying microlights, paragliders and, of course, hang gliders. One of my duties is to represent those interests at meetings of ASAC, the peak body for Australian sports aviation, and in other forums such as CASA's misnamed 'consultative' meetings.

One of my objectives was to understand the needs of other sporting pilots with the view to forming alliances that could further our mutual interests. Another of my objectives at the time was to lift the 5,000ft ceiling barrier. I couldn't understand the inequity of our conditions when clearly sailplanes weren't saddled with the same restriction. The more I talked to representatives of the Australian Gliding Federation, the more unjust and arbitrary this limit became. But

I also learnt that glider pilots were equally baffled by some of the senseless and unjustified restrictions placed on them that we somehow weren't held to.

It was inevitable that a close working relationship would develop. And the more we learnt the more apparent it became that the only differences between us were personal decisions about which type of wing we chose to fly (at various times in our lives). Functionally, structurally, financially and strategically there were no significant differences between our service organisations. I am also convinced that the \$1.50 difference in annual membership fees is testament to the same good management of each organisation, operating in the same environment, working to achieve similar ends.

Clearly there are services being duplicated. There are also economies of scale denied to two smaller organisations acting alone. But there are other reasons why we should join together, as the project group discovered in their working meetings.

The most important of these, and this is my personal conclusion formed admittedly from the unique perspective I've had, is because of differences between us.

This may seem a bit perverse at first, but I hope I can explain. There are some differences between us: differences in history, in experience, in some of our flying activities (launching and landing techniques most obviously) and sometimes in the ways we approach challenges. But I see these differences as complementary and very valuable if they can be shared. It is more than just strength in numbers. I view this diversity in our common wealth of experience as a very rich resource that can enhance the quality of our flying and the opportunities to go flying, if we openly embrace the concept of soaring in all its many forms.

I'm told often enough that most pilots just want to go flying and don't want to get caught up in what's required to ensure that continues to happen. That being the case I hope you'll vote for a new organisation, because I don't expect much will change for the majority of pilots, in the air or on the ground. No need to change what you do, what you fly or your club membership. Unless of course you want to.

Behind the scenes things will change as present business practices are rapidly consolidated and refined to deliver even better service. And in the longer term it is easy to predict that with combined resources many of our objectives should be achieved much faster and at less cost. It is a very low risk decision and we will all benefit. But what the aviation environment will be like and what those objectives will be are impossible to predict here and now.

However, it is possible to make some predictions about what a decision to remain as we are will mean to most of us. Again, with the privilege of my experience as an HGFA President I see daily that things are getting tougher and more competitive. Competition for airspace, competition for new members, diminished finances and sources of revenue, raised expectations about customer service; it is getting tougher all the time. And the only way to ensure we can continue to fly as we want is to be better organised.

Whatever the decision, I'm not going to be President of the HGFA for too much longer, and frankly I don't envy the person who has to follow me. I trust that they'll discharge their duty of care as well or better than I have, knowing that I've left the organisation and its resources in the best possible state for that to happen.

And that's why I'm encouraging you to vote for a new organisation dedicated to serving the needs of all soaring pilots. Because, ultimately, I love to go flying and I want to ensure that continues no matter what wing I might want to fly.

Rohan Grant

► Dear fellow soarers, I felt inclined to offer my thoughts on future amalgamation in our sport, having read over recent months other opinions both for and against, published in this column. A little personal history to allay any bias. I started gliding as a first year uni student back in 1972 at Benalla with a week's intro, and later that year a week with Ingo at Tocumwal (fantastic of course!). Unfortunately, study and finances precluded further endeavours over the next eight years, but then a few 'crash' intros to hang gliding on the old Rogallo wings preceded a later and more controlled delightful learning curve through 15 years of hang gliding. This included triking, aerotowing, and a few comps – never a 'gun', but many years of great camaraderie, fun and adventure.

Now, looking back as a middle aged (mid-40s) more pecunious flier, I have been able to extend my flying fun, albeit with far too much work time and still too little flying time. I am currently still a member of both the GFA and HGFA, as well as a gliding club, a hang gliding club and AOPA. I am fortunate to own or have shares in a hang glider, a trike, a Grob 109 motor glider and a Piper Lance (The chopper is yet to come!). I have reluctantly eased out of the hang gliding, but still fly trikes. I have enjoyed re-entering the gliding community over the past few years.

Reading the new combined issues of the magazine gives me enormous pleasure and I hold great hope for the new forum, if only personal fears and bigotry can be overcome. I am aware of the different cultural backgrounds of glider versus hang glider pilots. Sure there are valid differences in attitudes to recreational and sports soaring in these two sports, such as the 'gung ho' way of 'hangies' and the more conservative, and generally older, glider pilots. But having flown with both camps it is patently obvious that we are all out there with a common purpose and with common enemies (bureaucracy and business) competing for

airspace and some meagre government funding.

With both sports I have met very professional, experienced pilots (world champions in each) and administrators who deserve respect from both camps. I have watched the extremely professional development of hang gliding along with responsible peer review and international competition organisation within the HGFA over nearly 20 years. This has at times been resisted by those who preferred the good old days of free flying with few rules. Similarly, I have felt the sense of conservative management and some cronyism within gliding, but interwoven in both are many great people who give their time to maintain and fight for our freedom to fly. Let's face it: We are not a big pressure group with any political clout, and the more we can stick together the more hope we have to expand our sport and our freedom to fly. Lastly, I would exhort all 'soarers' to join AOPA.

I love flying, I love all types of flying, and I have enjoyed great camaraderie from all types of pilots. Get out there and try 'em all.

Justin Smith

► I would like to bring up something on the amalgamation issue that I haven't yet seen discussed. If CASA (i.e. the government) sees gliding, hang gliding and paragliding, etc, as a single organisation, isn't it likely that they may want to treat us as a single entity? Considering that gliding is more heavily regulated than hang/paragliding, being lumped in with gliding cannot do us any good from a regulation point of view.

Politicians and modern management executives seem to think that it is in their job description to change things, including fixing things that aren't broken. They are perfectionists in a world where it is not possible to achieve perfection. It would be very easy for them to think that simplifying the regulations is a good idea. Combining CASA regulations, etc, would have to make hang/paragliding more regulated and less specific to our particular operations.

On a different subject, I have noted that the GFA don't seem to have executive officers that feel that they have to reply to letters to the editor. Does this mean that they are happy to let their members have the last say? Without having always to put the executive's final spin on it? Certainly some letters may contain questions or require clarification. However, if you know that someone else will always get to put their final spin on your opinion it is a disincentive to put forward an opinion at all.



I hope that I don't feel motivated to write any more letters to the editor trying to stir up some debate on amalgamation, etc, as I am getting sick of reading my letters in the letters column. I would much rather read other people's letters.

Graham Sutherland

► I am a glider pilot, and have been watching pretty much from the sideline the issue of amalgamation, as I suppose many others have. So far it has become a matter of concern to see some letters to the editor on the issue with complaints about things as superficial as having to skip each other's articles in the combined AG/Skysailor (one each from a hang glider and glider pilot in the April edition), or references to hang glider pilots flying naked (I hope the boys do not do it in eagle territory!), or us flying real gliders (what is the definition of a 'real' glider?), or whether they fly from fixed sites or not (what about motor gliders then?), or extended arguments that suggest to me rationalisations of resistance to change.

My approach is going to basics: we share the same airspace, with similar interests. What separates us is a matter of degree in a continuum of largely powerless flying devices with some powered varieties. Our performance measures are similar (records/ competitions/ badges), we utilise the same forces of nature to achieve essentially similar outcomes, and so on. So it makes real sense to join efforts in organising our sport, particularly if that will give us some more clout either in marketing it or defending it against the bureaucracy. Of course, we will then have to achieve this, and our focus should be in asking our leaders how that will be ensured to form a final opinion.

Thus, in my mind the move is essentially correct; it is only us who can make it fail. If it is wrong to join paragliding, hang gliding and gliding, doesn't it then make sense to separate gliding into recreational/cross-country/competition sub-sets to keep each one 'focused'?

Finally, with respect to the combined magazine, I welcome the opportunity of having access to material I am interested in every month instead of every second month, and so far the curiosity factor is such that

Insert 1/3 page ad from files provided

Letters to the Editor continued

I am jumping to the other guys' articles (or even ads) first to see what they are up to! If I ever lose interest in part of it I will simply skip it, but I don't see that happening for a while. I thought I could contribute my 50 cents of common sense, or my own view of it anyway.

Carlos Varsavsky

► Congratulations on the merged mag. I think it's really interesting, and it's great to be able to read about all kinds of soaring in the one place!

I am writing to express my support, in the strongest possible terms, for the merger of the gliding fraternities. I've never been much of a one for 'politics', and I admit I can't really understand the rationales that the (apparently mainly sailplane) pilots have against the amalgamation. Aren't we all in it primarily for love of soaring? And doesn't the drawing together of the main streams of soaring flight only make the potential bond greater in a combined passion and interest? I always thought that you can't make a fire with one log – but put many together, and you have a bonfire! Maybe I should tell my own story, so you can understand where I'm coming from.

As a young child, I always dreamed of aviating, and begrudged birds their wings. As a teenager, my father, an ex-wartime RAF pilot, further stimulated my interest in aviation with two joy flights in a helicopter (from the Yarra River helipad that was Reg Ansett's commuter pad, I believe), following it up in the early '70s with an afternoon trip to the Portsea back beach for some 'dune surfing' in the Rogallo kite of a generous friend. I dreamed of a traineeship with Qantas, but never 'got there', and money was always too tight to go it alone.

I commenced sailplane gliding with GCV at Benalla in 1976 as a 21st birthday present to myself, not having the available cash or justifiable reason for powered aviation. I loved the challenge of making use of the available natural energy to achieve my

dream of soaring flight, and wound up fully 'qualified', taking friends and other passengers to share my joys (and frustrations!).

I also did a short stint in ultralights with Murray Buzza and Ken Stanley at Stanhope in the early '80s. I have fond memories of fence hopping around Murray's farm, and of freezing my butt off during training sessions on early frosty mornings, with a ground level air temperature of zero or minus one!

My aviating ceased in 1988 due to new family commitments at the time (an all-too-common scenario, so I find!). A career in Christian ministry and social work, combined with the parenting of young kids, left me perpetually poor and short of time, so flying was for years again beyond my reach. In the

memories of that one afternoon 'dune surfing', decided to go hang gliding. A week's stint with Steve Ruffels and Henry Hang glider at Eagle School in Bright in April '97 was pure joy (Despite the regular landings in the cow pats on the training and bomb-out paddocks!). The highlight of the week for me was a 1.5 hour flight off Mystic, where I gained significant height – 2-3,000ft I think; no instruments in the training gliders! – and found myself soaring with a pair of wedgies. I could really relate to the recent articles in the mag on the joys of sharing with eagles after that! I also resumed my membership of GCV in August '98, but have found that fees are much steeper than I remember when I departed in '88.

I guess I just love to soar whenever

I can, and the possibility of having the joys of both hang gliding and sailplanes (and ultralights?) available with the one membership is extremely attractive to me. I love the 'in your face' feel of hang gliding, and the 'refinement' (and possibility of sharing with a friend) of sailplanes, but can never afford both at the one time as things stand. I really hope the merger works out, and encourage all to 'cross the divide' and sample the joys of the different kinds of soaring!

All power to the merger!

Max Broadway

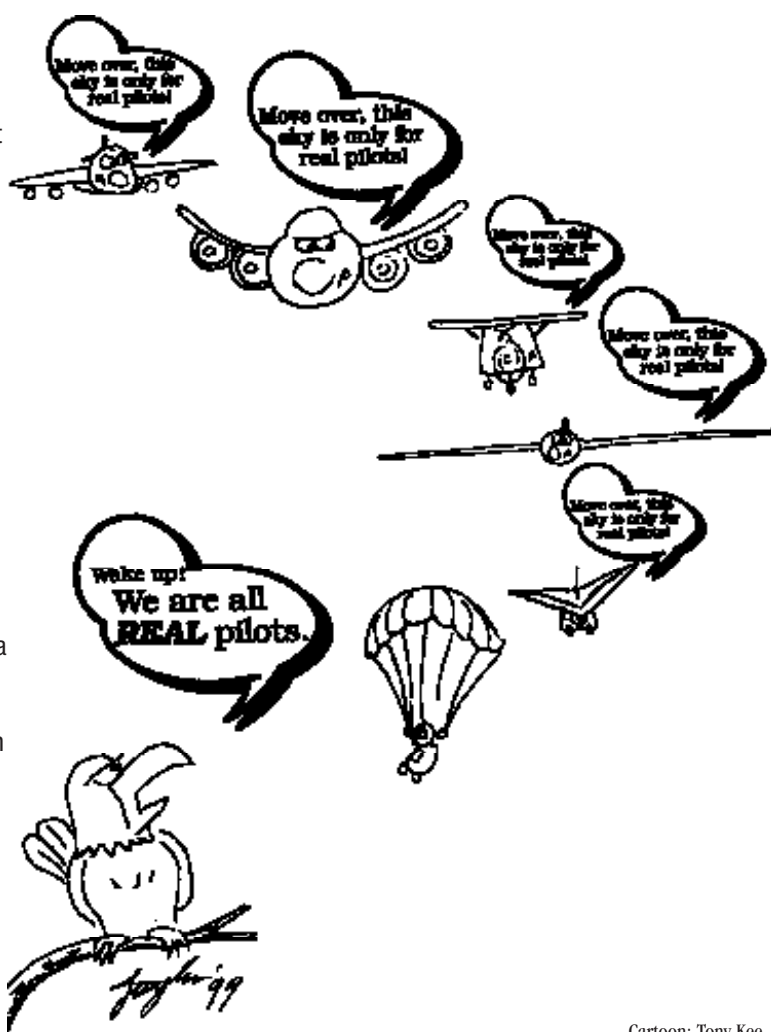
Greetings from Scotland

► Upon my return to Bonnie Scotland, I would like to say a big 'thank you' to all pilots at Stanwell Park. Many have given me invaluable advice and encouragement and have shared in my excitement at learning to fly over the past six months. Above all, thanks for making me so welcome on the hill. I hope that these words of appreciation will serve to reinforce how important this support is to new pilots.

I am looking forward to seeing Scotland from the air, and extend an open invitation to anyone planning a trip to the UK to fly the Scottish sites with me. I would be proud to return your hospitality.

You can contact me on email at: julesmahules@hotmail.com

Julie Knight



Cartoon: Tony Kee

meantime I would look longingly at the sky, and the hunger to fly never abated. My brother Andrew took up ultralights where I left off, and commenced a school at Tocumwal. Tragically, he was killed in a gyro crash in 1994 – he was sent to do solo circuits after about 2.5 hours of instruction. However, even Andrew's death didn't kill the desire to fly.

Having turned 40, I promised myself I would resume flying, and given the fond

In-flight Refuelling

RICK MORAWSKI

Isn't it great when you're flying cross-country at about 6,000ft and the air is as smooth as silk?

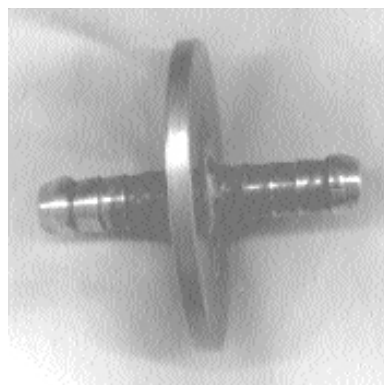
Isn't it unpleasant when you have to descend into horror turbulent conditions just to refuel from one of those jerry cans you've carried? And then you've got to climb back to cruise altitude through that turbulence.

I figured that I added at least an hour to my trip for every refuelling stop. Don't you wish you could just keep on flying to your destination? At least you would only have to go through the wringer once.

Those are the thoughts that prompted me to develop my in-flight refuelling system. With it I have extended the endurance of my Edge 582 to 5 hours (plus safety margin). It was a relatively easy exercise, simply using a 12 volt automotive fuel pump to extract the fuel from the jerry cans and dump it in the main tank.

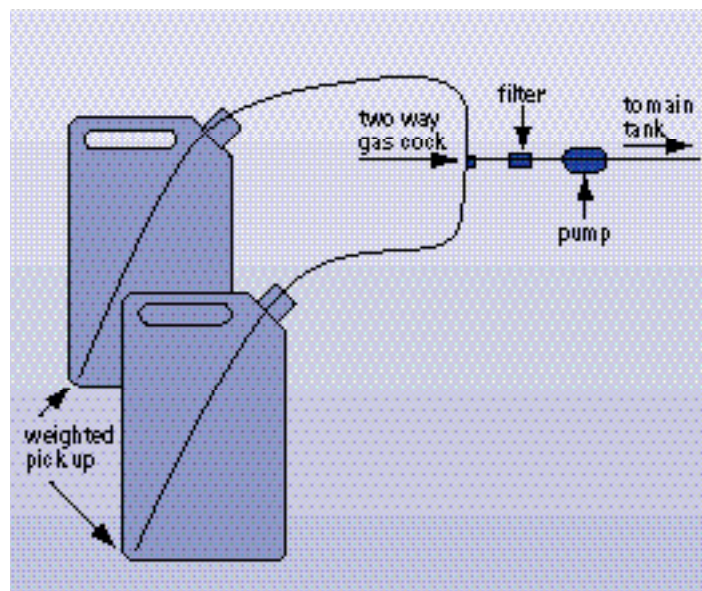
My design criteria included:

- 1) interfering with the main tank as little as possible; and
- 2) being able to easily detach the jerry cans so I could get fuel at my destination.



5 meters of $\frac{1}{4}$ inch fuel hose and a dozen hose clamps. From my local plumbing supplies I purchased a two way cock (as used for household LP gas cylinder changeover valve), and $\frac{1}{4}$ inch hose barb tee to replace the elbow at the top of the fuel level sight hose. The only tricky thing I had to do was get my local machinist to make two brass washers the same size as the little yellow plastic discs in the lid of the jerry can. Into the centre of these I silver soldered $\frac{1}{4}$ inch hose joiners.

