

APRIL 1981

LATE EDITION

adelaide
university
gliding
club's

Newsletter



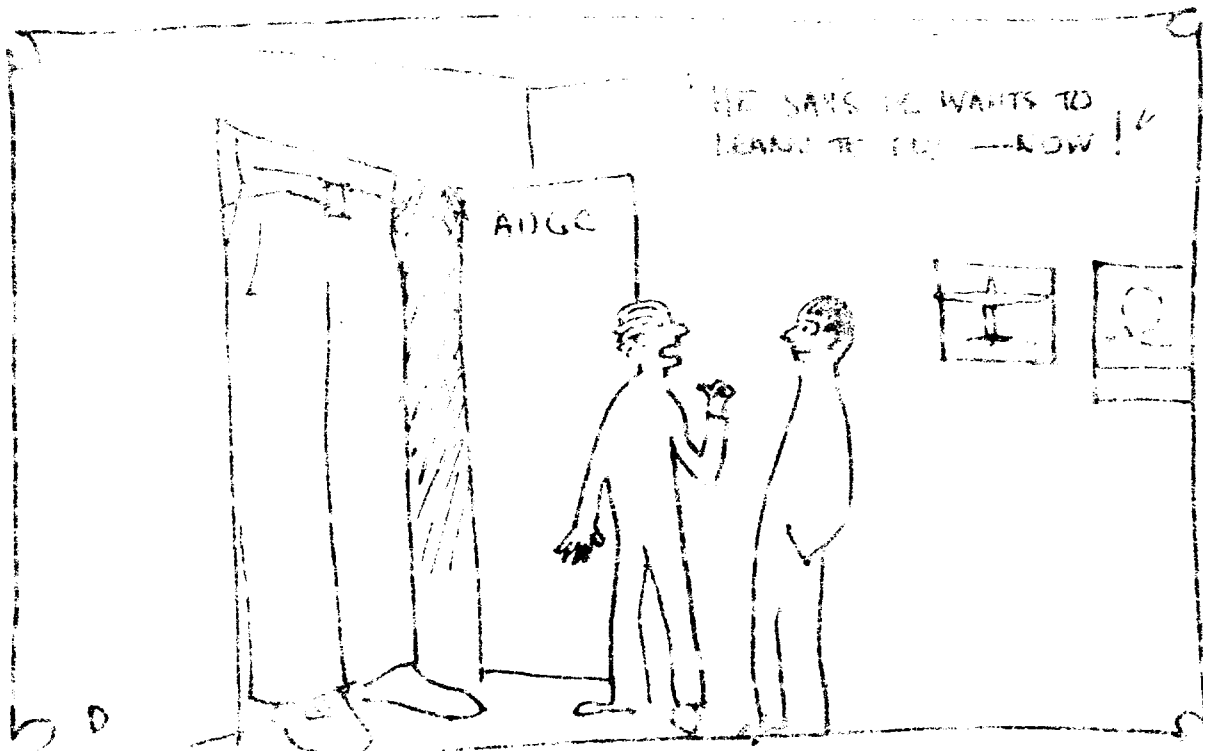
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Category

ANNE EDITORIAL

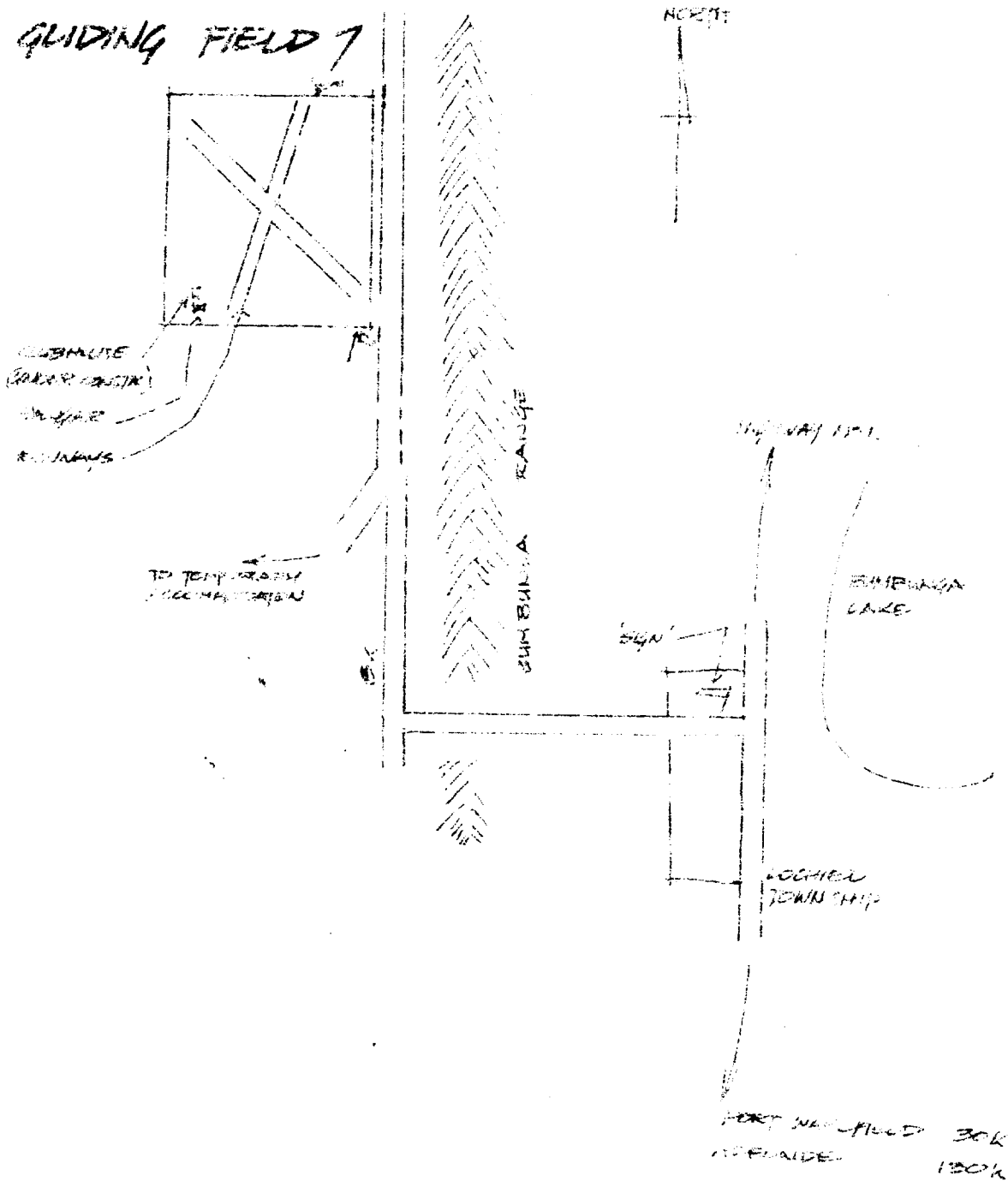
Well, here we are again starting another year's Newsletter. This edition has a story behind it but I don't think that I should bore you with all the gory details. Suffice it to say that this is very, very late due to factors within and without the control of the editor, the publisher and the repair man. Anyway, welcome to a new Newsletter. To all the people reading this for the first time we should explain that the cartoons are by Don and we know that they are very good because they have been rejected by only the best magazines and newspapers around the world. We don't allow ordinary rubbish into this, sometimes, well, very occasionally erudite publication. Such is the case of the Phantom, who, after all, is the Phantom and also in the case of Auntie Amy Biggles who isn't sure who she is. Any other strange people showing up are the figments of an imagination if you can call it that - which is pretty doubtful.

