Uni Gliding

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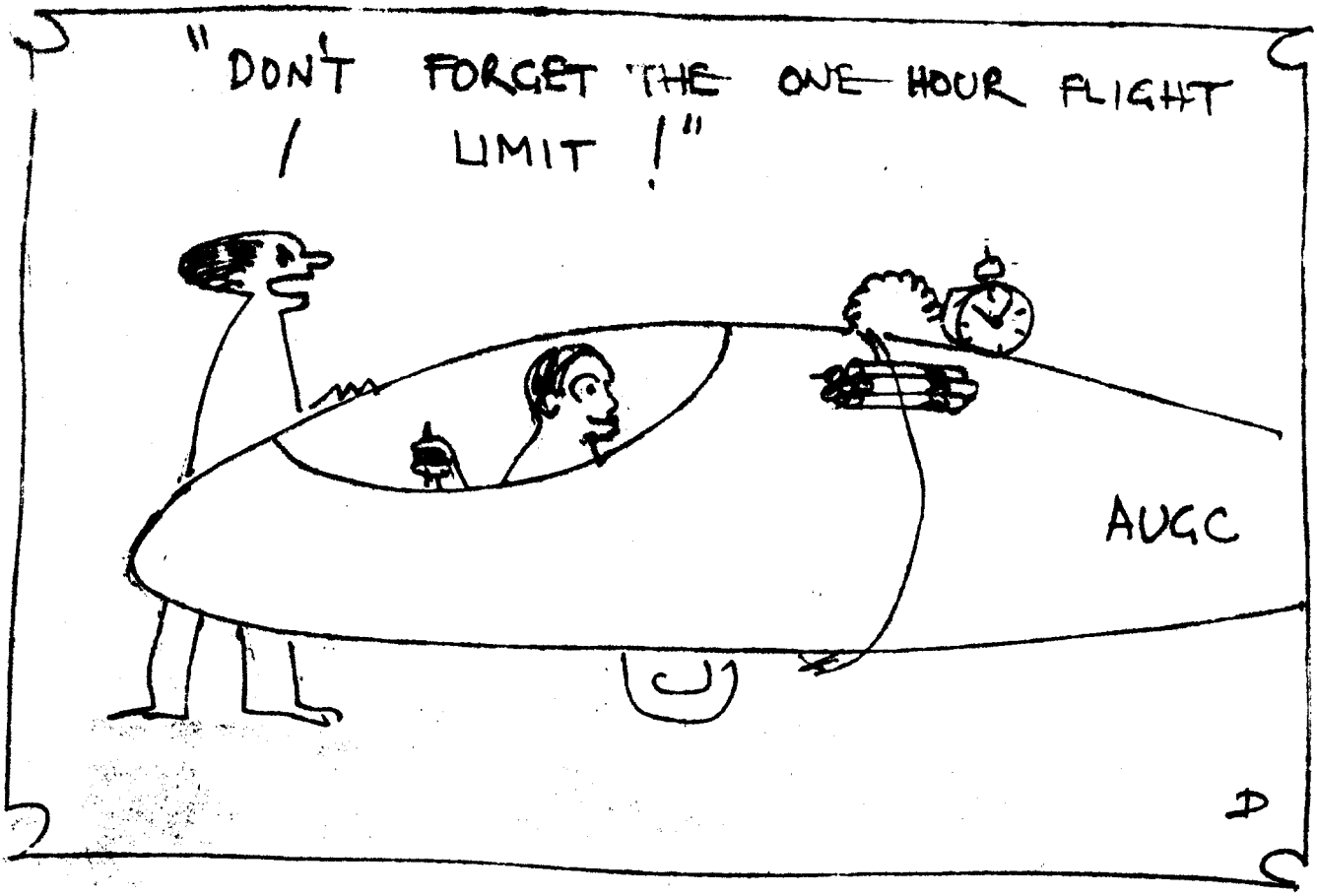
August 1983

Official Journal Of The Adelaide University Gliding Club.



Next Meeting

Wednesday, 7th September, 7:30 p.m.
in the Jerry Portus Room, Union House.

Agenda: 1: Business; Find out the next exciting episode in the saga of AUGC.
2: Educational Lecture provided by the instructor's panel.
3: Coffee; if you like that sort of thing after the meeting's earlier excitement.
4: Entertainment; Come and see our first efforts at video taping.