I considered using quick connects, as used on boat fuel tanks, but it was an unnecessary expense and I didn't trust them to keep working properly. From Repco I purchased a 12 volt fuel pump (Ecco brand, the same as used on Drifter aircraft) for about \$80; an ON/OFF switch; a Purolator fuel filter (the same as on the trike fuel system); about



Assembly is as per the diagram. I strapped the pump to the base tube under the seat with a big zip tie, but you could also use large hose clamps. The two way cock is mounted to the crossbar under the seat with hose clamps so it can be easily reached, and the long part of the control tap points to the jerry can in use so you don't have to look down at it. Put the filter between the two way cock and the pump so you stop any gunk getting into the pump valves. Make sure you put a weight on the suction end of the jerry can lines to keep them down the bottom (I used $\frac{1}{4}$ inch hose joiner). I joined the outlet of the pump to the main tank at the top of the sight gauge by replacing the elbow that goes into the tank with a tee. Locate the switch anywhere convenient, but not near the mag switches – we don't want you accidentally turning off the motor do we? Also be sure the 12 volt supply to the pump is suitably fused – I used a 5 amp inline fuseholder directly off the battery positive. Keep the wiring away from the compass and check the compass does not swing when the pump is turned on.

Test run on the ground for a while and check for leaks, then recheck all hose clamps are tight. Then go for a circuit, land and recheck for leaks. You are now ready for the mother of all cross-country flights!

On using the system for the first time it worked faultlessly. When the fuel level in the main tank dropped to about halfway, I turned on the pump to top it up. I could see it was pumping by looking at the sight gauge. When the jerry can was empty a lot of bubble was visible in the sight gauge as it pumped air. On landing at my destination I found one jerry can had about $\frac{1}{2}$ cup of fuel left in it, the other about $\frac{3}{4}$ cup. Great, since I allowed one litre unusable in each. When not in use I cap the open ends of the hose and coil them under the seat in a plastic bag.

Now I have a new problem. How to make an in-flight toilet!



Operation Manager's Note: Any modifications to a certified microlight, such as those described in this article, must be approved by a CASA approved engineer.

Paragliding in Western Australia



The year so far...

MIKE DUFTY

The weather has been a little weird in WA this year, and it hasn't been a change for the better. Lots of thunderstorms, cyclones and strong winds, and little in the way of cohesive thermals. It's been a bit frustrating reading of booming days and record glider flights over east, while we can't find a thermal bubble big enough to turn in. Those prepared to drive for the cause have still managed to get some decent airtime though.

January

The new year started with the standard all-in crowd at Shelley beach near Albany. There was quite a bit of flying done by the numerous paragliders down there, but there was also a lot of strong wind, and watching the hang gliders enjoying themselves obviously got too much for some, who decided that a beach launch followed by an elevator ride up and over the back followed by a two hour bush bash was preferable to sitting and watching.

In a separate incident, a restricted pilot landed in the lee of the rocks at the east end of the beach and had his bright pink polished

glider fall in the ocean. He quickly discovered the amount of force even a small swell can exert on a paraglider canopy. He was lucky to escape with only minor injuries after a few very scary moments when the glider tried to drag him out to sea. Recovering the glider wasn't easy, even with a dozen or so bystanders to help. Gordon impressed all with his endurance, resilience, desperation and bladder control during a non-stop six hour flight in ridge lift at Shelley's.

Back nearer to Perth, the winds remained mostly easterly, restricting hill flying to Mt Bakewell (rated intermediate plus 65 hours). Even for those rated to fly there, the flying was not so good – the sink was abundant and fierce, the lift was punchy but gone by the time you could turn. Most of the flying early in the year seemed to be an hour or two of glass off 'magic lift' at either Mt Bakewell (southerly) or The Range (westerly), and occasionally both at once!

February

The unseasonal rain also brought westerlies and a couple of rare opportunities for summer beach flying, with Leighton's, Mullaloo and Burns Beach all seeing some flying. The first weekend of February saw more ten to thirty minute, desperately hard work thermal flights at Bakewell, and some gale hanging at The Range. Somewhere along the line Eric joined the Mt Bakewell tree hangers club.

The next weekend saw the first cross-countries of the year. A lot of pilots turned up at Noondeening Hill/Baillee Farm, but conditions were difficult, with the wind off to the east and only weak thermals. Fifteen minutes of scratching if you timed your launch right (and two minutes of sink if you didn't) seemed to be the order of the day. Then Mike Annear launched at the end of a 15 minute lull, expecting to bomb out, and found the thermal of the day which took him quickly up to airspace altitude. He turned west and managed a pleasant 10km flight to the Toodyay Road, without ever finding another thermal like the first. This inspired renewed vigour among the remaining pilots, but with limited success as the wind was now picking up from the east. Mike Duffy launched into a strong thermal but ran away after

Left: Little Jiri under a slightly crumpled looking Hot Dream at Mosman Park, above a tree he landed in ten minutes previously. Photo: Mike Duffy

a couple of very nasty big asymmetrics just above take off. He found a more friendly thermal further down the ridge and scratched an 8km cross country to Mt Nardie in weak but frequent thermals without ever getting more than 1,200ft above take off.

Dave Humphrey may have discovered where the good weather had gone: it was only good on the weekdays. Dave had a couple of good mid-week flights off Bakewell, including a cross-country to Northam. Dave and Jiri also had spectacular high flights around the Porongorup and Stirling Ranges mid-week. Hopefully there will be more of that to come; the area has great potential.

Evan Williams and Jiri Hlavaty ran a safety officer training course for the club in February, with a good attendance of appreciative pilots. Later in the month Dave, Mike Annear, and Mike Duffy journeyed up to Geraldton mid-week to watch the solar eclipse and were pleased to get in some out of season flying up at Wozza's Knob in the morning. They also managed to get some Cloudbase Paragliding Club T-shirts on the national news by subtly standing behind the Channel 7 live broadcast camera.

The following weekend saw some cohesive thermals at Bakewell for once and, after some early bomb-outs, good thermalling was to be had in the afternoon. Mike Duffy dived over the back at the first opportunity but barely made it past the rotor. Mike Annear went forwards and found abundant lift over the town, Dave Humphrey also had a good flight.

March

The Labour Day long weekend saw a large group of paraglider pilots head down to Albany. Saturday morning brought excellent conditions at Parry Beach (near Denmark), Mike Duffy and Gordon soaring up to 1,000ft above the beach for three hours in the smooth ridge lift. Shelley beach also came on little later, and Mike Annear and Jiri had good flights there. A few of the other pilots got caught out driving between sites during the best wind, and didn't launch before the sea breeze came in and ended play at about midday.

Shelley Beach was 'on' beautifully Sunday morning and the sky was full of eight or nine gliders (it's a lot for WA!), including Dave's new tandem. The lift was there from beach height to 800ft and the crossing to Dingo's beach was possible. Peter Ricketts and Mike Moore had their first prolonged soaring



Top to bottom:

1. Little Jiri flying at Mosman Park with the Perth city skyline in the background.
2. Gordon at Parry Beach, March 1999.
3. Dennis Smith launching at Noondeening Hill.
4. Mike Annear waiting for the wind to drop at Wozza's Knob, Geraldton. On this occasion the sun went out first in a total solar eclipse, 16 February 1999.

All photos: Mike Duffy

flights, although Mike prolonged his second flight a little too far and got caught back in the gully when the wind picked up, earning himself a nice hour long bush walk (only 150m, but difficult going).

Dave Humphrey and Wally Grozchowski made the trip over to Manilla for both the NZ and Oz titles and had some good flights, although they didn't figure prominently in the final placings. Pity there were no high wind launching contests; then the sand-groppers might do a little better.

The club winch was rejuvenated in March thanks largely to Adam, John, and Wesley. Reports are that the old surging is a thing of the past and it hardly ever catches fire any more. Wesley, Adam, Gordon and Colin put it to good use, all achieving their first cross-country flights, with Wesley going the furthest at 8km. Jiri took his hands off the brakes at just the wrong moment on a mid-week flight at Bakewell and discovered just how unforgiving a Sector is when left to its own devices. Fortunately he found a very forgiving tree (between the powerlines and antennas) just after throwing his reserve. I'm sure you'll get to read all about it soon in the crash comics.

April

The club winch was in action again at Easter. Steve bagged his first cross-country in quite decent conditions, actually coming down on purpose at Beverley because he didn't have a map or a radio. Red also went cross-country, and a number of other pilots managed some pleasant thermalling above the paddock. Mike Duffy got high enough off Noondeening Hill (at Baille Farm) to get cold, and had a pleasant 10km flight to Toodyay; although it was another of those days that seemed to have only one decent thermal.

Conto's at Margaret River had perfect conditions on Saturday and Sunday, and Albany was also good all Easter. Evan has finally updated his glider and reported that the Energy club is a lot more fun than the Challenger club, after a few good days at Sandpatch and Shelley Beach. It seemed like conditions were coming good, but more cyclones and thunderstorms came down the following week. Eric Metrot managed a 60km cross-country, but he cheated by going home to France.

Hopefully things will settle a bit, and with the winch organised and smoother conditions we'll see a few more restricted pilots airborne too.



Note: The author's website can be found at www.cygnus.uwa.edu.au/~madmike/paraglid.html



Not Quite 300

RICHARD FRIDAY

After a little over two years of gliding (this time around) and some 130 odd hours in a reasonable variety of types, the time had come for me to get serious about things and actually fly away from the relative security of my take off point.

The opportunity was presented courtesy of an invitation from the Darling Downs Soaring Club (DDSC) to my home club at Caboolture, QLD, for interested members to attend a cross-country training course. The only prerequisite was that attendees hold their 'C' certificate. Caboolture is a very picturesque place to train, fly passengers or engage in some very scenic local soaring, but it sadly lacks any real cross-country potential. As a committee member I find the growing rapport between our two clubs very exciting and I think that both clubs have a very bright future ahead. Good for us and good for gliding!

Six Caboolture members attended and, although there are a dozen or more good stories from the week long camp, the one that takes prominence in my memory is that of my first (and failed) cross-country flight, an attempt at 300km.

The practical training consisted of a two and a half hour flight in a Twin Astir under the expert guidance of Allan Latemore from DDSC. This day has a tale or two in itself, suffice to say that I learned a lot.

A persistently strong north-east wind again greeted us on the big day. It had been blowing for a few days without any sign of abating, but the day was definitely soarable. A fellow Caboolture member, Kim Houghton, had also arrived to reacquaint himself with cross-country flying. The sessions the previous day in the Twin had prepared me for an attempt at 50km to claim my Silver distance. Allan, however, had other ideas. He was sufficiently confident of both my ability and Kim's that he insisted that we were capable of attempting 300km.

Allan's enthusiasm was quite contagious so we set about planning our task and smoking our barographs and doing all of the funny little things that have to be done in order to make a successful claim – a bit like the rules of golf really.

I was first to launch in the Caboolture club's Cirrus (IUZ) now wearing its 16m extensions, and although I took the launch all the way to 2,000ft, I was almost back to circuit height before getting away. "I can do better than this," I thought. At least it provided a handy notch on the barograph trace. Meanwhile Kim had taken a launch in the DDSC LS7 (XOW) and had radioed that he had set off on task. We had decided from the start that there was no point in hindering each other by trying to stay together so I expected not to see the LS7 again, even though our tasks were identical.

The thermals were powerful and before long I had my start point photo of the Jondaryan township and turned tail on the airfield and set sail for Dalby. The strong wind at this point was helping me on

task, but I was aware of the effect it would have on the homeward leg if it continued. "I'll deal with that at the appropriate time," I thought.

The sky was full of clouds and at one point I had the vario pegged on its upper limit with the averager showing 7.8 knots. Impressive stuff! Before long I was over Dalby and the strangest thing occurred.

The clouds stretched out over Dalby from left to right, horizon to horizon with nothing but blue on our intended track.

"Doesn't look promising," Kim's voice crackled from the radio, echoing my own thoughts. It's like there was a wall up there that the clouds wouldn't venture past. We discussed our options and considered abandoning

the task in favour of some more reliable soaring under the

We were getting good climbs over Dalby, and once over 5,000ft above ground I let Kim know that I was going to venture out into the blue for a sniff

around. Kim agreed so off we went, in slightly different directions. I'm sure we both felt like intrepid explorers setting off into the wide blue yonder, as if no one had ever done it before. It's a good feeling – adventure, apprehension, anticipation, reward.

The blue was working, it just didn't have any signposts. Kim was finding the same thing and with Chinchilla visible in the distance the show was back on. With only the occasional cloud we tiptoed our way to Chinchilla, sometimes apart, sometimes together, always staying high. The drift was probably the main contribution to our ground speed.

We took our photos and considered our next step. "I can see Miles," came Kim's voice. "I can see a long way too!" I replied, chuckling at my inane attempt at humour. Our next destination was a small airstrip between Miles and Condomine, but it was totally blue and we had been warned that there was a lot of unlandable country en-route, so maintaining sufficient height was mandatory. The only option was a cloudstreet well off track to the other side of Miles. We could rely on this to get us to Miles, but then what? An outlanding here would mean the greatest distance for our retrieve crews.

We had been airborne for over two hours by this time and I was beginning to take note of the different decisions each of us was making. "Interesting," I thought, "I can see why pair flying is so successful in competition flying." It was clearly apparent by the rapid changes in relative altitude between us when one of us was in good air or bad air, even when we were as close as a few hundred metres. The difference was even more marked when we were kilometres apart whilst flying on the same track.

Over Miles we made entirely different decisions, which ultimately saw me struggling over the turnpoint at the airstrip and Kim back over Miles taking his photo. Now I thought the LS7's better performance would allow Kim to press on so I wished him luck and concentrated on my own fate. I remember wondering as I watched the farmer ploughing his field way below me whether there was a pool of warm air quietly accumulating over the land surrounding him and whether or not his efforts would trigger it to rise. I remember



working the weak lift above him, hoping that I was on top of the bubble and not at the bottom. I have to grin when I look at the barograph trace that captured the thermal that it became – all 7,000ft of it! I even had the experience of a cloud forming a few hundred feet above me. Sensational!

Kim had opted to head back via Miles, but with my altitude I was able to set a direct course for Chinchilla and fly directly over the rough terrain below and so the 30km or so that had separated us dwindled back to zero again. The wind had not abated and it was becoming obvious that we were in for a hard slug all the way home.

We made it to Chinchilla with its bitumen airstrip and between us we must have tried a dozen thermals but we couldn't beat the drift. The township was creating a cycle of convection and finally I made a climb to a cloud base of some 7,300ft and tentatively set course along the highway east. Kim had found his own thermal so we headed back on task but made our primary option to leave enough height to head back downwind to Chinchilla and hit the pub. That would have put the ground crew about one and a half hours away.

We pressed on into wind, following the energy, picking a route in looking at the cloud shadows on the ground. At one point Kim had to confirm that I wasn't lost as I had elected to follow a line of clouds off route whose shadows described a huge arc which swept back

towards our destination. Kim was taking a more direct route. Again, the different decision making process was apparent. It seemed that each of us was able to string 4 or 5 good decisions together followed by a dud. Kim got low then I got low. It seemed as though every time we checked each others' situation it had reversed.

It was becoming ever more likely that an outlanding was inevitable as the day was starting to die. The thermals were becoming less frequent, but at least they were fairly strong and large.

First Brigalow came into view and we discussed our options. Plenty of height, press on. Then Warra became achievable. The racecourse at Warra had been surveyed as a known outlanding site the previous night, but that's another story. So we discarded our old options and selected new ones. Then McAlister came into reach, then we actually started seriously considering Dalby.

For some time now I'd had Dalby sitting resolutely in the same spot in the canopy. It's amazing how steady you can keep that yaw string when it really does matter. Kim in the LS7 had made a better choice and now he had altitude, whilst my altimeter counted inexorably down. Still, Dalby remained perched stubbornly, tantalisingly, just above the compass of the Cirrus.

Being conscious of not talking myself into something unachievable, I started looking more intently at the possibilities below me. At 3,000ft agl, Dalby was still stuck there, no overshoot, no undershoot, only

now I could make out the bitumen runway. A little snift, a gentle turn. Lost in the drift what I gained in height. Press on. 2,500ft now and I can make out the cross strip. Yes, it's achievable, but a few hundred feet more would be nice. Kim is a couple of thousand feet above me and calls me over into 1 or 2 knots, but it seems the source has stopped feeding the cloud and I lose precious height, circling this way and that. Dalby was achievable but I had no energy left 'in the bank' to spend on searching for more. If I could replay the flight this is where I would have persevered and either made that extra height or landed in the field below me.

An overshoot into Dalby was now obvious and Kim offered to make a radio call for me to seek clearance to land as I was unfamiliar with the runway alignment or frequency. My brain was now firmly switched off to 'staying airborne' mode and switched on to 'landing' mode. I told myself out loud, "You have been flying for 6 hours and 40 minutes; you now have to LAND!" There are some crucial things that have to happen in order to prevent a pleasant day from turning ugly in the last 60 seconds. "EFF, YOO, ESS, TEE, think about each one fella."

Kim radioed to tell me that I had the runway to myself, but that there was an Aero Commander holding at the other end awaiting my arrival. I joined high on base leg for a right hand circuit and needed full airbrake on final. Never missing an opportunity to fly in ground effect, and with such a long runway, I aimed at the piano keys with 70kt on board, closed the brakes and floated for three quarters of its length before gently settling at minimum flying speed. Sparing a thought for the tail skid on the hard surface, I held the tail up for as long as possible before coming to rest. I quickly hopped out to clear the runway and waved at the Aero Commander as he whizzed past (on a down wind take off I might add!), but he didn't wave back. I had held him up for a whole five minutes or so.

Total flight time:

6 hours 45 minutes.

Distance covered:

About 286km.