Articles in this edition have come from Emilis, Scoring and anyone else I could get to write an article. This consisted of not many people, in fact, probably even less than that. Next month's Newsletter will contain a wider variety of articles - like Don's article-to-be-an-epic on his flight to Stonefield and someone else's article on the retrieve. There may also be an article on gliding in India and some poems by the lately departed Dave Ellis. Any person wishing to write something for publication is pleaded with to do it - we need articles. Anyway, have fun reading this Newsletter.



ADELAIDE UNIVERSITY
GLIDING CLUBS INC.

GLIDING FIELD 7



General

Prior to his departure to Moscow (and the last of the PhD) Roman produced a preliminary schema and calculator program for calculating centre of gravity in the General glider, which has tail built in as part of the design, such that it can be added to with changing weight.

His report joins our file of club papers for the future.

Dave Ellis has been overwhelmed into a tempting a

Flying gliders

The attractions of soaring flight are fairly obvious; however there are some misconceptions which need to be laid to rest.

First, a couple of flights does not make you a 'glider pilot', nor do your adversaries cringe (even if you've flown at Waikerie 'with Maurie'); and neither does the opposite sex suddenly find you irresistible. Pity.

Next, it is true that the control of a sailplane is very satisfying, not just the sensation of flying, or the feeling of control of destiny it provides. There is more. Gliding depends totally on the ability to get on with other people. If you arrive with the attitude of 'what's in it for me', you won't last long.

Luckily, gliding clubs consist of people with similar interests to yourself, namely to enjoy flying. Most of them will go to extraordinary lengths to help you. Some will teach you free of charge, sacrificing their own time to do so. Others will drive the winch for you, and hold your wingtip. They will ground handle, help you get strapped in, and give the moral support so important to being a competent pilot.

In return, it will be assumed that you will return the attention. Not sit in the car, or watch on the sidelines.

If the ground engineer is working on the aircraft, you will be expected to not only assist, but also at least appear to be interested in what's going on. That includes sand paper and paint in the continuous process of keeping a sailplane airworthy.

As well, when the instructor has given 6 months of his time to teach you to fly, it will be assumed that you will volunteer your help when he wants to get away on some personal flying of his own. This may mean crewing for him at a contest somewhere out bush.

Because in the process, you will learn something about survival in the 'real world', and perhaps even a little bit about yourself; and how to control your own destiny .

" GENTLE BANK TO THE LEFT...

GOOD..

TURN TO THE RIGHT...

STEADY..

SMOOTH CLIMB... LEVEL OUT..

YOU ARE DOING WELL...

NOW THE NEXT MANOEUVE IS VITAL..

PUT THE DOOK.. UT THE DOOK..

UT THE DOOK..

UT THE DOOK...



1981 Sports class championship (for two seaters too)

With the completion of the current contest season, initial preparations are in hand for the 1981 season which begins in September.

S.A. Sports state contest

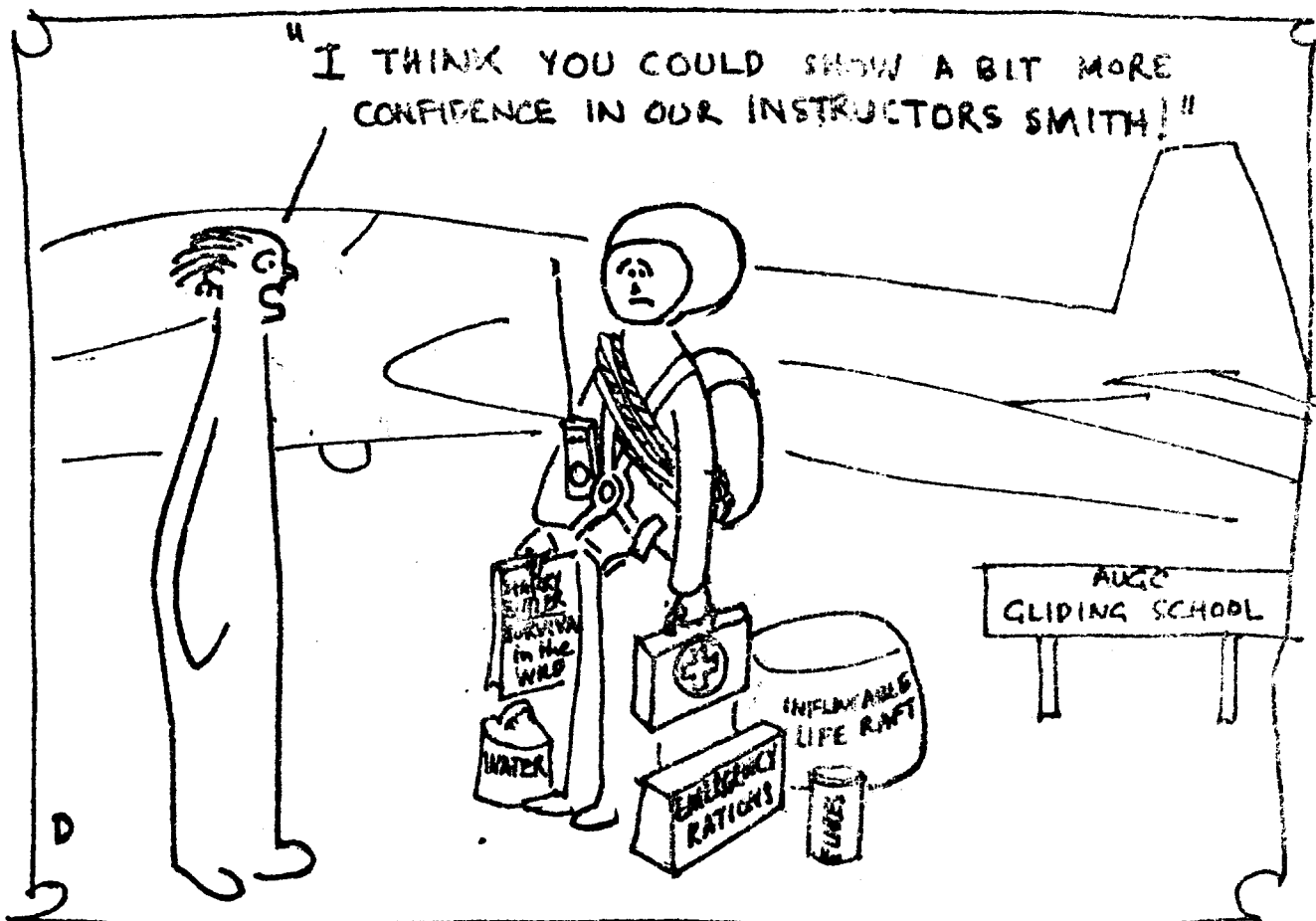
Remark has indicated their willingness to host the event. The date has not yet been confirmed, but is likely to be November 7-14.