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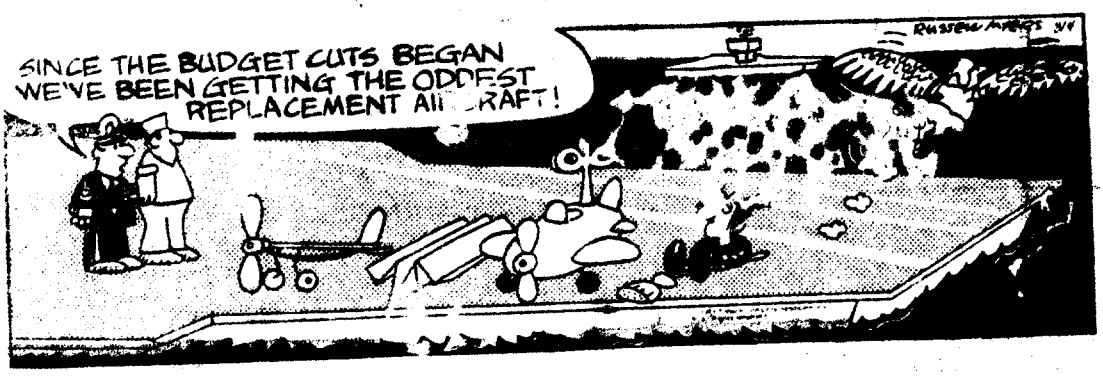
Editorial

Well, another newsletter out and I still haven't committed suicide. I apologize for the somewhat smaller nature of this edition, but this is because the newsletter is due out in the week of exams. Although, now I come to think about it, suicide would appear to be a viable alternative, what with last month's twenty eight page encyclopedia, and now this month's exams...

I also mention that although we had two or three submissions for last month's edition, this appears to have been a short lived spate of reader enthusiasm, and I have recieved NOTHING for this month. (Discounting, of course, things like President's reports, etc.). Please remember that I will be forever in your debt if you supply as much as a legible word to this worthy cause.

I eagerly await your deluge of essays, articles, cartoons, sketches, diagrams, poems, songs, etc.,

Andrew



President's Report

READ THIS...

As you know, since the beginning of this year, the club has had problems with repairs, and has been unable to keep both two seater aircraft flying. We have hung on by the skin of our teeth and generally had one of them available, but the situation is getting desperate. The Bergfalke skid is broken again, and its annual Certificate of Airworthiness inspection has just fallen due. The Bocian wings need protective work done urgently due to surface cracks, and at its C of A inspection in December, a number of other items will need attention. Before then, the Ka6 C of A inspection falls due. All this means THERE IS WORK TO BE DONE.

We have enquired into getting some of this done by paying for it, and boy, would we have to pay! For example, to do the gluing operation on the Bergfalke skid (after we prepare it etc.) - probably $500. To do the Bergfalke C of A - around $1000. The club cannot afford these costs without an enormous increase in flying rates which would put flying out of reach of many students. Therefore, we must do the bulk of the work ourselves. However, there are two problems;

1) We have nowhere to work.
2) Only Mark Forster is qualified to do the C of A inspections.

Problem 1 will be solved when Don Hein's shed is completed as he has promised the club access to it for at least 1 year in return for help in building it.

Problem 2 will be resolved when Mark has finished the C of A on his own aircraft.

In consequence, the executive has decided the following;

a) Repairs to the Bocian wings will be deferred until the Bergfalke is flying again. This at least keeps a two seater flying.
b) No work will be done at present on the Bergfalke.
c) That top priority be given to Don's shed and Mark's C of A as club project.

By helping with these projects, members will be in fact working <u>for th benefit of the club</u>. It is imperative that the Bergfalke is repaired and inspected as quickly as possible as should anything happen to the Bocian, FLYING IN TWO SEATERS AND HENCE ALL TRAINING WILL CEASE.

Appeals over the past two months on these projects have produced some small results,but much more is needed. And if you have been flying in club aircraft, you have been benefitting from cheap rates and have a respon sibility to help the club in return. Besides, both Don and Mark have done a lot to help the club in the past (example - Mark spent over 100 hours building the new Bergfalke skid earlier this year. Don's contributions are too numerous to mention). YOU MUST HELP TOO.

Mark needs help at Gawler on weekends. Ring him on 251 2820 to organis when you could lend a hand. Don needs help both weeknights and weekends. Ring him on 261 4245 to arrange. You can't even use the excuse that you hav no skills of use - in both cases, unskilled and skilled hands are needed. SO THINK ABOUT IT. IT IS <u>YOUR</u> FLYING AT RISK. WOULD YOU LIKE TO HAVE TO GIVE IT UP??

SZD-9bis Bocian 1E / Poland

One of the best known training sailplanes is the two-seat Bocian built by SZD. It is one of the few two-seat gliders stressed for aerobatics, including inverted flight. The prototype was flown for the first time on 11 March 1952 and the first production aircraft in March 1953. Several alterations were made to the tail and to the rudder in particular, and the Bocian C first flew in February 1954 followed by the D in 1958 and finally the E which first flew on 6 December 1966. By the end of 1976 a total of 593 SZD-9 Bocians had been built.

