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Editorial

A year to remember

The coming year is historic. Of major proportions will be the celebrations associated with the Bicentenary. The year will be significant in aviation terms too — air shows, air races, fly-ins and hopefully, safety.

It would be interesting to see our Bicentenary year declared as 'The Year of Aviation Safety' — a year where we demonstrate significantly that we can reduce the number of avoidable accidents. If each of us was to double-check everything, if we always left ourselves an escape route and if we made a conscious, early decision to use that escape route, then between us we could reduce the number of accidents significantly — simply by each of us *making sure* that it is not us that has the accident.

'Safety Promotion' is a term that you have probably been hearing recently. Safety promotion encompasses those activities which seek to improve our safety record and to encourage safer practices by the dissemination of knowledge and experiences on aircraft operations. It is a program which is designed to supplement the rules and regulations and to encourage each of us to both learn and to teach — by discussing our individual experiences.

The safety promotion program includes seminars, pilot's nights, the production of videos, posters and brochures and of course, the *Digest*.

The Department has formed a Safety Promotion Section to co-ordinate these activities. This team has direct contact with the aviation community through various committees as well as through the Regional Offices of the Department.

Within each Regional Office a Safety Promotion Liaison Officer has been nominated. The SPLO is a valuable contact for clubs and training organisations as a source of a diverse range of safety promotional material from within Australia and overseas — as well as a source of professional advice on safety matters.

Please make use of this resource.

Thanks to all of you who have supported the 'new' *Digest* and in particular for the positive feedback for the 'Human Factor'. The *Digest* has also been recognised in an international forum. The Flight Safety Foundation, based in the United States, has announced that the *Digest* is the winner of its annual publications award for 1987. I think that is a reflection of the overall interest in safety shown jointly by the Australian aviation community and the Department — and not just for the past year but for the previous thirty years that the *Digest* has been published. Australia continues to be a leader in this field. We can all be proud.

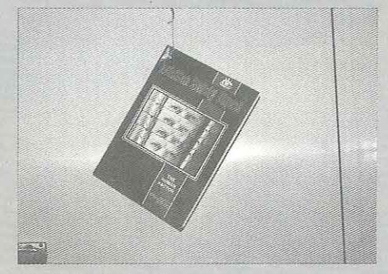
Equally important was news from W.A. that the *Digest* is so well regarded that it is hung on a string in the 'loo'. One of the most effective ways of disseminating information is by presenting it to a captive audience, especially one that is in a meditative or contemplative mood. It is a practice that I support and I would encourage schools and clubs to similarly hang a few copies for 'reflection'.

The Spring 1988 issue of the *Digest* will be a 'special' not only to mark the Bicentenary but to coincide with the Bicentenary Air Show and the 1988 Annual Convention of the Flight Safety Foundation which is to be held in Sydney. Your contributions will be welcome.

Let's make it a year to remember — in aviation safety terms □

David Robson

DAVID ROBSON
Editor



Font of wisdom?

Covers

Front. The cover photo is the winner of Category One of the NIKON/ASD photographic competition. It is titled 'Scottish Pioneer' and shows a Scottish Aviation Twin-Pioneer over Sydney.
Photograph by Ron Israel
Pentax 6 × 7 cm 120 Fujicolor Type S

Back. The winner of Category Three of the competition was 'A little low wouldn't you say, Louie?' Fokker Friendship landing at Parafield, S.A.
Photograph by P. T. Crowe
5 × 4 inch Royal Pan

Editor: *David Robson*
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Graphic Design: *Lesley Gordon*

Photographs: *P 4, 21* *David Robson*
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P 8 *William Young*
P 17 *Allan Ash*
P 20, 23 *BASI*

Diagrams: *Soussanith Nokham*

ALA's alas

Steve Tizzard is the CFI of the Canberra Aero Club and has spent a lifetime flying little aircraft into and out of short strips.

THE AIM of this article is to discuss operations into strips with which you are not familiar — safely and efficently.

As a general rule — sneak up on them! By that I mean that anticipation is half way to solving a problem. Then approach the strip carefully and look for possible traps that you didn't anticipate.

We were taught a technique known as 'precautionary search' in our basic training. I believe the name 'precautionary search' is invalid. A more appropriate name for the sequence is 'landing ground operations'. The actual technique for an ALA operation does not differ significantly from a precautionary search and this recommended change of name might also help remove the mystery from such operations.

Step one — plan ahead

Prior to contemplating the use of an ALA, it is wise to have a good look at Section 81 of the VFG. In essence, you need to ensure that:

- The physical characteristics are suitable.
- The geographic location is suitable.
- A method exists for determining the wind.
- You have consent to use the landing ground (from the owner or occupier).

The above four elements determine whether a landing ground is 'authorised'. [Even then, check whether the aircraft's insurance is valid for the particular strip.]

Always be cautious of information given to you by people who have no aviation background. Details of slope and length may be pure guesswork. It can be helpful if you can ascertain what other types of aircraft have used the ALA and when it was last used. Be very cautious if the ALA has been used only by aerial agriculture aircraft. Such operations are permitted from strips which are not suitable for other general aviation operations.

Having gained all the information you can on the proposed ALA, consider if it is marginal for your operation. If so, is there a more suitable ALA or airfield nearby. Also consider the use of a different aircraft. For example two POB in a Cessna 150 might be marginal whereas two POB in a Cessna 172 will give you a greater safety margin. You need to also consider the prevailing winds during your period of operation and, if there has been any rain, how the surface will be affected. If there has been rain it is a good idea to remove the wheel spats from the aircraft. They can become clogged with mud.

If there is no windsock at the ALA have the owner place a brightly coloured streamer on a steel post in a pre-arranged position.

Step two — arrival

If, after the above deliberations, you decide to use the ALA, make sure you arrive overhead with plenty of time and fuel — so that you may divert to a licensed aerodrome if you are subsequently unhappy with any aspect of the proposed operation.

On arrival bear in mind the mnemonic:

W — wind
O — obstacles (on/near strip)
S — size
S — surface
S — slope
S — shoots (undershoot/overshoot area)
S — sun (position)

(This mnemonic is equally applicable to selecting a field after an engine failure or for a precautionary search.)

In the case of the ALA operation, most of the information is known before arriving but must be reconsidered on the basis of your airborne inspection.

Do not forget to cancel SAR on arrival. Regardless of whether or not you are a SARTIME or NOSAR flight, it is sensible to arrange someone to attend your landing in case you do have a mishap.

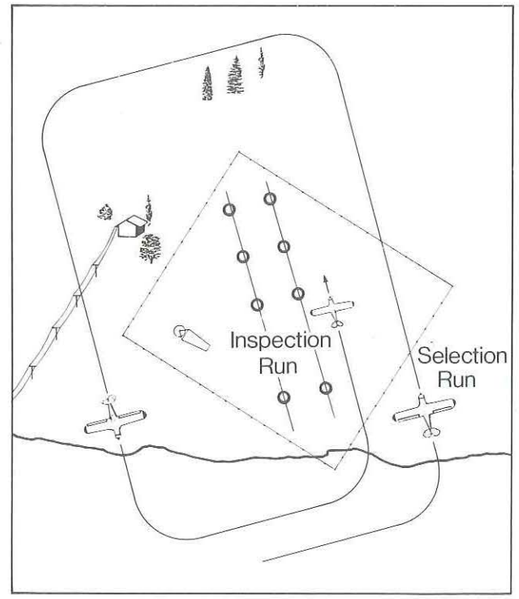
Having *positively* identified the ALA do not, as some manuals recommend, set the directional gyro on North, during an inspection run. This is a bad practice as you can lose your general orientation during the inspection process.

Step three — inspection

The next critical assessment is of the surface wind. Use all the clues available — windsocks, smoke, trees, dams, dust and blown crops. Before commencing any 'inspection run' I thoroughly recommend what I call a 'selection run'. This is done, after carefully considering the likely location of power lines in the area, by descending to about 200 feet agl well to the right and parallel to the landing area. This 'oblique picture' enables you to more accurately determine any problems with:

- the approach area
- the overshoot area
- length
- slope
- shielding — which may induce wind-shear.

Having completed this 'selection run' (at economical cruise power setting for your type), climb to 400 feet agl and position the aircraft on downwind. This selection run and the remainder of the procedure is shown in the following diagram.



Only one selection run is shown on the above diagram, however it must be repeated until you are absolutely certain the landing area is suitable. Then comes the close inspection.

The inspection runs should be flown no lower than 50 feet agl with repeated scanning of the following:

Obstacles (ahead) — and watch out!

Strip (condition)

Airspeed.

The aircraft should be in the approach configuration with part flap extended and with the propeller in fine pitch, ready for full power if required. Don't reduce speed below the normal approach speed for your aircraft. During the base leg and final segment of the selection runs, you should be getting a 'feel' for what the conditions are like (wind, turbulence, sink, lift, glare from the sun and the like). You must also determine a minimum and maximum touchdown point and stick to this touchdown zone with religious ferver! If you are not on the ground by the maximum touchdown point you must go around. This point must be fixed in your mind i.e. abeam an anthill, gate, tree or similar.

During the inspection run(s) you must also pay attention to the texture of the surface i.e. is there a green patch on a brown strip? Be very careful of *any* track which crosses the landing area. Is there an associated rut which may cause damage?

Also be very cautious of *any* animals in the same field. They may be stationary during the inspection runs but mobile during the landing roll. Stock on the downwind side will probably run away from the aircraft — other stock may cross the strip to join them.

The wire from very old fences can also be a problem. Cattle can become entangled and don't realise that they shouldn't free themselves and leave the wire in the middle of an ALA! Watch out for temporary fences across a strip which uses two paddocks. If there is a fence which seems to disappear at the edge of the strip — look out.

Apart from animal diggings on the surface (rabbits and pigs), it is also not uncommon to find pieces of farm machinery or other miscellaneous objects on the ground.

Small rocks from 50 feet can be BIG when you land on them.

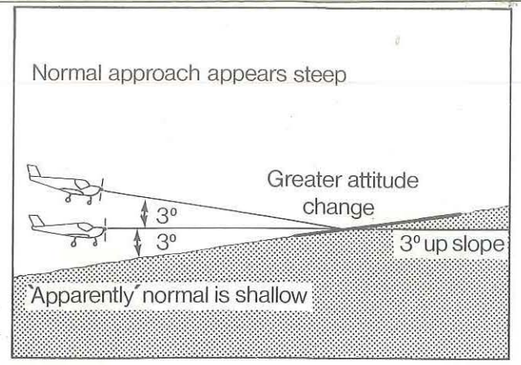
Step four — the approach

On your final approach please keep to the published airspeed and DO NOT ADD A FEW KNOTS FOR MUM AND THE KIDS. In my experience this is probably the major cause of accidents in ALA operations. Wind-shear is the only reason for carrying excess speed. Use the recommended configuration for your aircraft and for the conditions that exist at the time. Also be prepared to go-around if you are unhappy *with any aspect* of the approach. [Your thought processes must be so organised to land if all is okay but to to be prepared to go-around at any stage.]

After touchdown use firm braking with the control column hard back. Use careful braking on rocky, stony or patchy wet and dry surfaces or with a tailwheel aircraft. With a taildragger, keep the tail up as long as possible to keep the end of the strip in sight.

If you have any doubt about the surface, shut down as soon as you come to a stop and conduct a detailed inspection on foot. If you deem this unnecessary, be careful of parking areas — tie-down stakes are often left in the ground, are difficult to see and can cause a lot of damage if you taxi over one. Also be mindful of wire or ropes in the parking area.

I should have liked to devote a major portion of this article to landing on slopes. With proper training (and currency) slopes of up to 15 per cent with one way operations are quite acceptable but two per cent slope is all you are allowed (excluding aerial agriculture operations) and is enough to contend with. Even a two to three per cent slope can cause problems for the uninitiated. There is a subconscious illusion regarding the relationship between slope and the approach angle which can catch you out.



