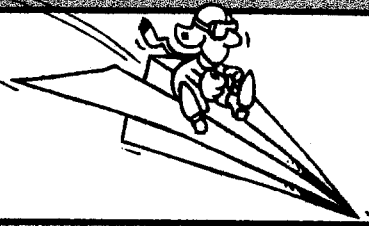


# Uni



# Gliding

The Official Journal of the Adelaide University Gliding Club

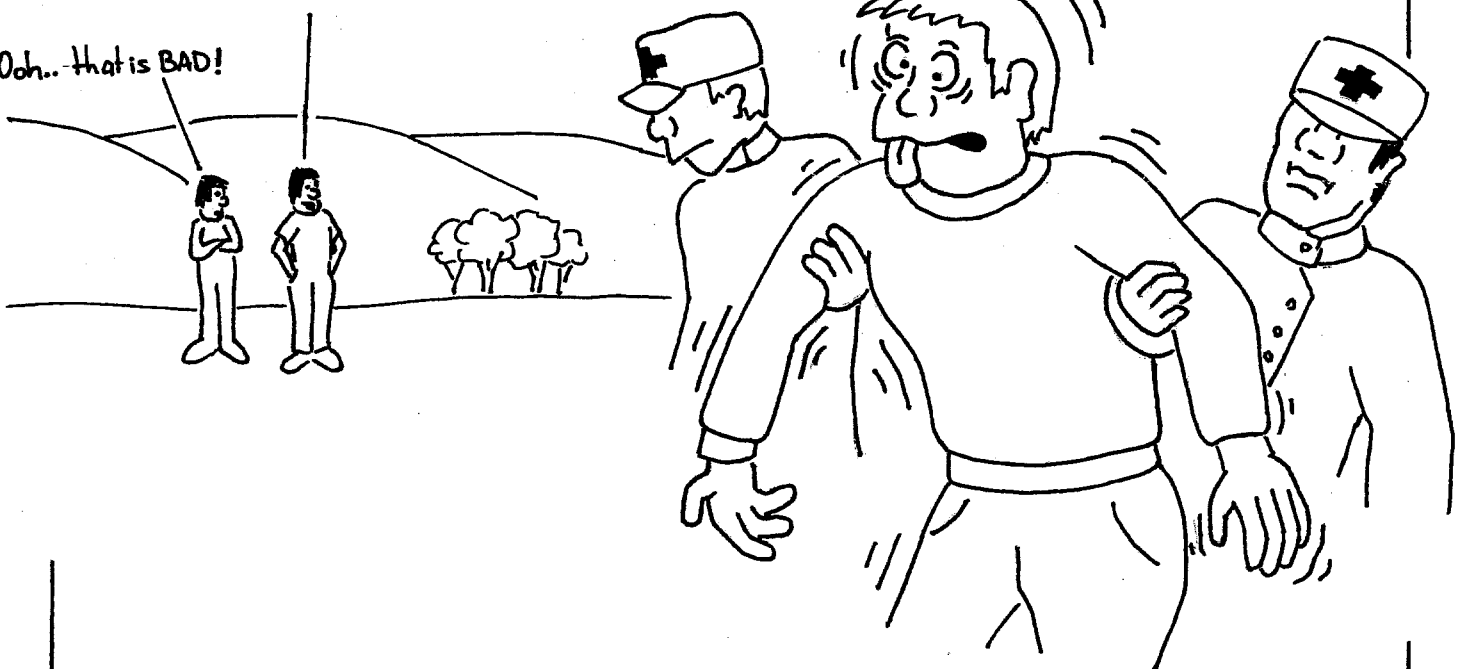
WEBSITE: <http://www.augc.aus-soaring.on.net/>

# SPECIAL

## "INTELLECTUAL EDITION"

Poor guy... reckons he was doing  $V_{NE}$  in the Libelle along the ridge when Claire passed him in the Arrow...

Ooh... that is BAD!



**WARNING:** This publication contains material that some people may find offensive (mathematics).

## CONTENTS

President's Spiel .....	2
Editor's Page .....	3
Bergie's Wheel Drag .....	4
Boyle's Law .....	5
Measurements .....	6
August on Field .....	7
What's on in September?	7
Competition .....	8
Calendar .....	9
How to Get There .....	10

### \*\* REMINDERS \*\*

*Had your Annual Check Flight yet ??*

Unless this is endorsed in your logbook by the end of this month you won't be able to fly solo until you've had the check.