Construction is of wood and fabric. The oval-section fuselage is plywood covered and incorporates two seats in tandem beneath a long blown Plexiglas canopy. Landing gear consists of a non-retractable monowheel with brake, and front skid. The mid-set wings are swept forward 1° 30′ at quarter chord. They consist of a two-spar wooden structure with plywood D-section leading edge and fabric covering. SZD airbrakes are fitted inboard of the slotted ailerons. Between 1955 and 1968 Polish pilots broke many world records in various models of the Bocian, including Franciszek Kepka who set a world record goal flight of 636.6 km (344.1 nm) in 1962. The Bocian currently holds the world height records for two-seaters.

[redacted]

4.7 Aircraft or glider on final approach, has right of way over an aircraft or glider on the ground.

4.8 An aircraft shall not be operated on the ground in such a manner as to create a hazard to itself or other aircraft, and shall not be operated in the air in close proximity to another aircraft except when thermalling or when in the circuit area.

4.9 Aircraft shall not fly in formation except by pre-arrangement.

...../5

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4.15 Visual Meteorological Conditions

VMC exist when an aircraft can maintain:

(i) a flight visibility; and
(ii) a distance from cloud

equal to or greater than that set out below.

Type of Aircraft	Height	Flight Visibility	Distance from Cloud		Additional Conditions
			Horizontal	Vertical	
Fixed-Wing	Below 5,000	5000 M	600 M	500 feet	(a) Within his area of responsibility.

...../6

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5. Signals for the control of aerodrome traffic.

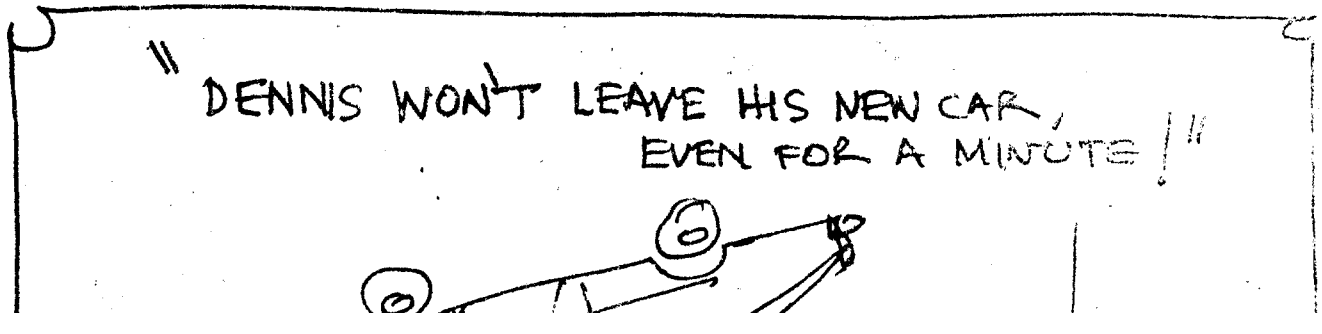
5.1 The following signals which are reproduced from the 'Visual Flight Gu could be expected at a Government or Licensed aerodrome. They have been prepared with power aircraft in mind and some discretion would have to be exercised if received while in the air.

Light Signals

VISUAL SIGNALS — CONTROLLED AERODROMES
Light Signals

LIGHT SIGNAL	MEANING IN FLIGHT.	MEANING ON AERODROME

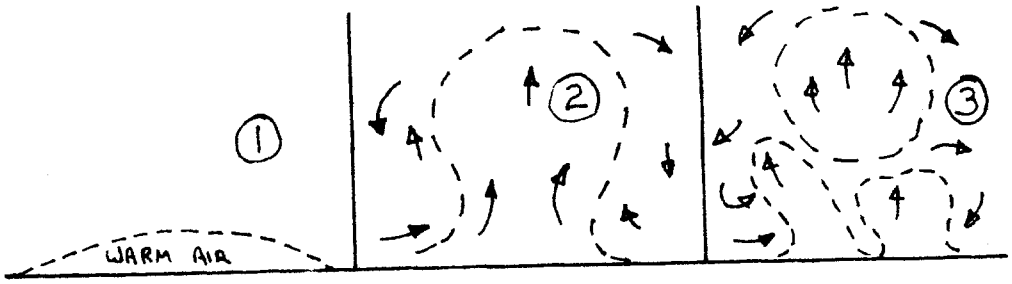
[redacted]



BASIC GLIDING KNOWLEDGE

Thermals

Different types of soil and vegetation reflect or absorb heat from the sun to different degrees; thus the air close to the ground over some fields will become much warmer than others. In this way, large bubbles of warm air are formed and eventually break away like a baloon to travel upward. Naturally there is a good deal of eddying and turbulence near the edges. If the volume of the warmed air is large enough, it may form a stream of air flowing upwards. Usually the flow is not regular and has much variation within it.



Once started how rapidly and how high the bubble rises will depend on the initial temperature and air temperature variation with height. Air pressure reduces with height and this causes the temperature of the bubble to reduce also. Since the lower layers (to 20,000 ft) are quite regular in this respect, this temperature drop with height is constant at 3° C per 1,000 ft.