If you are landing up the slope (and that is the way you should be landing) look to the far end of the strip and make a definite flare. Only flies can land on walls.

In hilly terrain watch out for false horizons.

The escape clause

In addition to what I have already said, an 'escape route' must be selected during the inspection run. A go-around, if necessary, may well be conducted to the left or right of the extended centre line to give:

- greater terrain clearance
- avoidance of inhospitable terrain
- noise sensitive areas, and
- known or expected turbulence.

Always select a go/no-go point for your final decision and if you are not in the groove by this point, go-around. In general, the threshold can be a decision point unless the particular strip or aircraft performance makes a go-around from this point risky. In some cases the go-around can be as late as from the last point of touchdown — the one you previously determined.

Conclusion

In the closing stages of this article, I believe it necessary to comment upon a common problem on final approach, where the approach profile is all over the place. Having discussed this matter with pilots who have the problem I believe there is a simple solution. Consider setting the aircraft up very early on final in the approach configuration, with the correct airspeed and *the attitude that will hold that airspeed*. If you perceive *any* change in the sight picture (aimpoint or threshold 'sinking' or rising) make a minor power change early and *ensure* you keep the airspeed constant by making a *correspondingly slight change* to the attitude. Small, continuous corrections are the way. Many people, who are nervous of ALA operations, get very low — apply 'heaps of power' and fly almost level to the threshold and still arrive high and fast.

ALA operations can be very rewarding and enjoyable if done correctly — otherwise they can be disastrous.

Like many other aspects of aviation, successful operations into unknown landing strips are simply a matter of how you APPROACH them □

If it wasn't difficult enough already!

Handheldmikesagain!

As you have probably gathered by now I have no particular liking for the use of hand-held microphones. They can be a downright hazard in instrument conditions. They can be an unnecessary distraction at any time.

HE WAS UNDERTAKING his fourth solo flight and was to practise circuits with touch-and-go landings.

He had flown about one hour dual and a half an hour solo that day.

At about 200 feet agl on what appeared to be an extended but normal approach, the student was given a landing clearance. As he reached forward to replace the microphone, he dropped it.

He leaned forward to retrieve it and as he did, the aircraft touched down heavily 200 metres in from the threshold and bounced about eight metres into the air.

The pilot tried to recover the situation by pushing forward on the control column and applying power. He then realised that contact was inevitable and he closed the throttle.

The aircraft continued in a steep nose-down attitude and struck the runway with the propeller and nosegear which collapsed rearwards.

The aircraft started to wheelbarrow along the strip slewing to the left before groundlooping to the right and coming to rest on the flight strip.

The hand-held microphone is a potential hazard. If you use one, think about what you will do when someone calls you on short Final — and what you'll do if you drop it.

Remember the priorities:

1. Aviate
2. Navigate (when everything is under control)
3. Communicate (when you have control and are orientated).

In this predicament a late landing clearance is not unusual. Often the tower has no option. If it happens though, you don't have to answer straight away. If you're cleared to land, then go ahead and land — if not, then go around and talk about it when you are safely climbing. Certainly there is some pressure to acknowledge calls immediately but only if your priorities allow it.

Having criticised hand-held mikes, I now would like to balance the books and mention my second most active hobby-horse — *intercoms* or, more precisely, *out-of-coms*!

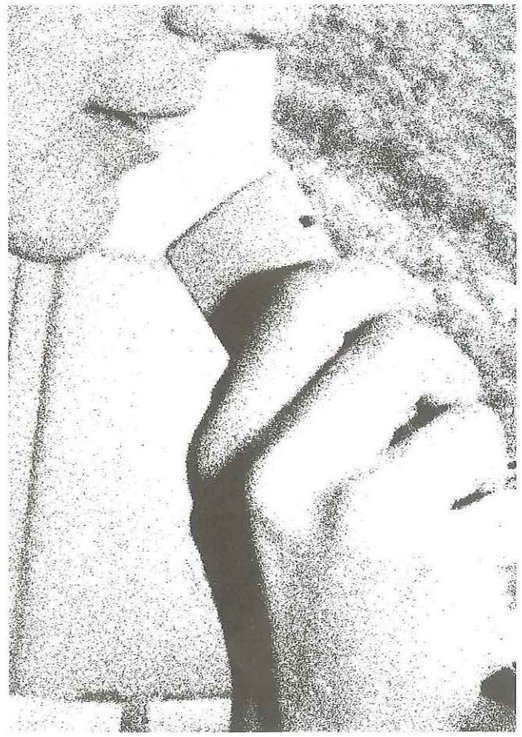
I believe it is wrong, unfair, inefficient and negligent to try and teach flying in an aircraft which either has no intercom or one which doesn't provide clear and reliable communications.

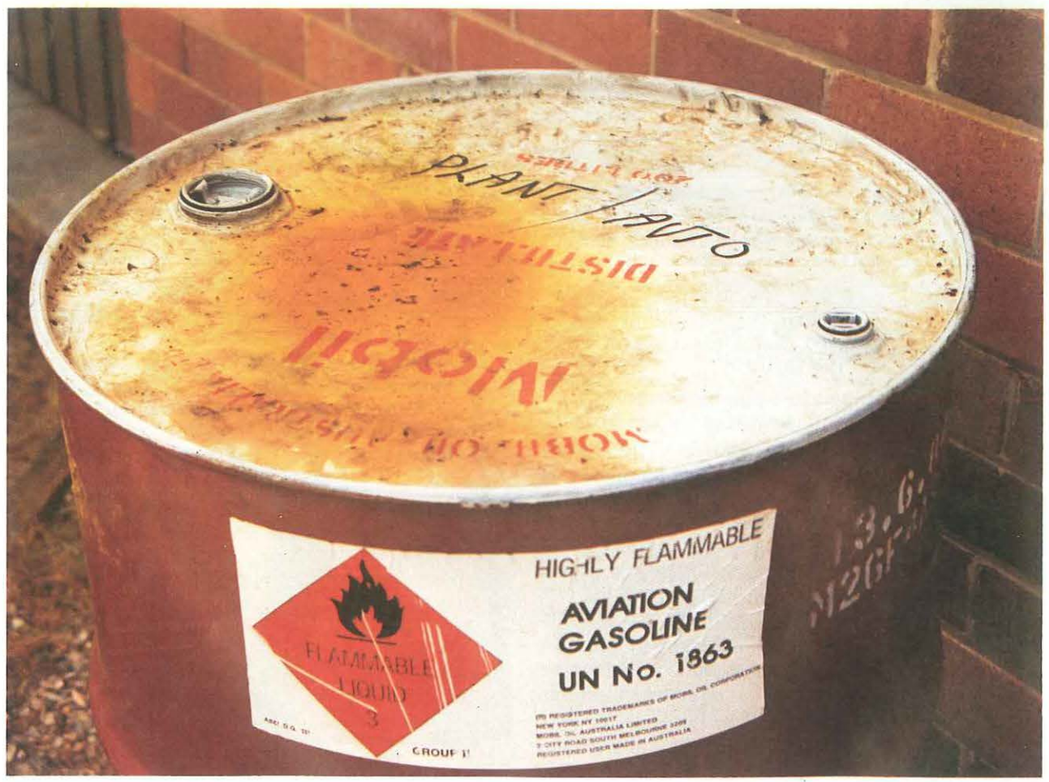
As an instructor I have suffered distorted comms, faded comms, intermittent comms, comms which wait for your second word before they decide to turn themselves on each time, and comms which require you use the transmit button and hence a second switch to select internal comms or external comms and which invariably result in you giving a lesson on 'straight-and-level' to everyone within 100 nm radius!

Imagine how it is for the student.

Clear communications are close to the top of the list of priorities for effective instruction — if not the first priority.

'Was that "take off power" or "takeoff power", over?' □





Nikon

AVIATION PHOTOGRAPHIC COMPETITION

The Digest photographic competition was a great success and I would like to thank all who participated. There were over five hundred entries and the standard was high. Judging is complete and the winners are:

Category One — the open category for the best overall photograph was won by **Ron Israel** with his print titled **'Scottish Pioneer'.**

Category Two — the category for a photograph on a safety theme was won by **Bill Young** with **'What's in these drums?'.**

Category Three — for the best black-and-white photograph was won by **P. Crowe** with **'A little low wouldn't you say, Louie?'.**

The winners of the Digest/NIKON photographic competition were announced in the last issue and the Category 1 and Category 3 winning entries are presented on the front and back covers of this issue, respectively.

The Category 2 winning entry is the double photograph displayed opposite. The message is clear — I think. This was an actual case of mislabelled and re-cycled drums. I am most grateful to Mobil for investigating the circumstances of this situation and for their positive, safety-conscious attitude. I have therefore published the letter from their Aviation Technical Officer. The message to pilots is now certainly clear.

THE RESPONSIBILITY IS ULTIMATELY OURS — AND I DO MEAN, 'ULTIMATELY'.

Photographs by Bill Young
Pentax ME Super. Kodacolor 135

Dear Sir,

Re confusing drum labelling

By now you should have received a letter from our General Manager — Operations, explaining the common industry practice of re-using aviation fuel drums for ground fuels, and the probable scenario of how the drums identified may have appeared with double-brands.

Despite the best endeavours of our company, it is possible that some transgressions on our strict operations policy may occur with some secondary drum users or country agents. While the non-removal of a hazardous product identification label when re-using a drum may not appear important to some, we view it with the utmost seriousness. From a general safety viewpoint as well as from the potential misfuelling aspect, we stress the importance of clear and concise labelling.

The important lesson to all aviators from this example is that all may not be as it seems. Despite the careful labelling and the best care and protection policies of the supplier, there is always the possibility, however remote, that any item purchased for your aircraft may be wrongly packaged or misbranded. ALWAYS CAREFULLY CHECK THE CONTENTS BEFORE USE. With petroleum fuels, only Avgas 100/130 is dyed green. Only Avgas 100LL is blue. This is done to allow for your easy positive identification. (Occasionally the acceptable mixture of Avgas 100/130 and the 100LL may result in an in-between colour, however this is still readily identifiable against the red of super petrol and pale yellow of unleaded petrol.) Always check the seals are intact and the drum is correctly stored.

As an organisation Mobil makes every endeavour to ensure that confusing drum labelling does not occur, and that only high quality clean and dry fuel is provided. However, we have no control over what happens to any drum once sold. Operators should always check the contents of any container before use. If in doubt, don't take the chance. It is important that you become the harshest judge. After all, it's your life at stake.

Yours faithfully,

G. D. ZIPPEL
AVIATION TECHNICAL OFFICER

The heat is on . . .

Dr Harry Rance is a regular contributor to the Digest. *Here he talks about about the insidious but serious risks of summer flying.*

Many pilots concentrate their flying activities during the summer months when they expect fine weather with clear visibility in dry and cloudless conditions. It is these apparently perfect flying conditions which can cause havoc with some.

RECENTLY I completed a trip to the Northern Territory with four friends. One of the passengers had the 'flu prior to leaving and despite the usual precautions at Mildura, my throat felt 'all right'.

During the night I woke several times bathed in perspiration. At breakfast I did not feel ill, although I had trouble swallowing and I was perspiring freely. I had the usual amount of fluid, orange juice and two cups of tea.

We departed for Alice Springs via a lunch and refuelling stop at Leigh Creek. On arrival I still felt well despite the sore throat and I thought the excessive perspiring was due to the 30 degrees heat and the two cups of hot tea.

On departure, Leigh Creek radioed saying that fuel appeared to be leaking from the left tank, and as no other traffic was present, I could land and check the cap on the runway. This I did. I needed to sit on the shoulders of a male passenger to check the caps and despite the humorous comments, it was quite hard work. Nothing was found amiss and we departed for Alice Springs.