National Sports contest

Last year's venue at Horsham was not advertised in time as a result of 'negotiations' at national level.

Pilots in N.S.W. have taken the initiative to organise the next Sports class Nationals (with or without GFA sanction, as I understand it).

The venue may be Leeton in late January.



The following is attributed to Lord Byron

"The more I see of men, the less I like them;
if I could say the same about women, all would be well."

& attributed to Emilis

"hear, hear...."

GLIDING FIELD

In common with all the equipment used by the members of the gliding club, the field we operate from requires regular maintenance.

Consistent with the aims to keep our flying costs low, maintenance is done by the members themselves. The jobs are fairly obvious and straight forward, and can usually be done by the spare manpower sitting in the pie-cart during the flying day. If everyone takes it in turns at flying and getting the jobs done, the effort per person is fairly small.

The following work was achieved in recent months -

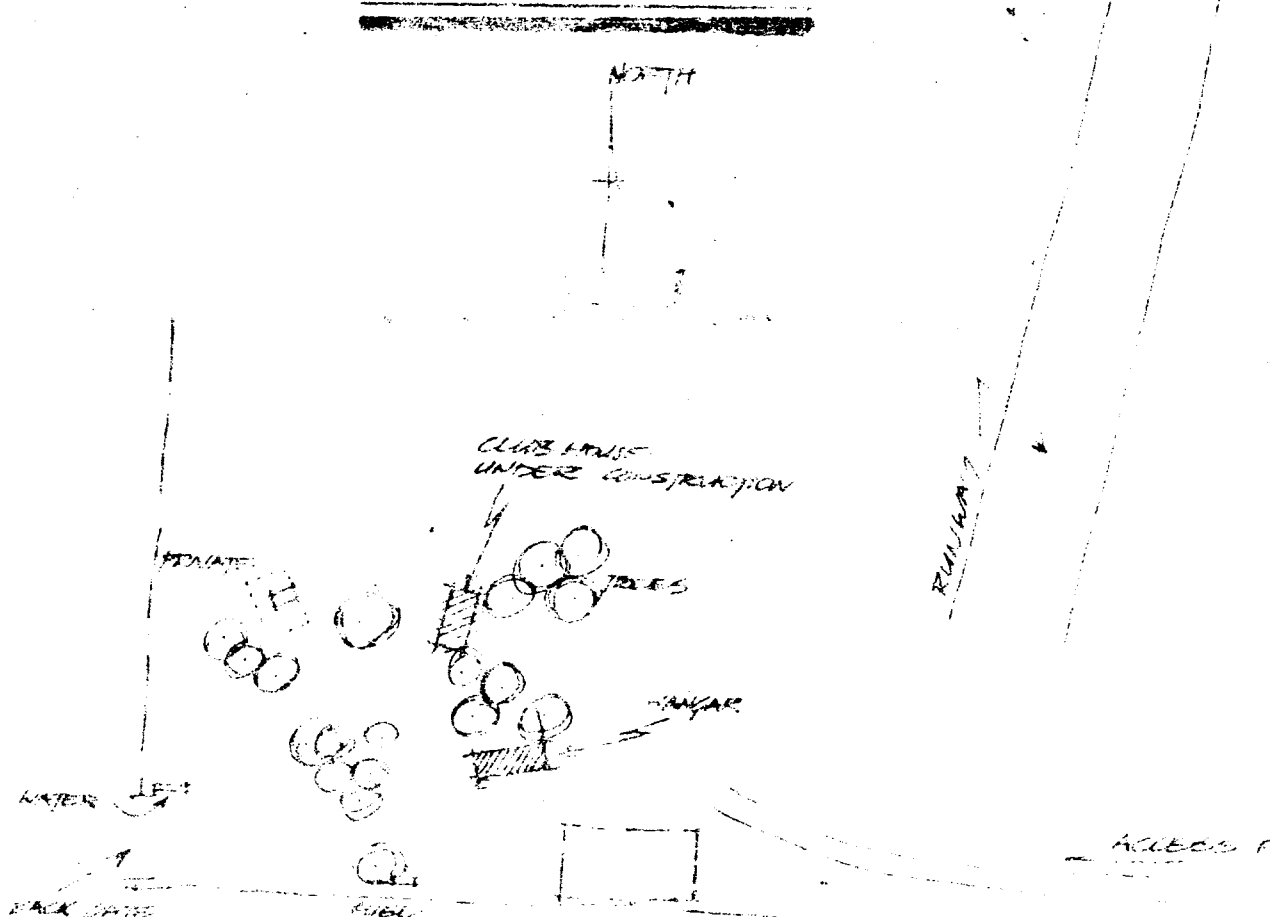
The MAIN HANGAR is currently clean and relatively tidy. If everyone puts the equipment away and rubbish outside, we can keep it that way.

The RUBBISH heap along side the hangar was recently dispatched to the Butte refuse tip on the Arrow trailer. This task will need to be done more frequently in future. A big help would be to get a couple of 44 gallon drums for rubbish bins.

Emilis' SHED had iron on the western side replaced. The fenced off area too is keeping the sheep out and allowing ground cover to come back itself over the sand dune area. Might be worthwhile and around the club's buildings when these are completed.

The apron area has been graded, leaving clay patches in the area used to pull the gliders in and out. Plans will be to mark the area so that the club can start in spreading some Dolomite over the apron area might be a sensible idea.

The club's shed has taken a step forward with the laying of the plumbing, excavation for foundations and grading of the floor slab area.





THE GOLDEN GLIDER

A fable about your basic polar
as told to the author by a
girl in a singles bar who looked
suspiciously like a frog.,

by JERRY GIBBS

Once upon a time, long, long ago, when the wind was broken and we couldn't fly, I was walking through the enchanted forest and feeling low (no pun intended). I happened upon a beautiful meadow, and there, in the middle of the meadow, was a golden glider. There was no one around. I approached it cautiously and opened the canopy. To my surprise, sitting there in the cockpit was a frog, and the frog spoke. It said, "This glider is yours — if you are willing to accept and are successful in a quest. The glider has no speed ring, no speeds-to-fly decal, and no manual. I assure you the glider is airworthy and all the instruments work perfectly. Your task is, in one day, to find all the speeds-to-fly, make a speed ring, and draw the polar. If you do, the glider is yours." I accepted immediately, since I knew I could do it, being a graduate of the SHAPE Gliding Club Ground School.

But, then the frog said, "Wait. I will give you one wish right now, and if you make the right wish, I have a surprise for you." I thought for a minute and said, "I wish for a day of absolutely standard conditions with no air-mass movement — no lift, no sink, and no wind."

And then, with a blinding flash of light, the frog turned into a beautiful princess and she said, "That was the right wish. If you accomplish your quest, I will be your crew forever and ever. But if you fail, you will spend the rest of your life in sink with the wicked witch of the west."

Off I went with the glider and got an immediate launch. I flew straight ahead, completely coordinated with yaw string centered. I flew at all airspeeds (AS) from stall to redline and recorded the aircraft sink (Sa) from my variometer for each airspeed and put them into a table of figures. I then landed because I knew that I did not have to fly any more and that with only a pencil, a piece of paper, and a ruler, I could do everything the frog asked. My table of figures was as follows:

AS (km/h)	45	50	60	70	80	90	100	120	140....
Sa (m/sec)	stall	.8	.5	.58	.65	.7	1.0	1.3	1.6....