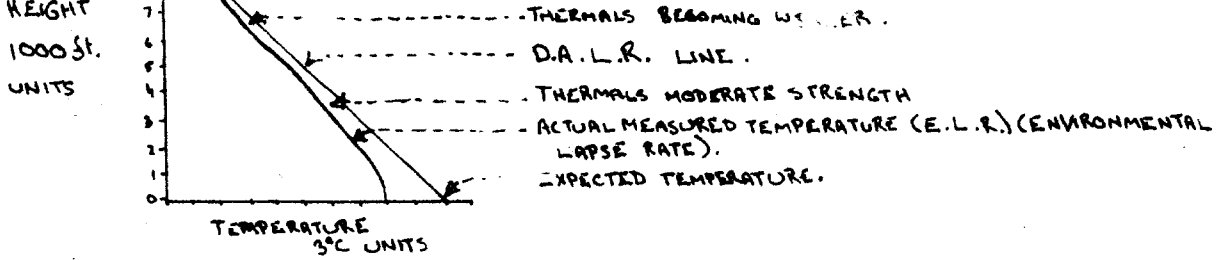
This is known as the Dry Adiabatic Lapse Rate (DALR). Dry because the air is not saturated with water vapour (if it was (i.e. cloud) it would cool at the saturated rate of 1.5° C per 1,000 ft). Adiabatic means there is no significant loss of heat from the bubble to the surrounding air.

The thermal will rise until there is no difference between it's temperature and that of the surrounding air.

The actual air temperature at height is measured and this, and the DALR graphed together to forecast the likely thermal heights.

The strength is governed by the initial temperature difference between the heated and unheated air.

If the graph is drawn with the same units for 1,000 ft and 3° C, then the thermal DALR will be a 45° diagonal, making it easy to draw.



Not all thermal bubbles will get to the maximum temperature before breaking loose and these will rise to a lesser height than the maximum and also be of lesser strength.

Often, usually associated with anticyclones, (highs, common on the Australian weather map) there will be a sharp increase in temperature with height. This is called an inversion and becomes a lid for thermals.

If the thermals go high enough for the air to reach its dew point - that is, the temperature drop is enough for the water vapour present to condense to droplets, then cloud will be formed. Being dependant on temperature, the clouds will form at the same altitude and have flat bases. Further rise of the air will then depend on the relationship between the air temperature and the SALR (Saturated Adiabatic Lapse Rate).

Fair weather cumulus clouds have a firm cauliflower appearance and a flat base.

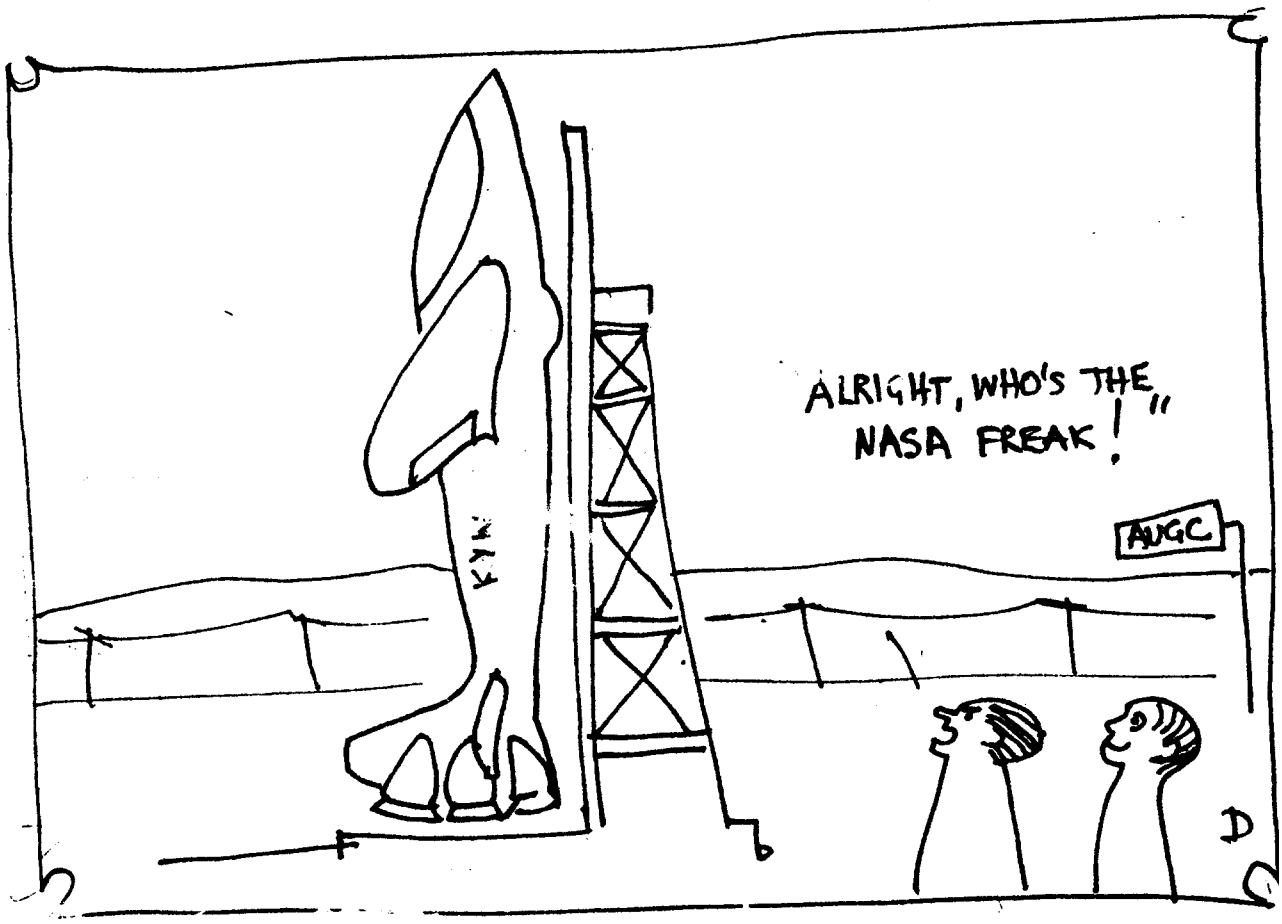
These have a short life (from formation to dispersal) of about 20 minutes. When the temperature relations are unstable, once the thermal has reached cloud base, the slower rate of cooling at the SALR increases the thermal strength and towering cumulus and thunderstorms may develop.