Lessons learned:

Don't waste the day by being too conservative early on. Our barograph traces show quite clearly the rounded tops of each height gain where we stuck with the lift until it died before moving on. Though we had no great plan to fly together I found pair flying, even at our modest level of expertise, to be an extremely good way of fine tuning your decisionmaking process. Cross-country flying is very rewarding.

Kim found the last thermal of the day and made it home.

Two days later I made a second attempt in the LS7 and succeeded in 5 hours 29 minutes. What a good feeling.

Diamond distance next!





Murray Safari '99

A national trike gathering will be held on the weekend of 5-6 June at the National Sport Aviation Centre, Wangaratta Aerodrome (250km north of Melbourne). Over 50 trikes from all states will take part in the events – a great chance to see a whole range of trikes and meet the pilots.

From Monday, 7 June, a group of over 40 trikers will commence an eight day expedition along the Murray River. This will be the largest group of trikes to complete a course in excess of 1,600km while flying in unison. The trip will have HGFA and AUF registered trikes. For participating pilots the following minimum standards are required: 50 hours flying experience, XC rating and equipped with VHF radio.

The course plan, from 7-14 June, is as follows: Day 1: Wangaratta-Tocumwal-Echuca. Day 2: Cohuna-Swan Hill. Day 3: Robinvale-Redcliffs-Cullulleraine-Loxton-Mildura. Day 4: Wentworth-Renmark-Waikerie. Day 5: Morgan-Murray Bridge-Strathalbyn. Day 6: Mouth of the Murray-The Koorong-Kingston-Nhill-Horsham. Day 7: Bendigo-Wangaratta/Benalla. (Note: SA pilots are expected to leave 2 days earlier for arrival in Wangaratta on 5 June.)

The course may vary at the time, so for exact details during the week on where the group will be and when, feel free to contact Tony or Jamie on their mobile: 0418 574068. For further details on the event call Tony Dennis on 03 57626227.

Benall to Echuca: A Murray Safari Warm-up

As part of our preparation for the Murray Safari '99, we organised a weekend away in March just for fun, and for some of our newer pilots to practice their cross-country skills and to practice carrying their gear, storing their aircraft overnight etc. It's a great transfer of skills as half the crew were experienced cross-country pilots. Even a small cross-country from Benalla to Echuca – approximately two hours flying time each way – is an adventure, and fun for

The pilots who flew from Benalla to Echuca. Clockwise from top left – Clarrie Rowdon, Helen Rowden, Tony Dennis, Stuart Malone, Annette Jacob, Lil Unsworth, Werner, Sharon Barnes, Steve Barnes (Redback), Tricia Glare, Kel Glare, Richard Price, Michael Rose, Wally Wiener, Bill Worrall, Therese Dennis.

both new and experienced pilots.

The flight took us via Shepparton, and then on to Echuca. Eight trikes in all, each with two people. We had arranged accommodation at the Echuca Motel for the Saturday night and they kindly provided us with a mini-bus free of charge for the evening (we stayed with them last year with the Murray Safari group). A fun night was had at a local hotel in one of the back streets of Echuca, with festivities running into the early hours of the next morning.

Sunday morning was an early start, and our wings needed de-frosting before take off. Breakfast at Hide's Bakery in Benalla upon return was thoroughly enjoyed, with a lot of 'trike and nonsense' chatter! The pilots and their passengers, who all had their trikes fully assembled in The Right Altitude's large hangar at Benalla, were Clarrie and Helen Rowdon, Stuart and Annette Malone, Bill Worrall and Weiner, Tony and Lil Unsworth, Wally and Karen Wiener, Steve and Sharon Barnes, Kel and Tricia Glare, Richard Price, Mike Rose, Drewe Bellmaine and Tony Dennis.

Therese Dennis

Paragliding Site Guide for Victoria

A new site guide providing information on paragliding in Victoria is available on the web at: www.jeack.com.au/~magic.

While there are already some excellent site guides (including one published by the VHGA), it was felt that a few more pictures, some more detailed maps and a guide specifically dealing with paragliding would be a great idea. It is also hoped that the web page will promote the search for new flying sites.

Each site entry has details on launch, flying, dangers and specifications, along with a map showing where the site is and some photos of the site (though more pictures are always needed!). If you have a site that is not listed, or have a potential site, the webmaster would love to hear from you so that the site can be promoted. In this way it is hoped that pilots can all have more flying 'buddies', and therefore more opportunities to fly. If you have any site information or photographs suitable for publishing, email Andrew Shipley at: admin@magicmobility.com.au

Airwave Winds Up

Airwave, the British hang glider/paraglider manufacturer, has been placed in receivership and will be looking for a new owner, either as a whole, or for its individual parts. Items for sale include the design rights to all the company's hang gliders and paragliders, and rights to manufacture spare parts for all past gliders. Further items include Airwave's unique paraglider design software installed on a PC (complete with recent designs and prototypes, an A0 plotter and a HP printer); full documentation of all Airwave hang gliders; the right to trade under the name of Airwave Gliders and use the Airwave logo; access to a European Community 'CRAFT' Award (worth 914,000 Euro) to develop the Flexible Aerofoil Numerical Simulation tool. This project has started and will be able to predict the wing shape and simulate the flight characteristics of any cloth wing. It will also be able to measure the shape of paragliders and hang gliders in flight. Anyone interested in purregister his or her interest to be forwarded to the receiver upon appointment.

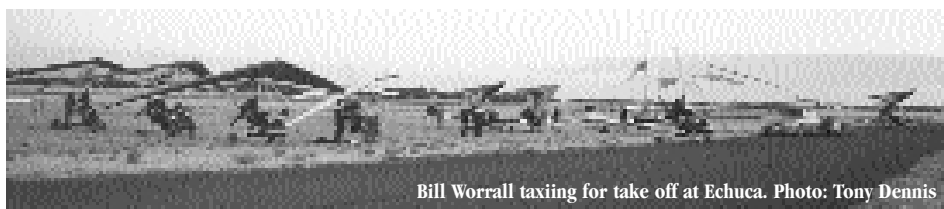
Rory Carter (Airwave Gliders Ltd)

Canungra Hang Gliding Club News

The beginning of this month saw the Canungra Hang Gliding Club host the 1999 Women's Flying Skills Improvement Clinic. The weather cooperated for what seems the first time this year and the hang glider and paraglider pilots enjoyed an excellent week of practical skill development supplemented by a series of seminars and forums on various aspects of flying. Thanks to Barb Utech and Peta Roberts for organising this event and to all the guys who helped out on launch and driving retrieve etc.

The local sites have been remarkably quiet over the last month with a large contingent of the hangies travelling down to Manilla to compete in the NSW State Titles. Unfortunately the usually epic conditions failed to materialise, but the Canungra boys appear to have revelled in the mediocre conditions with Glen Macleod finishing second ahead of Jon Durand Snr and Jon Durand Jnr winning B grade (and retaining his record of NEVER having bombed out at Mt Borah!). For a blow by blow account check out Tim Cumming's excellent article at: <http://tinny.eis.net.au/~tim/manilla99/index.htm> [also appearing in this issue, Ed]

Over Easter it was the club's paraglider pilots turn to travel to Manilla for the Paragliding State of Origin Series between Queensland and NSW. Although the weather only allowed two days of flying, an excellent time was had by all who attended. With one day to go Queensland was just ahead of NSW.



Bill Worrall taxiing for take off at Echuca. Photo: Tony Dennis

However an excellent day of team flying by Enda Murphy, Doug Banks and the rest of the New South Whales saw them win the day and the event for the second year in a row. Thanks to the Canungra Hang Gliding Club and the Sydney Paragliding Club for their sponsorship of this event and watch out for a full report soon. In the meantime the results can be viewed at: <http://www.uq.net.au/~zzdcrook/psoos/psoohome.htm>

As usual, a number of pilots have been beaver away on various tasks on the club's behalf. Our legendary President Shauna 'Timber' Purser and partner in crime Trevor 'Husqvarna' Crane spent a lovely afternoon removing several trees in the new Mt Tamborine bomb-out. Unfortunately, the remaining arboreal obstacles are right on the boundary of the park and their removal is pending the outcome of the ongoing political manoeuvring in the valley. Speedy Gonsalves has also been really busy organising the new club T-shirts which are not only beautifully designed but also fantastic quality and are selling like 'Jim Beam at the Canungra Classic'.

Make sure you don't miss out on this limited edition collector's piece; and while you are at it, why not pick up a copy of Barb Utech's brilliant club photo snapped at a meeting late last year? Apparently the club continues to prosper financially thanks to some shrewd investing by our resourceful Treasurer, Fran Ning, and by Jim Beam sales during club meetings at Moriarty Hall. Damien 'Tex' Gates has also put together an MS Access-based Flight Log Book which is easy to use and will certainly be more convenient for those of you who only switch off your PC to go flying. If you would like a copy then drop him a line at: TEXDOC@bigpond.com and tell him 'Team Ugly' sent you.

Over on North Stradbroke Island, Craig Papworth has also developed a number of coastal soaring sites around Point Lookout. Craig has improved a few launching areas and is keen to have people visit and fly the area. The club is in the process of formalising the arrangement with the Redland Shire Council.

The plans for the Tamborine launch toilet are currently with the council for consideration. Apparently the design settled upon is a Clivus Multrum (the BMW of composting toilets according to experts in the field) and will be positioned so that it can be used by both the pilots and spectators. Nice for the club to be seen to be putting something back into the local community.

Congratulations to Dave Pearson on his first flight after crashing in October last year following an encounter with Mr Rotor. Great to see such a popular and active member of the club getting 'back on the horse'.

Well that is about it for this month. Hopefully next time I'll have some flying stories to relate; for although the season may be drawing to a close, after the summer we have had, the flying can really only improve.

Mark Plenderleith

Dynasoarers Hang Gliding Club

Well, it's that time of the year again for me to tap out a tune on my keyboard to give you an annual report. The club held its annual general meeting on 4 December, with about 35 people in attendance. Once again my wife Vicki tried to upstage the event by breaking and dislocating her toe three hours before the BBQ was to take place at our house. Fortunately Tony Hughes saved the day and got the proceeding underway while waiting for us to return from the usual epic ordeal at casualty. The get together was very successful with the weather, culinary delights and company all being perfect. This year saw the introduction of special achievement awards, which were well received by the club.

The categories were:

The most hours flown – Geoff Coombs

The most sights flown – Warren McDonald

The best height gain over Moggs Creek

– Tony Hughes & Mark Willey

The best support person and driver

– Jenny Cuthbertson

The first time to Eastern View from

Moggs Creek – Toby Wiadrowski

The first time to Lorne from Moggs Creek

– John Norton

The first time to Lorne from Winki

– Mark Willey

The first time to Apollo Bay from Winki

– Peter Greenhill, Peter Hannah and

Jon Clements

The first time to Cape Otway from Winki

– Peter Greenhill

The brush with death award (snake bite)

– Karren Haigh

Moggs Creek to Apollo Bay – Ian Haigh

Four times to Apollo Bay from Winki and nine times total – Ted Remeika

1,000 solo hours flown in a hang glider

– Ted Remeika

The misguided fashion statement

– Rob (chook) Van der Klooster

The most equipment and least hours flown – Warwick Spratt

The most gratuitous use of the word f*!**

– Harold Niblock

Special thank go to Moyes, AirBorne, Photo First Belmont and Don and Carol Burns for donating prizes for the Awards.

The office bearers for 1999 are:

President: Peter Hannah, Secretary:

John Norton, Treasurer: Rod Trevor, Publicity

Officer: Warrick Spratt, Senior Safety Officers:

Ted Remeika and Rob

Van der Klooster.

Unfortunately, Tony Hughes is unable to continue his position as secretary and I would like to thank him for his tireless efforts and dedication towards the club.

We now have the Dynasoarers club T-shirts, long sleeved T-shirts and wind-cheaters, and I would like to thank Warwick Spratt for designing the logo and Tony Hughes for organising the finished product.

Congratulations to Jon Clements for being the 14th person to achieve the Winki to Apollo Bay run and to Peter Greenhill for being the 4th person to make it to Cape Otway. Remarkably Ted Remeika has now completed the run nine times and now has it all on video. It's well worth looking at if you get the chance.

The club has been running aerotow endorsements which have been very successful. Thanks must go to Rob Van der Klooster for brilliantly organising everyone on the ground and to Ian Haigh for his expertise on the trike, tireless smile and encouragement. The club has also enjoyed several fly-ins over the year. Sites include Mt Buffalo, Flaxmans Hill, Stanwell Park and Rainbow Beach. I would like to congratulate all of our club members who have competed over the year and wish them good luck in the up and coming events. After a very ordinary winter on the coast it looks like it's shaping up to be an excellent season. We have already enjoyed some exceptional easterlies and it has regularly been on at our other main sites. Have a good one!

Peter Hannah (President)

WA Hill Flyers Club

This club was formed in 1998 by Mike Thorn and Rick Williams; two pilots who have spent many years developing and flying inland sites in WA. After introducing many pilots to these sites, a decision was made to form a club with the following objectives:

1. To be a friendly group of pilots dedicated to enjoying and promoting our sport.
2. To encourage and support newly qualified pilots so they can stay in the sport longer.
3. To promote both hill launch and tow launch flying.
4. To seek out and develop new sites close to Perth.
5. To develop respectful and long lasting



relationships with landowners whose properties we are allowed to use.

6. To gain a positive and high profile for our sport through liaison with tourism bodies, local councils and other groups that would benefit from our association with them.

7. To encourage association with PG pilots through cooperation at sites.

8. To limit membership to recreational pilots and keep the club free from the influence of commercial interests.

9. To support the aims and objectives of both the HGAWA and HGFA in the promotion of our sport.

10. To have regular meetings, club activities and social events.

11. To promote a 'safety first' attitude to flying.

12. To encourage skill development and information exchange at all levels.

13. To access funding from appropriate bodies for the development of the sport.

In addition to these aims, the club has also adopted a policy of free membership. There is no joining fee, nor annual membership fee. Any funds required by the club will be sourced from fund raising activities and HGAWA and HGFA funding. This is to encourage all pilots, whether or not they are members of other clubs, to be a member of the Hill Flyers Club. It also helps spouses, friends and family to be involved.

Meetings take place on the last Wednesday of each month at the Swan Districts Football Club, Guildford Road, Bassendean. We meet around 7-7:30pm for a drink at the bar, start the meeting at 8pm and usually have the flying videos from about 9pm.

Our achievements so far include:

- Membership of over 55 pilots.
- Parachute repack nights.
- Development of flying sites.
- Phone-in line.
- Successful fly-ins.
- Progression of many pilots with little or no previous experience to inland ridge soaring and thermalling.
- Popular club meetings, with spouses and friends involved.

To encourage more pilots to get together to fly, we initiated a HGAWA funded phone-in service. Just call 9487 3258 to listen to or leave messages, but beware, you must follow instructions! A member directory is also being compiled to help this cause.

1999 Bureau Of Meteorology Night: A Weather Information Seminar

This weather information presentation and bureau tour will be conducted by Geoff Smith, manager of aviation and defence for the NSW and ACT regions.

The presentation will be tailor-made to be of specific interest to soaring pilots. Topics to be covered will include thermal development and behaviour, trigger temperatures, lapse rates, inland sea breezes, convergence, cloud types, lift indicators, thunderstorms, microbursts, etc. Also included in the presentation will be guided examples of obtaining weather information through the internet, and (hopefully) a computer thermal simulation.

Following the presentation will be a guided tour of the bureau. Find out what happens, where it happens and how it happens.

WHERE: Bureau of Meteorology, 300 Elizabeth Street, Sydney

WHEN: Friday 18 June at 6:45pm

Talk and tour are free of charge (tea and coffee also provided). At the conclusion of the tour we will be having dinner and drinks at a nearby restaurant.

For security reasons a list of attendees must be supplied by Monday 14 June. Call Richard Lockhart before this date on 0418 130 354.

The Ambulance Down in the Valley (Version 2)

James Freeman

*T'was a dangerous cliff, with the wind blowing stiff,
But to fly risk will always be present.*

*Three steps, all uphill, adds a bit too much thrill,
Makes the leap from the edge not that pleasant.*

*So to make it more fun, something had to be done,
But suggestions they just did not tally.*

*Well some pilots said, 'Put a ramp on the edge',
No, 'An ambulance, down in the valley!'*

*Well the ambulance way, it carried the day,
In a resolution that passed in a flash.*

*Well the joy of the crowd, was liberal was loud,
For those crowds they just love a good crash.*

*And so for some time, when conditions weren't fine,
Quick forth would the rescuers sally,
To pick up the men, who'd not fly again,
With the ambulance down in the valley.*

*Said the local MD, 'It's a marvel to me,
That you'd give so much greater attention,
To repairing results, than to curing the cause,
Why you'd much better aim at prevention.'*

*Aren't we picking up all, just as fast as they fall,
And giving them care liberally?*

*Why should we revamp, and put in that ramp,
If the ambulance works in the valley?*

*With patient refrain, I went on to explain,
What happens, if they let, the nose pop.
It's not falling as such, that hurts them so much,
But the shock down below when they stop.*

*'They're wrong in the head,' the lawyers all said,
'We must end their foolhardy endeavours.
If they can not be taught, to make it safe sport,
Then we must act now to stop them forever.'*

*'The mischief of course, should be stopped at its source,
Come friends, come on neighbours, let us rally!
For it makes better sense, to rely on a fence,
Than an ambulance down in the valley.'*

*So quite unexpected, a fence was erected,
And our flying days came to an end.
No longer can we, set up and fly free,
It's becoming a worrying trend.*

*Now if this story seems queer, as I've given it here,
Things often occur which are stranger.
For we've lost the right, to many a site
With our failure to control the danger.*

Flying

In a second my world turns around

As my feet are lifted off the ground

No longer do I lift my wing

Now it lifts me, a different thing

I hang in it, so you suppose

But it feels more like it somehow grows

Out of my body and my mind

Earthbound thoughts all left behind

Mountains, rivers, clouds I see

A whole new world calls to me

Feel like a bird, free of weight

Breathing sky and feeling great

Well laws of physics control me

Newton's apple and gravity

Pulling down with constant force

Time to land, there's no remorse

Another turn, then final glide

Flare out, touch down, satisfied

Across the ground with constant smile

My relaxed glow will last a while

But all these words, I say to you

Can not explain, unless you too

Take the plunge and leave the ground

Flying free, without a sound

James Freeman (after a poem by Thomas Rupp)

FAI News

World Pilot Ranking Scheme

The latest World Pilot Ranking Scheme (WPRS) for hang gliding, paragliding and Class 2 has just been published.