Now, remember, airspeed (AS) and aircraft sink (Sa) are both rates:

$$AS = \frac{\text{Distance forward}}{\text{Time}}$$

$$Sa = \frac{\text{Distance down}}{\text{Time}}$$

Therefore, the ratio is:

$$\frac{AS}{Sa} = \frac{\frac{\text{Distance forward}}{T}}{\frac{\text{Distance down}}{T}} = \frac{\text{Distance forward}}{\text{Distance down}}$$

The time in each case is the same, therefore:

$$\frac{AS}{Sa} = \text{Glide ratio}$$

Also, I note that AS is in kilometers per hour and Sa is in meters per second. Although it is mathematically correct to deal in two different kinds of units (as long as we remember what we are doing), we'll put everything in the same units where

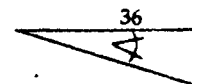
appropriate so it will be easier to explain it to the frog. So now we'll do this and expand our table:

										NOTE: 1 m/sec = 3.6 km/h
AS (km/h)	45	50	60	70	80	90	100	120	140	
Sa (m/sec)	stall	.8	.5	.58	.65	.7	1.0	1.3	1.6	
Sa (km/h)	stall	2.9	1.8	2.1	2.3	2.5	3.6	4.7	5.8	
Glide Ratio*	0	17	33	33.5	34	36	28	26	24	
		1	1	1	1	1	1	1	1	

*Divide first row by third row

Before we put all this on a chart, we note several interesting points:

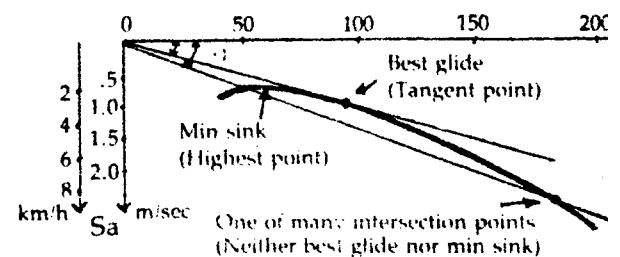
- At AS of 60 km/h we have our smallest Sa, even though we don't have the best glide ratio. This means we come down the slowest and, therefore stay up the longest (in time), although we don't achieve as much distance forward as possible. We'll call this speed "minimum sink speed," at this sink "minimum sink."
- We find our best glide ratio occurs at 90 km/h. For example, if I were at 1000 meters altitude and flew at 90 km/h, I would cover 36 kilometers distance forward before I touched down. If I flew at any other AS, I would not go as far. So we'll call this speed "best glide speed" and the ratio achieved "best glide ratio."

Also, the  formed by the

triangle, the "best glide angle." Note, however we come down faster than when flying minimum sink speed! (That is, even though we achieve more distance, we don't stay up as long!)

- If I were at 1000 meters altitude and only 24 kilometers from home, and I wished to get in a hurry, I could fly 140 km/h — that is, flying fastest is not necessarily best glide speed, but something different.

Now, to put this on a graph, plot the points, and connect with a smooth curve:



The curve represents all the possible combinations of AS and Sa that the glider can fly. Some are special and worth talking about:

- The high point of the curve is the minimum sink point.
- The tangent to the curve from the origin touches the curve at the best glide point! (This is the hard point to understand. Once you get this, you've

almost got it all — *Tilt & Tink* Talk. The Δ from the horizontal axis to the line from the origin to the curve (this line can either just touch the curve or intersect the curve) is your glide angle. The smallest glide angle you can have is that of the tangent. The glide ratio $\frac{AS}{Sa}$ is always largest at the point of tangency.

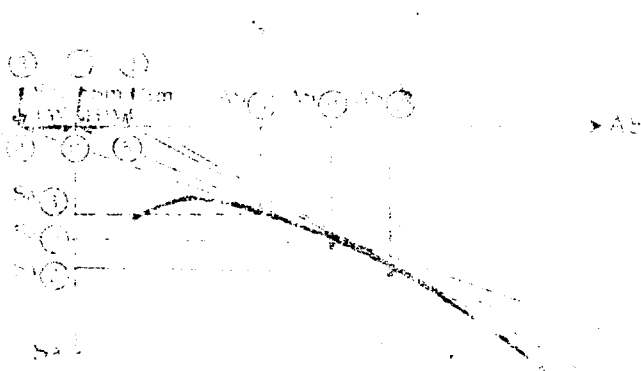
To verify, we can see, in Δ , the highest point on the curve, but it does come from the tangent to the curve from the origin. All other speeds come from other points on the curve.

Up until now, we have talked about still air; now we'll add in effects of wind and vertical air movement (lift or no-mass sink). Wind and sink (or lift) are not *prank*. *Tilt & Tink*.

example: If my speed is 90 km/h and my Sa is 7 m/s (7.7 km/h) down and I have a mass sink (or lift) of 20 m/s and an air-mass sink (S_m) of 1.0 m/sec (3.6 km/h) down, then my glide ratio is:

$$\frac{AS}{Sa} = \frac{AS + S_m}{Sa + S_m} = \frac{100}{9.7} = 10.3$$

(NOTE: You will see in a minute that this is not the best glide ratio you can achieve in these conditions. Obviously I and TW help glide ratio. So, and HW hurt glide ratio. Now we can put all this on our graph and really expand our knowledge.

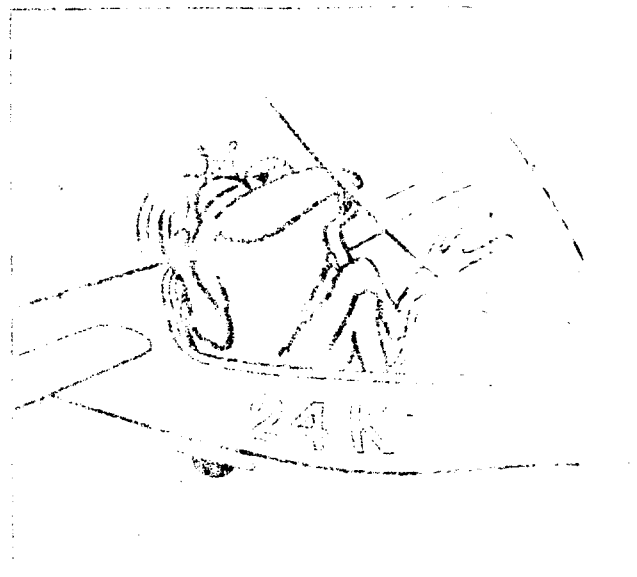


Let's put the $HW + TW + Sa$ on the graph. To find the best glide speed with $S_m = HW$, draw a tangent from $\textcircled{1}$. To find the best glide speed with $S_m = TW$, draw a tangent from $\textcircled{2}$. To find the best glide speed with $S_m = HW + TW$, draw a tangent from $\textcircled{3}$. *de lift*.