In the inland Australian conditions, the water vapour content (humidity) is very low. This results in a high cloud base (8,000 - 12,000 ft) which gives plenty of height for gliding.

As thermals are limited in size, sailplanes usually circle to remain entirely (if possible) inside the rising air. Because the sailplane's sinking performance gets worse with increasing angle of bank, and very little reduction in turn size results from bank angles steeper than 45°, bank angles between 40 and 25° are used to give circles of 140m to 200m diameter at usual sailplane speeds.

Ideally, in the thermal, the sailplane should be circled to obtain the highest variometer reading, steady all round. This does not happen very frequently in the first turn or two.

There are a variety of circle repositioning systems, called centering, which may be applied to achieve this.



Coming Events

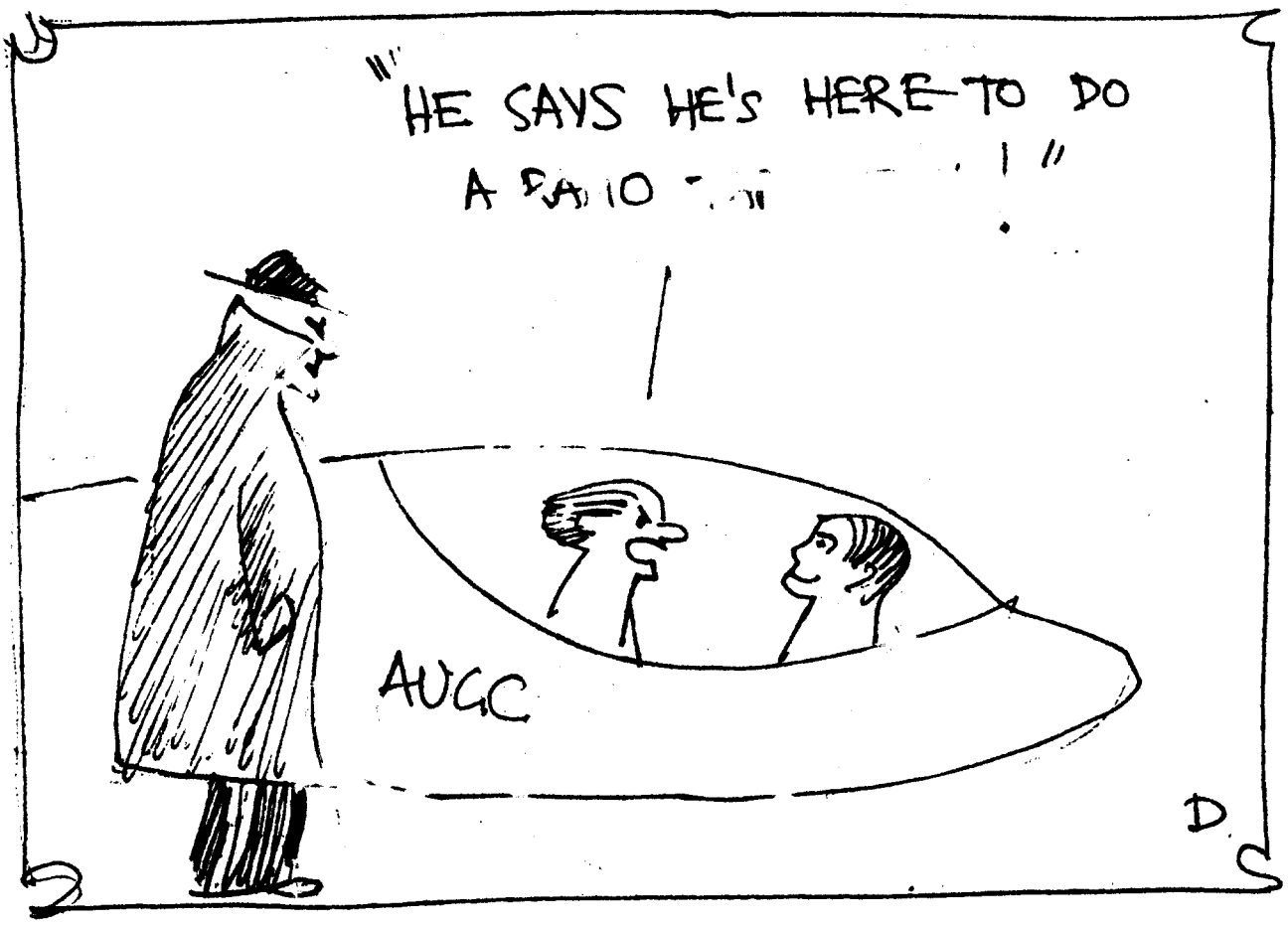
Holiday Camp: There will be flying during the week of holidays after the exams. (see the calendar published last month). If you're interested in flying on one, some or all of these days, contact a member of the executive (see list below).

