

In This Issue

ASC Competition Reports



Uni Glidin

A publication of the Adelaide University Gliding Club Inc



Next General Meeting

Wednesday 5th June 1985.

7:30pm, Jerry Portus Room, Adelaide University Union

A talk by Redmond Quinn on Aerodynamics will be featured on the program.

PLEASE NOTE : due to the resignation of Guy from the Executive a short election of a fifth Exec member will need to be held.

May 1985

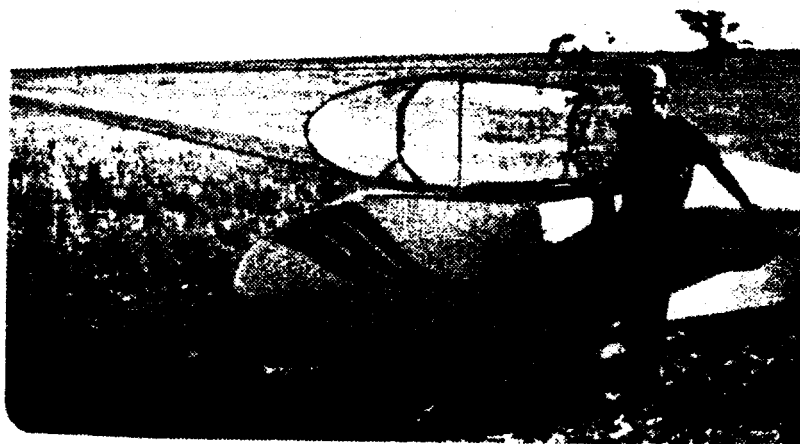
July General Meeting :

Wednesday 3rd July 1985.

Next Executive Meeting

Wednesday 19th June 1985.

Venue to be announced, all members welcome.



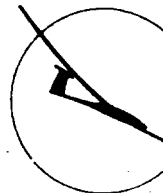
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The Ever Present Editorial

Why do people go flying ? Why do such foolish humans slog around on a dry (or wet) remote bare paddock miles from nowhere, sweating one week, freezing the next, all for the pitiful few minutes of airtime spent in a fragile wooden/fibreglass aircraft ? Why do we come out, week after week, complaining about the winch, the aircraft, the paddock, the weather (especially the weather) and anything else that is wrong ? Many times I've seen cars pull up at the fenceline to watch our operations in progress, only to see them drive off later, their occupants no doubt amused and amazed at the sight and wondering why such otherwise normal people spend a lot of time driving up and down a paddock in a truck that needs two engines to get it where its going and even then it sometimes doesn't make it ? Often I've stood on field watching the farmer working in the next paddock and yearned for a somewhat simpl lifestyle. Instead of standing out in the cold/wet/rain/heat/wind etc I could be back in Adelaide comfortably at home. Lately I've wondered why I risk my life in such a manner, and why I couldn't have picked a safer sport, like rugby. Perhaps gliding was one of the things my mother tried to warn me about when I was young, only I didn't listen.

Unfortunately I don't really have the answers to such questions, even my logbook with its neat pages of printed figures doesn't give me many clues. There are times though, up at 5000' in the last few calm thermals of the day, or when zooming between lift on a cross-country, or when enjoying the ridge lift with one of our feathered brethren on my wingtip, when I feel that I know the answer.

Dennis Medlow
(Neil is busy fixing Phoebi)
May 1985



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Articles & letters may be addressed to :

The Editor - Uni Gliding

Adelaide University Gliding Club Inc

C/o A.U. Sports Association

Adelaide University, North Tce, ADELAIDE 5000.

Erratum

In last month's issue the membership fee for the A.U. Sports Association was incorrectly stated as \$45. The correct figure is \$40. The AUGC club membership fee was correctly stated as \$5.

(I do NOT apologize for the few spelling errors, they are entirely the fault of my computer, for which it has been sent to bed without supper ... DM)

Lost & Found (Found this time)

If anyone has lost a rather large AUGC windcheater could they please contact Dick Temple (08 390 1827) to reclaim it.

Ops Notes

Change Of CFI

Our current CFI (Guy Harley) has resigned from the position. The Instructor's Panel recommended Redmond Quinn as the new CFI. This recommendation has been accepted by the club committee and will be passed to GFA for ratification.

Uni Gliding, on behalf of AUGC, wishes to thank Guy for the many years of work he has contributed to the club in his position as CFI.

Windsock

A new windsock should soon appear on field, thanks to Bob McKenney. A site has been chosen on the Northern boundary for its placement.

Telephone

The club telephone has been relocated to inside the hanger on the Southern wall. A 240V siren will soon be connected to the phone.

Phoebus Nose Damage

It has been noticed that damage can occur to the underside of the Phoebus cockpit by people lifting the tail too high when moving the aircraft on the ground. If you can't (or won't) use the dolly wheel please LIFT THE TAIL AS MUCH AS REQUIRED TO LIFT THE REAR SKID OFF THE GROUND, NO FURTHER !!!



New Members

Four new members have joined the club, we welcome :

Gordon Reddek	NACOWLAH
Kirran Trivedi	NORTH ADELAIDE
Tom Melville	NORTH ADELAIDE
Ian Button	GRANGE
Michael Stapleton	ATHELSTONE

Mailing List

Please note that if a newsletter is returned by Australia Post as undeliverable (wrong address, moved, etc) we will NOT continue posting newsletters to that address. Instead we will leave the newsletter at the Sports Association office for collection. In order to ensure uninterrupted delivery please contact the club Secretary before your address changes.

Air worthyness

By Dick Temple, Airworthiness Officer

BergFalke (VH-GZM)

The BergFalke is airworthy. The club has taken into consideration the comfort and warmth of students by taping up the aerotow hook opening.

Phoebus (VH-GYB)

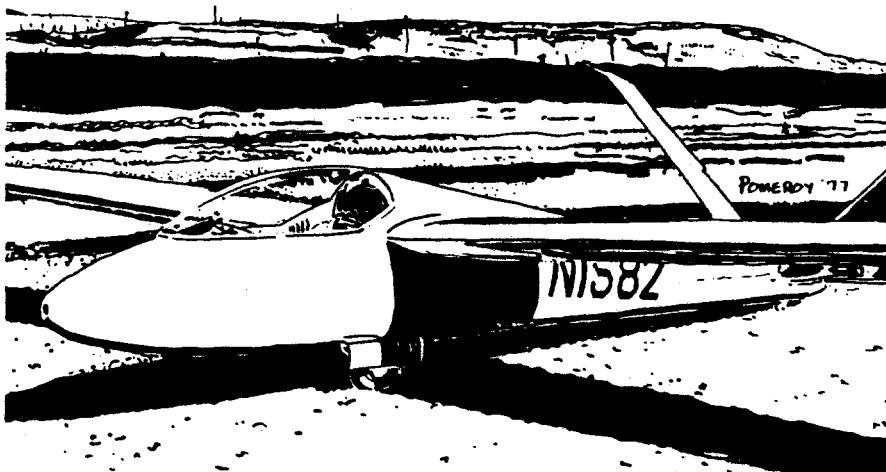
The Phoebus is airworthy. An enormous amount of work has been done by Neil Boroky over the past number of weeks to repair the skin damage caused by the collapse of undercart gear. The damaged area has been cut away and refilled. Final painting is now underway, the Phoebus has already been flown and has been returned to Adelaide on 19/5 for the final painting and sanding. It should return to Lochiel on the next flying day. Thanks to Neil for the huge amount of time he's put into the task.