Following feedback and a review of WPRS a programming error has been corrected. Now it is only a pilot's top four ranking scores that count towards the overall ranking (rather than all competitions a pilot had flown in the 18 month period). There are also several competitions which have dropped out of the current 18 month period. This all means that there are some big changes amongst the top places in both hang gliding and paragliding and the points are much closer.

In hang gliding new competitions included are the Australian HG Open, the Venezuelan International and the Brazilian WHGS, and there are currently 378 pilots ranked. Manfred Ruhmer now leads with 296 points, and only 11 points separate the top four (Oleg Bondarchuk 287, Gerolf Heinrichs 286 and Guido Gehrmann 285). Newcomers to the top 10 are Josef Zweckmayr (6), Rupert Plattner (7) and Christof Kratzner (10).

Those who have dropped out of the top 10 are Jean-François Gerard, Mario Alonzi and Bernardi Ignazio. For the women, Nikki Hamilton is now top ranked female in 44th position, with Françoise Moçellin 59th and Marie Jo Rufat 76th.

The paragliding ranking only sees the addition of the South African National Championships (not the Argentinian PWC as there were not enough valid rounds), and there are currently 401 pilots ranked. However with the changes detailed above there have been some big changes in the top 10. Jimmy Pacher is back in first place, 258 points ahead of Kari Eisenhut (250) and Christian Tamegger (246). Newcomers to the top 10 are Peter von Kanel (4), Hans Bollinger (6), Xevi Bonet (7) and Steve Cox (9). Those slipping out of the top 10 are Denis Cortella, Stephen Stieglair, Walter Holzmüller and Mads Syndergaard. Claire Bernier still heads the female rankings in 38th place, followed by Sandie Cochepain (54) and Louise Crandal (63). Class 2 sees no change as there were only four comps last year, which was the first year of an active Class 2 ranking.

Full details are available on the CIVL website: www.fai.org/hang_gliding/ or the British HG league website: www.theleague.force9.co.uk

Hang Gliding

1 Ruhmer, Manfred	6 Zweckmayr, Josef
2 Bondarchuk Oleg	7 Plattner, Rupert
3 Heinrichs, Gerolf	8 Cook, Steve
4 Gehrmann, Guido	9 Barnes, Allan
5 Thevenot, Gerard	10 Kratzner, Christof

Paragliding

1 Pacher, Jimmy	6 Bollinger, Hans
2 Eisenhut, Kari	7 Bonet Dalmau Xevi
3 Tamegger, Christian	8 Whittall, Robert
4 Von Kanel, Peter	9 Cox, Steve
5 Henny, Kaspar	10 Berod, Patrick

GAP Scoring Explained

There has been considerable confusion, and subsequently some strange scoring results, with the GAP scoring formulas in the past. The GAP explanation document has now been re-written in a way that describes how the different components fit together, without using mathematic terminology. This guide tells pilots how their scores are generated, and how tasks can, and sometimes cannot, separate different levels of pilot skill. The guide is especially important for competition organisers and task setters, as it is important to set up the system in a reasonable manner at the start of a competition.

The GAP scoring system has been criticised for being too complex and seemingly erratic. However, with a basic understanding of how the concept works it all becomes quite simple, and I think you will be pleased with the results.

The new document can be found at: www.ozemail.com.au/~zupy/gap/gap98.html

Michael Zupanc
(Australian delegate, Vice-President CIVL)



HGFA merchandise

Available from the HGFA, PO Box 558, Tumut NSW 2720 Phone: 02 69472888 or Fax: 02 69474328

- ◆ \$30 Polo shirt with embroidered HGFA logo in navy, green & white (sizes 16 to 24)
- ◆ \$50 Rugby top with embroidered HGFA logo in navy, green & grey (sizes 16 to 24)
- ◆ \$15 Cap (cotton or corduroy) with HGFA colour logo in red, black, navy or green
- ◆ \$1.50 HGFA Car sticker (no postage required)
- ◆ \$6 Embroidered Badge
- ◆ \$30 HGFA Hang Gliding Training Video
- ◆ HGFA Competitions Manual – no charge
- ◆ HGFA Towing Manual – no charge
- ◆ \$45 1998 Hang Gliding Grand Prix Series video
- ◆ \$5 HGFA Pilot Training Workbooks

- ◆ \$15 Beginning Coaching (Australian Sports Commission)
- ◆ \$20 Better Coaching (Australian Sports Commission)
- ◆ \$10 HGFA Operations Manual*
- ◆ \$15 HGFA Operations Manual Binder*
- ◆ \$5 HGFA Log Book*
- * Replacement Prices only – These items are issued free with initial Full Membership
- ◆ \$3.00 Postage and Packing (Bulk orders sent C.O.D.)





World Gliding Championships 1999

LISA TROTTER

The FAI World Gliding Championships will be held this year in Germany from the 31st of July to the 15th of August. Going by the performance of the Australian pilots at the Pre-World Gliding Championships last year, there is a good chance that we will see at least one of our own on the podium on the presentation night.

The team

The pilots who will be competing are:

Gary Brasher	open class	Nimbus 3
John Buchanan	open class	ASW22
Brad Edwards	15 metre class	ASW27
Bruce Taylor	15 metre class	ASW27
Peter Trotter	15 metre class	LS6
Miles Gore-Brown	standard class	Discus 2

These pilots will be supported by crew and the team manager, Beryl Hartley.

The airfield

The competition will take place at the Bayreuth airfield in the south of Germany. It is located north of Nürnberg and not far from the Republic of Czech border. The terrain is rolling hills, dotted with small villages and plenty of landable fields. The airfield has four strips and is situated on top of a hill. The finishes make a great spectator sport because many gliders are below the height of the field before the pull up to make a straight in approach.

The conditions

August is near the end of the gliding season in Europe and, although the days are getting shorter, the soaring conditions are reliable. Many days are likely to bring cumulus with 5kt climbs to five or six thousand feet – but, there might be a few low blue days which the Aussie pilots love. Last year Australia placed 1st, 2nd and 3rd on two days with these conditions!

Following the competition on the Web

Some of the crew will be doubling up as reporters to bring you news of the competition daily. Armed with a digital camera and a computer, these talented all-rounders will send you commentary and photos so that you will be up with the action as it happens. The website will commence on 31 July and can be found at <http://members.ocean.com.au/trotterp/>



Easter at Gawler Adelaide Soaring Club Regatta



Right: Steve Pegler – LS3 gets last minute advice.



Left: Rolf and Nela Beulter.



Report from the IGC Meeting in Seattle

ROLAND STUCK (FRENCH IGC DELEGATE)

The meeting was held in Seattle and was sponsored by the Seattle Gliding Council, SSA, Ephrata shire and the Barron Hilton cup. The sponsorship consisted of a welcoming lunch, a dinner with guest speaker Eugene Cernan (last man to walk on the moon) and a tour of the Boeing factory and museum of flight. The intent was to promote Ephrata for the 2003 World championships. The USA bid was quite expensive, US\$1,300-1,500 entry compared to the Italian bid (Rieti) of US\$600. Considering that this competition will be held following the South African competition, which will be quite expensive, Rieti won the vote, although by only a small margin. This means that we will be back into mountain flying again. Overseas contestants will be given a free crew member.

Championships

PW5 and Women's world comps, Poland '99. Major concerns with getting gliders. Only 230 PW5's manufactured as yet, and spread over the world. At the moment we have not found any gliders for our two representatives.

2001 South Africa. We were assured that there are no security issues in the contest area, no one else seemed too concerned. The Pre-Worlds finish on 31 December 2000, World comps finish 31 December 2001. It would be good to hear some comments from the Hang Gliding folks, I understand that they flew a championships there recently.

1999 Solar Challenge. Sporting licence will be required for all competitors. This is an FAI Level 2 competition and as such incurs no fee.

2nd WAG, Spain, 2001. La Mancha Glide 23 June to 2 July 2000, WAG 8 June to 26 June 2001. To ensure larger numbers, they will split the competition into PW5 General category, Women's and Older pilot categories (this was not clarified, I don't know if I am old or not?).

World junior championships 2001. Bid accepted from Issoudun, France. 1 July to 18 July 2001. A flat site with good conditions, thermals to 2,000m. US\$416 entry fee. Other bidder was Slovakia.

2nd World comps Club Class 2002.

(Note: the Australian comp is actually the year 2000 championships, just a couple of weeks late). Bid from Lithuania. US\$450 entry fee. Will be decided next year.

Club class rules. Entries will be limited to specific handicap ranges. Old Open Class gliders, such as the Open Cirrus, etc. are acceptable in this competition, provided they fit the handicap range.

Environment. Need to promote that airfields are a venue for conservation. The draft environment guidelines were approved, as June 1999

temporary. I moved to have most of the detail removed from the guidelines but this was lost. My concern was that we may be held to the specifics of guidelines in the future.

GNSS. Handheld transponders for approx. US\$1,500 should be available soon. Approval fee for GNSS raised from 1,000 to 1,500 Swiss francs. Fee introduced for updates. 17 models/9 manufacturers have been approved so far. Use of event markers for competition purposes has been included in Annex A of the sporting code and these markers are now required for all approved loggers. GFAC committee producing official observers briefing notes for many loggers. Calibration period for loggers and electronic barographs has now increased to two years.

Simulated gliding. FAI considering a new section of the sporting code for 'Simulated Gliding'. Will be a demo at the WAG 2001.

World Class Glider. 230 manufactured. No orders so far in 1999. Current price 24,100 Swiss francs. Licences sold overseas but no gliders actually manufactured. TE tubing now included. Investigation reveals that there is no problems with winch launching – winch drivers need to be aware that the weight of

the glider is very low. PW6 2-seater now flying. PW5 marketing summit to be held in Poland at world comps. 5,000m height limit should be resolved by April.

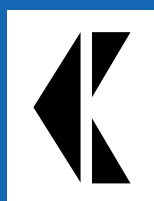
Sporting code. New simplified form for the sporting code was approved. Goal now accepted as reached if within 1,000m circle. 750kg weight limit for open class – for Bayreuth, if aircraft unable to reduce to 750kg, cannot use disposable ballast.

Distance records. Removed requirement to pre-declare remote start, finish and turnpoints. New changes are effective from 1 October.

Barron Hilton Cup. Rules to be published on the SSA webpage.

Number of competitors in 2003. Rieti will consist of 4 classes, Open and 18m, 1 pilot per NAC each. 15m and Std, 2 pilots per NAC each. Lilienthal Medal was awarded to Oran Nicks (posthumous).

Election. President Tor Johannsen (Norway), 1st Vice President Brian Spreckley (UK), 5 x Vice presidents – Dick Bradley (SA), Eric Mozer (USA), Tapio Savoleinan (Finland), Ake Petterson (Sweden), Terry Cubley (Australia).



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The Flight of the Owl



DENIS LAMBERT
(Darling Downs Soaring Club)

Ken Stehbens and I had been planning a 300km to 500km task for some time from the Darling Downs Soaring Club out of McCaffreys Field to get the soaring season started for us after a poor winter. Ken had only recently returned to gliding in June after an absence of several years so he was very keen to get back into some serious flying. We had planned several tasks of either 300 or 500km to take advantage of whatever conditions presented themselves on the day. On Thursday, 5 November, there had been a heavy cirrus cloud cover which remained unbroken for the entire day. Friday morning dawned with fog and drizzle in Toowoomba, but by the time I arrived at Oakey for work at 6:30am, only the cirrus remained. By the time I had driven out to the club from work, the cirrus had moved almost completely east of the strip and cu's were starting to develop in the north towards the Bunyas but the rest of the sky was still blue. After preparing the Puchacz and taking our photos we noticed a couple of small cu's developing to the south-west which was downwind so we eventually settled on a 300km task as we felt that the ground was not heating quickly enough for a 500km task and therefore the day would not be long enough.

Our chosen task was from DDSC to Millmerran A/F (62.3km), Brigalow Silo (123km), Jandowae Crossing (35.2km), DDSC (90.3km) – a total distance of 310.8km.

This task allowed us to be no more than 91km from the club at any one time and kept us in glide angle of most airfields during the flight which is handy on days when there is minimal crew available.

A launch was taken at 11:00 and as usual we found that we could have launched earlier as the Puch was able to climb in a patchy 3-4kt thermal to 5,000ft QNH. Unfortunately we were unable to climb any higher due to Oakey Airspace restrictions. The top of this climb put us in an ideal position to start so at 11:17 without any further ado we set out on task. This first section was flown by me with Ken driving the GPS. The clouds ahead looked good although there were the inevitable large blue holes to negotiate. After gliding down to 3,000ft looking for that one good climb I decided to stay as high as possible through this section and took a couple of weak 2-3kt thermals to maintain our height band. Once we arrived under the better cu's further south Ken took over and started upping the pace with a good 6kt climb under a solid cu to 6,000ft. Unfortunately the rest of the thermals on this leg were patchy 2-4kt climbs which were difficult to centre. We continued

across the Condamine River towards Millmerran until we were about 18km from the turnpoint.

Once again a blue hole presented itself so we slowed down and searched for some good lift to get us through with some respectable height remaining. A good looking cu eventually formed over the turnpoint so we headed off expecting a solid climb but found only a weak 2kt which was not worth stopping for. We turned over Millmerran for Ken to take a quick photo and then headed off to Brigalow Silo some 123km to the north-west.

The sky ahead promised a rapid increase in our speed but was also showing signs of overdevelopment. Ken picked up a good climb about 20km north of Millmerran and took it to the top at 6,500ft. We had planned to run under one of several cloud streets heading in the general direction of track, however these did not appear to be working well and our climbs were 2-3kt at best. The next 50 or so kilometres were spent trying to stay high over the scrubby area but we eventually lost contact with the cloud streets and ended up low at 3,000ft near the Broadwater. As we were getting lower we were also forced to diverge off course to the east in order to stay within range of good landable paddocks as the country west of the Broadwater is heavily timbered. We had been flying in cloud shadow for some time and the air was becoming buoyant but we could see a sunny

Left: Ken Stehbins and Denis Lambert after their flight. Good cu's can still be seen in the background. Turning Brigalow silos at 7,000ft heading towards Jandowae Crossing.

patch in the distance which we headed towards. Arriving over this area at about 2,700ft we searched until Ken contacted a weak 0.5kt thermal which at least managed to stop our descent. This was worked for about 10 minutes until it eventually grew in strength to 6kt which allowed us to climb away in style.

After this low point conditions improved as we headed towards Brigalow Silo. We found some strong lift of around 8kt in several places under some well developed cu's which allowed us to push on and round Brigalow at 14:10. The clouds towards the next turnpoint looked reasonable but the first couple of climbs only provided scratchy 2-3kt thermals which were difficult to work. I headed towards a promising cloud further on track through very strong sink which cost us 3,500ft and was rewarded with a good 5kt climb back to cloudbase at 7,000ft. After leaving this we headed towards a large cloud that had formed just north of Jandowae Crossing which looked promising. This cloud provided a steady climb which allowed us to take a turnpoint photo while thermalling in good lift. We turned at the crossing at 14:55 after what turned out to be a slow leg into wind with 90km left to run.

Ken started working out final glide requirements with his GPS while I concentrated on getting a decent climb. Due to the easterly sea breeze that can often come in at this time of year we planned to alter our course to a

more easterly heading so our final glide would be made with a minimum of headwind. Conditions ahead looked promising but once again only some clouds were working. I took a few weak climbs of 2-4kt to stay high and then handed over to Ken to search for that final glide thermal. We were still 50km out and below final glide path height as Ken headed for a solid looking cumulus cloud and was rewarded with the climb of the day which took us to 9,000ft in strong 8-9kt lift. With final glide assured we headed towards home via a small dogleg around Kommamurra Silo to avoid the Oakey Airspace Area. As luck would have it we flew through lift in the blue most of the way home and had to use airbrake to get in under the Oakey Airspace 5,000ft step. After arriving over the airfield I floated around for another half hour or so of local flying before we decided to land.

As it turned out we were probably a little conservative in our task setting as we could have left at least half an hour earlier and continued flying for another 2 hours after returning which would have put us close to a 500km flight task. Even so it was a great flight which was a lot of fun with very little real risk of an outlanding attached.

Unfortunately you won't see this flight in the Decentralised Competition as the photos didn't work out, but that's life. By the way for those who don't know, Puchacz is Polish for Owl.