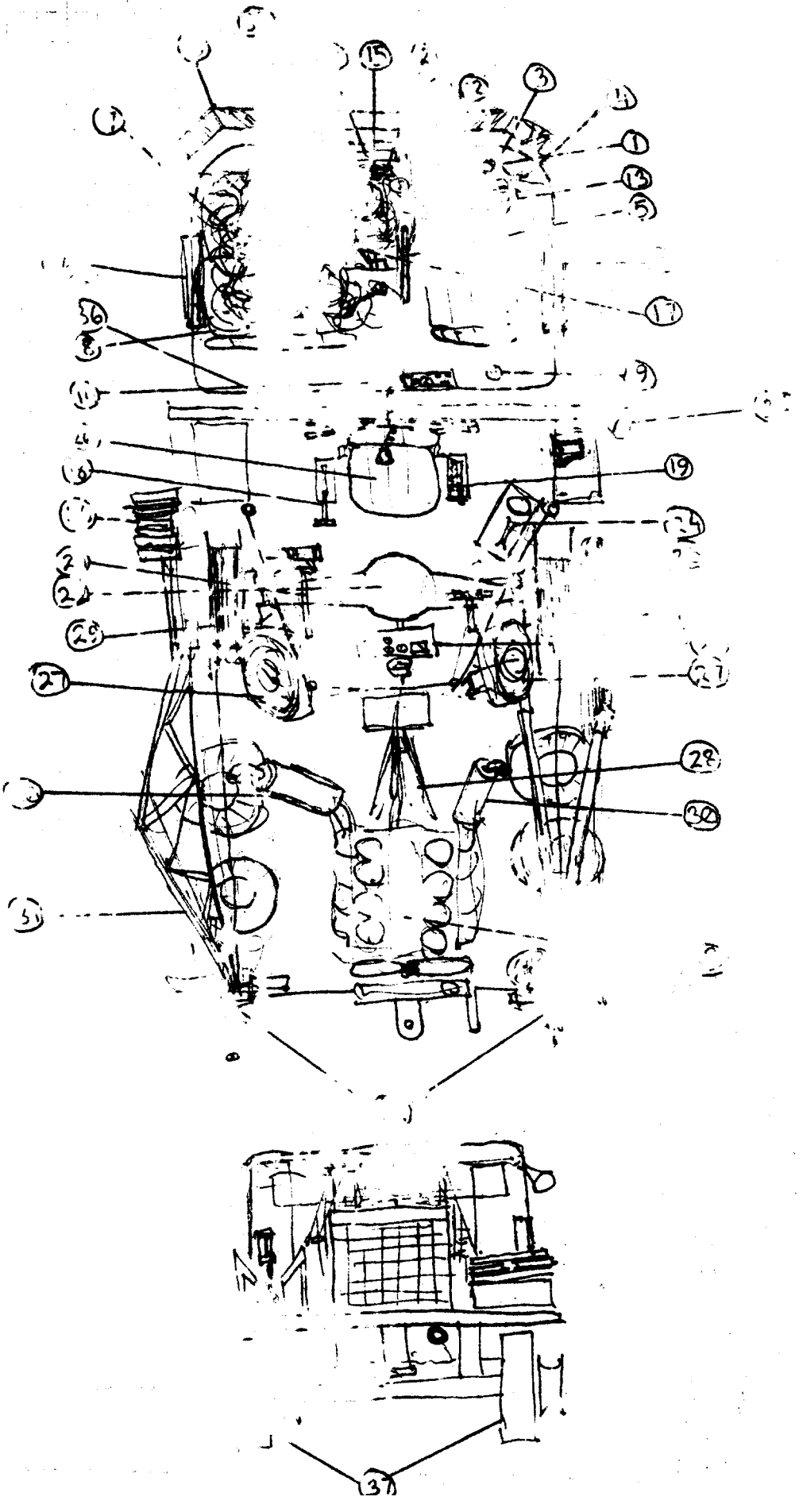
Whyalla Gliding Club visit: The Whyalla & District Gliding Club is visiting our airfield on the first weekend in October (1st & 2nd) Come up for this and you might see some aircraft other than our own.