**The crop is now approaching its maximum height - *be extremely careful of wingtips etc. at this time of year.***

## PRESIDENT'S SPIEL

Hi Everyone.

If you weren't flying on the weekend of 22nd and 23rd of August then you missed out big time. It was one of those great weekends where we experienced wonderful weather (ridge all day as well as thermals to 4000') and everyone who was there had smiles on their faces. It was good to see so many people enjoying themselves and I guess it makes up for a couple of crappy weekends that we had before.

Congratulations this month go to **Kevin Zietz** for graduating from daily checks, **Andrew McCauley** for getting his five hour flight for his Silver badge and converting to the *Standard Libelle*, to **Raj Bholanat** for also converting to CY, and to **Angus MacGillivray** for converting to the *Club Libelle*. **Stephen McGuinness** has been nominated for Level 1 Instructor Training and I have been recommended for Level 2. **Peter Cassidy** has mastered the art of tugging at Waikerie and we may arrange for an aerotow conversion weekend.

This month still sees the *Bergfalke* down at West Beach; it has been joined by the *Arrow* and very soon by **Simon Hackett's Motorfalke**. The Bergy is being

slowly re-assembled but will need a re-spray of dope. Come on down to lend a hand and it will be back in the sky soon. **Matt Fenn** deserves a mention for finally turning up at West Beach after promising to do so for many weeks. The *Arrow* requires a bit of work, including fitting TJ's old radio to it installing the air vent properly and making a couple of new covers for access holes.

---

 EDITOR'S PAGE
 

---

# Spring has Sprung !!

ZIPPIDEE - DOO - DAA

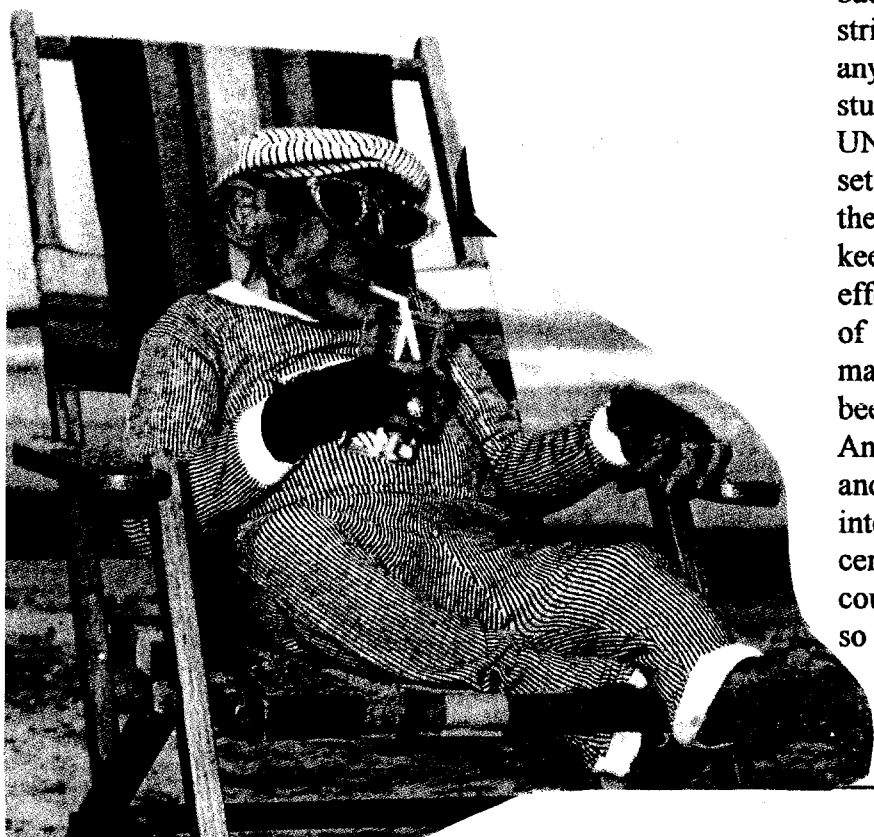
OH YEAH !!!