Bocian (VH-KYW)

The green doping of the port wing and elevator has been completed. Only a few fiddly bits remain to be done before the next major step, the recabbling, has to be done. The port wing patch that was considered doubtful has been discussed with Mike Burns (CTO/Air), and inspected by Emilus Prelgauskas, and found to be sound. The fuselage is currently at Gawler, and will be brought to the West Beach workshop so that strategies for cabling can be planned and the necessary purchases made.

DI Certificates

Although the paperwork was sent to GFA some six weeks ago, nothing further has been heard. The matter will be pursued with the RTO/Air (Bronte Woods).



Wanted

The club needs some chicken wire for the eaves in the Clubhouse, if anyone has some spare wire netting going cheap (i.e. free) could they please contact the Secretary.

On Monday morning of the Easter weekend, Dick Temple, Andrew McGrath and myself arrived at Gawler to fly in the last day of the Gawler Easter Regatta. Amongst the masses of fibreglass mean machines in the tie-down area was our own, somewhat conspicuous, Bergfalke and the Phoebus. While waiting for briefing time to arrive, Dick and I busied ourselves with some of the usual pre-competition chores such as the DI, washing the aircraft, readying cameras etc., and a couple of more unusual ones, such as jacking up the fuselage to remove and pump up the mainwheel! At 11.00am we walked into the briefing room (in the nearby Trotting Club premises) and heard the details of the expected weather and the tasks. Weather-wise, there was hope of reasonable conditions (moderate lift to 3000-6000ft.) over a fairly short soaring day - this turned out to be true. The task finally selected for Sports and Two-seater Class (that's us) was a 117km. triangle: Gawler - Rhynie - Greenock - Gawler.

After briefing, it was some time before the tugs started launching the competition gliders lined up on the runway. In the meantime, things didn't look too promising, with a 'sniffer' glider or two struggling to stay up. However, the lift suddenly started to improve, and the tugs commenced to make short work of depositing the long line of gliders in several nearby thermals. As our turn to launch drew near, Dick and I made ourselves comfortable with a different-from-usual arrangement of cushions since we were wearing parachutes - these are mandatory in competitions. While waiting for the launch, we decided that (initially, at least) Dick would navigate and take turn-point photographs, and I would concentrate on accurate flying.

The aero-tow launch was uneventful, (although I hadn't flown one since the last assistant instructors course!) and we joined a gaggle of six other gliders. After some confusion over the exact location of the start gate (!), we eventually crossed it at around 2.30pm and heard "Good start, Zulu Mike!" over the CB. Almost immediately, we pulled up into good lift, and climbed a further 1000ft. or so - I had a sneaking suspicion that this was not the done thing, so close to the start gate, and Andrew confirmed this later. From there on, we chased small gaggles of gliders that had left before us, arriving below them, but not lower than 2000ft. However, we lingered too long in our thermals (inexperience!) so eventually it was quite lonely - out of sight of Gawler and Rhynie, and not a glider to be seen anywhere! Meanwhile, Dick was doing a magnificent job of navigation, plotting our progress past every bend in every dirt track. At one stage, we were down to just over 1000ft. above ground, but we managed to hang on and eventually start climbing well again. As we approached Rhynie, with plenty of height in hand, Dick noticed that it was getting late in the afternoon, and conditions must start to fade soon. He was right. Just after rounding Rhynie, we took our last respectable thermal of the day. Soon after, we caught up with a Twin Astir which seemed to be working rather poor lift. Not being impressed with gaining a few meagre feet while being drifted back by the light headwind, I decided to press on to find something just a little better. However, it was soon obvious that nothing better was to be found, as we descended lower and lower, and the patchy lift we flew through became weaker and weaker. Eventually, with a few likely looking paddocks picked out, we struggled to gain a little height around 1100ft. After losing 100ft. instead, we chose to creep along on track, stretching our glide through patches of zero sink, and ready to join circuit into one of the many landable paddocks below. Finally, we set up circuit into a medium sized square paddock of stubble and skimmed over the fence to end our valiant attempt.

This was Dick Temple's second competition flight, and my first. The main thing I learnt from this experience was that the only real way to learn about preparing for and flying in competition (or any cross country flying) is to keep your eyes and ears open, and have a go. Book knowledge did not help me as much as I thought it would. So, when you're ready for it, try cross country flying - its good fun and its what gliding is all about.

By the way, the impressive statistics for the flight were as follows:

Maximum height - 5300 ft.

Distance - 63 km.

Average speed - 34.4 kph.

Lookout, Ingo !!

Easter Regatta - DAY 4

By Andrew McGrath

On Monday, there were only five gliders competing in Sports/Two Seater Class; the Phoebus, the BergFalke, two Twin Astirs and a Janus. The day did not look at all promising in the morning, with a heavy cover of cirrus hiding the sun, so only 114 Km (Gawler - Rhynie - Greenock - Gawler) was set.

Sports Class was launched last today, not until about 2:30pm, when thermals were 2 - 4 knots going to about 3500'. Because of the late start, with a short day forecast, I started as soon as I reached start gate height, and was followed across the line by the Bergie.

I made relatively good time along the first leg towards Rhynie, using thermals marked by Standard Class gliders also going in that direction. Unfortunately, the BergFalke could not keep up with the plastic machines and was soon left behind; last seen thermalling down low across from Kapunda. I rounded Rhynie at about 2900', and on my way out of the turn found a 3 - 5 knot thermal to 5300' where I was joined by a twin astir on its way into the turn.

As I worked my way back down towards the Barossa Valley, I had the feeling that the thermals were about to stop completely. Lift was going to ever lower heights, and strengths were down to about two knots. Just south of Kapunda, I had one good 3 knot climb to 4800' while listening to all the 15 metre class gliders in trouble just the other side of Kapunda.

I cautiously set off in the general direction of Nuriootpa at 60 kts, not exactly sure where Greenock was, and wondering whether or not to simply turn straight for Gawler. Suddenly I got my bearings and saw Greenock only a few Km ahead, and raced in at 70 kts. Around Greenock at about 4000'.

I began a careful glide towards home at best L/D in still air, looking carefully at the profile of the airfield and wishing I had a final glide calculator for the Phoebus. Suddenly, with about twelve Km to go, it was obvious I could get there, so I hurled across the line at 800', going Vne.