We over-flew Oodnadatta arriving on time and our estimate for Finke was passed. A student pilot was flying the aircraft from the right hand seat and while I was explaining where we were, DME distance etc, I realised my estimate for Finke was wrong. I then started recalculating and decided my watch must have stopped. After querying the time from the student and realising the difference in GMT and South Australian time I recalculated again. Finally it occurred to me that I had added the miles to the estimated time interval instead of the minutes, so I crossed it out for the second or third time, and added it again.

After a lot of effort I accomplished this task and Finke was overflown as flight planned. By this time my head was aching and I felt quite hot and as it was getting late in the afternoon, the turbulence had also increased.

I passed our ETA to Alice Springs after labouring over the very simple addition and we arrived at that time.

After the usual landing and tie-down chores were completed I felt very uncomfortable with the headache becoming more severe. At this stage I started to drink the soft drink we had on the plane, and after the reaching the hotel, I seemed to drink several gallons more.

Later that evening when I started to flight plan the next stage of the journey, I was absolutely amazed at the state of that day's flight plan.

Besides the numerous crossing-outs of the ETAs, the figures had become progressively harder to decipher. The errors I had made with the additions were so obvious and it was hard to believe the flight plan was mine. The ATIS information for Alice Springs was written down and I could hardly recognise my own writing or figures.

There is absolutely no doubt in my mind that I had allowed myself to become dehydrated and the difficulty of the additions and the state of the flight plan was the direct result of it. The aircraft was on track at all times and navigation was not a problem, but it raises the question of how much more difficult it would have become if another problem had presented itself requiring clear thinking, or difficult decision-making.

One could rightly assume that this could only happen to a first-time Territory 'goer' with limited flying experience and a 'dry' aircraft. Not so, I have been on numerous trips to the outback, have over 2000 hours experience, hold a Commercial Licence with a Class 1 Instrument Rating, and on board the aircraft were ten gallons of water and packets of soft drink.

It goes without saying that the fluid on the aircraft was taken in liberal doses by the pilot and crew for the remainder of the journey.

This article is directed at three specific aspects of summer flying which can be disastrous if care is not taken. These aspects are interwoven, but for ease of discussion will be dealt with separately.

Heat Stress

This topic was discussed comprehensively in a previous *Aviation Safety Digest* (122/1984) but some salient points are worthy of re-emphasis. If you can get hold of a back copy it would be worthwhile to read it again. An aircraft left in the sun will obviously 'soak-up' heat — especially those with a large expanse of perspex. Gliders are prime examples of the potential for the effect of heat-soaking. The advantage of the good visibility from the 'glass bubble' brings the disadvantage of high cockpit temperatures when left even for a short time in the sun. Temperatures within cockpits may rise to 15-25°C above ambient temperatures and the surface temperatures of items within the cockpit may be even higher, in some instances even high enough to cause true burning of the skin.

A principle of physics taught to most of us at school or learnt by experience was that black or dark objects are good absorbers of heat so we should ensure that our clothing is light coloured, preferably white, to reflect as much heat as possible. Headgear is useful and will help to keep the head cool especially if there is a layer of air between the hat and head.

While you expect the heat to dissipate once you get airborne due to cooler ambient air and the loss of heat due to convection, conduction to the cooler air and radiation from the heated aircraft structure, there is the risk of heat absorption beneath the cockpit from solar radiation. The 'greenhouse' effect of the perspex 'bubble' is very real, particularly if the flight is not to any great altitude and is extended more than a few hours.

The effect of getting into a hot cockpit and being exposed to solar radiation is akin to gentle cooking. Our bodies produce energy internally for us to live, to drive our internal engine and heat is produced. We take in fuel, food and drink, and convert it into energy for life. The heat produced is usually lost to the environment as with any other machine, by radiation, conduction and convection to the surrounding environment. In addition our bodies produce liquid on the surface of the skin, sweat, which is evaporated to provide additional cooling.

If we are in a hot environment we are unlikely to lose much, if any, heat by radiation, conduction or convection to the surrounding air or structures. Our only facility for cooling is this evaporative effect of losing fluid.

We have all experienced this phenomenon in hot weather. With no breeze and little activity, we are soon running with sweat because our bodies are trying to remain within the close limits of internal temperatures for optimum performance. Quite obviously to produce sweat we need a reserve of fluid within our bodies and this topic of fluid balance will be discussed later.

What happens if we cannot keep our temperature down? Our design specification calls for very narrow limits for the internal core temperature. To go outside those limits will produce a severe reduction of performance. Studies show that aircrew make more control errors in hot environments than in temperate ones and the errors are characterised by unpredictability. Typically, errors were made in speed, altitude and heading control movements. Attention was narrowed and learning ability impaired among student pilots. Newly acquired or little-used skills were affected first as one would expect. Heat stress will add to other stressors such as fatigue, sleep deprivation and emergency situations and may influence the most vulnerable phase of flight, landing — especially after a long day of flying.

Dehydration

Mention has already been made that in a hot environment, cooling of the body may only occur through the evaporation of sweat. The formation of sweat is dependent upon fluid being available within the body to be brought to the skin surface to produce this cooling effect. The body contains a large quantity of water, about 60 per cent of body weight. We maintain a balance of this fluid by drinking and eating and then excreting excess fluid through the kidneys.

We have all experienced the after-effects of drinking large quantities of fluid over a short time period. There is a need to rapidly lose the excess fluid through the kidneys. On the other hand it we deprive ourselves of an adequate water supply the body uses its own stores to produce sweat and if the store is not replaced we lose more fluid that we can afford. This is dehydration. The extent of the dehydration is related to the amount of sweat lost and the amount of fluid we replace by drinking.

Once the ambient temperature rises to 33°C our only chance of keeping the body temperature down is by evaporating sweat. At that sort of temperature the body needs at least four litres of water a day, even without any untoward exercise. The fluid replacement must be spread reasonably uniformly throughout the day. If we exercise then we require more fluid. Climbing around an aircraft on preflights, manhandling aircraft and similar tasks require more fluid. At altitude the atmospheric pressure is reduced and increases the evaporation of sweat which compounds the problem.

As an aid to cooling, the drinking fluid should be cool (iced water is not always easy to drink). Tea and coffee are best avoided as they contain caffeine, which is a diuretic. (A diuretic is a substance which promotes excretion of urine from the kidneys which is not what is required in this situation.) Alcohol, also a diuretic, is obviously not a suitable fluid replacement for many reasons, especially when flying. When we sweat we also lose salt, but there is no need to concern ourselves on this count unless we are to be in the hot environment, working and sweating, for more than a couple of days. If we are in that position then salt should be added to your meals as the most palatable means to that end. It has been suggested that your fluid intake should be spread throughout the day. You cannot wait until you feel thirsty, it is too late by then, you are already dehydrated.

A better indication is the frequency of the need to urinate and the colour of your urine; once it is darker than a pale straw colour you should drink at least 250 ml of fluid every 30 minutes, or more frequently if you are actively working.

Symptoms of dehydration include headache, muscle weakness, drowsiness, nausea and impaired vision. All these symptoms appear vague and could be related to other conditions, but in a hot environment dehydration must be considered as the likely cause. The performance of a complex psychomotor task as flying will be affected in an insidious manner and you may not be aware of your deficiencies until too late.

Sunburn

Most of us like to expose our bodies to the sun to change our skin colour to light brown — to tan our skin. Much advertising and peer pressure encourages the practice of 'sun bathing' to achieve a suntan, but we are at risk of not just tanning our skin but burning it. Sunburn is not only an aesthetic disaster but may destroy skin cells and produce scarring such as one might see in a person burnt by fire or scalded by hot fluid. Sunburn causes a change in the skin not unlike a severe allergic reaction, with swelling and blistering. This process is accompanied by pain, and if it occurs in the region of joints, a substantial degree of immobility.

We are all aware of these dangers and if we set out to 'sun-bathe' we usually take precautions by not exposing our skin for too long or protecting the skin with suitable sunscreen applications. Problems arise when we bare our skin for what we think will be short periods of time and forget the effect when the sun is beating down on bare skin through a side window or even under a glass bubble of a cockpit. It is in these situations when we are trapped without additional clothing or sunscreen agents that we run into trouble and give ourselves yet another stressor with which we have to cope on top of possible dehydration, heat stress and all the difficulties of flying.

Conclusion

Flying in the summer months can be fraught with danger unless we think ahead.

1. Attempt to provide shade for at least the cockpit of the aircraft.
2. On the ground have as much cockpit ventilation as possible, doors, windows and 'bubble' open.
3. Ensure you have prepared yourself with adequate rest and fluid intake in the days beforehand.
4. Wear sensible clothing to reflect heat and protect against solar radiation.
5. Have a sun screen agent of your choice with a high blocking factor; 15 + is safest.
6. Drink plenty of fluid during the day, aim for at least 250 ml every 30 minutes or so and take some on board your aircraft.

Prepare your aircraft and yourself. Prevent dehydration and sunburn and then enjoy your flying and get home safe and sound.

Stay 'with-it' □

Strike me lucky and strike me pink

Strike one

AFTER COMPLETING the first swath run, the Agwagon climbed over a single set of power lines. At the end of the second run the aircraft flew under these same wires. As he did so, the pilot saw for the first time a second set of wires. He tried to go under them but the canopy of the aircraft struck the cables.

The aircraft flew on but the pilot could see in the rear-vision mirror that the fin and rudder were extensively damaged. Rather than risk a loss of control, he immediately landed in the nearest field — a field of sugar cane.

The pilot escaped unhurt and I think he made the right decision. However, the pilot had been using a 'mud-map' provided by the property owner. This map indicated the area to be sprayed and showed, by means of crosses, a power line at the end of the spray run. The pilot *assumed* that this meant a single set of wires, and being anxious to get the job done, *he didn't carry out his own recce before starting the job.*

Incidentally, the wire deflector cable had broken and therefore allowed the wire to sever the top of the fin and rudder.

Strike two

The pilot was reminded of power lines in the area before he started spraying. There was also a group of trees in the paddock. The pilot sprayed the clear area first and flew over the power lines at least twice.

He then told the owner he would spray the area near the trees 'free hand' before finishing the rest of the paddock. On the first pass near the trees the aircraft struck the power lines. The cockpit-to-fin cable deflector failed and one power line struck the fin about 50 cm from the top. The rear fuselage failed and the entire empennage separated from the aircraft which dived into the ground and came to rest inverted.

The pilot was seriously injured but did recall having the power lines in sight as he planned to go under them. The pilot's injuries were more severe than they would have been because he was not wearing a helmet and the seat belt buckle failed. It was not of a type approved for ag operations.

Please, please, please — wear a helmet, note the wires and don't relax your lookout, particularly after you have been spraying for a while and you think you've got it made □

AIRFLOW

Feeling a little query?

The AIRFLOW column is intended to promote discussion on topics relating to aviation safety. Input from student pilots and flying instructors is particularly welcome.

Anonymity will be respected if requested. 'Immunity' applies with respect to any self-confessed infringements that are highlighted for the benefit of others.

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Yours sincerely, ...

Name: .....

Address: .....

Details to be published? ☐ *No name* ☐ *Initials okay* ☐ *Full name okay*

URGENT NOTICE TO PILOTS

Mogas in Cessnas

During November 1987, aircraft owners, operators and licensed aircraft maintenance engineers were notified via AAC 191 of Departmental approval for the use of 'super' grade motor vehicle petrol in a wide range of single-engine Cessna aircraft.

Please note that this approval was limited to high-wing Cessnas with low compression engines and that some types were excluded — such as the C210 series and other fuel-injected models.

Note also that approval did *not* include aircraft used for charter or ANR 203 operations.