GLIDING FEDERATION OF AUSTRALIA

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New FAI Badges & Certificates

Summary for May 1999

A Certificates

PADINA Sven Thomas 10277 Central Coast
ZIEGEMEYER Nico 10278 Southern Downs

B Certificate

FORD Neville George 9885 Southern Riverina

A and B Certificate

COCCI Carlo Vincenzo 10272 Balaklava
FENKART Joe 10280 Boonah

C Certificate

MARTIN Joshua Harley 10145 QLD AIR TC
PALLICH Rudolf 10270 Adelaide
JOHNS Evan Gordon 10205 NSW AIR TC
JONES Margaret Eileen 10207 Bathurst
JOHNSON Tristram Richard 10166 NSW AIR TC

A B C Certificate

PALMER Donald Albert 10271 Southern Cross
THOMPSON Benjamin John 10273 Kingaroy
RAY David John 10274 Narrogin
FOLLETT Stephen Denman 10275 Caboolture
CAPPONI Ralph 10276 Southern Riverina

A B C Certificate continued

WIESNER David 10279 NSW AIR TC
LESTRANGE Heath Edmund 10281 Southern Downs
CAMP Peter James 10282 Narrogin
FOX Mark Thomas 10283 Bundaberg
BULL Richard Phillip 10284 Bathurst

Silver C

GILES Alaric Owen Edward 4260 Lake Keepit
ANTHIMOS Michael 4262 Mangalore
McCAULEY Andrew Roger 4261 Adelaide
BULLOCK Michael Allan 4263 Adelaide
THOMPSON Benjamin John 4264 Kingaroy
CALLAHAN Campbell David 4265 Southern Cross
CAPPONI Ralph 4266 Southern Riverina
GODFREY John 4267 Central QLD
EMERY Robert Victor 4268 Lake Keepit

Gold C

ROCK Grapham Frederick 1511 RAAF Richmond

Diamond Goal

BULLOCK Michael Allan Adelaide
PALMER Don Southern Cross

Claims for all badges and certificates to:

FAI Certificates Officer:

Beryl Hartley

106 Meryula Street

Narromine NSW 2821

Ph: 02 6889 2733 (w), 02 6889 1250 (h)

Fax: 02 6889 2933

Email: hartley@avionics.com.au

Decentralised Competition entries to:

Gary Hollands

92 Grange Road

Westbourne Park SA 5041

Ph: 08 8230 5722 (w), 08 8271 2020 (h)

Fax: 08 8230 4428

Email: Gary.Hollands@adelaide.on.net

Another Retrieval

DAVID PHILLIPS

During the Australian Flatlands competition I had trouble staying with the field. Every day, it would race off and leave me floundering on my own. In trying to keep up, I was getting impatient, making rash decisions and paying the price. I resolved that on this particular day things would change, and I launched with grim determination.

My first thermal off tow took me reasonably quickly to 7,000ft. There was the gaggle, a swirling column of gliders, not too far away. I followed, they moved on. I followed, they moved on. This continued until we approached the first turnpoint, about 40km from launch. In my effort to keep up, I arrived at the thermals a little lower each time. Now I was less than 1,000ft agl, in scrappy lift and the gaggle above was already leaving. I'd lost them again. Positioning myself over a promising looking ploughed field yielded nothing substantial. More fruitless searching left me at 500ft and I started to think about landing. I had drifted a long way off course, and was uncomfortably aware that, save for a solitary farmhouse, the landscape was devoid of life. I had no retrieve crew and hadn't been able to contact any of my flying companions. A little bubble of lift took me back up to 800ft. Foolishly, I decide that a black field of recently burned crops nearby was a better source, and I drifted further off course. Nothing but sink and I cursed myself for leaving the zero lift. No choice now but to land next to the farmhouse. At least I could phone in from there.

I landed to find the house resembled a scene from the movie 'Paris, Texas'. No one had been there for a long time, I was a long way from the road, no one knew where I was, and I had no way of establishing contact. The air was shimmering in the afternoon heat. I'd spent the last hour scratching low, dressed for the cold of higher altitudes and felt utterly dehydrated. My only remaining fluid reserve was a small fruit juice carton I quickly devoured. A search of the house and surrounds for water brought up nothing. Tired, thirsty, hungry and on the ground again, I sat down in the dust and, after a satisfying period of self pity, cursed hang gliding and the world in general. The only alternative was to head for the main road and try to hitch a lift. From the air I remembered that the road to the farmhouse took a wide detour and it would be much further if I followed the road. I decided that the possibility of a lift from a passing car outweighed the extra distance.

I started to walk along the road. After 30 minutes of walking I had a change of heart, left the track and struck out across the field in the direction of the main road. As I approached the middle of the field I heard the sound and saw the dust trail of an approaching car. In vain I leaped up and shouted; the car continued towards the main road without stopping. The car must have come from somewhere, perhaps there was another, occupied farmhouse nearby? I started to backtrack, following the dust trail left by the car.

I trudged on. There was no wind and except for the flies buzzing around my head, it was completely silent. The heat was oppressive. Ahead there was a line of trees clustered along the road. After what seemed an eternity, the trees got closer, and lo!, there was a house. My heart sank as I realised this too looked derelict. In fact, it looked more than derelict, but wait, there were dogs tied up near the house, healthy and looking well fed, which was better than I felt. The dogs set up a cacophony as I approached, but there was no other sign of life. At least there should be some water about, even if I stole it from the dogs.

With the dogs barking, knocking on the door seemed futile, but I tried. Nothing stirred, so I walked around to the side of the house to look for some water. As I did so I got the feeling I was being watched and, with a start, noticed a man standing on the veranda no more than 20ft away, silently watching me. He had a demeanour that was quite unsettling, but I gathered myself and launched into the standard spiel: "Hello, I'm a hang glider pilot. I hope you don't mind, but I've landed on your property nearby. Would you mind if I used your telephone?" He remained completely motionless until I mentioned the telephone, whereupon he abruptly walked inside, leaving the door open. Taking this as an invitation, I followed.

The interior of the house was an absolute shambles. Junk filled every crevice, and everything was covered with a thick layer of dust. My host pointed to a pile of dust in the shape of a telephone. I told the organisers I am down safely and will make my own way back to town.

After the call we stood in uncomfortable silence. I tried to strike up a conversation about the usual things, but there was only the most grudging response. Obviously I was not welcome, so in a fit of inspiration, I asked how far it was to the main road. "Coupl'a miles," he responded immediately. I got the message. "I'll walk to the main road." I put money on the table for the telephone call and ran. I knew that a brisk walk would cover one mile in about fifteen minutes, so a 'coupl'a miles' should not take more than 45 minutes, given my now weary state and less than brisk pace. So it's a little disheartening to find absolutely no change in the scenery after an hour and a half. No main road, just the track, stretching on forever. Perhaps my previous host had stretched the truth a little to get rid of me.

I trudged on. For some reason I had left my glider in the wilderness but had chosen to carry my harness with me. The straps were cutting into my shoulders and the bottom of the harness was rubbing painfully against the backs of my thighs with each step. After a time, in the distance, I could see what looked like an intersection in the road. I thought I must be getting close; my pace quickened. When I arrived I found that the road I was on ended at a crossing with yet another track. I had a choice: left or right. According to my compass, the main road was straight ahead, and since nothing suggested either direction as more promising, I tossed a mental coin and turned left. For a time things looked better, as the road seemed to be turning back in the right direction, and it looked like it was more travelled. My spirits rose; I'd be at the road soon, a lift would be easy to find, and I'd be at camp in time for a late dinner.

I rounded a corner shielded by trees to be confronted by an old wire fence blocking the road, which petered out a hundred metres or so further on. Wearily I slumped to the ground, visions of dinner fading into the distance. I had thought that landing when I did, finding no water at the deserted farmhouse, and my reception down the road were low points in this saga, but they were just practice for the way I was feeling at this time. I seriously considered just staying where I lay and waiting for the vultures. "That would be pretty stupid – there

Story

aren't any vultures in Australia!" I said out loud to the malevolent landscape. I gathered myself up, shouldered my harness, and headed back down the road. It took twice as long to arrive back at the intersection, and I was beginning to wonder if I had somehow managed to wander onto another track in my delirious state.

With perverse elation I eventually found myself back at the intersection. It had taken an hour and a half to arrive back at the same place in the middle of nowhere. I strode through and along the new track, which gradually rose towards a crest about a kilometre ahead. As I approached the crest, the track seemed to turn in the wrong direction again. Typical, I thought, I'm going to end up walking around in circles all night.

Abruptly, the track ended and I was confronted with a tar road. This had to be the main road. I stood in the middle of the road, walked in circles and shouted 'Hallelujah!' to the gods.

It was now dusk so I settled down comfortably on the side of the road to await my lift. It was a main road, and it was on the way back from the turnpoint, so there had to be lots of traffic. But there was nothing. I began to doubt that this was the main road after all, so I walked for about 500m in each direction to convince myself that the tar under my feet wasn't an illusion. Still nothing. I decided that I could probably sleep where I was quite comfortably – I felt like I could have slept anywhere quite comfortably – and hitch a lift in the morning. I was glad I had my harness with me after all. It was about 9pm, although I was beyond caring. I amused myself by looking for a patch of ground free of ants, which seemed to be everywhere.

In the distance a light appeared. I leapt into the middle of the road, planted my harness down in front of me, and vowed that there was no way I would let this car pass; they'd have to run me over first. As it got closer I could make out in the gloom that it was a large van, with gliders on the roof – sweet salvation indeed! The van lurched to a stop amid a chorus of raucous cheers from inside. I had managed to stop the Moyes van on its way back from goal. The lads had been at the pub celebrating a little and were in fine voice. Drew Cooper leapt from the back, strode up and said: "Who the f*** are you and what the f*** are you doing here?" This seemed like the most wonderful thing anyone had said to me in a long time and I just wanted to hug him, but resisted the temptation. The chorus in the back wanted to know if I needed a lift, and if so, what kind of glider did I fly?

I confessed that it was not a Moyes; the chorus responded "No way, back in the truck Drew, we're leaving." I offered to write a cheque on the spot for a Moyes glider, so they relented. "Where's your glider," they asked? Sheepishly I pointed into the darkness and said, "About ten miles that way, I think." "No problems," said the chorus, "we'll find it," and the van roared off down the dirt track.

We retraced my painful path, and explored a few new ones, before we finally located my glider in the darkness. There was much discussion about whether they should put my glider on the bottom, because they couldn't bear the idea of it travelling above the Moyes gliders, but decided it was too much trouble and tied mine on top. The chorus decided to make me team mascot, and I was given ceremonial access to the esky. I had quite a bit of catching up to do, and needed little encouragement – the first beers barely touched the sides. By the time we arrived back at camp I was feeling no pain, and was thinking, "What a great day. I wonder what tomorrow will be like."



June 1999

Hang Gliding

Snapping Away



Andrew McKinnon takes off from Ben Nevis, Victoria.

Photo: Ingrid Holtkamp



Larry Jones above Myponga Cliffs, South Australia.

Photo: Max Browne



Simon Bickerton on tow at the end of the rainbow.

Photo: Murray Wood



Monte and Nion hanging around Rainbow Beach, Queensland. Photo: Trevor & Ann Mitchell

HGFA Operation Manager



Quote of the month:
'A thunderstorm is never as bad on the inside as it appears on the outside. It's worse!'

A Sailplane, Parachutes and Lightning

The following report was just received from Europe:

'An ASK21 from Dunstable, England, crashed after being hit by lightning on Saturday, 17 April. The pilot and passenger sustained minor injuries. They were flying under a clear blue sky at 2,500ft, about three miles in front of the cloud's leading edge. According to a witness on the ground, a ball (yes, ball) of lightning flew out of the cloud and hit the glider. Immediately the right wing exploded and fell away. As the glider began to spiral down the left wing also came off and the two pilots bailed out. One landed on the roof of a disused garage and managed to get himself down. He was slightly hurt. The other landed in a field but fractured his ankle. He also suffered slight burns to his neck and the back of his head. His fleece jacket was blackened. Both pilots have damaged ear drums but neither have lost their hearing completely.

This is a bizarre accident. The skin of the right wing was completely blown off, as was part of the skin from the fuselage. The control rods were melted through. It appears as though the rapid heating caused air and/or water trapped inside the glass fibre structure to expand rapidly and literally explode. If the same thing had happened to a powered aircraft of similar construction the fuel tanks would almost certainly have exploded too.

We owe a debt of gratitude to our recently departed CFI who introduced the compulsory wearing of parachutes in club gliders. Up till about two years ago we generally did not use them in two-seaters except for aerobatics. A Dunstable parachute repacking rush is now expected and basic instructors are being doubly careful about parachute and baling out briefings.'

More on Safety Equipment

Prioritising the order in which a new pilot buys equipment is always difficult. One item that is often ignored is a UHF radio. As one instructor put it to me: 'I see too many new pilots flying with a vario and no radio. A vario will not enhance safety, while the radio will allow instructors at sites frequently used by visiting pilots to keep a check on their safety. This will help to ensure not only the safety of the pilot but the security of the site.'

Operations near Airports

The operating rules for hang gliders and paragliders near uncontrolled airports are the same as for our cousins in larger gliders. When operating below 3,000ft within 8km of any aerodrome that is used by regular public transport services (RPT), or when operating within a Mandatory Broadcast Zone (MBZ), VHF airband radio must be carried and used in accordance with established procedures. MBZ boundaries are shown on VTCs or ERCs; you will have to contact either the airport owner or local travel agents to determine whether an RPT operates at specific airports. These requirements, along with our other operating rules, are laid out in the HGFA Operations Manual, section 6.

Accident Reports

The following two reports from the USA reinforce the need for a thorough pre-flight check.

No 1

Pilot: Weightshift microlight pilot
Experience: Unknown
Injuries: Fatal
Aircraft: Aerotrike-Safari with a Spirit-14.8 wing
Aircraft damage: Total

Description:

'The fellow that died in this accident in Texas was considered to have had adequate training and was thought to be responsible and conscientious. I don't know how this could have happened – when attaching the front wires to the channel under the nose of the trike, everybody knows that you must not move from that spot until the safety ring is installed. It was definitely determined that the accident was caused by the pilot not having installed the safety ring on the retaining pin that holds the lower front wires in position (in the channel under the nose of the wing), and by the pilot not having caught this terrible mistake during his pre-flight inspection. Without the safety ring in place, the retaining pin worked out of the lever and the front lower wires disconnected. It's not been explained exactly what then happened, but apparently the rear lower wires became very loose, got into the prop, the wing violently tilted up, the trike quit flying and fell.'

No 2

Pilot: Tandem Instructor
Experience: Substantial – hours unknown
Aircraft: Tandem hang glider
Pilot Injury: Fatal
Passenger Injury: Concussion

Description:

Aerotow launch from a dolly. The glider remained attached to the dolly and began to lock out immediately after launch. The pilot released as the bank angle increased, but was unable to level off before hitting the ground.

Analysis:

Though uncertain, it appears that the tow bridle was routed through part of the frame of the dolly.

No 3

Pilot: Intermediate paraglider pilot
Experience: 85 hours
Aircraft: Intermediate paraglider
Pilot Injury: Bruising to ribs, concussion
Aircraft Damage: Nil
Weather: 10-15 kt wind
Location: Coastal soaring site

s Report

Craig Worth flying at Rainbow Beach, Queensland,
with Fraser Island in the background.

Photo: Jean-Luc Lejaille

Description:

The pilot had only several hours on the coast and decided that, as coastal soaring is 'safe', he would try some 'big' wingovers. After three or four wingovers he had a small tip collapse (it felt like it had come out); during the next one, with the pilot well above the glider, the canopy suffered 80% deflation. After a partial recovery the glider went negative, and after two or three attempts to recover the 'mess' the pilot realised he had insufficient height to deploy his reserve and landed heavily on sand dunes.

Comments:

The pilot stated that he should have deployed his reserve immediately the glider collapsed. He put the accident down to overconfidence and inexperience on the coast. He stated that he was sucked into the common belief that inland pilots develop – that soaring in coastal air is 'foolproof'.

No 4

Pilot:	Restricted hang glider pilot
Experience:	10 hours
Aircraft:	Nov/int hang glider
Pilot Injury:	Nil
Aircraft Damage:	Broken keel, broken downtube
Weather:	25-30kt wind
Location:	Small coastal soaring flight

Description:

After waiting half an hour for other pilots to turn up, the pilot asked two inexperienced people to give a wire assist. As they got in position to launch, a wing lifted and the wire assistant thought she was going to be lifted off the ground – so she let go. The pilot was soon on top of his broken glider in nearby bushes.

Comments:

Strong winds, an inexperienced pilot and wire assistants with no experience whatsoever. A recipe for disaster. He was lucky to only break his glider.

Fly safely,
Craig Worth



So They Say...

Take offs are optional. Landings are mandatory.

If God meant us to fly, He'd have given us more money.

If you push the stick forward, the houses get bigger; if you pull the stick back they get smaller. (Unless you keep pulling the stick back – then they get bigger again.)

Flying is not dangerous; crashing is dangerous.

It's better to be down here wishing you were up there, than up there wishing you were down here.

Speed is life, altitude is life insurance. No one has ever collided with the sky.

It's best to keep the pointed end going forward as much as possible.

The only time you have too much fuel is when you're on fire.

Flying is the second greatest thrill known to mankind... Landing is the first!

Every one already knows the definition of a 'good' landing is one from which you can walk away. But very few know the definition of a 'great landing'. It's one after which you can use the airplane another time.

The probability of survival is equal to the angle of arrival.

Always remember you fly an airplane with your head, not your hands.

Never let an airplane take you somewhere your brain didn't get to five minutes earlier.

You know you've landed with the wheels up when it takes full power to taxi.

Those who hoot with the owls by night, should not fly with the eagles by day.

'Young man, was that a landing or were we shot down?'

Learn from the mistakes of others. You won't live long enough to make all of them yourself.

Trust your captain... but keep your seat belt securely fastened.

Any pilot who relies on a terminal forecast can be sold the Brooklyn Bridge. If he relies on winds-aloft reports he can be sold Niagara Falls.

Good judgment comes from experience and experience comes from bad judgement.

Aviation is not so much a profession as it is a disease.

There are three simple rules for making a smooth landing: Unfortunately, no one knows what they are.

Any attempt to stretch fuel is guaranteed to increase headwind.

Remember, you're always a student in an aircraft.

Keep looking around; there's always something you've missed.

Try to keep the number of your landings equal to the number of your take offs.

You cannot propel yourself forward by patting yourself on the back.

There are old pilots, and there are bold pilots, but there are no old, bold, pilots!

Asking what a pilot thinks about the FAA is like asking a fireplug what it thinks about dogs.

Gravity never loses! The best you can hope for is a draw!





Surviving Mid-

TONY SEGAL

During the 1914-18 war a brave pilot of the Royal Flying Corps, who had the misfortune to be shot down with no parachute in his Sopwith Camel, could decide whether to jump regardless, or to burn.