Although I didn't see the final scores, I think I was beaten by the Janus; I missed the scores while out retrieving the BergFalke from Tarlee...

Question— *Low,*
Skidding Turns:
WHY THE FUSS?

Answer—
Because They Tend To Cause
Sailplanes to Bore Holes In The Ground!

by JIM PAYNE

“Coordinate your turns!” We’ve all heard it, time and again. We had it barked in our ear from the back seat when we were students. It’s in the textbooks—ALL of them. It’s something we strive for. And now that you’re starting to build up solo time, you’re getting pretty good at keeping that yaw string straight.

Oh, sure, you’re not perfect yet . . . and sometimes you cheat just a little. But plenty of time to get better, right? Well . . . maybe wrong. Maybe you’re not going to get that time. Maybe, just maybe, you’re going to get a bit sloppy in the pattern, or you’ll fudge onto final with a little extra rudder to “horse” yourself around in line with the runway. Haven’t we all done it sometimes?

Sure, friend, and congratulations, you’re now in the classic skidding turn. You remember skidding, don’t you? You’ve been taught it’s Not a Good Thing To Do. You’ve accepted that, even if you’re not quite sure of just what’s going on in a skidding turn. So you’re going to work on it, next time.

But just how bad can it be? Sloppy, yes. Uncoordinated, sure. Certainly the mark of a low-time pilot (and of some who should know better). But just how bad can it be?

How about bad enough to kill you?

Ah, good. It appears that we have your attention. *Very* good. Attention is in order, as author Jim Payne leads us to a better understanding of the skidding turn; what it is, how it works—or doesn’t—and why it should be avoided at all costs. In this case a little knowledge is a *safe* thing—it could save your life. —ED.

A skidding turn is a common, innocent indiscretion; that is, unless you make a low-slow one that leads to a stall/spin. If we all remembered that an *intentional* spin can be entered by applying rudder at the stall—a skidding entry—we all might be more careful to ensure that we fly coordinated.

The stage is set for trouble when someone has poorly planned a landing pattern. The bad planning results in a low turn to final. Because of the proximity to the ground, the bank angle used to make the turn is shallow. This causes a slow turn rate, which the pilot tries to “aid” by using too much rudder. During the resulting skid, the pilot lets his airspeed get too low, perhaps because he hopes he

can stretch his glide. While slow and skidding, the stall angle of attack is exceeded and the airflow over the wing separates. The inside wing, with down aileron, will most likely stall first and stall more severely. This, coupled with the rudder input, causes the aircraft to roll toward the inside wing and enter a spin. Once that happens correct recovery controls, even instantly applied, may not have time to overcome inertia and effect a recovery before the aircraft meets the hard earth.

Since this dismal scenario is all too common, let us examine some of the mechanics of a skidding turn which point out the importance of coordination and stall prevention close to the ground.

Skids

Any uncoordinated maneuver in an aircraft results in a sideslip (Ref. 1). Commonly referred to as "beta" (β) in engineering, sideslip is the angle between the fuselage centerline and the flight path (Figure 1).

A skid is an uncoordinated turn in which the pilot is using too shallow a bank angle for the rudder input. Or conversely, the pilot is using too much rudder for the bank angle (Figure 2). A skid is evidenced on the yaw string on the tail of the string is toward the *inside* of the turn. The ball in a turn-and-slip indicator will be displaced toward the *outside* of the turn, showing the lateral force caused by the skid. If the path of the tail and the nose were traced through the air, the tail's trace would be outside that of the nose, hence the term 'skid.'

Besides the yaw string or ball, other cues can be acquired through experience. One is the direction of the g forces on your body. When skidding, the g force is not vertical with respect to the aircraft and your body will be forced toward the outside of the turn. Another cue is sound. Even well-trained sailplanes can make a different sound when in a skid. Although these "heads up" cues may be subtle, you will be safer if you can learn to recognize them and integrate them into your flying.

The most extreme example of a skidding turn would be a "flat turn." Here, the wings are held level with opposite aileron while the aircraft is ruddered around to the desired heading. This is a terribly inefficient way to turn a sailplane. When low, you want to complete any turn as optimally as possible, so that you lose the least amount of altitude. Since shallow turns take more time, during which you continue to sink earthward, they require more altitude. At 55 mph in a full-rudder, wings-level skid, my LS-4a turns about 5 degrees per second. In a coordinated 45° banked turn, the turn rate improves to 23 degrees per second. Since the skid causes a large increase in parasite drag, consequently increasing the sink rate, it is even more inefficient than the numbers indicate. This example is the extreme, but it proves the case that you need to remember: shallow, uncoordinated turns are inefficient.

Because the nose is pointed inside of the flight path vector by an amount equal to the sideslip, skidding turns can

give an illusion of being more efficient than they are. I was able to generate a beta in excess of 40° on my LS-4a. With the nose pointed so far inside of the flight path, it is difficult to judge where the flight path really is.

The point to remember is that the purpose of the rudder is to *coordinate* the aircraft, and not to make it turn. As Derek Piggott (Ref. 2) so effectively puts it: "Many pilots find it difficult to understand that the rudder plays only a minor part in making a turn. *In fact, it does not materially affect the rate of turn and is only used to produce the slight yawing force which balances the turn.*" (Italics added. —Ed.) Piggott points out that the force required to turn an average glider around a radius of 300 feet at 45 mph is equal to nearly half the weight of the glider; clearly, no rudder can generate that much force and therefore no rudder can turn the sailplane. The force which does that *has* to come from the inclined lift vector of a banked wing.

This coordination in a sailplane requires concentration. A rudder is sized so that it can generate the force needed to coordinate the sailplane throughout its flight envelope. Thus, at approach speed, the pedal force needed to move the rudder is small. This makes it easy for the pilot not to notice that he is leaning on a rudder.

A desirable characteristic of any sailplane is a tendency to roll opposite a sideslip. In other words, "wind in the right ear" should cause a roll to the left. What this means is that any skid will require opposite aileron to keep the bank angle constant.

The roll due to sideslip can be significant. At 55 mph the roll force due to beta generated by a full deflection of the LS-4's rudder requires almost full opposite aileron to hold the wings level. In wings-level flight, full rudder application while holding the stick centered produces a roll to 45° of bank in 4 seconds. Thus, this strong tendency to roll during a skid means the inside (slow) wing will have down aileron while the outside (fast) wing will have up aileron.

Stalls

A skid by itself is inefficient, but not dangerous. It is when the skid precipitates a stall that trouble can come knocking. Let's look at the stall and observe how a skid can "up the ante."