Re-iterating Anthony's words: what a great weekend! If you missed out bad luck. The *Puchatek*, *Libelles* and *Boomerang* (QZ - adding a touch of colour along the ridge) all playing around in a bright blue sky smothered with healthy cumulus, over a lush green landscape. Where else would you rather be on such a glorious day than soaring around the skies?! One of those weekends where you virtually had to pull airbrakes to come down. Dodging hang gliders to boot! And all without the excessive heat (and flies) of summer.

Unfortunately only one dual-seater on field (a temporary situation) meant some of the trainees only got a small amount of flying despite the ideal conditions. Hey, don't be discouraged guys, we've all been there, and once your training's over you won't have that problem again. There's plenty more good weather coming, so stick with it, get the training out of the way, and there will be no stopping you!!

Anyway enough of my gloating. Looking back over recent issues of this publication it strikes me that some people (not mentioning any names) have been writing rather silly stuff occasionally. Now this is, after all, a UNIVERSITY Gliding Club, predominantly set up by and for STUDENTS, the cream of the crop, the intellectual elite, so to speak. To keep them happy I have therefore made an effort to eliminate all silliness from this issue of *Uni Gliding* and provide articles of a more mature and challenging nature. Most have been written by our prolific President, Mr Anthony Smith, while the article on heaven and hell is from an unknown source via the internet. (Yes I know it's not directly concerned with gliding, but it was the best I could find at short notice, and I'm the editor, so drop off.....)

*Steve* (Editor and semi-intellectual)



## THE DRAG FROM THE BERGFALKE WHEEL

While the Bergy was down at West Beach it was suggested that a fairing around its main wheel may improve its performance slightly. Many years ago the skid was redesigned to prevent it from breaking as much and the wheel was lowered by about two inches into the airflow. This would have increased the drag from the wheel quite significantly, so I did some rough calculations to see how much effect a fairing would have. All forces are in kg to make things easier when talking about the Bergy's performance.

For those really technically minded all the numbers that have been used in this article came from ESDU Data Sheet 79015.

First off the drag of the wheel can be approximated by:

$$D_{\text{wheel}} = 0.5 \times \rho \times V^2 \times 0.55 \times C_D/C_{D0} \times A_{\text{wheel}}$$

where  $\rho$  is the air density  
 $V$  is the airspeed  
 $C_D/C_{D0}$  is the drag coefficient for the aspect ratio of the wheel (for the Bergy it's approximately 0.4)  
 $A_{\text{wheel}}$  is the exposed frontal area of the wheel (the wheel is 4 inches wide and 11 inches in diameter)

Originally the wheel protruded about 4 inches below the skid. Hence  $A_{\text{wheel}}$  is approx  $100 \text{ mm}^2$ .

$$\begin{aligned} D_{\text{wheel original}} &= 0.5 \times \rho \times V^2 \times 0.55 \times 0.4 \times 100 \times 10^{-6} \\ &= 0.5 \times \rho \times V^2 \times 2.20 \times 10^{-3} \end{aligned}$$

With the wheel lowered on the new skid it protrudes 6 inches into the airflow. Hence  $A_{\text{wheel}}$  is now approximately  $150 \text{ mm}^2$ . Then

$$D_{\text{wheel lowered}} = 0.5 \times \rho \times V^2 \times 3.30 \times 10^{-3}$$

Now the drag of a fairing can be approximated by:

$$D_{\text{fairing}} = 0.5 \times \rho \times V^2 \times 0.07 \times A_{\text{fairing}}$$

For the fairing I have assumed that it is 180 mm across at the base and is 130 mm across at the open end. Leaving the height of the fairing as  $h_w$  gives a fairing frontal area of:

$$\begin{aligned} A_{\text{fairing}} &= 130 \times h_w + 2 \times 0.5 \times h_w \times 25 \\ &= 155 \times h_w \text{ mm}^2 \end{aligned}$$

$$\begin{aligned} D_{\text{fairing}} &= 0.5 \times \rho \times V^2 \times 0.07 \times 155 \times h_w \times 10^{-6} \\ &= 0.5 \times \rho \times V^2 \times 0.01085 \times h_w \times 10^{-3} \end{aligned}$$