The approval carried the proviso that the person who controlled the use of the aircraft had applied for a flight manual amendment. This amendment includes a number of limitations and cautions. The onus is on the *applicant* to ensure that the aircraft is used strictly in accordance with the approved amendment.

Before using motor vehicle fuel, pilots must satisfy themselves that the flight manual amendment applies to the specific aircraft they are about to fly. (Note *specific* aircraft, not just aircraft type.) The fuel tanks should be placarded and the pilot should be familiar with the cautions and limitations that are applicable. If in doubt — don't use it.

NOTE:

- The oil companies cannot guarantee that the motor fuel is free from dirt or water.
- The engine may be more likely to experience carburettor icing.
- Mixing AVGAS and MOGAS will invalidate any dye test.
- Flight endurance may be reduced due to greater evaporation of MOGAS.

Any motor fuel which is used must be filtered in an approved manner to remove possible contaminants.

Other aircraft types are being considered for approval and some have already been approved to use MOGAS. Interested parties should contact the Regional Office of the Department or refer to AAC 152 for further details.

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Aircraft accident reports

Third quarter 1987

The following information has been extracted from accident data files maintained by the Bureau of Air Safety Investigation. The intent of publishing these reports is to make available information on Australian aircraft accidents from which the reader can gain an awareness of the circumstances and conditions which led to the occurrence.

At the time of publication, many of the accidents are still under investigation and the information contained in those reports must be considered as preliminary in nature and possibly subject to amendment when the investigation is finalised.

Readers should note that the information is provided to promote aviation safety — in no way is it intended to imply blame or liability.

Preliminary reports

The following accidents are still under investigation

Fixed Wing

07 Aug, PIPER 34 200, VH-SMM, Non-commercial — pleasure, CALOUNDRA QLD.
Shortly after touchdown, the gear unsafe warning horn sounded and the red gear unsafe warning light began to flash. The right wing slowly lowered and the aircraft veered to the right of the strip before coming to rest.

An inspection of the right maingear revealed that the maingear had collapsed because of the failure the maingear side brace stud.

08 Aug, PIPER 28 161, VH-PZK, Non-commercial — pleasure, KOORALBYN QLD
The pilot stated that the aircraft touched down well into the 1400 metre strip, and after commencing to brake he decided to carry out a go-around. During the attempted go-around the aircraft crossed a deep gully, off the end of the strip, and the rear fuselage struck a dirt bank. The impact caused the nosewheel to strike the ground heavily and the nose gear strutcollapsed. The aircraft skidded across a paddock striking several fence posts and a fence before coming to rest on a road, 208 metres beyond the end of the strip.

10 Aug, PIPER PA31, VH-HVA, Charter — passenger operations, MT ISA QLD
When the aircraft was about 75 kilometres south-west of Mt Isa the left engine failed without warning. The flight continued to its destination and the pilot decided to leave the selection of flap and landing gear until late on approach. When the landing gear was selected down there was no response. The pilot carried out a missed approach followed by a low level left circuit during which he unsuccessfully attempted to unstow the hydraulic hand pump to manually lower the landing gear. The aircraft was subsequently landed 'gear-up' adjacent to the sealed runway on the grassed flight strip.

An inspection of the left engine revealed that bolts holding the number 3 cylinder to the crankcase had failed. Also that the operation of the hydraulic pump handle had been hampered by a build up of hardened lubricant and dust.

13 Aug, CESSNA 402 B, VH-TWZ, Charter — passenger operations, CUNAMULLA QLD
Just after liftoff, at about 50 feet above the runway, the pilot heard a loud bang and noticed smoke coming from the left engine. Power was increased on the right engine and the landing gear and flap retracted. However, the aircraft began to descend and veer to the left before touching down on its undersurface. It skidded for 103 metres and came to rest 155 metres to the left of the runway centreline abeam the upwind threshold.

An inspection of the left engine revealed that the thread of the nut on the number 2 cylinder connecting rod big end bolts was stripped, causing the big end to become detached from the crankshaft and forcing the connecting rod through the crankcase.

23 Aug, PIPER 28 140, VH-CWE, Non-commercial — pleasure, NOOSA QLD
The pilot was taking part in a flying competition consisting of several flying sequences which were to be flown from the right hand seat. A safety pilot/adjudicator occupied the left hand seat. The sequences included a practice forced landing that was commenced from the upwind end of the strip at an altitude of 1500 feet. This sequence was to be conducted without the use of the aircraft instruments and all the instruments, with the exception of the tachometer and the vacuum gauge, were covered with a piece of cardboard.

The pilot stated that he set the aircraft up in a glide for runway 29, approaching over a tidal lake, and on late final realised that an undershoot was developing. The safety pilot said that he noticed the rate of sink increase rapidly on late final and when the pilot at the controls did not apply power, he called for a go-around and applied power. However, the mainwheels contacted the water and the aircraft nosed over coming to rest inverted in the shallow lake, 150 metres prior to the runway threshold.

27 Aug, PIPER 28-235, VH-CEE, Non-commercial — pleasure, CLERMONT QLD
The pilot and his passengers were on the final stages of a trip through central and northern Australia. After spending the night at Clermont they were observed to enter the aircraft and following an engine runup the aircraft commenced the takeoff run. The aircraft was then observed to become airborne and a short time later the sound of an impact was heard. The wreckage was located in timbered country, 475 metres beyond the threshold of the departure runway.

27 Aug, GRUMMAN G16 4, VH-PUV, Aerial agriculture, DUNWICH QLD
Just after takeoff, at about 40 feet above ground level, the engine began to misfire and run roughly, then failed completely. The pilot dumped the load and commenced a steep turn to the left in an attempt to land on a track behind the aircraft. During the turn he realised that the aircraft would not make the chosen area and the aircraft was stalled into the tops of the trees. After the impact it descended steeply to the ground, the pilot escaped with scratches and some bruising.

Inspection of the wreckage found that the left magneto had become detached from its mountings.

31 Aug, CESSNA A188B A1, VH-IEV, Aerial agriculture, AYR QLD 35SW
The pilot reported that shortly after liftoff the engine began to lose power. He commenced to dump the load but at about the same time the right mainwheel and tailwheel struck an earth bank just beyond the end of the strip. The aircraft became airborne, and 115 metres further on the left wingtip contacted the ground. The right mainwheel then contacted the ground and the aircraft swung through 130 degrees to the left and travelled a further 44 metres before coming to rest.

14 Sep, CESSNA U206-G, VH-WEN, Non commercial — business, NOOSA QLD
Just prior to touchdown, the pilot observed kangaroos on the edge of the strip. He applied power with the intention of carrying out a missed approach but one of the animals ran in front of the aircraft. The pilot heard a thump and realising the aircraft had struck the animal he abandoned the go-around and landed the aircraft.

Post flight inspection revealed substantial damage to the empennage and rear fuselage.

14 Sep, BEECH A36, VH-TLB, Non commercial — business, WILLOW GLEN QLD
The pilot had landed at the strip on a number of previous occasions, but this was the first time in this aircraft type. The final approach was made longer than normal. At about 100 feet AGL, with the airspeed at about 65 knots, the aircraft began to sink. The pilot applied full power to commence a go-around and as the nose pitched up, the left wing dropped. The pilot did not prevent the nose of the aircraft pitching up, thus aggravating the almost stalled condition of the aircraft. Power was then reduced and the aircraft landed heavily in a wheat paddock alongside the strip and slid sideways as it came to rest.

Although the pilot had conducted short field landings in the aircraft type, on a long strip, he had not previously conducted a landing on a short strip which required the use of this short field technique.

01 Sep, BEECH 35 C33, VH-DHB, See circumstances below, EMERALD QLD
During a scheduled 100 hourly inspection, a maintenance organisation discovered substantial damage to the right wing structure consistent with the application of overload forces to the right wing.

23 Sep, AEROCDR 500 S, VH-MEH, Aerial mapping/ photography/survey, CHARTERS TOWERS Q
The pilot had been conducting a six and a half hour low level survey flight. He stated that on joining the circuit at the completion of the flight he lowered the landing gear and obtained a gear down indication. The gear indication was again checked on final approach but during the subsequent landing roll, as the nosewheel was being lowered to the runway, the landing gear handle in the cockpit sprung to the up position. The landing gear retracted and the aircraft slide to a halt on its undersurface.

An inspection of the landing selector found that it functioned normally and no reason for its reported deselection has, as yet, been determined.

24 Sep, MOONEY M20 B, VH-DUV, Non commercial — business, THEODORE QLD 19W
Prior to proceeding to the flight the pilot checked the strip details with the owner. The details included advice that there was a power line on the approach. On arrival at the strip, the pilot located a power line and assumed this was the one to which the owner had referred. During the approach, the pilot saw a single power line and attempted, unsuccessfully, to avoid the line. The aircraft yawed violently to the left, however, the pilot was able to regain control and land the aircraft off the approach. A section of the fin and rudder had been torn from the aircraft.

27 Sep, PIPER 34 200, VH-RYL, Charter — passenger operations, ROMA QLD
After arriving overhead his destination the pilot selected the landing gear to the down position, but received an indication that the nosegear had not locked down. The emergency gear extension procedure was carried out but failed to achieve a nosegear down and locked indication. The pilot diverted the aircraft to Roma and following touchdown, the nose was lowered onto the runway and the aircraft slid to a stop.

An inspection of the of the nosegear found that a bolt had been incorrectly installed and had fouled the nosegear linkage rods.

29 Sep, HUGHES 269 C, VH-THR, Aerial Mustering, TOOGOOLAWAH QLD
The pilot stated that after landing the helicopter he allowed the engine temperature to stabilise for about one minute at 2800 RPM. He then reduced the power to about 2000 RPM and after another minute, as he was about to disengage the rotor, the helicopter was affected by ground resonance. The pilot, who had already released his seat belt, was thrown to the floor of the aircraft.

02 Jul, AUSTER J1 B, VH-ASK, Non-commercial — pleasure, WALCHA NSW 30NE
The pilot was undertaking his third flight for the day, during which he completed a number of circuits and landings. Following a touch and go landing, the aircraft had reached a height of about 300 feet when it was seen to commence a turn back towards the strip. During the turn the nose dropped and the aircraft subsequently struck the ground in a steep nose-down attitude. Initial investigation revealed that there was virtually no fuel remaining in the tanks, and the engine was not under power at the time of the accident.

13 Jul, CESSNA 152, VH-FST, Instructional — solo (supervised), BANKSTOWN NSW
At the completion of a flight in the local training area, the student returned for a full-stop landing. As the aircraft was flared prior to touchdown, the pilot was affected by sun glare. The aircraft bounced a number of times and the nosegear strut collapsed.

19 Jul, CESSNA R172 K, VH-SPJ, Sport parachuting, COLLECTOR NSW
The pilot was flying the jump aircraft for a parachute club. After having completed the fifth drop for the day, the aircraft was observed to make a high speed pass, at an altitude of about ten feet above the ground, over a group of spectator parachutists. The aircraft then climbed steeply to an estimated altitude of between 200 and 300 feet before carrying out a wingover type manoeuvre. It then descended rapidly and impacted the ground in a slightly nose low, left wing low attitude, before nosing over and coming to rest 57 metres from the point of impact. The pilot was trapped inside the wreckage, which was destroyed by the ensuing fire.

06 Aug, CESSNA 180 G, VH-MJC, Non-commercial — pleasure, EAGLE CREEK NSW
The aircraft had been parked overnight in freezing conditions, and a coating of rime ice covered the upper surfaces. The pilot poured several buckets of warm water over the aircraft before taxiing to the strip, about one kilometre from where the aircraft had been parked. Takeoff was commenced after the various checks had been completed. The takeoff was normal, but shortly after the aircraft became airborne the pilot noted that the performance was sluggish. The aircraft tended not to respond to aileron inputs, and the pilot was forced to use coarse rudder movements to maintain directional control. The aircraft lost height and struck large granite boulders before coming to rest adjacent to the end of the 550 metre strip. Fire broke out and destroyed much of the fuselage and the inboard sections of the wings.