Remember that a stall occurs when the angle of attack

FIGURE 1. Diagram of sideslip

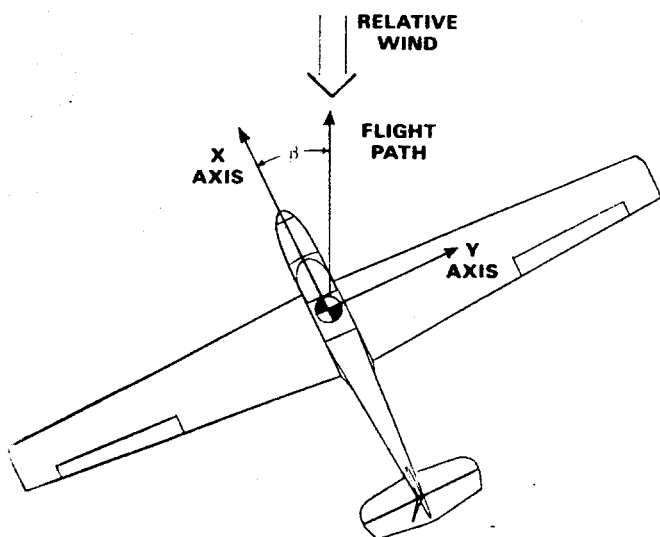
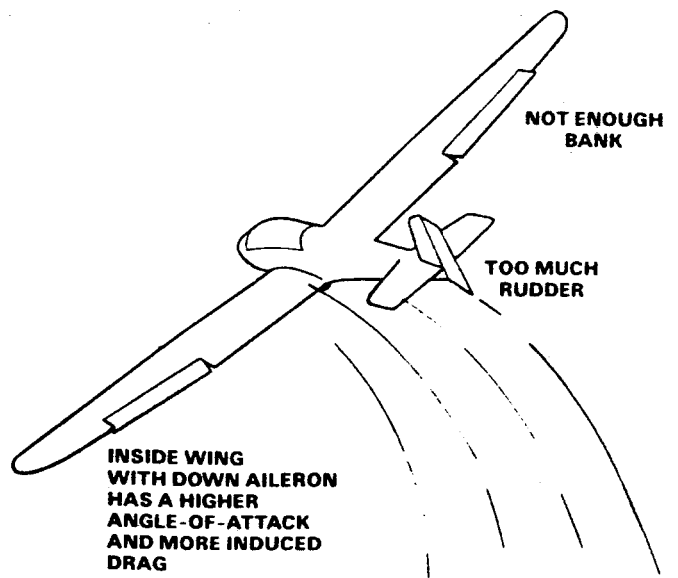


FIGURE 2. Diagram of skid



Membership ListSupplement to Uni Gliding, May 1985.

Any changes or errors should be reported to Bob McKenney.

John Abbenante	35 North St, HECTORVILLE 5073	08 336 3175
Nick Abbott	P.O. Box 44, CLARENDON 5152	08 383 6236
Brenton Banham	12 Lucerne St, FINDON 5023	08 268 1463
Mike Barnden	11 Adelaide Rd, MALLALA 5502	085 27 2237
Eric Bardy	2 Western Pde, BROOKLYN PARK 5032	08 43 8994
Stephen Bates	125 Brougham Place, NORTH ADELAIDE 5006	08 271 0888
Neil Boroky	C/o 6 Wilson Avenue, FELIXSTOW 5070	085 32 4253
Peter Brooks	35 Snows Rd, STIRLING 5152	08 33 9425
Ian Button	11 Monaco Crt, GRANGE 5022	08 356 3848
Ralph Cardillo	29 Winzer St, SALISBURY 5108	08 250 4513
Virginia Castins	23/383 Cross Rd, EDWARDSTOWN 5039	08 297 8025
Paul Clarke	21 Quick Rd, MITCHELL PARK 5043	08 277 1391
Chris Clarkson	53 Elizabeth St, NORWOOD 5067	08 332 7275
Martin Cughlan	48 Swain Av, ROSE PARK 5067	08 332 3131
Rod Connolly	12/4 Loch St, STEPNEY 5069	08 42 5868
David Conway	187 Brougham Pl, NORTH ADELAIDE 5006	08 267 1915
Julian Cooper	3 Salter St, KENSINGTON 5068	
Rachel Coton	2 Beta Cres, PANORAMA 5041	08 277 2486
Paul Daman	12 Hughs St, LINDEN 5065	08 79 6684
M. Dedronni	Davoren Rd, ELIZABETH FIELD 5113	08 254 9016
David Elliot	15 Pitcairn Av, URRBRAE 5064	08 79 3425
Nick Ellis	99 Beafield Rd, PARA HILLS WEST 5096	08 250 1469
Peter Evans	11 Stanley St, WOODVILLE 5011	08 45 9442
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Jordi Evins	32 Seaview Rd, LYNTON 5062	08 277 9707
John Galluccio	9 Marion Rd, PAYNEHAM 5070	08 336 2657
Bob Giles	27 Collingbourne Dr, ELIZABETH VALE 5112	08 255 3233
David Gluyas	2 Highland Ct, BELAIR 5052	08 278 3053
Martin Gregory	13 Jackson Ave, COROMANDEL VALLEY 5051	08 278 3622
Guy Harley	29 Hermitage Rd, AULDANA 5072	08 332 5552
Brian Hillier	8 Nolan St, WEST LAKES SOUTH 5020	08 49 1951
Martin Howells	31 Linley Av, BLAIR ATHOL 5084	08 29 1627
Mark Jenkinson	65 Valley View Dr, HIGHBURY 5089	08 364 3259
Martin Jones	43 Francis St, ST AGNES 5097	08 265 1803
Kevin Jordan	23 Devereux Rd, HAZELWOOD PARK 5066	08 79 2791
Peter Kennewell	1 Palmer Pl, NORTH ADELAIDE 5006	08 267 4454
G.Y. Krippner	24A Blackburn St, ADELAIDE 5000	08 223 7526
Deborah Lange	30 Tomsey St, ADELAIDE 5000	08 223 1989
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Albert Lee	2/120 Yainy St, PARKSIDE 5063	08 271 1180
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Graham Luysden	Lower North East Rd, HOUGHTON 5131	08 380 5467
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Andrew Materne	107 Sunshine St, BRIGHTON 5048	08 296 2491
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Andrew McGrath	185 Military Rd, TENNYSON 5022	08 356 2466
Bob McKenney	80 Archer St, NORTH ADELAIDE 5006	08 267 2002
Dennis Medlow	66 Boucaut Av, KLEMZIG 5087	08 261 9781
Tom Melville	213 Jeffcott St, NORTH ADELAIDE 5006	08 267 1973
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David Mottershead	5 Wycliffe St, FULLARTON 5063	08 29 4820
Peter Morey	28 Oruston Av, BRIGHTON 5048	08 296 5134
Guy Morgan	23 Marine Pde, MARINO ROCKS 5049	08 296 2579
Derele Nagle	16 Jessie St, SEACLIFF PARK 5049	08 298 2932
Tom Nemith	11 Terrigal Rd, REDWOOD PARK 5097	08 251 3127
Roger Northcote	38 Cooper Pl, BEAUMONT 5066	08 79 2032
Tim Parish	10 Rodda Rd, MYRTLE BANK 5064	08 338 1415
K.C. Paulson	5 Hamilton St, VALE PARK 5081	08 261 4914
Hank Flaggensars	39 Calway St, KILBURNE 5084	08 269 2265
David Fraolin	45 Brougham Pl, NORTH ADELAIDE 5006	08 267 1086
Redmond Quinn	13 Redmond St, COLLINSWOOD 5084	08 44 5331
Mark Raftery	16 Stradbroke Av, FLYMPTON PARK 5038	08 293 6276
Kevin Raner	5/36 Barke Rd, PROSPECT 5082	08 380 7082
Gordon Reddek	C/o Delhi Petroleum,	