By World War II, fighter pilots were equipped with personal parachutes but survival was rarely possible below 1,000ft, over 200kt airspeed, or from an aircraft undergoing significant rotation or acceleration. The Luftwaffe Dornier 335 fighter was first flown in 1943, and was fitted with an ejector seat. After the war the Martin Baker Aircraft Company developed the modern military ejection seat and, these days, a pilot escaping from a 'severe' situation has a 95% chance of survival.

Microlights and Hang Gliders

Microlight and hang glider pilots have been using 'whole aircraft parachute recovery systems' for many years; the low mass and high drag of these aircraft, coupled with the low velocity reached in a dive, makes them particularly suitable. Worldwide, 14,000 such systems are in use and 124 lives have been saved. In the UK the British Hang Gliding and Paragliding Association reported that by 1994 the lives of 23 BHPA members had been saved by these recovery systems. Of 47 deployments, 17 were accidental, 23 were successful and 7 failed; it is clear that no system can give a 100% recovery rate.

Sailplanes

In comparison with a microlight, a sailplane has a high mass, low drag and rapidly reaches a high speed in a dive. The cockpit is clear of surrounding structures and it would appear, at first sight, to be easy for a pilot to climb out and operate his personal parachute. Until recently these assumptions turned attention away from the use of whole-aircraft parachute recovery systems in gliders.

Research in Germany

The Bundesministerium für Verkehr (the German Federal Ministry of Transport), became concerned about the number of fatalities following mid-air accidents in gliders. In 1988 a study was financed by the Ministry and undertaken by Prof. Wolf Röger at the Fachhochschule Aachen (FH Aachen), the Aachen University of Applied Sciences, and is still in progress under Röger and his colleagues.

The Problems of Baling Out

Röger carried out an analysis of the mid-air glider accidents in Germany for the years 1975-1988. There were 34 accidents, the majority clearly being collisions between two gliders. In total 58 gliders were involved, of which 14 landed safely. 64 pilots were involved, of which 28 were fatally injured. 32 pilots jettisoned the canopy, or were seen trying to do so, and of these, 19 survived and 13 were killed. The remaining 15 deaths occurred in the cockpit without any evidence of the pilot trying to bale out.

Following this study, Röger investigated the problems involved in baling out of a glider cockpit.

The short time interval between the accident and the glider hitting the ground is an obvious problem.

Canopy Jettison

A series of experiments was carried out involving pilots aged 20-60 years. A three-lever jettison system took 3.5 seconds to operate. A one or two-lever system, operated simultaneously by both hands, only took 2.5s. One second was saved if the canopy were pulled away by the airstream. The age of the pilot had no effect in these tests.

Getting Out

The time taken to get out of the cockpit, after releasing the seat belt, was affected by age, physical condition and load factor. Getting out took a well-trained fit young person 2.6 seconds, and an older person 4.5 seconds. When a load factor of 1.5G was simulated, by attaching lead weights to the pilot's body, a young person took 3.5 seconds, and an older person took 7.2 seconds. Under this load factor some people, aged 40 years or more, were unable to get out at all. The instrument panel and the height of the cockpit wall also affected the exit time.

Load Factor – Wind Tunnel Tests

Experiments were carried out in the wind tunnel at FH Aachen to investigate the aerodynamic loads on the canopy during jettisoning. The experiments were carried out with a rear-hinged, front opening canopy. With a small forward opening of less than 3cm the airflow past the cockpit produced low pressure inside the cockpit. The resulting force tended to move the canopy forward and held it down on the fuselage. If the front of the canopy were raised above 6cm the airflow lifted the canopy away from the cockpit and tended to move it backwards. Opening the cockpit ventilation and closing the clear vision panel, raised the air pressure inside the cockpit, assisting canopy removal. The internal pressure was raised even more during a side-slip.

Full-size Glider Tests

Prof. Röger carried out tests using a full-size LS4 fuselage mounted on the roof of a car which was driven down the runway of the NATO airfield at Geilenkirchen. The canopy was released and its motion and flight path recorded on video.

Front-opening Canopies

The first tests were carried out with the canopy being raised mechanically, operated by the car's front seat passenger. A front-opening canopy, in position and unlocked, remained in place regardless of the angle of attack. Above 85kt, the canopy lifted off the fuselage. With side-slip of greater than 15°, the canopy separated slowly from the fuselage, hit the instrument panel, hit the pilot, hit the wing and then the rudder.

The test was repeated with the front of the cockpit raised by 20cm. The canopy lifted off, pitched nose down and returned to the fuselage aft of its original position. The airflow then held the canopy closed so preventing exit. With side-slip the raised canopy separated from the fuselage, but the front of the canopy turned into the cockpit, hitting the pilot.

Air Accidents

Side-opening Canopies

The left side of the canopy was released and raised slightly.

The canopy hinged on the right side, then released and lifted away. It flew off the fuselage with a nose down movement, across the cockpit to the left side, without gaining height, and hit the pilot. The canopy then flew over the left wing, over the rear fuselage, finally hitting the tail on the right side.

Clearly, this cannot be considered satisfactory. An alternative method is to release, and push upwards, the left side of the canopy. The canopy rotates 180° around the right hinges until they break off. The canopy flies back, passing below the right wing and then hits the tail, but passes clear of the pilot without injuring him. This method of jettisoning a sideways-opening canopy is recommended over the method of jettisoning both sides together. There is, of course, a danger that the hinges won't break, in which case the canopy would slam shut.

Real Pilot Tests

All the above tests were carried out with the canopy released by a mechanical device. Tests were then carried out with a pilot in the cockpit and a forward-opening canopy. Two handles were fastened to the canopy frame forward of its centre of gravity.

The canopy was released and the handles were easily pushed upwards. The airstream then pushed the nose of the canopy down (the centre of lift of the canopy is to the rear of the centre of gravity) and it was not possible for the pilot to control this movement; within 40 milliseconds the canopy struck the cockpit, blocking the pilot's emergency exit.

The next test was a pilot-operated canopy release with a side opening canopy. The pilot was wearing a leather jacket and a crash helmet, and the canopy strut was also padded. The pilot pushed the canopy quickly to the right. There was a nose-down pitching movement, and a nose-inward yaw of the canopy. The nose of the canopy turned into the front of the cockpit and slid up the pilot's arms towards the pilot's face. The pilot was Wolf Röger himself.

This series of tests showed that during manual jettisoning of the canopy the pilot is unable to control its movement and there is a high risk of injury.

Improved Canopy Hinge

To improve the situation, the nose down movement of the canopy has to be transformed into a nose-up movement. Three methods are available to achieve this. In the first method an additional weight at the rear of the canopy would move the canopy's centre of gravity (CG) to the rear of the centre of lift. However, a weight of 18lb (8.2kg) would be necessary, so this method is not feasible.

The second method is to change the canopy's aerodynamic shape. A theoretical study was carried out of forty-six different canopy shapes, confirmed by wind tunnel tests. One design of canopy produced a slight nose-up movement over the whole range of angle of attack and airspeed. However, it would only be of use for the rear cockpit of a two-seat glider.

The third method involves a hinge situated between the rear of the canopy frame and the rear of the cockpit opening: the hinge is designed to disengage at about a 30° opening angle of the canopy. The pilot grasps two handles situated to the front of each side of the canopy

frame and lifts up the front of the canopy, which immediately rotates upwards around the hinge. At about 30° the canopy separates from the fuselage, flies clear of the pilot, then passes well above the rudder.

If sideslip is present, the canopy takes a similar flight path but displaced to one side. The "Röger hinge", as it is now called, is the recommended method of attaching the canopy frame to the cockpit.

Ballistic Parachute Recovery

There are two methods of ballistic parachute recovery. In the glider rescue system (GRS), the entire airframe, with the pilot remaining in the cockpit, is lowered to the ground by parachute. In the pilot rescue system (PRS), the glider is first stabilised by a small parachute. This parachute then extracts the pilot from the glider (after automatic canopy jettison and seat belt release). The pilot is then lowered to the ground either by the small parachute, or by his own.

Glider Recovery System (GRS)

Röger analysed 42 mid-air accidents involving gliders in Germany from 1975-1990. Most of these accidents involved collisions. Half the gliders involved lost a wing or part of a wing, one third lost their elevators, and the rest their rear fuselages and tailplanes. The wing-root area mostly remained intact, and the recovery system should, therefore, be installed in this area.

GRS – Flight Path After Damage

Following the loss of part of a wing, the glider rolls into a spiral dive, with the intact wing initially being uppermost. The steepness of the dive depends on the amount of the wing that has been lost. In extreme cases, a negative angle of attack may be reached.

If the elevator is lost, or the tailcone and tail unit is lost, the glider dives into a negative loop – a bunt. The glider accelerates rapidly, the airspeed increases rapidly, and might exceed V_{ne} . These findings were confirmed at FH Aachen by computer simulation, and by drop tests on model gliders.

GRS – Parachute Deployment

T-shaped tails are common in gliders. The deployment system must first pull the parachute bag out of its storage compartment in the fuselage. It must then lift it clear of the tailplane, even when the glider is at a negative angle of attack. The constituent parts of the parachute must then be streamed and stretched in order – the bridle, the risers, the canopy suspension lines and the canopy itself – in order to avoid the lines tangling and fouling the tail unit. A high-lift drogue parachute would have poor inflation in the turbulent air close to the fuselage and would have poor dynamic stability. A ram-air drogue parachute will not fill at high speed, or if spinning, and requires a large canopy area that might collide with the tail during inflation. Neither is suitable for parachute deployment.

For conventional glider designs, a spring or compressed-gas operated device would not supply enough energy to enable the parachute bag to clear the tailplane. A high energy device is required. This can be either a mortar, a gun or a rocket. A mortar or a gun will cause recoil that might damage an already weakened airframe. The favoured method is therefore a solid fuel rocket.

GRS – Static Stability

Three or four parachute risers are needed to ensure that the damaged glider remains stable as it descends. These should be grouped around



Surviving Mid-Air

and above the glider's CG. However, if part of the glider structure is lost, the CG position will alter; if the tail or part of the rear fuselage is lost, the glider will pitch nose down; if a wing, or part of a wing, is lost the glider will tend to roll. The glider will hang so that the CG is below the intersection points of the risers. To minimise the change of pitch produced by loss of glider structure, simple geometry shows that the risers should be as long as possible.

The angle of attack of the aerofoil affects stability. A glider descending under a parachute has a most unusual relation to the airflow which comes from under the wing instead of the normal direction. Röger has shown that for any given aerofoil, static stability is only possible at the following angles of attack:

- The normal flight range, up to $+13^\circ$,
- A range of $+20-30^\circ$,
- From $+50-70^\circ$.

The length of the fore and aft bridles should be adjusted, as they are installed, to give an angle of attack in this range. The third option also gives a satisfactory attitude for ground impact.

These results were based on computer simulation and eighty free-flight tests with a scale model glider (scale 1:4.8) dropped from a tethered barrage balloon. A steady state descent of 160' was obtained. The results were analysed from a flight data recorder and analysis of video film.

GRS – Forebody Wake Glider Rotation

The wing of the descending glider is deeply stalled, and so is producing large wingtip vortices. These hit the side of the parachute canopy, causing the canopy to oscillate and thus lose drag.

The disturbed air is known as forebody wake, and the effect can be reduced by the length of the parachute risers being longer than a wingspan. With this increase in riser length the parachute efficiency is increased.

A further advantage of a long riser is that it will compensate for rotation between the parachute and the glider, as in a spin or a spiral dive. It obviates the need for a heavy swivel. In any event, a swivel is not "failure tolerant", so is not the best solution to the problem of rotation.

GRS – Effect of 'Opening Shock'

When a parachute is deployed, the canopy, suspension lines and risers are first stretched taut. This produces the "opening snatch". Air then enters the canopy and impacts the crown of the canopy, producing the "opening shock".

The damaged glider might be in any attitude when the parachute deploys. Each riser and its attachment to the airframe must therefore be able to withstand the entire opening shock.

The parachute canopy in its bag is first lifted upwards so as to clear the tail unit. The airflow then moves it in line with the fuselage. In the event of the loss of the tailplane, the glider will start a bunt, with a downward rotation of the nose, and a negative angle of attack. This will result in the parachute opening below the line of the fuselage. A further factor is that the risers are attached above and in front of the CG of the glider. The result of this is that the opening shock produces an upward rotation of the nose of the glider. A good effect of this is that the airspeed of the glider is reduced. A bad effect is that a violent pitching movement will be produced. This pitching movement will have almost no damping in the absence of the tailplane. In the event of a very violent opening shock, the glider might even start to loop and then fall into the parachute lines. Clearly, this would be disastrous.

When the parachute deploys more or less in the line of the fuselage, the opening shock will produce a rapid deceleration of the fuselage.

Accidents

The inertia of the wings will result in forward movement of the wingtips. This in turn will produce a load on the main spar and on the wing root fittings for which they are not primarily designed. The resulting structural failure could crush the cockpit and the pilot.

A further problem occurs if the pilot delays the operation of the system, and the parachute deploys when the glider is flying inverted at the bottom of the bunt, following loss of the tailplane or rear fuselage. The parachute canopy will exert a force in the direction of the airflow, causing the nose of the glider to drop into the second part of a positive loop. The glider will then fly through or rotate until it is the right way up. The complete flight path will be "S-shaped". Röger believes that the rotation would be very rapid, and little loss of height will occur. It is clear that the pilot must operate the system as early as possible.

It is vital that the opening shock is as small as possible. A large canopy opens more slowly than a small canopy, but the opening shock might be greater. A "reefing" system must be used – this controls the volume of air entering the canopy, increases the opening time of the parachute and reduces the opening shock.

GRS – Ground Impact

This is a critical phase of the rescue, especially regarding spinal injury. A 60-year-old pilot can withstand a compression load on the spine of 675lb force. At a nose down attitude of the glider of $20-45^\circ$, and a descent velocity of six metres per second, the impact load on the spine should be below this value. This attitude of the glider ties in very well with the angle of attack of the wing required to give stability to the descending glider.

A modern crashworthy cockpit should ensure the pilot does not suffer injury due to the ground impact. The pilot may receive minor injury in an older type of cockpit.

GRS – Suitable Systems

The systems are supplied in three types of pack:

- **CANISTER.** This consists of a lightweight aluminium cylinder housing the parachute canopy, which is pressure packed to 20 tonnes, and is waterproof. It can be left for six years between factory repacks.
- **VERTICAL LAUNCH SYSTEM (VLS).** This is a low-profile fibre glass container with a frangible cover, for mounting on top of the airframe. Parachute canopy repack cycle is every four years.
- **SOFTPACK.** These are mounted on a steel tray, and can fit into awkward spaces. Canopy repack cycle is between one and three years depending on the application.

I understand that eight out of ten new gliders in Germany are equipped with an engine. When the recovery system is installed, the rocket can be angled by up to 15° to left or to right of the vertical. I suggest this be done, to reduce the risk of a deploying parachute tangling with the motor pylon. The manufacturers stress that the engine must be shut down prior to system activation.

GRS – Rocket Attachment

The rocket must have a means of escaping from the glider airframe. Fabric covers are easily penetrated. Dacron is stronger and requires a velcro-closed panel. Plastic, fibre glass or aluminium would need a blow-through panel.

Ignition is by dual redundant mechanical igniters. No electricity is required. The activation handle requires a force of 45lb. A dual action is required which makes inadvertent operation unlikely.

The canopy should be matched to the all-up weight of the glider. At sea level, a descent rate of 6.4m/sec is obtained. At 5,000ft, a descent rate of 7.6m/sec is obtained (see Table 1). The all-up weight of some typical gliders, including water ballast where applicable, is as follows:

Nimbus	1,650lb	(comp. weight)
Discus	1,156lb	
Junior	838lb	
ASK 13	1,166 lb	

A problem is the relatively low maximum deployment speed of the systems. The peak deployment load for the GARD-150 is 3G, so the attachment points for the parachute risers will have to be designed to withstand 4.5G. A further point is the increased opening shock at altitude. This will require calculation, and will require an increase of design strength of the riser attachment points. It may be possible to design energy absorbing attachment points, so reducing the required design load.

TABLE 1 – Technical details of various GRS systems (numbers are approximate)

System	Max. glider AUW (lbs)	Max. deployment speed (knots)	System weight (lbs)	Canopy diameter (feet)
BRS-500	500	70	20	24
BRS-750	750	86	22	28
BRS-900	900	119	25	28
BRS-1050	1050	135	27	30
BRS-1200	1200	127	32	32
BRS-1500	1500	127	40	36
GARD-150	1645	120	43	40

Pilot Rescue System (PRS)

This is an alternative to the glider parachute rescue system. A high energy system deploys a small drogue parachute. Simultaneously, locking clamps on the glider canopy and the seat harness are released. The drogue parachute stabilises the damaged, tumbling glider. The attachment of the drogue is transferred from the glider to the pilot. The drogue first pulls away the glider canopy and then the pilot from the cockpit. The glider then falls safely away from the descending pilot.

Röger recommends that the drogue parachute then lowers the pilot safely to earth. This implies that the drogue parachute has to be as large as a conventional personal parachute.

Mike Woollard, Chairman of the BGA Technical Committee and a past Technical Director of Irvin Parachutes, presented a paper at the OSTIV Congress at St Auban discussing the different rescue systems. He favoured the Pilot Rescue System, but suggested that the pilot, having been extracted from the cockpit, was then lowered to earth by his own personal parachute. This would enable the drogue parachute and the personal parachute to each be optimised for its particular function.

The extraction of the pilot from the cockpit has been studied on a test rig at FH Aachen. The instrument panel needs to be raised or jettisoned with the glider canopy. The test extractions showed there was no risk of collision between the pilot and the cockpit structure. There was no risk of injury to the knees of the pilot. However, at a nose-up attitude of +20°, the pilot's head jerked backwards. The load on the pilot was low, being 1.5-5G.

After the pilot has been extracted, the glider will drop freely in an uncontrolled flight path without a parachute. In the special case of the glider losing one wing it will roll, and there is a danger that the rising, intact wing will strike the pilot, or his parachute.