11 Sep, PIPER 28 235, VH-FAR, Non-commercial — pleasure, KULPRA STN NSW
The pilot stated that at an altitude of about ten feet after lift-off, the engine failed. The aircraft landed heavily on the nosewheel and the nosegear subsequently collapsed. The pilot reported that on inspection the fuel tank selector was positioned to draw fuel from the empty left wingtip tank instead of the left main tank.

13 Sep, AMER AIR AA-5A, VH-JSK, Non-commercial — pleasure, ELDERSLIE NSW
The pilot intended carrying out a one-day return flight to Luskintyre. However, when in the Luskintyre area he misidentified the Elderslie strip for that of his planned destination and entered the circuit for a landing. It was reported that the later part of the approach was flat and the pilot stated that when the aircraft was about 10 feet above the strip it suddenly dropped. Full power and back stick were applied but the aircraft landed heavily and bounced. The pilot decided to go-around and during the attempt the aircraft struck a runway light and a fence before the throttle was closed.

13 Sep, PIPER 28 161, VH-MHE, Non-commercial — pleasure, SCHOFIELDS NSW
The pilot had been authorised to carry out circuit and landing practice. The aircraft had been operating for about 20 minutes when witnesses reported that following a touch and go it assumed a higher than normal nose attitude. At an altitude between 100 and 150 feet above the runway, the engine noise ceased and the aircraft pitched forward to a steep nose down attitude. This attitude was maintained until the aircraft impacted the ground, 50 metres to the right of the runway centreline.

17 Sep, AIRPARTS FU24-954, VH-MYW, Aerial agriculture, BRAIDWOOD NSW
The pilot was operating from an agricultural landing area. During the takeoff run the left mainwheel struck a vehicle tyre, that was being used as a strip marker. The tyre was flung into the air and struck the left stabilator causing it to jam in about the neutral position.

The pilot subsequently landed the aircraft in a paddock and during the landing roll the aircraft struck a fence.

18 Sep, PIPER 25 235, VH-SGD, Aerial agriculture, ALBURY NSW 60NW
The pilot was engaged in spraying a wheat crop. Two large trees, 18 metres apart, were situated in the centre of the paddock and the pilot intended to fly between the trees during one of the spray runs. He positioned the aircraft to fly under overhanging foliage and as close as possible to the tree on his right. As the aircraft passed the tree the right wing struck a dead branch. The pilot was able to maintain control of the aircraft and land it back at the airstrip, approximately three kilometres away.

21 Sep, MAULE M5-235C, VH-XCM, Non-commercial — pleasure, HARTLEY NSW
As the pilot was unfamiliar with operations at Bankstown, he had arranged to land at a strip near Hartley to pick up another pilot who would accompany him to Bankstown. The pilot inspected the strip from the air and was advised by the pilot on the ground to land uphill, into the north-east. A landing in this direction resulted in a quartering 10 knot tailwind. The aircraft bounced on touchdown and began to swing to the left. Being unable to regain directional control, the pilot applied full power to go around. During the go-around the tailplane struck a fence, and the aircraft came to rest against the fence, 38 metres to the left of the strip centreline and 250 metres from the initial point of touchdown.

27 Sep, QUICKIE Q2, VH-BQQ, Non-commercial — pleasure, PT MACQUARIE NSW
The pilot reported that as he flared the aircraft for landing it dropped heavily, nose first, onto the runway and bounced. He applied power and straightened the aircraft, which then touched down on the mainwheels, but the nose dropped again and the aircraft overturned.

20 Aug, AIR TRACTOR AT 301, VH-JFA, Aerial agriculture, CORRYONG VIC 10E
The pilot was spraying a pine forest in hilly country. The spray runs were made in the downhill direction only, which required a low power setting during application. When the pilot applied power at the end of a run, engine roughness was noticed. He turned towards Corryong Aerodrome but the engine problem worsened to the point that he decided to land. The only suitable area was a road, but on touchdown the aircraft bounced necessitating heavy braking for the remainder of the landing roll. The tail lifted and the aircraft nosed over and came to rest inverted on the side of the road. Initial investigation established that the head had separated from No.9 cylinder.

22 Aug, PIPER 38 112, VH-PCF, Instructional — dual, WERRIBEE VIC 8SW
At about 2500ft above ground level during climb, a loud noise was heard coincident with an rpm drop and severe vibration. The prevailing wind was a 35 knot northerly and after changing his selected landing spot a couple of times, the instructor decided to land to the west as this gives maximum ground roll. The aircraft touched down 188 metres from a fence and a 2 metre high levee bank. It impacted the levee bank at an estimated 40 knots, was catapulted over the drain and landed inverted 15 metres beyond. The student was able to extricate himself from the wreckage but the instructor was trapped for 90 minutes until help arrived.

It was determined that the loss of power was due to a spark plug, complete with heli-coil, becoming dislodged from the Number 1 cylinder.

22 Aug, PIPER 25 235, VH-KRT, Aerial application, NHILL VIC 20NE
The pilot had just commenced spraying a crop of peas on his own property. At the end of a swath run the left wing struck a nine metre high tree during an attempted pull up. The aircraft veered left, apparently out of control, and crashed through a large gum tree 235 metres further on. The aircraft came to rest inverted and caught fire. Initial investigation indicates that the engine was performing normally prior to the impact. It has also been determined that the pilot was not qualified to perform aerial agricultural operations nor had he received any training for such tasks.

12 Sep, BEECH V35 B-MK2, VH-ILY, Non-commercial — pleasure, MITTA MITTA 3.5NW
Upon arrival at Mitta Mitta the pilot performed a touch and go on the 1000 metre long gravel strip, before approaching for the full-stop landing. After touchdown, the aircraft veered to the right but was repositioned on the centreline within a short distance. However, it again veered to the right and departed the hard packed gravel surface of the strip and entered an area of long, damp grass. The pilot was unable to control the direction of travel and the aircraft encountered a drainage ditch, an earth mound and a fence before coming to rest with its noseleg collapsed.

01 Jul, CESSNA 210 M, VH-MCE, Non-commercial — pleasure, ARKAROOLA SA
On arrival at the destination strip, the pilot assessed the wind to be from the west at about 15 knots. He decided to land to the northeast using short field technique but during the flare the pilot found he was unable to counteract right drift and the aircraft touched-down on the nosewheel. The nosegear subsequently collapsed, and the aircraft skidded to a halt just off the right side of the strip.

05 Jul, CESSNA 172-P, VH-WIQ, Non-commercial — pleasure, ANTHONY LAGOON NT
The pilot attempted to takeoff on an access track to a cattle yard. A southerly wind of about 15 knots necessitated takeoff towards the yard. The aircraft was near gross weight and short-field technique was used. At a position 411 metres from the brakes-release point, the right brake caliper assembly struck a 1.65 metre high section of the fence which formed the cattle yard. The right wing sheared off outboard of the fuel tank when it hit an adjacent 3 metre high fence cap. The aircraft then impacted the ground in a steep nose down attitude and slid inverted for a short distance before coming to rest. The aircraft had been airborne for 155 metres prior to the first impact.

11 Jul, PIPER 28 181, VH-TXN, Non-commercial — pleasure, ALICE SPRINGS NT
After touchdown the aircraft bounced back into the air and the pilot then raised the flap to the fully retracted position. The aircraft contacted the runway nosewheel first, bounced again and landed on its nosewheel for the second time. The nosegear subsequently failed and the aircraft skidded straight ahead and came to rest on the runway.

03 Aug, BEAGLE A109, VH-UEM, Non-commercial — pleasure, STREAKY BAY SA
After application of full throttle during the takeoff run, a severe vibration developed which rapidly stopped the engine from rotating. When the aircraft came to rest the pilot noted that one of the two propeller blades had cleanly separated from its hub.

08 Aug, CESSNA 402 B, VH-UBI, Scheduled passenger service, ADELAIDE SA
Upon arrival at Penneshaw the pilot failed to obtain a gear down and locked indication for the right main gear. Several alternative methods were tried but a safe indication could not be obtained. During a flypast, another pilot on the ground observed the aircraft with the aid of binoculars and reported that the gear appeared to be down. During the landing roll the pilot felt the right gear start to collapse. He decided to go-around and fly back to Adelaide where better facilities were available. Several more attempts were made to lock the gear in the down position, but to no avail. During the subsequent landing the right gear collapsed at about 30 knots and the aircraft slid a further 212 metres before coming to rest on a taxiway off the right side of the runway.

06 Sep, AMER AIR AA5-B, VH-MQW, Non-commercial — pleasure, INNAMINKA SA
The pilot decided to land on the shorter of two strips, using a short field technique. Touchdown was made 94 metres into the 470 metre strip, but the pilot was undecided whether to apply maximum braking or to initiate a go-around. Full power was applied and the aircraft became airborne for a short time before touching down in rough terrain. It came to rest with both main gears collapsed, 282 metres beyond the end of the strip.

19 Sep, PIPER 32 260, VH-BMB, Non-commercial — pleasure, COOBER PEEDY SA
Upon arrival in the circuit, the pilot assessed the conditions and approached to land into wind on runway 04. When the nosewheel was lowered onto the runway, the aircraft veered to the right and did not respond to the application of left rudder. A go-around was initiated, but soon after becoming airborne, the aircraft rolled to the right until it reached a bank angle of about 50 degrees. The pilot attempted to counter the roll with the application of opposite aileron but the aircraft continued to roll right until the starboard wing tip touched the ground. The auxiliary wingtip tank ruptured and caught fire. The nose of the aircraft dropped and the aircraft struck the runway heavily in a wings level attitude. The landing gear collapsed and the aircraft slid to a halt outside the strip markers, with flames now emanating from the engine bay and right wing. The occupants then evacuated the aircraft successfully. The pilot reported that after exiting the aircraft he sighted the windsock which indicated a wind direction of approximately 310 degrees and estimated the speed to have been 35 knots.

28 Sep, CESSNA 152, VH-ALH, Non commercial — business, MARYVALE NT
The pilot was attempting to take-off from a dirt road to fly to the Station's strip to pick up his partner. Just as the aircraft became airborne a slight left turn had to be negotiated. During the turn, the left wingtip struck a clump of bushes and slewed the aircraft to the left. The left wheel struck an embankment and the aircraft proceeded through a small bush and also clipped the top off another small tree with the right wing. Full power was still applied to the engine and the aircraft was again beginning to fly when the left tailplane caught on a large bush which bought the aircraft back onto the ground. The pilot then abandoned the take-off attempt and closed the throttle. The aircraft ran through another large bush before finally coming to rest.

31 Aug, BEECH 58, VH-WLC, Non-commercial — pleasure, PORT HEDLAND WA
After selecting gear down, a safe indication could not be obtained for the left main gear. The pilot diverted to Port Hedland where further attempts to lower that gear also failed. The gear was retracted and a gear up landing carried out.

A similar left gear unsafe indication occurred 3 landings prior, but on that occasion after recycling the gear a normal extension was obtained.

23 Jul, CESSNA A188B A1, VH-RYO, Ferry, BALLIDU WA 8SE
The pilot stated that at the end of the take-off run the wheels hit a 60cm high contour bank. He also reported that he misjudged the distance between the point at which the takeoff was commenced and the bank. The aircraft sustained substantial deformation damage to the landing gear attachment points and the carry through structure.

23 Sep, CESSNA 210 L, VH-MHC, Aerial application, KUNUNURRA WA
The maingear uplock assembly had just been fitted with a new seal and the aircraft was flown to ensure the correct operation of the system. The gear retracted normally but could not be lowered and a gear up landing was made. Inspection revealed that the unit had been incorrectly reassembled after the seal was changed.