And the drag of the wheel exposed beneath the fairing is given as

$$D_{\text{wheel faired}} = 0.5 \times \rho \times V^2 \times 0.55 \times 0.4 \times 100 \times (150 - h_w) \times 10^{-6}$$

$$= 0.5 \times \rho \times V^2 \times 0.022 \times (150 - h_w) \times 10^{-3}$$

So total drag of the fairing and wheel is:

$$D_{\text{faired wheel total}} = 0.5 \times \rho \times V^2 \times (0.022 \times (150 - h_w) + 0.01085 \times h_w) \times 10^{-3}$$

$$= 0.5 \times \rho \times V^2 \times (0.01085 + 0.048 \times h_w) \times 10^{-3}$$

To reduce the drag back to the original wheel position:

$$0.5 \times \rho \times V^2 \times 2.20 \times 10^{-3} = 0.5 \times \rho \times V^2 \times (3.3 - 0.01115 \times h_w) \times 10^{-3}$$

$$h_w = 98.65 \text{ mm}$$

So we need a fairing that is roughly four inches high and leaves two inches of the wheel exposed. "So what", do I hear you ask? If we assume that the Bergy has a glide ratio of around 32:1 at 55 knots at a weight of 490 kg (including two average weight pilots), then the drag of the Bergfalke is 15.31 kg. Doing some more numbers indicates that the increase in lowering the wheel has increased the drag by 0.3417 kg, an increase of 2.2 percent! It's even worse if you consider that the induced drag at that speed is around 45 percent of the total drag, ie 6.89 kg. Hence we have actually increased the form drag of the Bergfalke by just over 4 percent, something that would be noticeable at high speed. Want to improve the competition performance of our 'bongo drum with wings' - then consider making a fibreglass fairing for the wheel.

*Anthony*

A thermodynamics professor had written a take home exam for his graduate students. It had one question: "Is hell exothermic or endothermic? Support your answer with a proof."

Most of the students wrote proofs of their beliefs using Boyle's Law or some variant. One student, however wrote the following:

First, we postulate that if souls exist, then they must have some mass. If they do, then a mole of souls can also have a mass. So, at what rate are souls moving into hell and at what rate are souls leaving? I think that we can safely assume that once a soul gets to hell, it will not leave. Therefore, no souls are leaving. As for souls entering hell, lets look at the different religions that exist in the world today. Some of these religions state that if you are not a member of their religion, you will go to hell. Since, there are more than one of these religions and people do not belong to more than one religion, we can project that all people and all souls go to hell. With birth and death rates as they are, we can expect the number of souls in hell to increase exponentially. Now, we look at the rate of change in volume in hell. Boyle's Law states that in order for the temperature and pressure in hell to stay the same, the ratio of the mass of souls and volume needs to stay constant. So, if hell is expanding at a slower rate than the rate at which souls enter hell, then the temperature and pressure in hell will increase until all hell breaks loose. Of course, if hell is expanding at a rate faster than the increase of souls in hell, then the temperature and pressure will drop until hell freezes over.

It was not revealed what grade the student got.

---

**THE GUIDE TO OFFICIAL MEASUREMENTS AS USED BY THE AUGC**

---

It is with some amazement that I realised that there is now an entire group of new glider pilots in the Club who have no understanding of the official measurements in use at either the airfield or the shed at West Beach. So I have (re)written the guide for your amusement and education with apologies to Bradley, who has endured a lot over the years.

**Bradley's Dick Length (BDL):** This is one of the major units in use by the Club. This is one of the smallest measurements humanly possible without resorting to technology like electron microscopes, and is often used as a unit of smallness rather than length. This unit tends to vary slightly depending on Bradley's mood and/or how cold he is. It is approximately 1.5 to 3.0 microns but has not been officially measured. (Giving Bradley the benefit of the doubt we will assume 3.0 microns for the rest of this article).

**Footteenth:** Lots bigger than a BDL, 18 microns.

**Hairsbreadth:** Not an exact measurement because it depends on the type of hair used (for example: it ranges from ultra fine bum fluff through to super coarse short and curls). Generally covers the range of 6 footteenths through to 12 footteenths (or 36 through to 72 BDLs).

**A metrik:** 0.03937 of an inch or 1 millimeter.

**A Smidgen (or Smidge):** 7.54 millimeters / 0.297 of an inch or 2513.33 BDLs. (According to Redmond however, 0.3 of an inch or 2540 BDLs is near enough).