Look at point $\textcircled{4}$ — we have an air-mass sink. So, enter $HW + TW$ to draw the tangent from $\textcircled{4}$ to the curve. It touches the curve farther out than $\textcircled{3}$ (longer AS). Note that there is a corner

*Note that you can get more on figure 2, but glide ratio to

$$\frac{AS}{Sa} = \frac{AS + S_m}{Sa + S_m} = \frac{AS + HW + TW}{Sa + HW + TW}$$



point on the graph. There is a glide angle for stated another way, a $HW + TW + Sa$ when there is no sink.

Although this latter point of a $HW + TW + Sa$ is a larger Sa than other glide ratio, it is the best I can do.

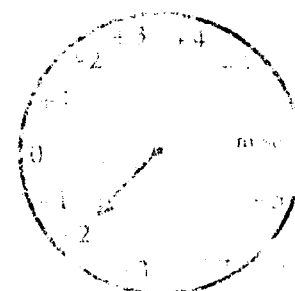
Thus, what we have to add is the S_m and S_m we can find a new AS that gives us the best glide ratio possible for manual control.

Guess what? We just discovered the best glide ratio. By using figure 2, we can now find the best glide ratio of a pilot.

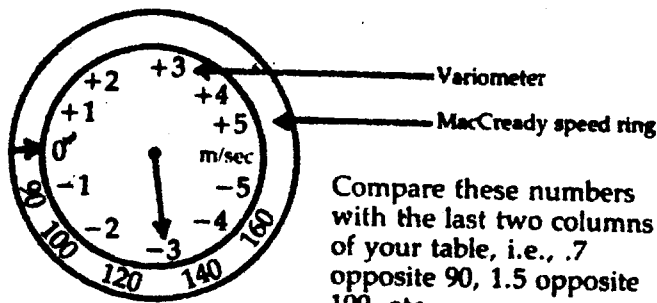
S_m (km/h)	Sa (m/s)	Sa (km/h)	AS (m)
0	7	7	12.9
5	14	14	12.9
10	21	21	12.9
20	42	42	12.9
25	48	48	12.9

That is, for a presumed S_m that is $HW + TW$ and from the graph, the best glide ratio from S_m to the curve.

Let's put $HW + TW$ on the graph. The variometer is a device that measures that $Sa + S_m$ we can't read directly. Let's say you can't read the variometer. It tells you, this.



In this case, the variometer tells you that you have a vertical air-mass sink of 1.5 m/s. However, you know that you are still in the ground. So, you know that you are not in the ground. You know that you are not in the ground. You know that you are not in the ground.



On the ring, I'll put the AS numbers I got from my table opposite the total sink. So, if the arrow points at -3, the ring says fly at 135 km/h to achieve best glide ratio for that condition. *Another discovery* — the variometer with the speed ring is nothing more than the glider polar built into an instrument. Note that the ring is not fixed, but can be rotated. Why? Fortunately, the frog did not ask this question which is related to how fast I can fly when I'm in constant or other certain forms of lift (a racing technique). However, you already have all the raw data you need to make the calculations.

Also, the frog didn't ask me about the final glide calculator (which tells me if I can get home from a certain altitude, or if I have extra altitude, how fast I can fly), so we'll save those discussions for the advanced course. One other point — while you can

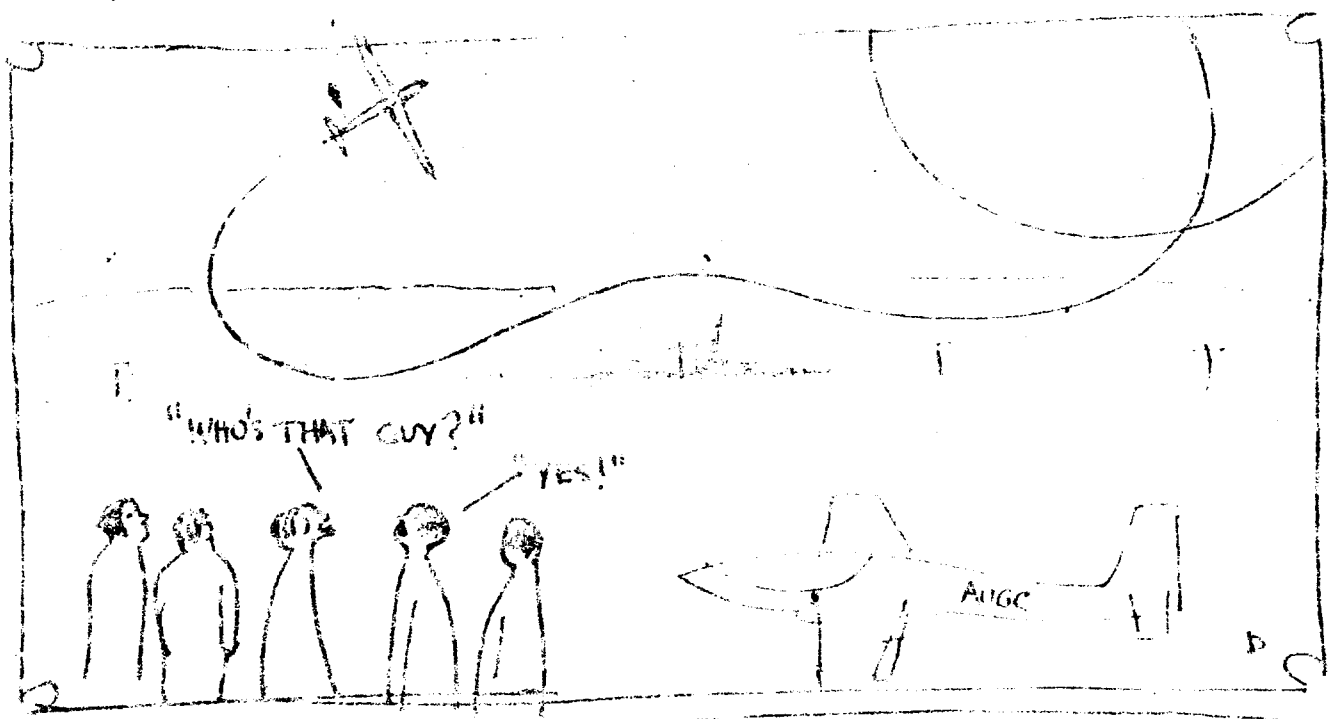
obviously work the HW or TW factor into the speed-to-fly when using the polar graph, you unfortunately have no instrument in the glider measures HW or TW, so to take this factor into account use the speed ring to figure the speed as previously described (assuming no HW or TW) and then add 50% of estimated HW, or subtract of estimated TW. This is the best approximation you can make.

I returned the next day and showed my results to the frog. It looked at them carefully, and then there was a blinding flash of light, and there she was, the beautiful princess. She said: "You did it! I'm yours forever! And in case you didn't know it, I'm a qualified aerotow pilot with my own plane and licensed to perform every type of maintenance repair on gliders. I also have another surprise for you." SHAZAM, there stood a golden van with a stocked bar and double bed in the back and also a golden trailer.