Bernard Rossi	16 Blyth St, GLEN OSMOND 5064	08 79 8918
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Jacques Sayers	16 Vitz St, TEA TREE GULLY 5091	08 264 2640
Michael Schilling	5 Whiteleaf Crs, GLENGOWRIE 5044	08 294 5243
Jodie Semmler	4/25 Margatich St, CROYDEN PARK 5008	08 68 5563
Jenni Sleigh	78 Ferguson Av, MYRTLE BANK 5064	08 79 4995
Carol Smith	15 Correa Ct, BLACKWOOD 5051	08 278 8857
Michael Stapleton	16 Kerley Crs, ATHELSTONE 5076	08 337 7701
Paul Stephenson	111 Old Mt Barker Rd, STIRLING 5152	08 339 2827
Damen Svedgrass	46 Fenington Tce, NORTH ADELAIDE 5006	08 267 2049
Mei Tang	187 Brougham Fl, NORTH ADELAIDE 5006	08 267 1915
Nick Tembel	7 Russ Av, SEATON 5023	08 45 4571
Dick Temple	Rangeview Dr, CAREY GULLY 5144	08 390 1827
Peter Temple	Rangeview Dr, CAREY GULLY 5144	08 390 1827
Irene Thomas	3 Jersey Av, BRAHA LODGE 5109	08 258 2306
Kirran Trivedi	51 Finnis St, NORTH ADELAIDE 5006	08 267 3270
Steve Turner	18 Avalvara St, PARALOWIE 5108	08 250 2711
Brenton Vandeppeer	17 Grandevie Dr, TEA TREE GULLY 5091	08 264 0270
Lynton Vonow	104 Jeffcott St, NORTH ADELAIDE 5006	
Anna Virhos	6/25 Clifton St, CAMDEN PARK 5038	08 29 4528
Penny Virhos	6/25 Clifton St, CAMDEN PARK 5038	08 29 4528
Alex Weissmann	42 Dulwich Av, DULWICH 5065	08 31 1230
Stephen Were	19 Burn Av, SEFTON PARK 5083	08 44 1540
Andrew Wigney	45 Brougham Fl, NORTH ADELAIDE 5006	08 267 3432
Phillip Wood	C/o P.O., ONE TREE HILL 5114	08 380 7330
Chai Dol Yeap	16 Sheffield St, MALVERN 5061	08 271 0888
Gillian Yeo	75 Grenfell Rd, MODBURY HEIGHTS 5092	08 264 0316



reaches a point where the flow over the top of the wing separates. This separation progresses from the back of the wing toward the leading edge. Many things, such as planform, airfoil shape, wing twist, bugs, rain and spoilers affect the rate and pattern of airflow separation.

Some typical wing planforms and the stall pattern for each are shown in **Figure 3**.

Flow separation on a straight wing tends to begin at the root and progresses forward and outboard as the angle of attack increases. This results in a relatively docile stall with good aileron control until the late stages. Swept wings tend to stall at the tip first, with the flow separation moving forward and inboard. Fighters with swept wings often are designed with the ailerons placed inboard of the tips so that roll control is maintained as far as possible into the stall. Elliptical wing planforms tend to be known for abrupt stalls because the flow separates evenly across the span. Elliptical planforms also theoretically have the lowest induced drag, making them desirable for gliders. But manufacturing an elliptical wing is difficult and expensive so most sailplane wings are a compromise, generally achieving a nearly elliptical lift distribution by tapering the leading and/or trailing edges.

Since most sailplanes have a nearly elliptical lift distribution, the rate at which the area of separation moves forward determines the abruptness of the stall (**Figure 4**). This is a function of airfoil shape.

All of these stall propagation patterns can be altered by manufacturing the wing so that the angle the chord line makes twists along the span. When this is done, the root section is constructed with a slightly higher angle of incidence than the tip section so that the inboard portion of the wing will stall first.

Bugs or rain will interfere with the smooth flow of the boundary layer over the wing. On a modern, laminar flow wing this interference manifests itself by causing airflow separation at a lower angle of attack, and this has the effect of raising the stall speed.

Lastly, any mechanical protuberance on the wing such as

a dive brake or spoiler is going to cause the stall pattern to be altered.

In any case, all of these effects are altered by a skid. With out test, it is difficult to predict exactly what is going to happen on any particular aircraft during a skid. Do, however, expect the stall speed to be higher and the stall characteristics to be worse.

Looking at a typical training glider, the stall pattern for straight, coordinated flight might occur as shown in **Figure 5**. But in a skidding turn, the stall pattern may be altered to that shown in **Figure 6**. Notice that the stall characteristics of the inside wing are altered so that they are more like an aft-swept wing, while those of the outside wing are now more like a forward-swept wing. Do you smell trouble? The flow around the fuselage also is going to disturb the flow over the wing root section, adding another variable to the stall. Meanwhile, the opposite aileron required to keep the bank angle constant will put the inside aileron down and the outside aileron up. Since down aileron increases the effective angle of attack of the wing in the region of the aileron, the probability of a stall of the inside wing is increased. Also, this down aileron has more induced drag which tends to yaw the aircraft in the same pro-spin direction as the rudder (**Figure 2**). These events cause a yawing rotation of the sailplane. We now have a mass in motion which requires an opposing force acting over time to change its trajectory. In a slow, stalled state, no control surface on the aircraft can generate a force large enough to do the job in a few seconds. Hence, it is going to require time—which translates into altitude—to recover, and if you didn't have any surplus altitude when the adventure began, your list of options has grown mighty slim.

Considerations

The flying qualities of most modern sailplanes are quite forgiving. But these qualities are no reason to allow you piloting to be sloppy, as there is enough control power in a modern sailplane to hamfist yourself into awesome trouble.