Minimum Height for Survival System Operating Times

Modern gliders have low drag and hence gain speed rapidly in a dive, as after a mid-air collision. Assuming the glider is in a vertical dive and has no drag, starting at an initial velocity of zero it will have attained a speed of 95kt after 5 seconds. After 7.5 seconds it will be flying at 145kt. At 10 seconds it will have reached 190kt, beyond the V_{ne} of most gliders. It is clear that the pilot must initiate the rescue system as soon as possible after the accident.

Comparing the two types of ballistic recovery system, the glider recovery system and the pilot rescue system, they both have an improved capability over a personal parachute.

The minimum height for successful deployment depends on the reaction time of the pilot, and the canopy inflation time. The glider recovery system decelerates the glider immediately, but the large parachute required takes time to fill. The pilot rescue system operates slowly at first due to the complicated mechanical release system, but the small parachute opens rapidly. The pilot rescue system is slightly faster than the glider recovery system.

It is of interest to compare the personal parachute with the glider recovery system (see Table 2). The figures are taken from the St Auban OSTIV paper of Mike Woollard. The time advantage of the glider recovery system over the personal parachute is clear.

TABLE 2 – Times taken (in seconds) to reach safety

Action to be taken	Personal Parachute	Glider Recovery System
Decision to abandon flight:	1.5	1.5
Undo straps:	1.0	n/a
Jettison canopy:	1.5-20.0	n/a
Exit glider:	3.0-4.0 (or much longer)	n/a
Pull ripcord or operating handle:	1.0	1.0
Parachute canopy opening time:	1.5	2.5
Time to safe rate of descent:	1.0	1.0
Total Time:	10.0-30.0 (or longer)	6.0

Röger considers that after a mid-air accident in level flight, at 50kt and with a pilot reaction of 2.5 seconds, the minimum deployment height is 650ft. In level flight at 80kt airspeed, the extra kinetic energy results in a lower minimum deployment height of 400ft. A vertical dive will result in a greater height loss, especially at high speed. At 80kt, in a vertical dive, a minimum deployment height of 1,100ft is necessary.

The effect of the mass of the glider is of only slight significance. A glider mass of between 200kg and 750kg will only result in a difference in minimum deployment height of 100ft.

A parachute reefing stage holding back half the drag area for half a second reduces the opening shock by half. Considering a glider diving vertically at 80kt, the minimum deployment height will only be increased by 70ft by the reefing system. At high altitude, such as 16,500ft (5,000m), the opening shock is much greater, but the question of minimum deployment height does not apply.

System Design

The system of ballistic parachute recovery used needs to be carefully designed to reduce the risk of failure. A Failure Mode and Criticality Analysis should be carried out to demonstrate its reliability.

Airworthiness Standards

The German authorities have recommended that the systems should be designed to operate at up to 4,000m (13,000ft), and up to V_{ne} .

The OSTIV Airworthiness Standards recommend an operating height of 5,000m (16,500ft) to allow for the generally higher ground level of some areas of the USA. The velocity is set at the Design Speed, a higher figure than the German requirement.

The two systems are otherwise very similar.

Conclusion

In many critical situations, such as mid-air collisions, these devices could save many more lives than the use of conventional personal parachutes.

Tony Segal is a retired GP. He has researched safety issues for many years.

HGFA Events

Australia

National Microlight Gathering

5-6 June 1999

Wangaratta Aerodrome, VIC. The largest microlight gathering in the southern hemisphere with over 60 trikes attending last year, and a good time to see trikes and meet instructors and pilots. Saturday night dinner available for \$15pp, with guest speakers. For dinner reservations or further information please contact the Southern Trike Club on 03 97511480. All are welcome.

Bright Autumn Festival Fly-in

7-8 June 1999

Bright Alpine Fly-in

27-28 June 1999

Porepunkah, VIC. Both events are held at the Porepunkah airfield (36° 43.2min S, 46° 53.3min E), 4 Nm ENE of Mt Buffalo. Enjoy our friendly fly-ins & experience the colours & calm autumn air. Contact: Greg or Rosemary Withers (Bright Microlight Centre), ph: 03 57501555, Don Walpole, ph: 03 57535250 or Coach House, ph: 1800 813992.

Murray Triking Safari

7-14 June 1999

Wangaratta to Strathalbyn and return. For further details contact Tony Dennis on 0418 574068.

Manilla Mug Revival

2-4 October 1999

(NSW labour day weekend)

Competing for the Manilla mug trophy. Entry open to all pilots of any footlaunch aircraft. Entry fee of \$20 includes dinner. Register at the Imperial Hotel, Manilla, on the Friday night/ Saturday morning. For further information call Billo on 02 49213804.

Inaugural East Coast

Sport Aviation Fly-in

2-4 October 1999

Maitland, NSW. Hosted by the Royal Newcastle Aero Club and the Windsock Flying Club. All types of sport aviation are invited to attend, provided (1) the aircraft is registered with an official aviation body; (2) the pilot is licensed; and (3) a VHF radio is carried. The Hunter Valley has some very scenic flying areas, and many local attractions for the visitor. A number of tents will be available to pilots for a nominal charge, with showers, toilets and catering on site. A number of seminars and forums on aircraft building, engine maintenance etc, will be held free of charge. If possible, could

clubs advise of any volunteers available to help with catering, camping, etc. For further details, contact Dave Caban (Pres) on 02 49682843 or John Robson (Sec) 02 49459792.

1999 Canungra Classic

23-30 October 1999

Canungra, QLD. Entry fee \$100 plus \$35 site fee. Registration and 'Calcutta' on 22 Oct, 7pm. Paragliders & floaters welcome. GPS mandatory (Garmin or Aircotec). Camera back-ups can be used every day except last day. Prizes awarded for grades A, B, C, Ladies and Paragliding. Int rating required. Closing date for entry: 31 Aug. Late entry fee: \$30. For more info visit the website: <http://tinny.eis.net.au/~tim/classic99/index.html> Contact: Phil Pritchard ph 0418 761193, Glen McCleod 0755 435716, email: tim@eis.net.au Send entry to: Canungra Classic, PO Box 116, Canungra QLD 4275.

2000 NSW HG State Titles

11 - 18 March, 2000

Registration at the Imperial Hotel on 10 March. The comp will attract a min AA grade rating. Entry fee \$120.00 - includes films, T-shirt and presentation dinner. Minimum pilot level adv. rating or int. with inland experience. UHF radio and parachute required. GPS recommended (if it still works in 2000). Databack camera optional but recommended. HGFA rules and scoring apply with GPS turnpoint and timing verification. Cheques payable to: NSW HG State Titles, 50 Park St, Charlestown 2290. For further details email: BOLIVE@hahs.health.nsw.gov.au or ph: 0249213804 (w)

2000 Victorian HG Open

12 - 18 March, 2000

Location: Corryong. Contact: Wesley Hill - email: whill@nm.com or ph: 0408 305943.

Overseas

British Nationals, Monte Cucco, Italy

2-9 July 1999

40 places for guest pilots from other nations. Min pilot experience: International SAFEPRO 4 standard or participation in own nation's Nationals. All pilots must have personal liability insurance which will cover hang gliding accidents. Entry fee of £80 sterling (or equivalent in Italian lire) includes a T-shirt, primary films and retrieve co-ordination service (not retrieve vehicles). For further details visit: www.theleague.force9.co.uk Contact: HGMeethead@aol.com

World Paragliding Championships

3-18 July 1999

To be held in Bramberg, Austria. Contact HGFA office on 02 6947 2888.

World Hang Gliding Championships

26 July-8 August 1999

To be staged in Monte Cucco, Italy. Contact HGFA office on 02 6947 2888.

Jackson Hole Paragliding Extravaganza

7-14 August 1999

Teton Village, Wyoming, at the Jackson Hole Ski Area. This is a USHGA sanctioned event. There will be multiple events and classes. However, the site requires a P3 rating and there is absolutely no tandem flying allowed. Entry fee \$200 before 4 July 4; \$250 after 4 July. The Jackson Hole Paragliding Air Games will be run at the same time, but will not attract USHGA points Entry fee \$100 before 4 July 4, \$150 after 4 July. All competitors pre-registered before 4 July have a chance to win a brand new Ball Graphics Comp Vario. Bring the entire family and visit Yellowstone and Grand Teton National Parks while flying at one of the premier flying sites in the US. Just remember to make your reservations early. For additional information contact: Critter Mountain Wear, Richard Kocurek, PO Box 975, Crested Butte, CO 81224-0975, USA, Ph +970 349 9326, email: critter@crestedbutte.net

WHGS NZ Speed Gliding World Cup

18-25 September

The 18th is the only official practice day, the rest set aside for competition days. For more information contact Geoff Dossetor (comp organiser), email: antigravity@xtra.co.nz

Nordic Cup 1999

25-30 June 1999

This year's Nordic Cup will be held in Kössen, Austria. It will be a modern paragliding comp, recognised by FAI/CIVL as a category 2 event and also counted in the World Ranking list. The event is open to all international pilots holding an FAI sporting licence. Unfortunately, numbers are limited, so we ask competition pilots to register as soon as possible. Further details available on: www.opk.no/kk/nordic-99_e.htm Contact: Sepp Himberger j. himberger@tirol.com

Women's Hang Gliding Worlds

18-30 June 2000

To be held in Greece. Contact HGFA office on 02 6947 2888.

Watts What

BRENDAN WATTS
(CFI/PE, South West Microlight School)

Houston, we have a problem! How many times have we heard that being said? Apollo 13 rings a bell, and if I recall correctly their problem was more of a how the hell do we get down as opposed to how the hell do we stay up?

I think the most frightening time when you have an engine failure is the locating of a suitable landing area. Not so much the sound of silence – that is something we have been accustomed to during training, as all students will agree.

The hardest part comes next, the decision you are about to make could well be the last you'll ever make. If I was to try and give a comparison, I would say the heat under your collar when experiencing an engine failure is somewhat like air temperature, the higher you are the cooler you are. The fact of the matter is, that when you have altitude you also have time, and that is the truth. Decision making is a lot easier when time is on your side.

When one is confronted with an engine failure your main priority is to maintain control of your aircraft, begin a search for a suitable landing area, the bigger the better. If time is on your side certainly try to restart the motor, but don't let this interfere with the setting up of this forced landing. If the motor restarts, it's a bonus, but let's face it, how many times have our engines failed then restarted? Generally if they stop there is a good reason for it, and it is unlikely it will just fire up again.

Be prepared to move to number two choice if the first turns out to be unsuitable. Once you have chosen your landing area, check for obstacles such as power lines – they are not easily seen from the air so look for the power poles – they have to be there somewhere. This can certainly cock up what may have been the perfect approach into this landing area. Trees stand out well, so that problem can be assessed quite quickly; what

about stumps, fences, or drains? These can be found quite often in paddocks.

Once you are happy that it is clear of obstructions, and you have made a decision that is where you are going to land, how do you go about it? Well, how many landings do you have under your belt? Knowing the direction of the wind certainly helps, as a headwind will reduce your approach speed considerably. The last thing you need to do is approach a strange paddock with a tailwind. Due to the type of aircraft we fly, and its relatively slow airspeed, I dare say we know the direction of the wind most of the time.

So what is different about forced landings to normal landings? Well, a few things. At an airport we are used to completing three legs of the circuit, etc.

I don't think anyone is going to be too concerned about that when your engine has just died in the arse. If you have the altitude to set up a normal approach, treat it as an airstrip, place yourself downwind as usual. You already know how far out from the strip you should be, if you are looking down at the strip or paddock at about a 45 degree angle you know you are well within your glide range. Turn base as you normally would, keep the downwind leg short, and make a decision that you will put your aircraft down at a particular point.

We all like to think when it comes to spot landing competitions we are going to kick arse, so pick your spot and make it happen! If you were flying with good altitude you will have time to set this approach up. If not, you generally will have to make a fairly straight in approach in which case your options are greatly reduced. Like I said, less altitude less options – the choice is yours.

When I fly at Bunbury (WA) doing circuits on runway 25 I like to think that if the motor fails now I will reach the strip. When you have passed the prison start to slip in so you just pass over the edge of the speedway. That way you are well within your glide capabilities, And ask yourself this, do you know where to land from any point in the circuit, whether it be 25 or 07? If not, why not? Maybe a refresher on engine outs with me would be an interesting way to spend an hour of your time.

That's all for this month. Remember, fly high, fly safe.

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Microlights

AIRFOIL SAILS have 20 Xtralite 147 & 4 XTL 137 sails in stock ready to go. These are the last of the available stock we have.

Here are some of the comments on our replacement sails so far:

"My new XTL 147 sail is MUCH faster than my ragged old sail. Landings are fast, and the glider is very stiff. It probably behaves like it should." Jeff Rickard

"Your sail just saved me \$5,000 because I didn't have to buy a new glider." Larry Fleming

"She flies like a bird." GS Smith

"Easy to land! A lot more responsive and easier to handle." Stuart Brown

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Simulated Gliding



DG200 WUZ, Lochiel, SA. Photo: Mandy Wilson

ROLAND STUCK
(French IGC Delegate)

At the IGC meeting in Seattle, I was appointed as "specialist" for simulated gliding. The objective of the IGC is to monitor what is going on in this rapidly developing field. For us, simulated gliding is more than a fancy entertainment, it may also be a way to attract younger people to real gliding as well as an educational tool for training students. Therefore it may be useful to give you some information about this topic.

To my knowledge there are essentially three softwares allowing virtual gliding:

1. SFS. PC

This is the only software really dedicated to gliding simulation, developed by Uwe Milde and Detlev Schwetzer from Germany. Details can be found on their website:

<ftp://members.aol.com/UMilde/sfs.htm>

SFS uses a very realistic model of the physical characteristics of a soaring plane. All manoeuvres which can be flown with the real plane can be done with SFS PC. Take off, landing, soaring and hang gliding as free flight or with evaluation are possible. You can fly cross-country and race with other pilots. In my opinion, the main limitation of this software is its low resolution graphics which make it look somewhat outdated when compared to the graphics of the most recent flight simulators.

2. Flight Unlimited

Flight Unlimited featured a glider (Grob Twin Astir) in its first version but unfortunately this sailplane has disappeared from the most recent versions.

3. Flight Simulator 98

The most popular flight simulator is FS 98 from Microsoft and features a Schweizer 2-32 glider which unfortunately is not very well modelled and has poor flying characteristics.

The basic program also allows soaring on a few spots and in some situations but it is not possible to find lift anywhere in the FS world.

However, FS 98 is a very open program and a lot of designers all over the world are creating planes, scenery and utilities. Some of them have designed much better gliders than the stock Schweizer, and with realistic instrument panels. Here are some interesting links:

<http://members.aol.com/autofastco/soar.html>
(an American site with many gliders)

<http://ourworld.compuserve.com/homepages/WolfgangPiper/>
(a German site with many nice old-timer gliders)

<http://www.geocities.com/CapeCanaveral/Hangar/1018/>
(a Dutch site with some gliders and gliding sites)

<http://www.angelfire.com/all/flyfar/>
(an adventure that allows you to soar over California) and, of course,

<http://www.Flightsim.com/>
which is the most popular web site for FS, where you may find anything.

At the IGC meeting in Seattle, I met Larry Sanderson, SSA President, who is also very interested in gliding simulation. Since he has some connections with Microsoft, he will try to persuade them to integrate thermal, ridge and wave lifts in FS and to improve their glider. I am nevertheless afraid that it will be too late to implement in FS 2000 which is to be released soon.

I intend to make a demo of gliding simulation during the next World Gliding Championships in Bayreuth (Germany). I plan to use FS 98 with good scenery of the Bayreuth airport which is in the commercial add-on "German Airports" as well as thermals randomly distributed, with a program created by Ed Dumas Snr. If I can find a second fast PC, it should even be possible to organise races in a multi-player mode over the task given for the real contest.

I have also another project which would be to "replay" with FS 98 a real glider flight using the flightlog recorded by a GPS recorder. With the use of satellite textures and 3D terrain maps, the landscapes are now becoming more and more realistic in FS and it would be very interesting to render a real flight in the 3D world of FS 98. This project is quite ambitious and I hope to find the necessary skills to realise it.



The Amalgamation Proposal

The Proposal:

Three years ago the executive of the GFA were driven to investigate alternative methods of delivering the services required by the membership to operate in their chosen sport. The changes and pressures on all forms of aviation during the last few years are obvious to all. Almost daily we are faced with television, radio and newspaper reports from one or more sections of aviation in this country on changes to costs, regulation, safety, operations and airspace. It is not unexpected then, that our sport has increased demands at all levels on the services supplied by our voluntary workforce. Our organisation had a support system which had grown to deliver all the necessary requirements to its then 4,000 plus membership. As the membership declined, in line with other forms of sport aviation, the executive and council searched for ways to:

- Increase membership numbers
- Cut cost but not services
- Cover costs without increased fees

Those seeking the answers were not alone as all other aviation sports disciplines were facing the same quandary. The representatives of the HGFA and the GFA found themselves at the same meetings with CASA, Airservices Australia, Aviation Industry sections and other politically necessary discussion groups. They found that they were seeking the same goals from all of these meetings. The necessary meetings our representatives attended to ensure that members retained all the expected services were constantly increasing both in number and importance. To achieve the coverage required with the limited resource of expertise within the administration of both groups the representatives found themselves speaking for both the HGFA and the GFA at many meetings.

The situation was complicated by a perceived uncertainty in regard to the ongoing payment for services supplied under the scheduled contracts between CASA and the Sport Aviation Organisations. This contract allows the GFA and the HGFA to carry out the functions of setting and maintaining standard in the appropriate aviation disciplines. The Federation has been well served by the late Roger Woods and the present Executive Officer Henk Meertens in their determination to strengthen the working relationship between CASA and the GFA. The executive then considered alternative methods of dealing with the declining membership. A plan was put in place to address the declining membership and Emilis Prelgauskas, a very experienced gliding promoter, took on the huge task of seeking answers to the development of the sport through a promotions within the clubs assignment. While this approach may have long term gains the short term options were to:

1. Cut all but necessary services to members and retain the present level of memberships charges
2. Increase the membership charge to cover delivered services
3. Ignore the problem and hope it would just go away
4. Amalgamation with another like organisation and take the opportunity to achieve economies of scale in personnel and services.