27 Sep, PIPER 28 140, VH-RVN, Non-commercial — pleasure, CERVANTES 11ESE
After arrival at his friend's farm, the pilot stated that he was informed of acts of vandalism at Cervantes airstrip, where he had left his aircraft. He inspected several possible landing sites on the farm and next morning went to the strip to fly the aircraft back to the farm. After doing a number of aerial inspections of the farm, an approach was made to one of the chosen landing sites. The site consists of a flat touchdown area, then about 40 metres further on becomes a steep and undulating slope. The planned touchdown point was overshot so a short burst of power was applied and the aircraft was flared in an attempt to land on the up sloping surface. The nosewheel contacted the ground heavily and collapsed, then 25 metres from the touchdown point, the aircraft pitched inverted and slid to a halt.

02 Aug, BOEING 747-338, VH-EBT, Airline Transport, GUAM 37S
QANTAS Flight 22 departed Narita with a complement of 327 passengers, and 22 technical and flight crew.

The Captain reported that en route to Guam, isolated thunderstorm activity was observed on the Aaircraft weather radar. A continuous radar watch was maintained, and the aircraft made a number of diversions from the planned track in order to avoid the storm activity. About 30 kilometres south of Guam, a heading alteration of 10 degrees was made to regain track. Shortly after the turn was completed, the aircraft entered an area of severe turbulence. The encounter lasted about 30 seconds, during which the aircraft was subjected to accelerations of +1.8 G to −0.4 G (the acceleration due to gravity, normally +1 G).

Both the Captain and the Second Officer (who was occupying the right hand control seat), had been monitoring the weather radar, and advised that there was a total absence of returns from any convective cloud on either radar screen. The aircraft was flying in cirrus type cloud, and no lightning had been observed.

Forty eight passengers and one flight attendant received varying degrees of injury. As there was no warning of the encounter, the seat belt signs were off. Most of the injured passengers had been asleep, with their seat belts unfastened. This was despite an announcement made in English and Japanese after departure from Narita, that passengers should have their seat belts fastened at all times when they were seated. The seat belt signs were switched on again at the onset of the turbulence.

The cabin crew were assisted in treating the injured by a Japanese doctor. He advised the Captain that no one was seriously injured or in need of specialist medical treatment which warranted a diversion from the flight plan. The flight crew included two flight engineers who carried out individual checks and inspections. They subsequently advised the Captain that the aircraft was apparently structurally and mechanically unaffected by the encounter with the turbulence. In the light of the information provided to him, the Captain elected to proceed to Sydney as planned.

On arrival in Sydney the injuries were re-assessed, and twenty eight passengers and the flight attendant were conveyed to various hospitals. All but one of the passengers was released later that day. The passenger remaining in hospital was the only one considered to have sustained serious injury.

Maintenance engineers conducted a severe turbulence conditional inspection, and found no evidence of any structural damage to the aircraft. Both weather radar units were removed, tested and found to be fully serviceable.

It was established that only one of the passengers who had had their seat belts fastened at the time of the encounter received any injury.

Rotary Wing

14 Jul, BELL 206 B, VH-PHA, Non-commercial — pleasure, GAYNDAH QLD 10W
The helicopter was heading in a westerly direction following takeoff from the pilot's property. The track was to take the aircraft directly over Mount Gayndah so the pilot decided to track to the south of the mountain to provide better terrain clearance. On passing abeam the mountain, at about 500 feet above ground level, the helicopter struck two power lines, strung across the flight path, between the mountain top and a river flat below. The pilot stated that he immediately lowered the collective and turned the aircraft towards a cleared are a. Approaching the area it became obvious to the pilot that the aircraft would not clear trees on the approach path and he increased the collective. The helicopter cleared the trees and turn ed right through 180 degrees before touching down in a level attitude while travelling rearward. The landing skids collapsed and the aircraft slewed to the right before coming to rest. An inspection of the helicopter revealed that impact with the wires had occurred initially near the ends of both main rotor blades then on the upper surface of the tailboom. The tail rotor drive shaft was severed as was a substantial portion of each tail rotor blade, and the tailboom was almost severed at a position in front of the vertical stabilisers.

22 Jul, HUGHES 269-C, VH-MZR, Aerial mustering, ROSELLA PLNS QLD
The pilot was making a landing approach at the conclusion of a stock mustering operation. The helicopter collided with a single wire telephone line, then struck the ground and rolled onto its side.

31 Aug, HUGHES 369-HS, VH-HED, Aerial agriculture, RATHDOWNEY QLD
The pilot reported that shortly after takeoff he sensed a loss of engine power and the helicopter began to descend towards a fast flowing creek, over which it was passing. The left skid struck a log and the helicopter began to rotate before settling onto sloping ground. The pilot switched off the electrics and fuel before the aircraft rolled onto its side.

17 Sep, BELL 47-G2, VH-KHK, Aerial Mustering, HAY NSW 65W
The helicopter was engaged in the mustering of feral pigs for a cull. After descending the helicopter to follow the pigs into a cleared area, the pilot noticed that more power was required to fly the aircraft. The aircraft was immediately landed at the base area, where an inspection revealed damage to the leading edge of both rotor blades. The pilot reported that neither he nor his passenger had been aware of the helicopter striking any objects.

20 Aug, BELL 47 G3B2A, VH-AAU, Aerial Mustering, LEILA CREEK NT
At a height of 80 feet above ground level with the helicopter almost stationary, a total power loss was experienced. During the autorotational descent the main rotor struck trees, and when the helicopter touched down the right skid was torn off and the machine rolled onto its right side. The occupants evacuated unhurt through the pilot's door.

20 Sep, BELL 206 B, VH-BLR, Aerial mapping/ photography/survey, WAIKERIE SA 24W
The helicopter was flying at 40ft above ground level to enable the cameraman to film a vehicle. The crew heard a loud bang and the pilot suspected an engine failure so he commenced an autorotation. However, he quickly found that the engine responded normally to power changes but not knowing what caused the noise, he decided to land on suitable terrain just ahead. After they had exited the helicopter, the cameraman reported to the pilot that he saw a wire just prior to hearing the noise. Inspection of the machine confirmed that it had suffered a wirestrike.

13 Jul, BELL 206, VH-BEQ, Charter — passenger operations, KARRATHA WA
After consultation with his passengers regarding the expected duration of the return survey flight, the pilot decided that he needed only one 200 litre drum to re-fuel. Just short of Karratha he advised the passengers that he would have to land due low fuel state. During the descent the engine stopped, due to fuel starvation, and the helicopter was substantially damaged

09 Sep, HUGHES 269-C, VH-PSK, Aerial mustering, ANNA PLAINS 30SSW
Whilst mustering cattle near a holding yard, the helicopter was being held in the hover in a 15-20 knot headwind. Because some of the cattle broke away, the pilot turned downwind to herd them back. As the aircraft rolled out of the turn it began to descend and the pilot attempted to arrest the sink by increasing collective. However, the helicopter continued downward and impacted heavily on the ground resulting in the tail boom being sheared off. It then bounced into the air and began to yaw rapidly, but the pilot quickly and firmly placed it back onto the ground. When the helicopter came to rest the occupants were able to extricate themselves from the wreckage.

The pilot reported that he believes he overpitched when he increased collective during the recovery attempt.

Gliders

26 Sep, SCHLEICHER K7, VH-GQX, Instructional — dual, JONDARYAN QLD
The instructor stated that after a normal flight and circuit approximately half air brake was set for the approach. Additionally during the approach further air brake was set, for a short period, to steepen the approach. When the instructor then checked the indicated airspeed he observed that it had reduced to less than 45 knots. He stated that he did not close the air brake in time to prevent a heavy landing.

22 Aug, BURKHART ASTIR CS, VH-IKG, Non commercial — pleasure, BORDERTOWN SA 4W
The glider was being winch-launched on strip 36. During the launch, the left wingtip dropped into lush grass covering the strip. The glider rolled rapidly to the left around the wingtip, until it was inverted. The aircraft impacted heavily in this attitude and came to rest 96 metres from, and 15 metres to the left of the take-off point.

A 10-15 knot north-easterly wind was blowing at the time.

06 Sep, BURKHART TWIN ASTIR, VH-KYN, Instructional — solo (supervised), BEVERLEY WA
The pilot was carrying out a practice circuit. Although the approach was good, the flare was initiated too high. The pilot attempted to correct by lowering the nose, however he was late in initiating the second flare. The aircraft struck the ground and bounced into a nose high attitude. The pilot again lowered the nose which resulted in another bounce. The gear finally collapsed after the third ground impact.

Lighter than Air

15 Sep, KAVANAGH D-105, VH-OBF, Charter — passenger operations, WALKAMIN QLD 5S
Following a check of the weather situation, the balloon was launched in a five knot wind. After about 20 minutes the pilot observed that the wind strength had increased and decided to land the balloon. The passengers were rebriefed

on the landing procedures and the burner pilot light was turned off in preparation for landing. On touchdown, in an estimated 20 knot wind, the basket tipped over and was dragged along the ground for 90 metres before coming to rest. Two of the occupants let go of the grab ropes on touchdown and were thrown from the basket on initial ground impact. During the ground slide two other passengers also let go of the grab ropes, the pilot managed to restrain one and keep her within the basket, however, the other passenger was thrown out of the basket.

20 Sep, KAVANAGH K160, VH-HGU, Charter — passenger operations, RUTHERGLEN VIC 4E
In the final stages of the landing attempt, the balloon was affected by a rapid change in meteorological conditions. This resulted in a collision with a small tree and the danger of overshooting the planned, safe landing area just ahead. To ensure touchdown in the planned clearing, the pilot activated the rip panel at a height of about 45 feet. A heavy landing resulted and the basket rolled over in the direction of flight. Prior to touchdown, the passengers had been briefed and were standing braced ready for landing.

Ultralights

22 Sep, RESURGAM ULTRALITE, NOT REG, Non commercial — pleasure, NORTH ARM QLD
After becoming airborne the aircraft proceeded to fly over a nearby town before turning to head back towards the strip. Witnesses report that when the aircraft was about two kilometres south of the strip, the wings appeared to 'flap' and the aircraft descended rapidly before tumbling into the ground.

An inspection of the wreckage found that the fabric on the wings had decayed and was generally of low strength. It was apparent that the wings had lost their rigidity after the fabric became detached.

30 Sep, SKYCRAFT SCOUT MK 3, NOT REG, Test, BABINDA QLD 10N
The aircraft had previously had to be flown with the control stick displaced to the right of centre in order to maintain a wings level attitude. The aircraft owner advised a visiting ultralight pilot of the problem, who offered to attempt rectification. After a conducting a flight to experience the problem first hand, the pilot adjusted the right wing warping wire and conducted another test flight. The adjustment had improved the trim problem but still not completely provided a fix. The pilot then readjusted the right wing warping wire to its original condition and added a D-shackle to the left wing warping wire to increase its length. Another test flight was carried out and it was found that the aircraft could only be maintained in level flight when full right rudder and full right control stick were applied. The aircraft was struck by a wind gust and the left wing dropped, as no further control was available to correct this situation, the pilot pulled a wing warping wire. Unfortunately he pulled the right wire instead of the left wire and was unable to correct his error before the aircraft struck the ground.

A subsequent inspection of the wreckage found that the right wing warping wire was 19 millimetres longer than the left. Also, all the dimensions of the right wing were slightly larger than that of the left wing, resulting in the right wing area being about 80 square centrimetres greater.