It is one thing to know that pushing the correct amount

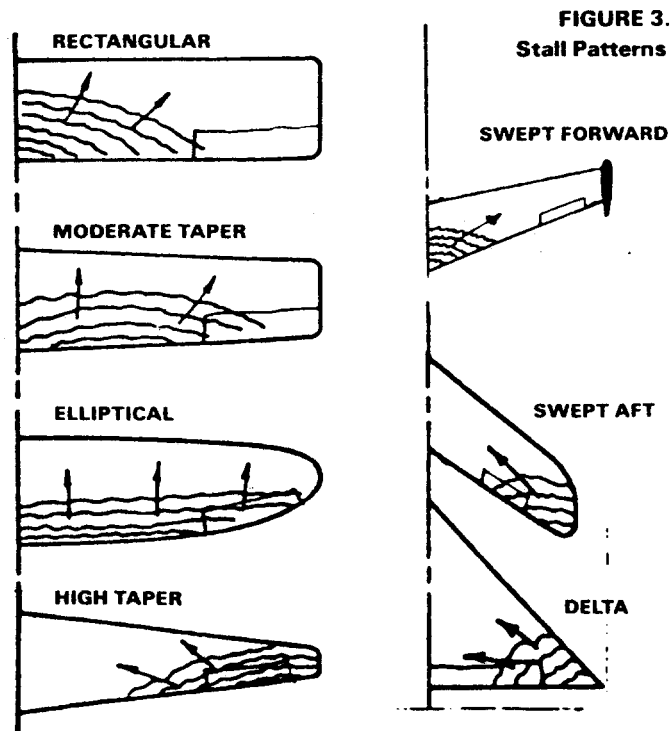


FIGURE 3.
Stall Patterns

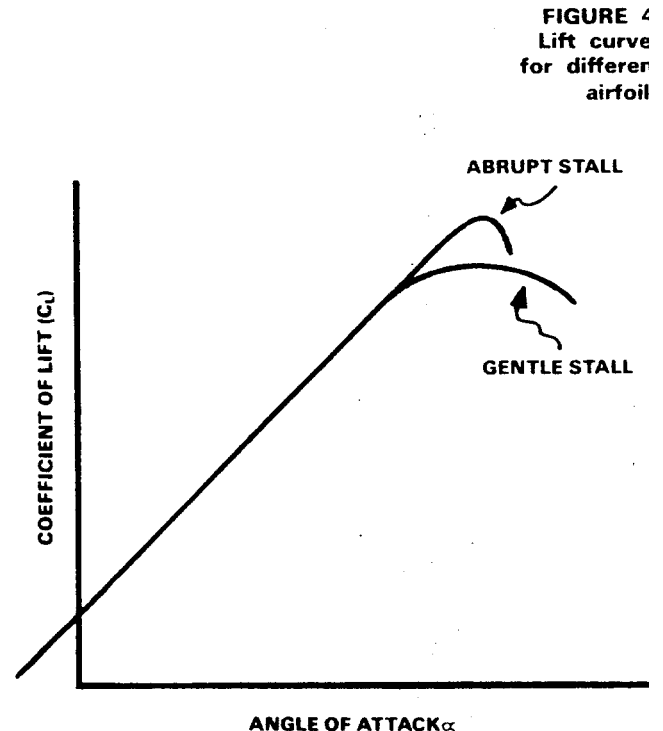


FIGURE 4
Lift curve
for different
airfoil

of rudder opposite the tail of the yaw string will cure a skid, and quite another thing to always fly coordinated. Thus, a great idea is to fly occasionally with a professional. You might uncover some bad habits and help keep your flying honest. While you are at it, try some high-altitude stalls from a simulated slow skidding turn to final. If you pitch the nose up while you have too much speed you might transition the sailplane to a fully stalled state before a good yaw rate is achieved, and the resulting stall will probably be more benign than the one you'll get by "sneaking up" on the stall with a slow airspeed decay. Try several at different angles of skid, as some combinations may be nastier than others.

Scenario

As a means of tying all of this together, let's assume that sink has been heavy or you have been inattentive, and you are approaching the field lower than you like—lower than you ever have before. Wisely you abandon thoughts of a full pattern; unwisely you elect to stretch the glide into a long, low base leg which ought to allow you to squeak onto the runway rather than suffer the embarrassment of a close-in landout. Approaching the point where it becomes necessary to turn final you are maybe no more than 60 feet up—possibly even lower. Gingerly you lean into that final turn, careful to keep the low wingtip clear of the ground. But low bank angles mean low turn rates and this turn isn't progressing fast enough, so you start to feed in some rudder to "help" it around.

The sailplane does in fact appear to turn a little faster, but most of that apparent turn is yaw; you still aren't going to line up with the runway in time. But that yaw moves the outside wing ahead a trifle faster, and the inside one a trifle slower, so to keep the bank angle from steepening (the faster wing wants to lift, moving the slower one closer to the ground) you apply a little stick towards the high side. As the outside aileron goes up the angle of attack on that wing is slightly reduced, putting it further from trouble, while the angle on the wing inside the turn is slightly increased—unfortunately in the direction of the stall angle.

All this time you have, of course, been turning, even if not fast enough to suit you; and everyone knows that a turning sailplane has a higher load factor, which means a higher stall speed. You could protect against this by shoving the nose down to add speed, but this whole exercise has been conducted while scraping along just barely above the

crabgrass or desert scrub as it is. So you don't shove the nose down; you tend instead to hold it up more as you turn and the sailplane wants to sink. And while all of this has been going on, your airspeed and stall speed have been marching to meet one another.

After a couple of iterations of this back-stick, in-turn rudder, opposite aileron business, stall angle of attack will occur at your low, inside wing. This stalled wing will have more induced drag than the right one, will stop generating lift, and will lag aft. Meanwhile the right wing keeps on generating lift—or at least more of it than its counterpart. The result is known to the professionals as "departure," and at 60 feet—or 100, or 200—it is the absolute, irrevocable beginning of the end. The outside wing tends to come up and over and the aircraft sinks rapidly toward the low inside wing, because neither of them is now effectively opposing gravity. As the aircraft slides down sideways, relative airflow against the vertical tail pushes the nose down, and usually before a full turn of the spin has been completed the aircraft has impacted nose-first. This is the least-recommended of all ways to touch down, and a skidding turn initiated it.

Conclusion

A skid by itself is not dangerous. A stall which occurs during a low-altitude skid is *always* dangerous. If you are habitually careful to use the appropriate approach speed you might fly for years and wonder why all the fuss about skidding turns. But on the day when you make an approach with no margin for error, the wind gets gusty, the airspeed is low and you start using rudder to "help the turn," you may *learn* why all the fuss. Remember, the great truths in the pattern are **PLANNING, COORDINATION** and **AIRPEED**. This means you must arrange in advance to be at all the right heights in the pattern, and then keep the yaw string centered with the airspeed spot-on.

Planning, coordination and airspeed; may you always have them right.

REFERENCES

1. Anon., *Flying Qualities Theory and Flight Test Techniques Handbook*, Chapter 9: Stall/Post-stall/Spin, FTC-T1H-79-2, USAF Test Pilot School, Edwards AFB, CA August 1979.
2. Piggot, Derek, *Gliding—A Handbook on Soaring Flight*, Adam and Charles Black, London, 1958.
3. Payne, James M., "Spins," *Soaring*, May 1984.