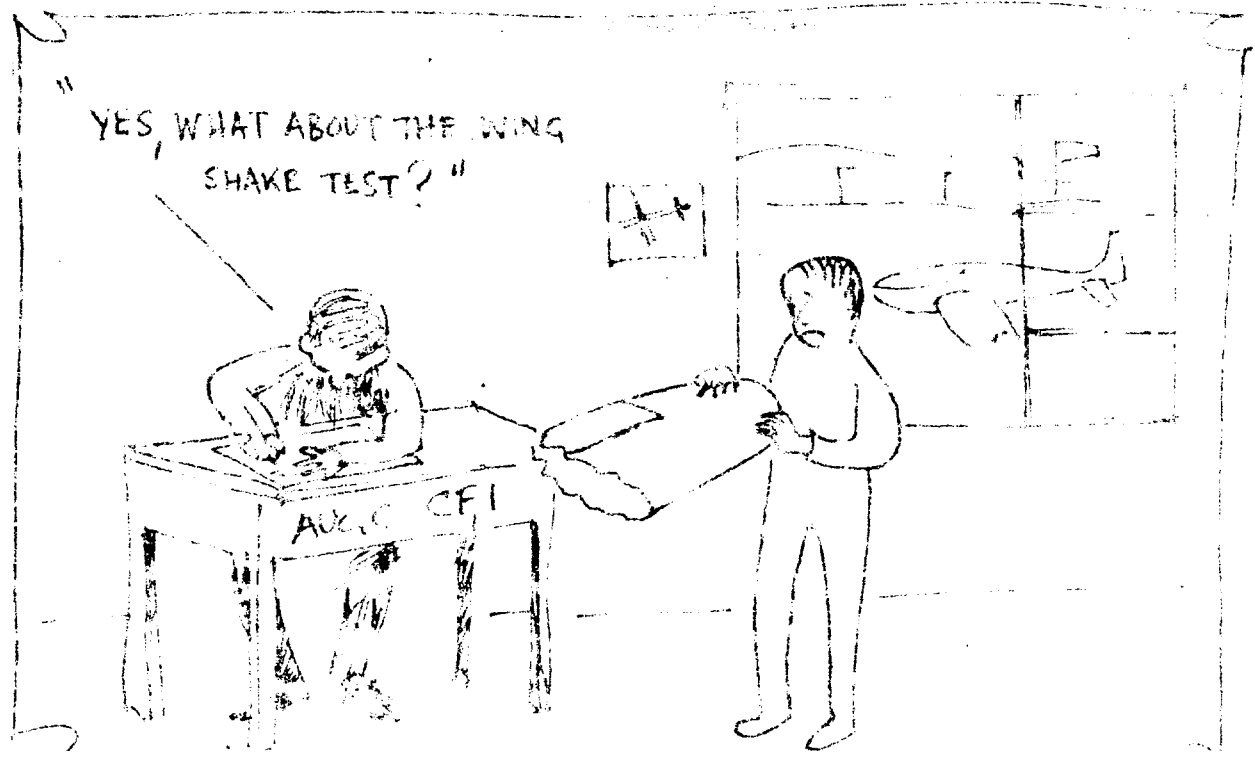
We hitched up and drove off into the sunset land of eternal lift and lived happily ever after.

The moral of this story is that if you understand the glider polar, you too can soar with a beautiful princess. (And if you believe this, I have some swamp land in Florida you might be interested





THURSDAY NIGHT ???
FLYING THIS WEEKEND ???
THEN RING ANDREW ON 255 3040
RIGHT NOW OR ELSE !!!



WORKSHOP NEWS

The sailplanes that the club operates do deteriorate due to wear and tear of use. Because this is a relatively slow process, sometimes the aircraft are abused and the aftereffects of this is only evident in damage which appears much later.

In the past, the club has had a lot of voluntary work carried out by qualified sailplane maintenance people, however as this repair work has been again necessary after a short period, this free help is no longer available. In fact, the last overhaul on the Bocian was done by another gliding club. This unique situation can not be expected to continue.

The result is that the damage done to club aircraft in the future will result in two things -

1. the instructor of the day can ground a sailplane as unairworthy, and no flying gets done.
2. to meet the additional cost of maintenance, the treasurer will have to raise flying fees; and you get less flying for your money.

Luckily there is another solution. First, be very gentle with the aircraft, particularly on the ground.

Two, get one of the senior pilots to show you how to rub back and paint the Bocian; this keeps the weather out, and makes the plane last longer.

Current status -

The Arrow has had its radio mounted by Don Hein. The surface finish is adequate, except for the wings and particularly the tips which need work.

The Bocian was overhauled in November 1980. One wouldn't know it looking at the plane. Where paint is cracked, new paint, characterised by its runs has been applied, without undercoat. It can't be expected to last.

Some bright individuals removed the main wheel, and left the aircraft resting on its nose skid for the week. The nose skid of the Bocian is not intended for long loads. In this case, the suspension bladder of the skid was left without air, and the continuous load broke the nose skid structure. Congratulations.

Long term abuse has now resulted in the plywood on the undersurface of the wing in coming detached from the ribs near the wing root. Its a sizeable job to fix.

Long term -

The pressure to erect the new building at Lochiel is so that the aircraft can be worked on during the weekends while members spend their nights on field.

If this doesn't eventuate soon, the club will be back to a situation faced last year where the club didn't operate for 4 months because the equipment was unservicable.

THE AMAZING AUNTIE AMY BIGGLES
IS BACK!!!!!!!

...AFTER COMPASSIONATE LEAVE
(It wasn't my fault - Ed.)

Dear Auntie Amy,

As a newcomer to the wonderful world of gliding at lovely Lochiel I am amazed by the skill of your pilots at the recent competitions; their grim determination to beat all the competition, the cunning tactics, the reckless speeds at which the pilots went, the delights - almost to the death - each man chafing at the bit, the sweat, blood, and tears as each day moves to its climax, and when they eventually get off the ground it is even more spectacular:- but tell me, isn't crashing through the "start gate" at breakneck speed meant to be done with the glider rather than the trailer?

Signed Puzzled Trainee.

Dear Puzzled Trainee,

As you may realize there can be as much action on the ground as in the air. As your last query is a legalistic one we have referred this to our legal adviser for comment.

A.B.

Dear Auntie Amy,

I am getting concerned about my husband who hasn't quite been the same since his recent overseas trip.

With jet lag, flexi-leave, etc., he found flying for long hours tiring to the extent that he kept telling the pilot of the jumbo jet that he could put it down in "that paddock" whenever he saw a ridge of hills. Now I hope this desire for outlandings coupled with a problem with his bearings doesn't cause undue problems at Lochiel.

Signed T.H.

Dear T.H.,

Unfortunately your warning came too late. Already we have found him attempting to make an artifact out of the Arrow on the other side of the ridge. Just because "the grass is greener on the other side of the hill" doesn't mean that we should seek

Dear Auntie Amy,

I can't understand what attractions await one of our young, virile pilots in Canada. Is it true, as I have heard from an unreliable source, that D.... is doing some engineering on the side?

Signed Curious.

Dear Curious,

Definitely not! No way! I am instructed by an equally unreliable source that he is going to seek his fortune via an extensive career opportunity. We don't need smut like this in our column! - nor in our club - that's why he's going to Canada. Seriously, Dave, all the best in your new venture.

A.B.