26 Sep, HUGHES LIGHTWING, 250081, Non commercial — pleasure, THE OAKS NSW
The student was landing the aircraft in a crosswind from the right. As the speed reduced, during the landing roll, the aircraft began to veer to the right. The instructor applied full left rudder and brake in an attempt to correct the situation but the aircraft continued to veer off the strip. Being concerned that the aircraft would strike a fence and overturn, the instructor applied full power in an attempt to clear the fence and land in an adjoining paddock. The aircraft cleared the fence but subsequently stalled and was blown back against the fence.

05 Sep, THRUSTER GEMINI, NOT REG, Non commercial — pleasure, BEULAH VIC 8W
The pilot reported that he had been flying over his farm for about 30 minutes inspecting the crops and sheep. When crossing a road, whilst proceeding to another section of the farm at a height of about 30 feet, he remembered the location of a power line 50 metres ahead. He banked the aircraft left to avoid the line, but the left wing hit the top of a tree. Control was lost and the aircraft impacted the ground, coming to rest inverted.

22 Sep, LIGETI STRATOS, NOT REG, Test, PENFIELD VIC 1E
The designer was test flying the first production model which incorporated several changes from the prototype. Witnesses report that the ultralight was being flown at about 500 ft above ground level and that just prior to the accident the pilot appeared to be testing the low speed characteristics of the machine. The ultralight then appeared to stall but reports vary considerably regarding the behaviour of the aircraft during its descent until its inverted impact with the ground. The ultralight was not fitted with a parachute.

FINAL REPORTS (The investigation of the following accidents has been completed.)

Fixed Wing

01 Jul, PIPER PA36-375, VH-PXZ, Aerial agriculture, OAKEY QLD 26S, Commercial, 1276 hrs
The operator of the aircraft had contracted to spray 160 hectares of barley with weed killer. On arrival over the property, the pilot flew an inspection orbit and commenced spraying the first paddock towards some tall trees and a power line. After this first pass the aircraft was pulled up into a procedure turn before diving steeply over the same obstacles, in the reciprocal direction. When the aircraft was clear of the obstructions, the pilot attempted to level the aircraft for the next spray run. However, the aircraft continued along its established flight path until striking the ground in a pronounced nose high attitude. The impact damaged the propeller, spray booms and landing gear. Chemical sprayed over the windscreen depriving the pilot of forward vision, and he was unable to control the subsequent landing run sufficiently to prevent the aircraft from broadsiding.

The aircraft was being operated at a weight in excess of the Agricultural Gross Weight and at a relatively slow airspeed. During the pullout from the dive, the load factor ('G' loading) applied to the aircraft caused an aerodynamic stall. The pilot was unable to effect a recovery at such a low altitude.

14 Jul, MITSUBISHI MU2B-25, VH-MUK, Charter — passenger operations, TOOWOOMBA QLD, Commercial, 9500 hrs
The pilot stated that the wind was blowing directly across the strip and he joined the circuit for a landing on runway 29. He reported that when the aircraft was on final approach it encountered a significant tailwind, and a missed approach was carried out, followed by a 'tear-drop' style turn to align the aircraft on final for runway 11. The pilot stated that after touching down on the mainwheels, the nosewheel was lowered and he heard a bang before the nose of the aircraft contacted the runway. The aircraft slid along the runway before coming to rest just off the sealed surface.

An inspection of the landing gear assembly revealed that the nosegear downlock linkage failed due to overload forces causing the nosegear to retract. The landing gear mechanism was also bent by overload forces.

No evidence could be found to indicate that defects in the landing gear system existed prior to this landing. It is possible that in selecting the propellers to the Beta range and applying heavy braking, prior to the nosewheel touching down, that the nosewheel was forced onto the ground, thereby contributing to this occurrence.

07 Aug, VICTA 115, VH-RQH, Instructional — check, KAGARU QLD, Commercial, 3181 hrs
After takeoff the aircraft was flown to the local training area where upper air sequences were carried out. Following their successful completion the pilot was instructed to carry out a practice forced landing. The first attempt resulted in a significant undershoot and the aircraft was climbed to 2500 feet for a further attempt. On the second attempt the aircraft was placed in a position too high and too close to the proposed landing strip, so the pilot under check decided to fly an 'S' turn to lose altitude. During this manoeuvre the aircraft became grossly misaligned with the strip, the stall warning horn was sounding intermittently and the instructor instructed the pilot to go-around. However, the pilot banked the aircraft steeply to the left to align it with the strip, the aircraft began to roll rapidly to the left and despite the application of right rudder and full power it struck the ground. The nosegear and left maingear collapsed and the aircraft came to rest after a ground run of 39 metres.

13 Aug, DE HAV DHC2-MK1, VH-HQE, Charter — passenger operations, HAYMAN ISLAND QLD, Commercial, 5300 hrs
The pilots departure from Shute Harbour aerodrome had been delayed and he was running late for his arrival at Hayman Island. During the short flight he noticed that the cruising indicated airspeed was slightly less than normal, but attributed this to the possibility of water in the pitot system, a problem that he had encountered the previous day in another aircraft. On touchdown for the water landing, the pilot realised that the wheels were still extended. He attempted to prevent the floats digging in but the left wing struck the water before the aircraft came to rest.

This accident was not the subject of an on-site investigation.

22 Aug, BELLANCA 8-GCBC, VH-SUT, Non commercial — pleasure, BOONAH QLD 15SW, Private, 409 hrs
The pilot was approaching to land on an undulating 586 metre strip. A tow rope was connected to the aircraft, as the pilot intended to tow launch a glider from the strip. He aimed to touchdown well into the strip so that the trailing tow rope would not foul the strip boundary fence. The aircraft floated longer than the pilot expected and touched down at the commencement of the uphill A sloping section of the strip. In an effort to stop the aircraft before reaching the glider parked at the end of the strip, the pilot applied braking before the tailwheel had settled on the ground. The aircraft subsequently nosed over and came to rest inverted on the strip.

The pilot did not attempt to go around, as he was concerned that the tow rope might foul a fence during the climb out. He had overlooked the tow rope quick release facility available to him. Neither the pilot nor the operator had ensured that the strip was suitable for the proposed operation.

13 Sep, CESSNA 172-RG, VH-KOS, Non commercial — pleasure, TOOWOOMBA QLD, Private, 153 hrs
The pilot was manoeuvring the aircraft on the apron to park adjacent to another parked aircraft. Whilst making a right turn he was observing the other aircraft which was to his right, when the left wingtip struck a corner post of the airport boundary fence. The pilot had observed the fence post prior to commencing the turn and had assessed that there would be adequate clearance for the manoeuvre. However, he failed to continue monitoring the clearance with the post during the turn.

12 Sep, CESSNA 182 H, VH-PQB, Non commercial — pleasure, HOXTON PARK NSW, Private, 93 hrs
The pilot reported carrying out a normal approach to runway 34 in light and variable wind conditions. The aircraft bounced on first touchdown and then landed heavily on the nosewheel. Several more bounces occurred before the aircraft came to rest. The pilot taxied the aircraft back to the parking area where he found that the propeller blades had been bent.

After the initial touchdown the pilot had attempted to correct the bounced landing by pushing the control column forward.

20 Sep, CESSNA 210 M, VH-TIU, Non commercial — pleasure, MT SANDON 22KM N, Private, 600 hrs
The pilot stated that he carried out a normal circuit at his destination. During the landing roll he selected the flaps up, and then inadvertently selected the landing gear up before realising his mistake and selecting the gear down again. The gear up selection occurred just as the aircraft was travelling over a hump in the strip and it is believed that this, combined with the pilot holding up elevator, caused the weight of the aircraft to come off the wheels. This resulted in the landing gear safety switch becoming ineffective and the gear commencing the retraction sequence. When the aircraft came to rest the nosegear was fully retracted, the left maingear was partially retracted and the right maingear was still down and locked.

Subsequent inspection and testing of the landing gear system did not reveal any faults that could have contributed to the occurrence. The pilot stated that he believed he had mistakenly applied the after-takeoff checks instead of the after-landing checks and had selected the gear up instead of opening the cowl flaps.

This accident was not the subject of an on-site investigation.

09 Jul, CESSNA 210 M, VH-WRD, Non-scheduled charter passenger, ROPER BAR NT 8741022
As the aircraft turned onto final, the pilot noticed a large bird (later identified as a kite hawk) above and assessed that the aircraft would pass beneath it. However, the bird rolled over, dived and struck the windshield. The sudden heavy impact smashed the perspex into small pieces which cut the pilot about the face and chest. The broken windshield resulted in a substantial increase in the descent rate which required a considerable increase in power to overcome. A difficult landing was further complicated by a reduction in visibility due to wind blast, blood and feathers. Although the pilot's sunglasses and headset were knocked from his head, had he not been wearing glasses it is probable that he would have been blinded as a result of the collision.

The specialist ornithologist reported that large birds like kite hawks and eagles have only one evasive manoeuvre and that is to fold their wings and dive. However, if given sufficient warning they will simply turn away from an aircraft. Given that they are adept at avoiding collisions, this bird was caught unawares probably by the low power setting of the engine whilst the aircraft was on approach. When surprised by the proximity of the aircraft it reverted to instinct.

09 Aug, PIPER 25 235/A1, VH-FAL, Glider towing, BATCHELOR NT, Private restricted, 250 hrs
Soon after lift-off, whilst tow launching a glider, the aircraft was struck by two kite-hawks. One hawk smashed the windshield and also struck the pilot in the face. The pilot released the glider and made a normal landing on the remaining runway.

Although the pilot was cut about the face by the impact of the bird and broken pieces of perspex, it is considered that because he was wearing sunglasses at the time, he avoided probable serious eye damage.

Rotary Wing

27 Jul, BELL 206 B, VH-PHX, Instructional — check, BANKSTOWN NSW, Commercial — helicopter, 6020 hrs
One of the pilots was undergoing practice in engine failure emergencies at night. The helicopter was equipped with a 'Nightsun' light, which was used to illuminate the ground below the aircraft. Fixed lights were also installed at the edges of the helipad. During the third practice autorotative descent, the 'Nightsun' light was inadvertently extinguished when the aircraft was about 300 feet above the ground. It was turned on again by the time the aircraft had descended to about 100 feet, and the remainder of the descent and flare appeared to be normal. However, after touchdown the aircraft became airborne again, before touching down on the heels of the skids while moving slowly forward. The aircraft rocked forward and the main rotor severed the tail boom just forward of the tail rotor assembly.

The surface of the helipad had been softened by recent rain ,allowing the heels of the skids to dig in slightly. This probably accentuated the rocking movement which led to main rotor blade contact with the tail boom. The type of manoeuvre being performed requires a high level of skill. Should a slight error of judgement occur, there is little opportunity for any corrective action to be successful.

Lighter than Air

23 Aug, THUNCOLT 240A, VH-WMS, Non commercial — pleasure, ALICE SPRINGS 5S, Balloon, 1100 hrs
The balloon operator had arranged a familiarisation flight for visiting travel agents. After some low and higher level demonstrations, the pilot descended the balloon to drift at treetop level above the Todd riverbed. As he was aware of power lines in the vicinity he elected to land on a clearing just ahead. The pilot activated the rip panel which resulted in a high descent rate and very hard landing.

The pilot became committed to the landing on unsuitable terrain after choosing to descend too early. The pilot of another balloon, that had been operating in company with this balloon, had delayed his descent a short time and made a successful landing on an open area.

This accident was not the subject of an on-site investigation.

Ultralights

18 Jul, FIRST STRIKE SUPERCAT, NOT REG, Non commercial — pleasure, BRISBANE QLD 66W, Other (Foreign, Military, etc), 70 hrs
The pilot was carrying out circuit practice in his aircraft. After about 15 minutes flying the engine stopped. Realising that the aircraft would not glide to the strip, the pilot attempted a forced landing in a grassed paddock just short of the property boundary fence. Just after touching down, the aircraft struck the trunk of a fallen tree and the landing gear was bent rearwards.