FIGURE 5. Coordinated flow separation

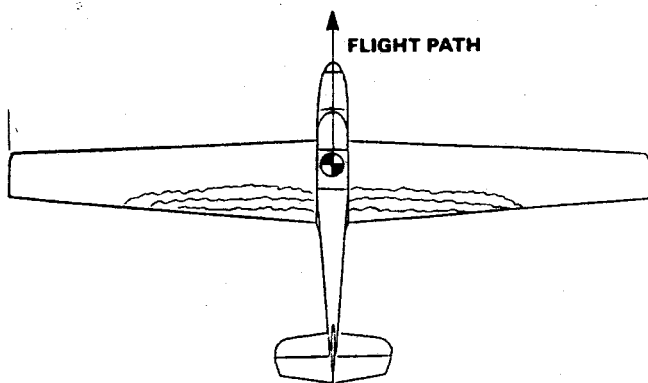
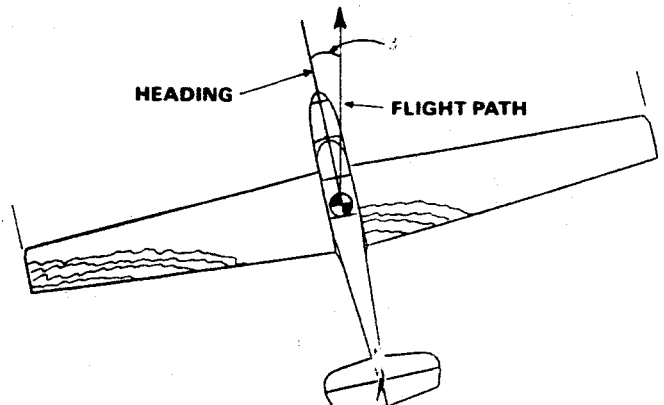


FIGURE 6. Flow separation during skid



84/85 SOARING SEASON REVIEW

Looking back over the last soaring season, most would say it certainly wasn't something worth writing about. Weatherwise, it was a very moderate summer for S.A., with very few days with temperatures above 40°C and no heatwaves, and as far as lift was concerned - average to weak in general.

The shortage of qualified flying instructors over the season was very noticeable, with many days being forfeited as a result. This problem was partially overcome by sometimes flying the club-aircraft under "host-instructor" supervision at Whitwarta and ASC airfields. The hospitality and co-operation of these clubs, and the attendance of our two assistant flying instructors was very much appreciated by all who flew there.

Perhaps the shortage of aircraft was the most frustrating of all. There was no single-seater for a few weeks between the sale of the Ka-6 and the arrival of the PHOEBUS, and no sooner did the PHOEBUS arrive than it was taken away to competitions by a select (and very lucky) few people. The BERGFALKE had its annual inspection during this period, however unlike some previous inspections, this one was completed in just one week with the help of Mark Forster and a massive club effort - no flying time was lost. Even when both aircraft became available, the flying-time per person was very limited.

Despite these setbacks, there were many successful soaring flights. The PHOEBUS did something like 25 cross-countries, was flown at the nationals at Arrarat, the state sports-class competitions at Lochiel, the Murray Bridge regatta and ASC Easter regatta. The BERGFALKE was flown at the state sports-class competitions and the ASC Easter regatta.

Quite a few certificate flights were made, and many ratings were obtained as a result of general soaring. These achievements are summarized below, however some deserve a special mention:

Congratulations to all those who soloed - hopefully you'll be enjoying some cross-country flights next season.

David Conway and Mark Raftery obtained Silver-C qualifications, one of Mark's flights being a 273 km triangle - well done.

Most importantly, Peter Temple was successfully converted to the PHOEBUS from the BERGFALKE with no previous single-seater experience. There was some concern that the PHOEBUS was perhaps not suitable for first-single-seater flights - not so. Again, well done.

Others, like myself, weren't successful at achieving Silver-C qualifications, but still enjoyed the soaring that we did get, especially with the new experience of flying something different like the PHOEBUS.

Certainly it was the most active and successful AUGC soaring season for at least four years, as far as cross-countries and competition attendance is concerned, and with the BOCIAN hopefully back in service by late this year, next soaring season promises to be even better.

Summary of certificate flights and ratings:

First solo's:	Jenni Sleigh, Paul Clarke, Andy Rowan
Conversions to PHOEBUS:	too many
Conversions to HORNET (ASC):	David Conway, Mark Raftery, Andrew McGrath
Aero-tow conversions:	Neil Boroky
Cross-country ratings:	David Conway, Mark Raftery, Bob McKenney, Neil Boroky
First Silver-C distance:	Mark Raftery, David Conway, Dennis Medlow, Neil Boroky
Silver-C duration:	Mark Raftery, David Conway
Passenger ratings:	Richard Temple, David Conway

Change of Contact Person

ALL CLUB MEMBERS PLEASE NOTE : As of the 6th of June the club contact for flying on the weekends will be Gillian Yeo. Her phone number is 08 264 0316. Please call between 8 and 10pm on Thursday nights to register your presence on a weekend.

ASC Contest - Day 3 Sunday 7th April 1985

By D. Medlow

Sports Class Task	Gawler - Marrabel	53 Km
	Marrabel - Stockwell	36 Km
	Stockwell - Gawler	37 Km
	TOTAL	126 Km

Weather Forecast : Max 26_C, light SW winds. Sea-breeze predicted after 1530 hours.

First class lauched : SPORTS Time : 1200

With a good forecast, the sky starting to show promising signs of cumulus cloud, and my eager (?) crew ready to retrieve me, I launched at approx 1230 hrs, just after Phillip Beale in his Boomerang. After releasing I found that the lift was only 3-4 kts and since the temperature was still rising I decided to stick around and see what would develop. The max height of thermals was about 4000' at this time but the weather out on track looked decidedly poor, with almost no cloud formation.

By the time I decided to start at approx 1310 the remainder of the classes had been launched and I found myself sharing thermals with 12 other planes and a ASW22 (which counts as 1.5 planes). Not the most relaxing of pastimes, especially when some of those pilots were interpreting the rules of the air a little too liberally.

After zipping through the start gate at 3000' I found the usual amount of post-start-gate sink, but a promising cloud had a steady 7 kts to 5000' just north of the field. There was not too much variety in the air movements, either 7kts up or 10 kts down. This meant that long glides between thermals had to be carefully planned to end under a band of Cu or else outlanding practice was inevitable.

Navigation en route was relatively simple, I just followed a transmission line north, just west of Kapunda and East of (the infamous) Tarlee. There was no problems recognising Marrabel with its distinctive 90 bend in the road. I had taken over an hour and a quarter to do the first leg, my lowest point being 2000' AMSL.