The number four options seemed to be the obvious first choice. The Presidents of both the HGFA and the GFA along with their respective Executive Officers then took that proposal to the membership in a number of joint meetings. As these members travelled around the country meeting and speaking to members of both organisations they found that the single discipline sports aviator was rapidly disappearing. Many pilots were either Power/Glider Pilot, Glider/Hang Glider Pilot, Ultralight/Glider Pilot. The distinction between existing groups was becoming extremely blurred. With the expected introduction of ultralight gliders, there seemed to be increasing gains with amalgamation for all soaring pilots.

The acceptance in principle of the proposal encouraged this group to proceed with the next step of creating a model of amalgamation. This model was then put to the membership in both the Australian Gliding Magazine and by direct post to each member club. The model was established to provide a forum for discussion and evaluation of the proposal within the membership. This system of communication with individual members has not worked and the result has been:

- Insufficient and untimely information
- Leading to hearsay and speculation
- Members have become fearful and uncertain about the management of their sport
- A unacceptable level of apathy within the membership in understanding the existing system of management or the proposed changes

The membership will vote and each member will have his or her say on the direction of the GFA and the HGFA. The required 75% vote will ensure that the members have a resounding consensus on the administration method of their sport. The positive view of this proposal is that Clubs, State Association and the Council have questioned their role in the administration of our sport. The direction of the GFA following the vote will be set with a new determination from all sections of the Federation as members have come to a better understanding of the structure and role of the various levels of GFA administration.

To all the members who asked the questions, participated on chat pages, attended meetings to discuss the proposal, raised issues with state and national representatives and actively sought answers to their concerns, Thank you. It is your interest that has made the Clubs, Associations, Council and the Executive look to all the aspects of the amalgamation and develop an understand of the issues associated with this proposal.

Please take your vote seriously. Continue to ask the questions. The vote for the amalgamation proposal will be carried out by an independent body. Time will be allowed for all members to have the opportunity to express their choice.

While it is important HOW you vote it is more important THAT you vote.





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FREE FLIGHT: Bi-monthly journal of the Soaring Association of Canada. A lively record of the Canadian soaring scene, and relevant international news and articles. \$US26 for 1 year, \$47 for 2 years, \$65 for 3 years. Suite 101, 1090 Ambleside Drive, Ottawa, Ontario K2B 8G7, Canada. Email: sac@comnet.ca
SOARING: Official monthly journal of the Soaring Society of America Inc., PO Box E, Hobbs, N.M. 88241 USA. Foreign subscription rates: \$US43 surface delivery; \$US68 premium delivery. Annually.

SAILPLANE AND GLIDING: The only authoritative British magazine devoted entirely to gliding. 52 A4 pages of fascinating material and pictures with colour. Available from the British Gliding Association, Kimberley House, Vaughan Way, Leicester, England – annual subscription for six copies £17.50.

SAILPLANE BUILDER: Monthly magazine of the Sailplane Homebuilders Association. \$US29 (airmail \$US46) to 21100 Angel St., Tehachapi CA 93561 USA.

TECHNICAL SOARING/OSTIV: Quarterly publication of SSA containing OSTIV and other technical papers. Annual subscription 70DM. OSTIV c/- DFVLR, D82234 Wessling, Germany (BRD).

GLIDING KIWI: Official bi-monthly publication of the New Zealand Gliding Association, edited by John Roake. Specialises in up-to-date overviews of the world soaring scene and Omarama the N.Z. base for many of the current world records. \$A44 annually. (Send A\$25 for

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HGFA Addresses



All correspondence, including changes of address, membership renewals, short term memberships, rating forms and other administrative matters should be sent to:

Hang Gliding Federation of Australia

Executive Director: *Ian Jarman*
Administration: *Margaret Steinhart*
PO Box 558, Tumut NSW 2720,
ph: 02 69472888, fax: 02 69474328,
email: hgfa@tpgi.com.au

President: Rohan Grant

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Secretary: Tim Cummings

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55435093 (h), 0418 778422, fax: 07
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Vice-President: Keith Lush

5 Fortune St, Sth Perth WA 6151, ph:
08 93679066 (w), 08 93673479 (h), fax:
08 94741202, email: keith.lush@hds.com.au

Board Members:

Rohan Holtkamp

RMB 236B Western Hwy, Trawalla
VIC 3373, ph/fax: 03 53492845, 014 678734,
email: dynamic@netconnect.com.au

Michael Zupanc (CIVL Delegate)

6 Sibyl Street, Southport QLD 4215, ph:
07 55325895 (h), 0408 662328; email: zupy@
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Peta Roberts

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ozemail.com.au

Steve Ruffels

Bright VIC 3781, ph: 018 570168, fax: 03
57501174, email: eagle@netc.com.au

Michael Eggleton

27 Knightsbridge Ave, Belrose NSW 2085, ph:
02 99754114.

Operations Manager: Craig Worth

(Safety & Operations Committee, Pilot
Development & Training Committee)

PO Box 71, Hallidays Point NSW 2430, Ph/fax:
02 65592713, 0418 657419, email: hgfaops@
midcoast.com.au

Microflight Public Relations: Paul Haines

Ph/fax: 02 42941031.

For information about site ratings, sites and
other local matters, contact the appropriate
state associations region or club.

States & Regions

North Queensland HG Association

12 Van Eldik Ave, Andergrove QLD 4740; Pres:
Graeme Beplate 07 49552913, fax: 07
49555122, email: sitework@mackay.net.au;
Sec: Ron Huxhagen 07 49552913.

New South Wales HG Association

Sec: Steve Hocking, 19 Gladswood Gdns,
Double Bay NSW 2028, ph/fax: 02 93274025,
email: nswhga@s054.aone.net.au

Victorian HG & PG Association

PO Box 400, Prahran VIC 3181; Pres: Phillip
Campbell 03 53343034; Sec: Andrew
McKinnon 03 95631162; SSO: Rob Van Der
Klooster 03 52223019.

ACT HG & PG Association

PO Box 3496, Manuka ACT 2603; Pres: Michael
Porter 0415 920444; Sec: John Wilson 0419
600636; Trs: Craig Hopkins 02 62862488 (h),
SSO: Peter Dall. Meetings: 1st Tue/month
7:30pm, "Sky Lounge" Yamba Sports Club,
Phillip.

Tasmanian HG Association

PO Box 163, South Hobart TAS 7004;
Pres: Brett Tooker 03 62503506; Sec/Trs/ State
Co-ord: Stephen Bayley 0408 154156.

South Australian HG Association

1 Sturt St, Adelaide SA 5000; ph: 08 84101391,
fax: 08 82117115. Pres: Stuart McClure 08
82973452; Sec: Mark Tyminski 08 83766117;
Trs: Gary Stockton 08 82702910.

HG Association of Western Australia

PO Box 82, South Perth WA 6151; Admin:
Graeme Wishart 08 94449505; PG Rep: Julian
McPherson 08 93881584 & David Humphrey
0418 954176; HG Rep: Michael Derry 08
92840750 (h) & Keith Lush 08 93673479 (h),
08 93679066 (w); Trike Rep: Graham McDonald
08 93649226 (h), 0418 910841; Trs: Phil
Wainwright 08 92424483.

Clubs

NEW SOUTH WALES

Blue Mountains Hang Gliding Club Inc

Pres: Richard Lockhart 0418 130354, email:
flyhawk@kdbnet.net.au; Sec: Alan Bond 02
98995351, 9 Finchley Pl, Glenhaven
NSW 2353; Trs: Dolores Sempregoni, SSO:
David Middleton 02 96236961; Newsletter:
Glen Tomlinson, ph: 02 95468028, email: glen_
tomlinson@orix.com.au Meetings: Last Tue/
month 7:30pm, Sportsman Hotel, Kildare Rd,
Blacktown.

Byron Bay Hang Gliding Club Inc

Pres: Bill Bailey 02 66853626, bill@omcs.com.
au; Vice-Pres: Andrew Polidano 02 66843510
andrew@byron-bay.com; Sec: James Samuel
02 66804336, freely@mullum.com.au; Trs:
Shirley Lake 02 66858147, lois@linknet.com.
au; SSO: Chris Rollins (HG) 02 6689 7217, Brett
(PG) 02 66876907. Meetings: 1st Wed/month
7pm, Bangalow Bowling Club.

Illawarra Hang Gliding Club Inc

Pres: Mark Ryan 0412 424 760; Sec: Tim
Causser 02 4294 8110, email: timcau@
ozemail.com.au; SSO: James Nathaniel
02 4681 0641.

Kosciusko Alpine Paragliding Club

Pres: Roger Lilford 06 2815404 (h); Sec: Lisa
Ryrie 06 2359120, 06 2359060; SSO: Heinz
Gloor 02 64576019 (w), 02 64567171 (h).

Manilla SkySailors Club Inc

http://gri.une.edu.au/mss
Pres: Brian Shepherd 02 67852182;

Sec/Trs: Felix Burkhard 02 67751050, mailto://
felixb@xyon.com.au; SSO (HG): Patrick Lenders
02 67783484; SSO (PG): Godfrey Wenness 02
67856545.

Mid North Coast Hang Gliding Association

Pres: Lee Scott 02 65565265; SSO: Dale Davis
02 65597716.

Newcastle Hang Gliding Club

Pres: Tascha McLellan 02 49278867 (h), 1800
653935 (w), email: tascha.conrad@hunterlink.
net.au; V-Pres: Jason Turner 02 49408665 (h),
015 636384; Sec: Karl Kindl 02 49677711;
Trs: Tony O'Connor 02 49529146, SSO: Coastal
- Jason Turner 02 49408665 (h),
015 636384, Inland - Al Giles 02 49430674,
John O'Donoghue 02 49549084. Meetings:
Last Wed/month, Souths Leagues Club.

Northern Beaches Hang Gliding Club Inc

Pres: John Clark 02 99972842 (h); Sec: Mike
Warner 02 94521217 (h), 02 95573188 (w);
SSO: Mike Eggleton 02 94517127, Park 02
94502674, Glenn Salmon 02 99180091.

Stanwell Park Hang Gliding Club

Pres: Rob de Groot 02 42942173, fax 02
42943788, rdegroot@ozemail.com.au; Trs:
Karen Lederer 02 42942273, 0411 362273.

Sydney Hang Gliding Club

Pres: Dick Heffer 02 93872613; Sec: John
Trude 02 98873371; Trs: Greg Wilkinson
02 98184704. Meetings: 2nd Mon/month,
Moyes Factory Loft.

Sydney Paragliding Club

Pres: Rob Fakes 02 42942273 (h); Sec: Duncan
Cross, 48 Cormiston Ave, Concord NSW 2137, 02
97435128; Trs: Dave Worthington 02 9665
1465; SSO: Mark Mitsos 02 42949065.
Meetings: 1st Mon/month, St George Leagues
Club, Kogarah.

University of NSW Hang Gliding Club

Pres: Daniel Faber 02 93150727, email:
dfaber@kensocoll.unsw.edu.au; Sec: Jon
Ingles 02 93150571, email: jingles@kensocoll.
unsw.edu.au; www page: www.vision.net.au/
~gbeng/Hang_Gliding.html

QUEENSLAND

Cairns Hang Gliding Club

Pres: Brod Osborne 07 40534686 (h), 07 4051
5555 (w); Vice-Pres: Ian Graham 07 40954466;
Sec: Lance Keough 07 40912117, 31 Holm
Street, Atherton QLD 4883; Trs: Kasanda
Brease 07 40532586 (h), 07 40512438 (w).

Canungra Hang Gliding Club Inc

Pres: Shauna Purser 07 66793404,
shaunapurser@yahoo.com; Vice-Pres: Andrew
Horchner 07 38707709,
0412 807516, afactor@gil.com.au; Sec:
Richard Glascock 07 55435057, 015 120874,
richardg@qldnet.com.au, PO Box 41 Canungra
4275; Trs: Fran Ning 07 55773260, ning@
ausinfo.com.au; SSO: Glen McLeod (HG) 07
55435716, John Botting (PG) 07 33002049,
bottings@bigpond.com

Capricorn Skyriders Club Inc

Pres: Brian Hampson 079 226527;
Sec: Geoff Craig 079 923137;
Brian Smith 079 287958.

Conondale XC Flyers Club Inc

13 Cottman St, Buderim QLD 4556;
Pres: Bruce Crerar 07 54451897; Vice-
Pres: Shane Gingell 07 32851668; Sec:
Mark Savage 07 54416423; Trs: Annie Crerar
07 54451897; SSO: John Blain
07 54948779; Visiting pilot contact:
Graham Sutherland 07 54935882.

Gladstone Hang Gliding Club Inc.

16 Far St, Gladstone QLD 4680; Pres: Colan
McGree 0413 941134; Sec/Trs: Natasha
Atkinson 07 49726840; PR: Brian Duffy 07
49922676; SSO: Geoff Craig 07 49923137, Paul
Barry 07 49922865, prbarry@tpgi.com.au

Sunshine Coast Hang Gliding Club

53 Yungar St, Coolool QLD 4573; Pres: Geoff
Pettigrove 018 061595; Vice-Pres: Mal Price
0412 07450883; Sec/Trs: Cathy Edmunds 07
54463037; SSO: Dave Cookman 07 54498573.
Townsville Hang Gliding Association Inc
Pres: Gary Rogers 077 538565 (w),
077 79264511 (h); Vice-Pres: Peter Scarfe 077
721766 (w), 077 212666 (h); Sec/Trs: Brad
Cooper 077 792853 (h), fax 077 815230;
SSO: Graeme Etherton 077 724467.

Whitsundays Hang Gliding Club

Pres: David Nash 07 49531817; Sec: Ron
Huxhagen 07 49552913, fax: 07 49555122,
email: sitework@mackay.net.au

VICTORIA

Dynasoarers Hang Gliding Club

Pres: Peter Hannah 03 52632335; Sec:
John Norton; Trs: Rod Trevor 03 52811209;
SSO: Ted Remeika 015 841107;

Rob van der Klooster 03 52223019, hrt@
deakin.edu.au; PR: Warwick Spratt
03 52531096. Meetings: 1st Fri/month,
Bay View Hotel, 2 Mercer St, Geelong.

Eastern Hang Gliding Club

Pres: Geoff Tozer 03 97583250 (h); Sec:
Andrew Medew 03 98227861, 16/25-29
Brougham St. Box Hill VIC 3128; SSO:
Harry Summons 03 59646055 (h), Lance
Sheppard 03 59623570 (h), M/ship: Mark
Jeffree 03 59689015 (h). Meetings: 3rd Wed/
mth, Montrose Town Centre Meeting Room,
Cnr Swansea Rd & Mt Dandenong Tourist Rd,
Montrose.

North East Victoria Hang Gliding Club Inc

Pres: Jeanette McLaren 03 57544910;
Trs: Bill Graham 03 57501828; SSO: Geoff
White 03 57501244. Meetings: 1st Thu/
month, Pinewood Hotel, Bright.
www.home.aone.net.au/gilbert/nevhc.htm

Sky High Paragliding Club

Pres: Adam Nienkemper 03 94811122 (w), 03
93057442 (h); Vice-Pres: Phil Savory
03 959772537 (h); Sec: Jeremy Torr
03 97702775 (h), 03 97705770 (w).
Meetings: 1st Wed/month 8pm, Retreat Hotel,
226 Nicholson St, Abbotsford.

Southern Club

Contact: John Reynoldson 03 95970527.
Meetings: 1st Tue/month, Middle Park Hotel,
Canterbury Rd.

Southern Cross Paragliding Inc

Pres: Gary Clarkson 0419 319948; Vice-
Pres: Alister Johnson 0418 323692; Sec:
Nicole Matthews 03 57501884, 018 450626,
email: nicolematthews@hotmail.com Meetings:
Last Wed/month.

Southern Trike Club

Pres: Mark Howard 03 97511480, 0418
533731, fax: 03 97511584; Vice-Pres: Dave
Wentworth; Sec: Ben De Jong; Trs: John Amor.
Meetings: 2nd Tue/month 8pm, Jakes
Nightclub, 23 Church St, Brighton.

Western Victorian Hang Gliding Club

Pres: Phillip Campbell 03 53343034; Vice-Pres:
Andrew Hume 03 93760907; Trs: Sandra
Holtkamp 03 53492845; Sec: Rachelle
Guy 03 98092974; SSO: Rohan Holtkamp
03 53492845. Meetings: Last Sat/month,
The Golden Age Hotel Beaufort.

WESTERN AUSTRALIA

Avon Valley Hang Gliding Club

Pres: David Drabble, 08 93071816, wescoast
@iinet.net.au; Vice-Pres: Rob Stevenson 08
92211338; Sec: Stephen Hoeffs 08 95275782;
Trs: Michael Derry 08 92840750.

Cloudbase Paragliding Club Inc

Pres: David Humphry 08 95745440; Sec:
Julian McPherson 08 92279266. Meetings: last
Wed/mth, 8pm at the Sportsman Association,
access off Woodsome St,
Mt Lawley.

Geraltion & Midwest Hang Gliding Club

Pres: Des Hill 08 99216219; 231 Third Street,
Geraltion WA 6530.

South West Microflight Club

Pres: Brian Watts 0412 552363; Vice-Pres:
Don Wilson 08 97641007; Sec: Paul Coffey 08
97251161; CFI: Brendan Watts 0408 949004.

WA Hill Flyers Club

Contact: Rick Williams 08 92943962 (h),
015 057961. Meetings: last Wed/month at
7:30pm at the Swan Districts Football Club,
Guildford Rd, Bassendean.

Western Soarers Hang Gliding Club

Pres: Sam Blight 08 93363738; Trs: Nav
Brennan 08 93397991; Comp coordinators:
Gordon Marshall 08 94519969, Nav Brennan.



Neuschwanstein Castle, Tegernsee,
Germany. Photo: Michael Bruce