**A Tad:** One and a half Smidges.

**A Touch:** Two Tads.

**A Bit:** Five Smidges. However **A Little Bit** is only two and a half Smidges.

**Heaps or Lots:** 15 Smidges or 10 Tads or 5 Touchs or 3 Bits or 37,700 BDLs.

**Stacks or Lots More:** 5 Heaps.

**Bags:** 350 Tads.

**Bull's Roar:** 11.876 metres or 1,575 Smidges.

**Klick:** 1 Kilometre.

**Country Mile:** 3.1416 Klicks.

*Anthony*

## AUGUST ON FIELD

**Sat 8 Aug:** 20 flights, total 1 hr 47 mins.  
Longest flight by M. Texler (17 mins, MI).

**Sun 9 Aug:** No flying.

**Sat 15 Aug:** 22 flights, total 4 hrs 42 mins.

**Sun 16 Aug:** No flying.

**Sat 22 Aug:** 15 flights, total 24 hrs 52 mins.  
Longest flight by M. Wilson (6 hrs, WUZ).

**Sun 23 Aug:** 20 flights, total 20 hrs 32 mins.

**Sat 29 Aug:** 20 flights, total 2 hrs 33 mins.  
Longest flight by A. McCauley (40 mins, PN)  
A. MacGillivray converted to MI.

**Sun 30 Aug:** No flying.

## AT WEST BEACH

West Beach is where we carry out the maintenance and repair on our gliders and equipment. There are usually volunteers working down there on Monday and Tuesday evenings. Here is a summary of what has been going on:

**Bergfalke:** Annual inspection - a big effort is called for to get our venerable work horse back into the air as soon as possible.

**Arrow:** Annual inspection - new (or soon to be) solo pilots will be keen to get NF back into the air as soon as possible.

**Bocian:** Still at the back being slowly rebuilt. It was extensively damaged a few years ago and progress is slow because of all the other work.

## WHAT'S ON IN SEPT?

### General Meeting Wed 2nd

Story telling with Andrew McGrath, temporarily back from overseas - always full of interesting stories (and highly intellectual).

6:30 pm Uni bistro for dinner.

7:30 pm Cannon Poole Room, Adelaide Uni.  
Drinks in the bar afterwards.

### Royal Adelaide Show Visit Wed 9th

Meet at the footbridge at 7pm.  
Will probably arrange car pooling, bus, etc. depending on numbers.

*\*\* Please call Angus (8431 1491) \*\*  
if you intend going.*

### Executive Meeting Tue 15th

7:30 pm at Angus' (5/179 Fullarton Rd. Dulwich); all Club members welcome to attend and have a say in how the Club is run. Not just for intellectuals!

### Go Carting Wed 30th

7.30 pm at Adelaide FastCarts.

Only \$40 for 50 laps.

*Please call Angus (an intellectual) (8431 1491)  
if you intend going.*

# CAPTION CONTEST

WIN  
a whole year's subscription to  
"Astrophysics Journal" !!

Adelaide moves a virtual step closer to becoming the Seattle of Australia as it establishes its first home-based carrier service. **SAMELA HARRIS** reports.



*Simply come up with the best caption to this photograph of the highly intellectual Simon Hackett, as he appeared in The Advertiser of Saturday 29th August.*

*Enter as many times as you like!*

*The lucky winner will be announced in next month's issue.*

Wired up: Simon Hackett, chief of Internode Professional Access.

---

## AUGC ON THE NET

---

Yes, the Club has its very own presence on the Internet, complete with pinups of some of your favorite gliders, including the *Libelle* and *Puchatek*. Find out heaps of useful information, and check out what's happened before it's even happened! (Well, almost.) Click away now to:

<http://www.augc.aus-soaring.on.net/>

You can also stay in touch via the e-mail list:  
[augc-people@internode.com.au](mailto:augc-people@internode.com.au)

If you want to join this list send an e-mail to:  
[augc-people-request@internode.com.au](mailto:augc-people-request@internode.com.au)