Dear Auntie Amy,

I recently overheard at the recent club dinner that our beloved C.F.I., former President and Acting Treasurer, Legal Adviser and Clubrooms Project Manager declared that he was "looking for a mature woman who's already had children safely off her hands" so that he didn't have to worry about domestic matters. Now it so happens that I am in a position to offer my sister who is really young looking for her age, and the doctor says she should be alright after her recent bereavement in which her husband died in suspicious circumstances, and left her a fortune. She is looking for someone with a legal mind and an eye for financial matters, with a whimsical sense of humour, to share his life with a clever little lady who enjoys lawn bowls, bridge, investing money in insurance and the occasional good, clean practical joke!

Signed Eve Stropper

Dear Sis,

This lady sounds like the ideal partner - just what he deserves. Thank you for your letter.

A.B.

BACK

NEXT

MONTH

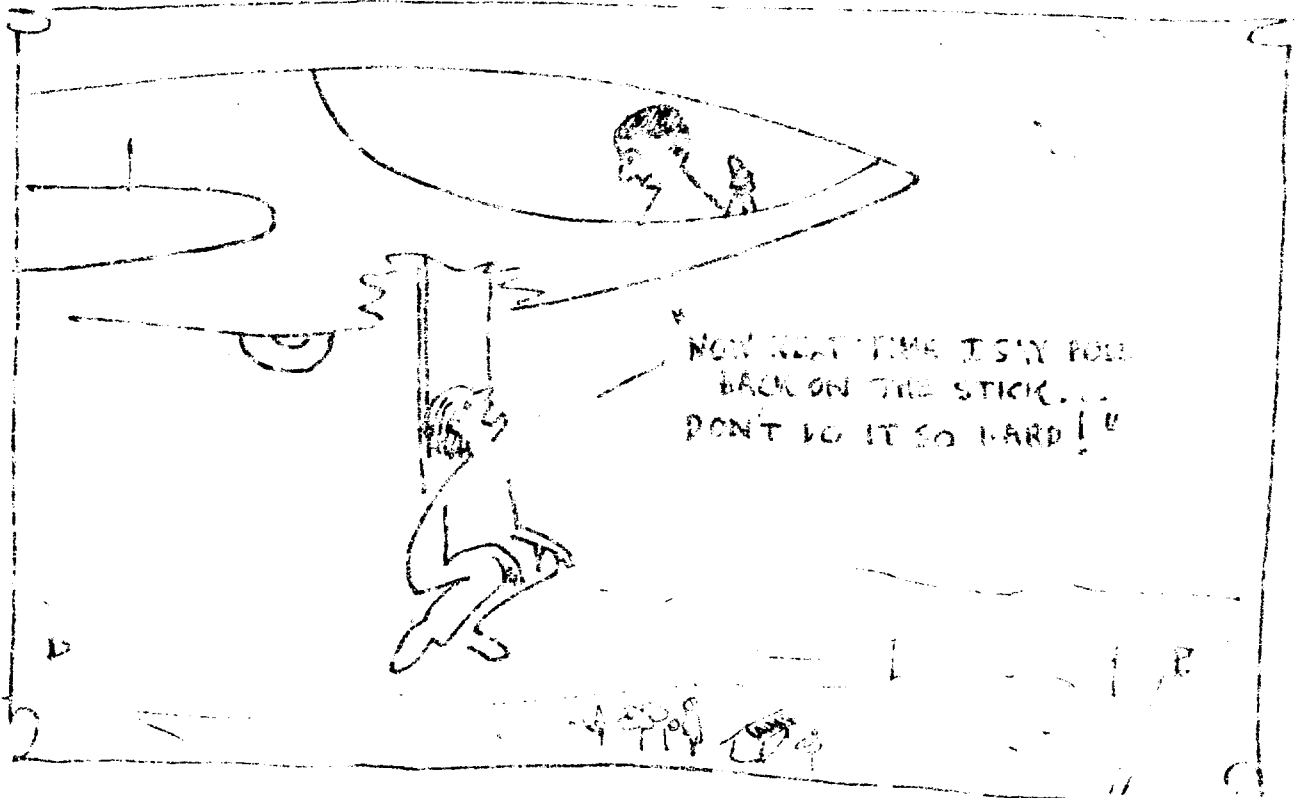
The Prez Sez:

Our recent efforts on the Social Club to have been successful thanks need to go to the group of people who put in so much effort the project. Special mention must be made of Tim who organised the shop space and of Mark, Don, Neil, Brett, Andrew, Sandra, Ellis, I and Tom for their efforts on the aircraft on several nights. Another paint job was something else on both the Lockheed and the sailing club.

If negotiations for the workshop proceed satisfactorily we will bring down the Six for some t.l.c. on the night of Monday, June 8th for the week to Friday the 12th. The Club meeting will be held on the Wednesday night of that week and not during the week before the most people will hopefully be up at Lockheed on the Camp.

Some people (like me) liked the idea of working on the aircraft and having the Club meeting at the same time. Others feel that this system unnecessarily rushes the meeting. Don likes the idea of having something more than just a business meeting but favours talks, lect etc. on soaring topics. Are there any other suggestions and which in your favour? It seems that we all want to get away from the long late out meetings of late and make the whole thing more entertaining. As pointed out with little effect last year it would help if anyone of a major topic for the meeting could have the matter well-prepared, keeping it concise and to the topic. Also, please warn Richard so that the Agenda can be adequately prepared.

The Clubhouse.....By the time you read this the Club will be in place with the appropriate white and protection whatever under it. The then begins in earnest while we try to get the walls up and the roof on before the season starts (if it starts).



And now for a Presidential Address:

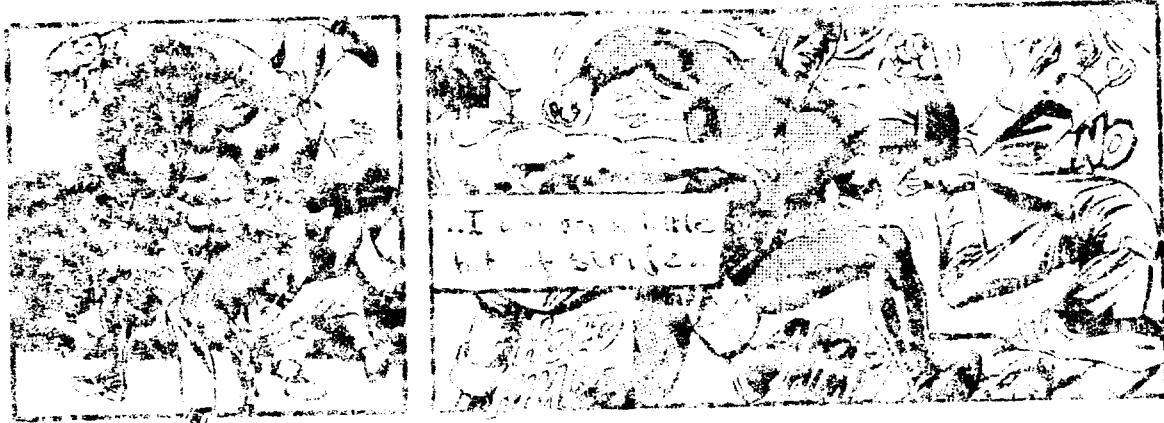
MR. RONALD REAGAN
1400 PENNSYLVANIA AV.
WASHINGTON D.C.
U.S.A.