Having taken my (two) turnpoint photos to officiate my silver C distance., I proceded in a ESE direction to where I thought Stockwell would be. Upon looking south I was not at all pleased to see the cloud rapidly disappearing, the probable signs of the expected sea-breeze. I climbed in a thermal to my high point of the flight, 6000', and headed outwards on the second leg.

Just north of Kapunda at approx 1315 I noted that thermal strengths were down to under 2 kts and there was virtually no cloud South of my current position. Gawler was not visible from my 4000' position and the prospects for finishing were waning somewhat. For other reasons (dehydration being one of them) I decided to glide back to Gawler rather than heading into the Barrossa area. The sink now being almost continuous at 2kts down.

Having pointed my nose South and wishing I had a Phoebus final glide calculator I just followed the Kapunda road back to Gawler, losing remarkably little height in the progress, all the time listening to some of the Standard and Open Class entrants who sounded as if they were not going to make it home for dinner tonight.

The Phoebus made it back to Gawler with height to spare (1500'), but noted one pilot in another glider scraping the top of the railway bridge before landing. After a textbook finish and circuit I landed after my quite enjoyable 4 hr flight, but not feeling too well due to the lack of water which I had quite foolishly omitted to carry along.

Overall a great introduction to competition flying, I hope to return next year ... to win !!

*Have You Seen
a Menace To
Soaring Safety?*

Auntie Amy

Dear Auntie

Over a year ago I was asked by the AUGC Executive to go to Thailand to survey a sight for a remote outlanding airstrip (something about Guy's long cross-countries) and I was told to stay there until the rest of the club arrived. So where are they ? I'm beginning to feel left out of things.

Yours Sincerely
Desperate Don

Dear Desperate

I can sympathise fully with your situation. However I feel that you probably didn't read the fine print on your travel orders closely enough. As your good friend Mr Hayden can tell you, you can never really trust anyone these days. Perhaps you have heard of the Golgafrincins and their "B" ark ?

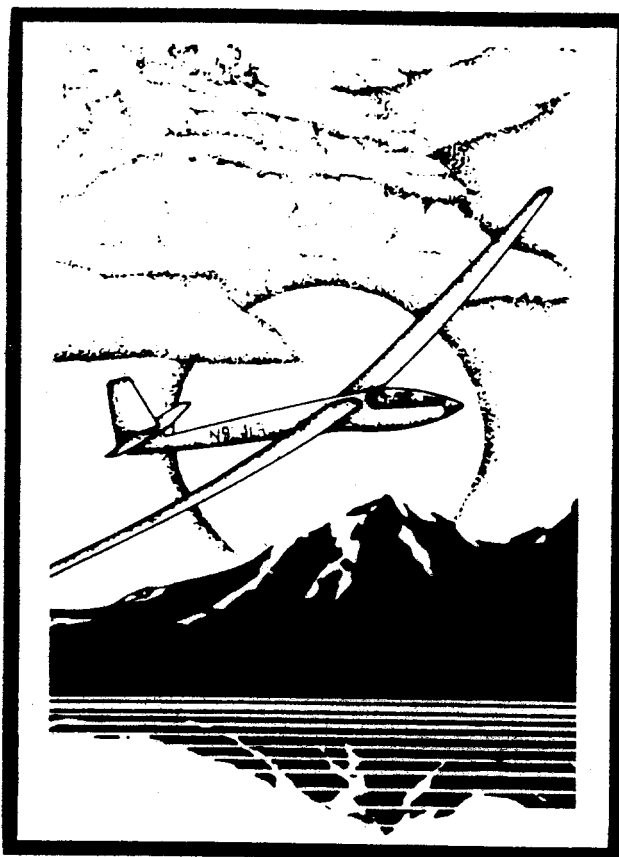
Yours Etc
Auntie A

AGM Summary

We cannot print a summary of the AGM minutes as promised last edition since the Secretary has not furnished us with one, perhaps next time ?

Club Cross Country Award

The Executive is pleased to announce that the club cross country trophy, the Harley Memorial Trophy (generously donated to the club by Guy's father), has been awarded to Guy Harley for his cross-country flight of 300+ Km during the Sports Class Nationals at Leeton. This is the first time that Guy has won the award.



S.A. Gliding Club Directory

Information obtained from GFA 1984 yearbook.

Adelaide Soaring Club Inc	Two Wells Rd, Gawler	085 221877
Adelaide Hills Soaring Grp	Ferries-MacDonald Airstrip	08 3392381
AUGC Inc	Bute Airstrip	088 262203
Balaklava Gliding Club Inc	Whitwarta Airstrip	088 645062
Barrossa Valley Gliding Clb	Stonefield Airstrip	085 224969
Bordertown-Keith Gliding CB	Bordertown Aerodrome	087 521321
Millicent Gliding Club Inc	Millicent Aerodrome	
Murray Bridge Gliding Club	Pallamana Airfield	085 321993
Port Augusta Gliding Club	Cnr Pirie & Wilmington Rds	086 436228
Renmark Gliding Club Inc	Renmark Aerodrome	085 851422
Sunraysia Gliding Club	5Km SW of Mildura Airport	050 257335
Scout Flying Association SA	Armstrong Field, Blanchetown	085 405109
Wakerie Gliding Club Inc	Wakerie Aerodrome, Hwy 20	085 412644
Whyalla & District GC	15 miles Whyalla/Pt Augusta Rd	086 459090

Deep in the lost jungles of Thailand for truth, justice and lower tax animals, uncivilised natives and the occasional Dept of Aviation official. Still he battles on, with most of the gliding world largely unaware of his efforts to keep us free from disease, pestilence and general aviation traffic. Once again Uni Gliding i proud to relate the adventures of this masked man ... "the pilot that walks" ...

Return of 'The Phantom'



Positions Vacant

AERONAUTICAL FABRICATION OFFICERS - GRADE 1
Adelaide

The AUGC Inc owns and operates a fleet of three modern gliding aircraft at its operations centre at Lochiel, South Australia. The company urgently requires the services of AFOs in the repair work currently being undertaken at its modern fully-equipped workshops in the Adelaide suburb of West Beach.

Duties include : repair/replacement of aircraft patches
recabling of control systems
boundary layer surface modifications
any other maintenance work as directed.

All work is performed under the supervision of highly trained and experienced senior officers.

No previous experience required.

The AUGC offers generous conditions of service which include :
Permanent Appointment
No sick leave
Opportunities to meet really great people
An entertaining night's work
No superannuation

Salary will be negotiated and will be commensurate with experience. (Applicants are advised that their chances of getting anything at all is zero.)

All applications should be phoned immediately to Dick Temple, Airworthiness Officer on 08 390 1827.

AUGC is an equal opportunity employer. (We'll get anyone to do this.)
Work is ongoing every Monday, Tuesday and Friday nights.

AWWW...OOO

Poor Mark

At a recent club executive meeting our beloved Treasurer, Mark Raftery was heard muttering complaints about the fact that he doesn't get any first term holidays. Poor Mark, we should all write to the University to protest over this gross violation of human rights.