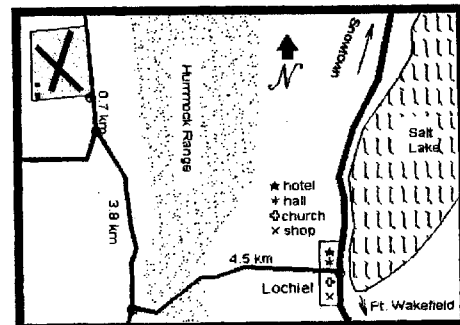
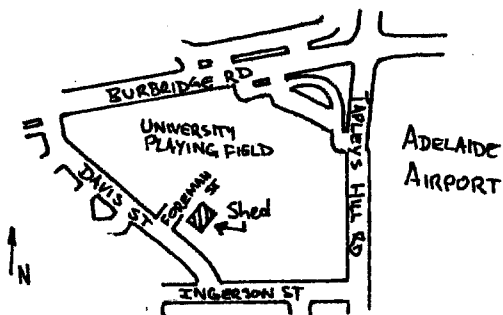


# AUGC: What's on in September?

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	<b>1</b>	<b>2</b> General Meeting <i>Social Evening with Andrew McGrath</i> 7.30 pm Cannon Poole Room, Adel Uni <i>All Welcome !</i>	<b>3</b>  <i>Call Contact Person</i> 018 810 963	<b>4</b>	<b>5</b>  <i>Go gliding...</i>	<b>6</b>  <i>Go gliding</i>
<b>7</b> 7.45 pm West Beach Shed Bergfalke Form II Arrow Form II Winch #3	<b>8</b>	<b>9</b> <i>Royal Adelaide Show</i> Meet 7 pm at Uni footbridge Ring Angus 84311491 for further details	<b>10</b>  <i>Call Contact Person</i> 018 810 963	<b>11</b>	<b>12</b>  <i>Go gliding...</i>	<b>13</b>  <i>Go gliding</i>
<b>14</b> 7.45 pm West Beach Shed Bergfalke Form II Arrow Form II Winch #3	<b>15</b> Executive Meeting 7.30 pm at Angus MacGillivray's 5/179 Fullarton Rd Dulwich <i>All welcome!</i>	<b>16</b>	<b>17</b>  <i>Call Contact Person</i> 018 810 963	<b>18</b>	<b>19</b>  <i>Go gliding...</i>	<b>20</b>  <i>Go gliding</i>
<b>21</b> 7.45 pm West Beach Shed Bergfalke ? Arrow ? Motorfalke ? Winch #3	<b>22</b>	<b>23</b>	<b>24</b>  <i>Call Contact Person</i> 018 810 963	<b>25</b>	<b>26</b> Reciprocal visit - ** Barossa Valley Gliding Club **  <u>No Flying at Lochiel</u>	<b>27</b> Reciprocal visit - ** Barossa Valley Gliding Club **  <u>No Flying at Lochiel</u>
<b>28</b> 7.45 pm West Beach Shed Bergfalke ? Arrow ? Motorfalke ? Winch #3	<b>29</b>	<b>30</b> <i>Go Carting</i> 7.30 pm at Adelaide Fastcarts  <i>* Bookings essential *</i> Angus 84311491	<b>1</b>	<b>2</b>	<b>3</b> ** Balaklava Gliding Club Regatta **  1st Leg of State Comps <i>(Don't forget to vote)</i>	<b>4</b> ** Balaklava Gliding Club Regatta **  1st Leg of State Comps

## SO YOU WANT TO HELP AT WEST BEACH?

- Do you want to help fix the gliders or build the winch at West Beach, but can't get there?
- A lift is available from the Adelaide University footbridge at 7.30 pm Mondays and Tuesdays.
- You can also ring Anthony on (08) 8393 2646, e-mail: [anthony.smith@adelaide.on.net](mailto:anthony.smith@adelaide.on.net). He can organize a lift for those who need it.



## SO YOU WANT TO GO FLYING THIS WEEKEND?

- You must ring the club contact person, Mandy, on the Thursday before, between 8.30 pm and 10.00 pm, on 018 810 963 so that she can organize instructors and transport for those intending to fly.
- A lift to Lochiel is available from the Adelaide University footbridge at 7.00 am, from the Caltex Service station on Port Wakefield Rd, Bolivar at 7.30 am, or from elsewhere (by arrangement only) if you have real transport problems.

→ Remember to phone the contact person or you could be forgotten .....

### Uni Gliding

If undelivered please return to:  
AUGC Inc.  
c/o Sports Association  
Adelaide University SA 5005