PHANTOM

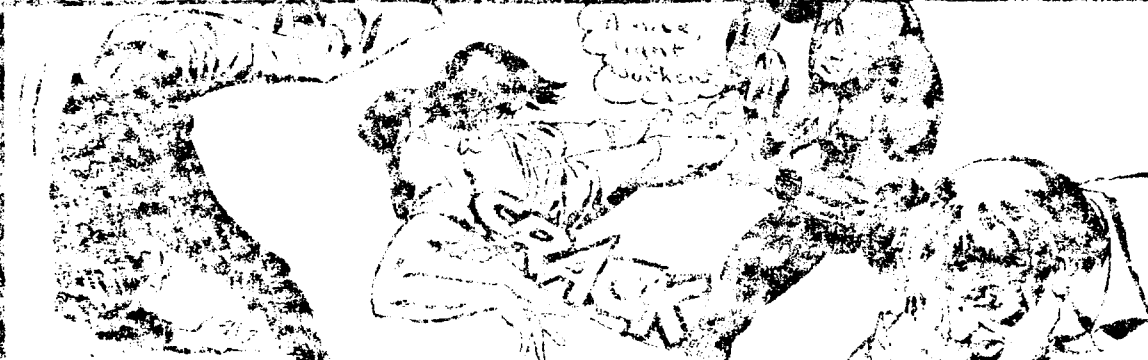
After such discussion and some hard work the clubhouse and operations centre is finally completed in August 1966. We find the executive in it arguing about.....



While Lord Derby Q.C., M.P. holds forth, it never ends...



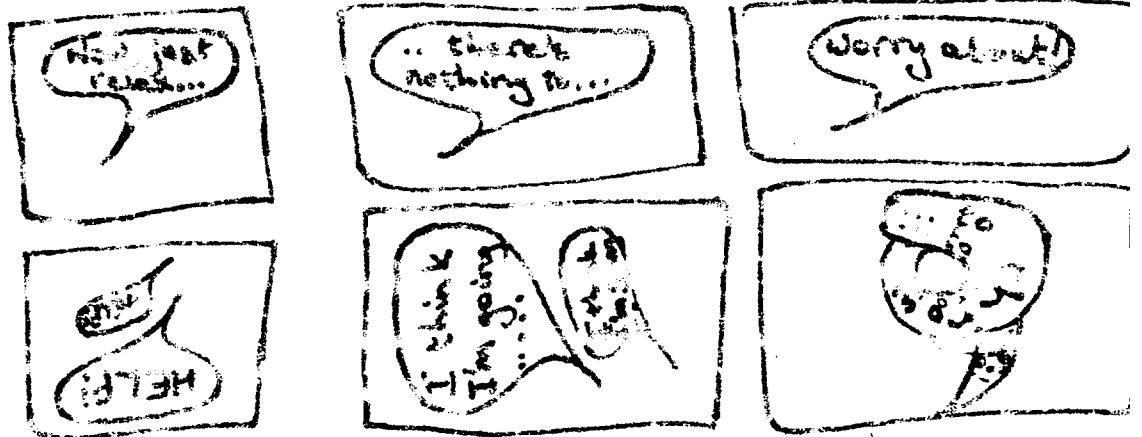
It is a long time after my first... conclusion... article... the... ..



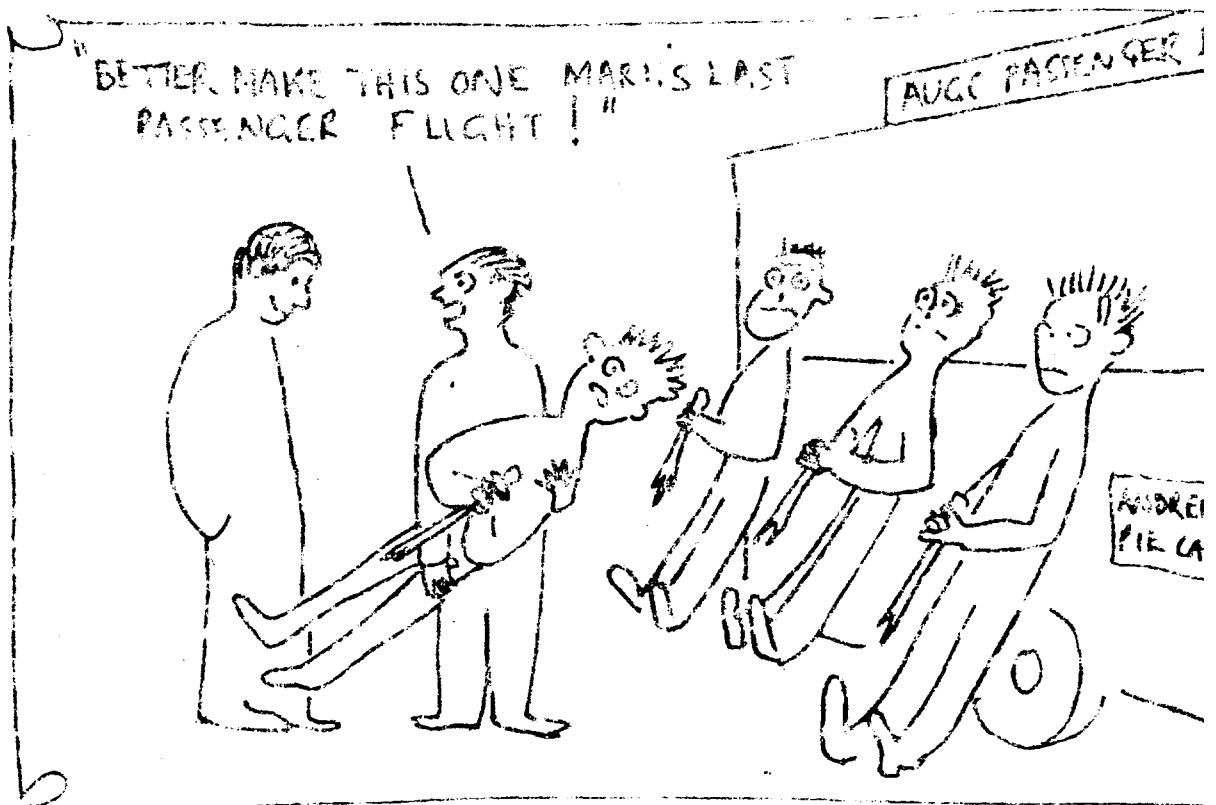
Great Unseen Moments at Lochiel:



- Guy doing aerobics (loop, chandelle + spin) with a passenger while flying in cloud



...this time with Sharon Quinn up front.



THE LAST PAGE

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Before flying on any weekend ring Andrew Sawyer on the Thursday night before so that the day can be organised.

Andrew's phone number is 255 3646.

Holiday flying:

A camp is being organised for May 30 to June 8.

Please come along for a day or for the whole week.

Bring your friends - don't forget the holiday Monday.

The Six will be brought down to Adelaide on Monday 8th June for some work. A night's work from everyone makes the whole thing go quickly, easily and efficiently.

CLUB MEETINGS:

<u>Date</u>	<u>type</u>	<u>where</u>
10/6/81	General	Meeting Room 1 (behind Bar)
17/6/81	Committee	T.B.A.
1/7/81	General	Sports Association Meeting Room
15/7/81	Committee	T.B.A.
5/8/81	General	Sports Association Meeting Room