Regatta: Balaklava Gliding Club is holding a regatta on the October long weekend (October 8-10th) at their Whitwarta airfield (not far from Lochiel). If you're interested, contact a member of the executive.

Bordertown: The State Gliding Championships for Open, 15m and Standard classes are being held at the Bordertown airfield on Sat. Nov. 26 to Sat. Dec. 3, 1983. There are also competitions for sports class and two-seaters (our Ka6, and most wooden aircraft, are sports class.). If you're interested, contact a member of the executive. This is a chance to see lots of different sorts of glider.

Club Executive:			
President:	Dick Temple:	390	1827
Secretary:	Dennis Medlow:	42	5093
Treasurer:	Russell Norman:	390	1824
C.F.I. :	Don Hein:	261	4245
Fifth Member:	Bob Giles:	255	3233
Newsletter Editor:	Andrew McG...:	356	2466
Airworthiness Officer:	Mark Forster:	251	2820





PARTS OF THE WINCH

(1) Steering Wheel- designed for people with seven foot arms.
(2) Ignition- produces groaning sound from engine.
(3) Numerous Knobs And Levers- no effect (please ignore).
(4) Horn Button- terrifies sheep and winch drivers.
(5) Hand Brake- gets in the way, requires two or three hands to release.
(6) Bumper Bar- the strongest part of the whole winch.
(7) Mess- consists mainly of fragments of cable, with an assortment of tools thrown in.
(8) Passenger Seat- unusable; covered in Mess (see (7)).
(9) Brake Fluid Reservoir- just where you would expect to find it.
(10) Truck Motor- no effect apart from producing worrying groaning noises (please ignore).
(11) Clutch Pedal- no effect.
(12) Brake Pedal- no effect.
(13) Accelerator- dispells illusions of power.
(14) C.B. Radio- in one of the most inaccessible positions on the winch.
(15) Instrument Panel (Truck)- some of the lights here flash sometimes; no other effect (please ignore).
(16) Doors- only open from the outside; reach out through window to escape.
(17) Gear Lever- engaging higher gear causes engine to cough and stall. engaging lower gear causes engine to over-rev terrifyingly.
(18) Throttle- causes cable to signal too signal too fast, cable to break.
(19) Gear Selector- [illegible] fully selected position where it is easily accidentally knocked into drive.
(20) Comfy Chair- well [illegible] seat knocks occupant's head against overhead fuel tank when travelling over rough ground (eg. airfield).
(21) Brake- no effect (please ignore).
(22) Diff- carefully designed in top secret; serves as footrest.
(23) Instrument Panel (Winch)- Some of these actually work, after a fashion (please ignore).
(24) Fire Spray- use for washing hands, tripping over onto gear selector (see (19)).
(25) Drum Selector Lever- disappears into footrest (see (22)).
(26) Winch Arm Counterweight- half a ton of scrap metal; falls off at irregular intervals.
(27) Tyres- these serve as brakes (what else??)
(28) Automatic Transmission- Self destructs at [illegible]ar intervals.
(29) Cable Drums- very strong and heavy, so the momentum enables them to cause horrendous cable [illegible]s.
(30) Exhausts- add significantly to the general air pollution problem.
(31) Winch Arms- accurately align cable ends with rear wheels to increase the chance of tangling. (see (32) & (37)).
(32) Cable- if you don't like untangling 10 feet of fishing line dont even <u>think</u> about two miles of this stuff.
(33) Winch Engine- produces unbelievable roar audible from Port Wakefield.
(34) C.B. Radio Horn Speaker- Causes ear damage (also audible from Port Wakefield).
(35) Number Plate- believe it or not the winch is registered!!!
(36) Cable Repair Tools- produce better muscles than a chest expander.
(37) Rear Wheels- lopsided double rims specially designed for wrapping up thousands of feet of cable at a time.

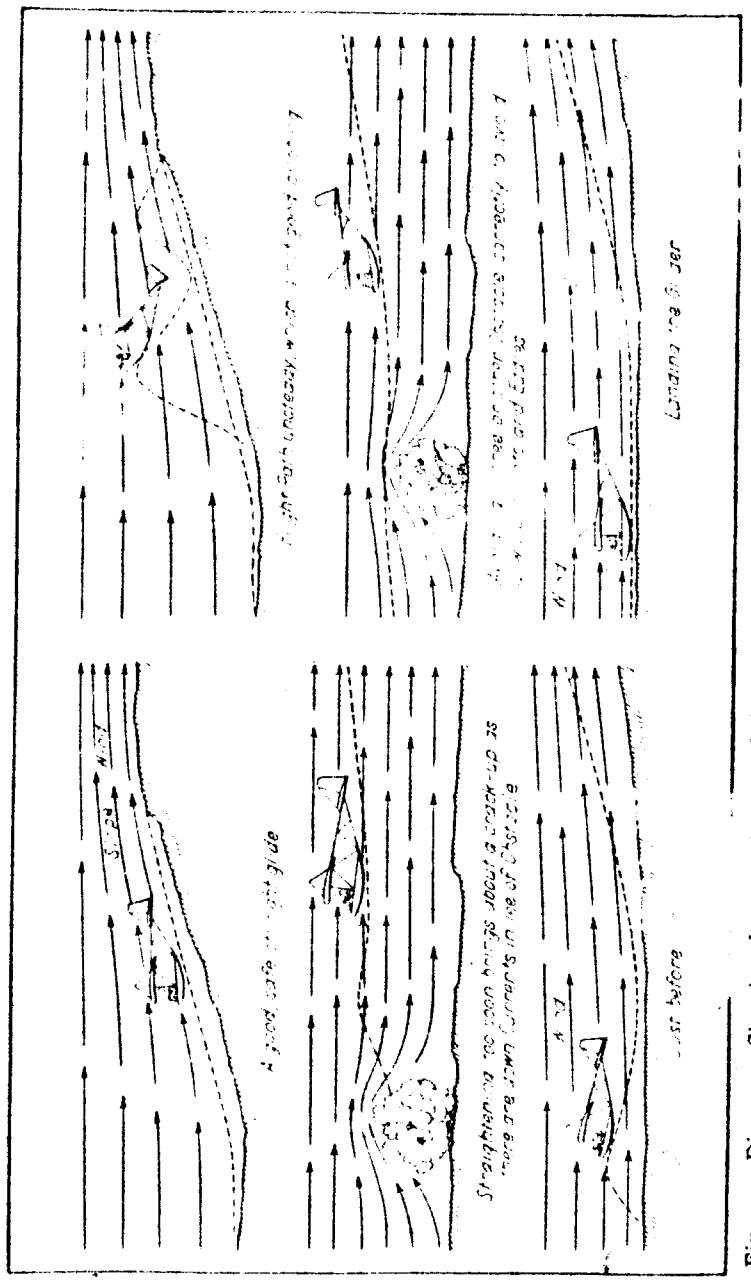


Fig. 44.—Diagrams Showing Various Phases of Glider Piloting. At the Top, Good and Safe and Unsteady, Unsafe Glides Are Compared. The Sketches at the Center of the Page Show Method of Guiding Glider to Pass Over Obstacle and Avoid Adverse Currents in the Lee of the Object. At the Bottom of the Page the Correct Method of Landing the Glider Is Illustrated at the Right. It is Not Advisable to Stall Before Landing as Shown at the Left.

tive to the controls and have a large wing span with a high lift airfoil. It is claimed that some of these planes have a lift-drag ratio of 21 or 22, which is exceptionally high when, according to Mr. Mock, it is considered that theoretically, the limit of this ratio for a plane having a fuselage, rudder, etc., is said to be close to 32.

The [illegible] who builds his own machine, either from homemade plans or [illegible] furnished by some qualified glider engineer, should [illegible] instruction, from a recognized glider school or [illegible] his plans carefully before permitting himself to be [illegible] a hill into the air. The ground appears very far [illegible] device, and unsettled conditions of mind contribute [illegible] a little to glider accidents that sometimes befall amateurs. If he proceeds sanely, no harm will come to him. If he cannot attend some recognized school or join some glider club having a competent instructor, the next best method is to take his glider to the top of a hill when there is a good wind blowing and there, the glider firmly staked down in the wind, work all his controls and learn [illegible] much they have to be moved to nose the ship up and down [illegible] restore lateral stability.

One of the most important things is that a beginner must be started below the top of the slope. Starting from down the slope in this way, the craft takes off at the proper gliding angle or approximately parallel to the slope. When launched from the top, the beginner will usually try to go straight off and will end in a stall. If the wind is more than three or four miles an hour he is caught in an updraft as he gets over the brow of the hill and the angle of attack increases. He is then carried up before he realizes it, gets into a stall, and generally makes a