An inspection of the wreckage found that a hose clamp holding the fuel line to the inlet side of the carburettor had failed and allowed fuel to siphon overboard. The failure of the clamp had resulted from the incorrect size clamp being used and the resultant size differential resulted in geometrical discontinuity and circumferential stress overload. The engine failed due to fuel exhaustion.

29 Aug, DRIFTER XP 503, NOT REG, Non commercial — pleasure, MERIMAN QLD, None , 1000 hrs
On arrival at the property, the pilot landed the aircraft in front of the homestead. A short time later he departed with the property owner on board for a cattle spotting flight. On returning to land, again in front of the homestead, the aircraft hit a single power line, pitched nose up and fell to the ground inverted. The pilot stated that he was not aware of the presence of the power line prior to colliding with it.

25 Sep, ULTRALIGHT WINTON SAPPHIRE,NOT REG, Non commercial — pleasure, DOYALSON AIR PARK, Unknown/not reported
The pilot had borrowed the aircraft from his brother to carry out some taxi training. He had previously flown gliders. After making about 20 runs along the strip the aircraft became airborne, the pilot decided to continue with the takeoff as he was uncertain if the aircraft could be stopped in the remaining available strip. The aircraft collided with trees at the endof the strip and became wedged in the tree tops. The pilot escaped from the aircraft uninjured and had to climb down the tree to the ground.

This accident was not the subject of an on-site investigation.

26 Jul, ULTRALIGHT SAPPHIRE, NOT REG, Non commercial — pleasure, BAIRNSDALE 12W, None, 225 hrs
After takeoff the pilot purposely held the aircraft at a low height above the strip to allow it to accelerate. At the upwind end, he initiated a steep climb and a steep turn to the right, however the aircraft stalled at about 150 feet above the ground. The aircraft struck the ground heavily and slid into a ringlock fence. The pilot freed himself from the wreckage, and the engine which was still running at high speed, was shut down by a spectator.

The pilot reported that after the stall, he applied full back stick to try to raise the nose, but to no avail. The aircraft stalled as a result of the steep climbing turn but recovery was not effected due to incorrect stall recovery technique.

16 Aug, THRUSTER GEMINI, NOT REG, Instructional — dual, WARRACKNABEAL VIC, Commercial, 1640 hrs
It was the student's fourth flying lesson and the effects of power were being revised. The student turned the aircraft 90 degrees to the left onto downwind but when he attempted to level the wings after the turn, the bank angle increased from about 30 degrees to 50 degrees. The instructor took over the controls and attempted to recover by applying right aileron, full power and holding the nose up briefly. When the aircraft did not immediately recover, the instructor lowered the nose but the aircraft struck the ground, in a left wing, nose low attitude, before full control could be regained.

After revising the effects of power, the engine speed was set too low for the aircraft to sustain a level turn. The student maintained altitude by progressively applying up elevator and the instructor did not notice the incorrect setting because speed was assessed with reference to the ground in a 20 knot tailwind. The instructor delayed taking over the controls, because he thought that the aircraft was being subjected to mechanical turbulence generated by trees, over which they were flying.

FINAL UPDATES (The investigation of the following accidents has been completed. The information is additional to or replaces that previously printed in the preliminary report).

Fixed Wing

26 Feb 86, CESSNA 402, VH-MWF, Commercial, ROCKHAMPTON QLD, 1437 hrs
As the aircraft was climbing through 1000 feet the pilot noticed a reduction in manifold pressure and fuel flow readings for the right engine. He advanced the right throttle and found that the engine instruments indicated that the engine was performing as if it was normally aspirated. A short time later he saw flames coming from the right engine and the fire warning light and alarm bell activated. The fuel to the engine was shut off but the pilot was unable to feather the propeller. The fire did not go out. However, the pilot was able to successfully land the aircraft at Rockhampton where the fire was extinguished.

An inspection of the aircraft revealed that the number 4 cylinder was cracked and holed around the seat of the exhaust valve. It is considered that the cylinder cracking and the subsequent burn away of material resulted from extreme operating temperatures. The torching of the combustion products through the hole resulted in the induction manifold being consumed by fire.

It was also determined that the propeller could not be feathered because the propeller governor control cable had become inoperative after its mount point on the induction manifold had been destroyed by fire.

29 Dec 86, PIPER PA 34-220T, VH-FYU, Private, COOLANGATTA QLD, 940 hrs
When the pilot selected the landing gear up after takeoff, the gear unsafe light remained on. Recycling the gear had no effect. The pilot continued to his planned destination, with the aircraft performing at about 10 knots below the expected speed. On arrival, a visual inspection confirmed that the right maingear was trailing. The pilot then carried out a successful emergency landing, during which the right flap and propeller sustained damage as the gear collapsed.

Subsequent investigation disclosed that the right gear strut had failed on takeoff from Mudgee. Examination of the failure indicated that corrosion fatigue had initiated on the inner surface of the strut. The strut had not been subjected to corrosion prevention methods. An inspection cycle recommended by the manufacturer had not been followed.

17 Aug 86, PIPER 32 300, VH-PXY, Private, BANKSTOWN NSW 2W, 200 hrs
The pilot, who was a part-owner of the aircraft, had arranged to take some friends on a scenic flight over beaches to the north of Sydney. The aircraft made an apparently normal takeoff, into a wind of about 10 knots. About one minute later, the pilot advised that an engine failure had occurred and he requested a landing in the reciprocal direction. At this time the aircraft was at a height of about 400 feet above the ground. Witnesses observed the aircraft commence a turn with a bank angle of about 30 degrees. Height was lost rapidly, and after turning through 180 degrees the aircraft collided with the roof of a factory and burst into flames. The survivor escaped from the left rear seat shortly before the front section of the aircraft fell through the factory roof to the floor below.

A number of witnesses had heard the engine splutter before the exhaust note died away, suggesting a problem with the aircraft fuel system. It was determined that the engine was delivering little or no power at the time of impact. No evidence was found of a mechanical defect or malfunction which might have caused the power loss, and the reason for the apparent engine failure was not established.

At the point where the pilot commenced to turn towards the aerodrome, the aircraft did not have the necessary gliding performance to reach the runway. The terrain ahead of the aircraft in the takeoff direction afforded a greater chance of a successful forced landing. The reason the pilot elected to attempt to return to the aerodrome could not be determined.

03 Sep 86, CESSNA 402, VH-RED, Commercial, ESSENDON VIC 2NNW, 11284 hrs
The flight was intended to return patients to their home area following medical treatment in Melbourne. After an apparently normal take-off, the aircraft ceased climbing at about 100 feet above ground level. In response to a query from the Tower, the pilot advised that the left engine had failed, that he was feathering the propeller and would return for landing. The aircraft was seen to be deviating to the left, towards a large array of power lines. These lines extend from about 40 feet to 90 feet above the ground, and as the aircraft converged with the array it was probably below the height of the upper wires. The aircraft then suddenly veered to the left and subsequently struck the ground in a steep nose-down attitude. A fire broke out on impact and destroyed much of the wreckage.

The final manoeuvre performed by the aircraft was typical of that which occurs when one engine of a twin-engine aircraft is producing considerably less power than the other, and airspeed is reduced to below that required to maintain directional control. The pilot had reported that the left engine had failed, and the loss of control as described by witnesses was consistent with a reduction of power from this engine, combined with low airspeed.

The investigation of the accident was hampered by the extent of the fire damage. However, an extensive technical examination did not reveal any evidence of a defect or malfunction with either the engines, the various systems or the airframe which might have contributed to the accident.

Although the pilot had indicated that he was feathering the left propeller, it was determined that the propeller was not feathered at the time of the accident. It was not possible to establish if the pilot had subsequently elected not to initiate feathering action, orwhether such action was initiated too late for it to be completed before impact with the ground.

The reason for the loss of performance reported by the pilot could not be established. It is likely that while the aircraft was being manoeuvred to avoid the power lines and return for a landing, the airspeed decayed to below the minimum required to enable adequate control of the aircraft to be maintained. At the point where control of the aircraft was lost, there was insufficient height available for the pilot to effect recovery. The reason continued flight was attempted, rather than a controlled forced landing in open areas prior to the power lines, could not be determined.

13 Jun 86, PIPER 32 300, VH-BTL, Private, BROKEN HILL 78NNW, 1090 hrs
The pilot was conducting a flight under Night Visual Flight Rules from his property to Broken Hill. About 30 minutes after departure the pilot reported that the aircraft engine was running roughly. Shortly afterwards he reported that the engine cowling had become detached and then that the aircraft was on fire. No further transmissions were received from the aircraft which was destroyed as a result of impact forces and fire.

It was established that the No.3 cylinder became detached from the engine crankcase and damaged the engine cowling as it was forced outwards against it. The cowling blew back against, and smashed the left windshield. Engine oil escaped from the crankcase where the cylinder had been attached, and was blown onto the cabin area. The likely source of the fire was fuel escaping from broken fuel lines.

Engineering investigation revealed that the lower front, half-inch cylinder hold-down nut ceased to maintain tension on the hold-down plate. Other cylinder hold-down nuts from this engine were examined and showed no signs of structural weaknesses. It is considered that the subject nut also complied to specifications, although this nut was not recovered. The engine had been overhauled 46 flight hours prior to the accident. It is considered that the nut was incorrectly torqued at that overhaul. The reason for the incorrect torquing of the cylinder hold-down nut could not be established.

The subsequent severe impact with the ground was a result of the extreme distractions with which the pilot had to contend. The aircraft was cruising at 3500ft AMSL when the engine disintegrated and the fire broke out. Part of the emergency procedure for this type of occurrence is to dive the aircraft in an attempt to blow out the fire. As the aircraft impacted the ground in a steep nose-down but wings near-level attitude, and only slightly off course, it is thought that the pilot was complying with that drill. However, the low cruising altitude did not afford him sufficient time to accomplish this and establish the aircraft in a more suitable attitude for a forced landing. His limited night flying experience in combination with a dark night might have resulted in him not being able to estimate his height above ground level.

28 Aug 86, CESSNA 421 B, VH-TWH, Senior commercial, PARAFIELD SA, 12500 hrs
The aircraft had not flown since December 1985 and had been parked in the open. The Maintenance Release had expired, and a Permit to Fly was obtained to allow the aircraft to be ferried to Parafield for maintenance. When the gear was lowered for landing, only the nosegear indicated that it was down and locked. Recycling the system did not result in locked indications being obtained for the maingear, although to persons on the ground it appeared to be down. During the subsequent landing roll the right gear collapsed.

The aircraft had been inspected prior to the flight and the engineers had noted that the gear bearings were dry and slightly corroded. They did not bring this to the attention of the pilot and he did not detect the condition during the preflight inspection. When the gear failed to fully extend prior to landing, because of lack of lubrication and corrosion, the pilot discussed the situation with an engineer on the aircraft and they decided that the fault was probably in the gear position indication system. As a result no attempt was made to lower the gear using the emergency system.

10 Sep 86, BEECH C23, VH-AHB, Private, FARRELL FLAT SA, 148 hrs
The pilot hired the aircraft, a type he had not flown for four years, for a trip to what he believed to be an authorised landing area (ALA). However, he did not check the strip condition prior to departure for the ALA.

During the takeoff run at the ALA, the aircraft entered thick grass located to the left of a ten metre cleared area along the strip centreline. The acceleration of the aircraft was retarded and the pilot, realising that the aircraft would not accelerate to takeoff speed in the distance remaining, abandoned the takeoff. The aircraft stopped 64 metres beyond the end of the strip after colliding with two fence lines and a road shoulder.

22 Sep 86, PIPER 32 300, VH-SBH, Private, WAIKERIE SA 56S, 1200 hrs
The aircraft was being flown to Waikerie for a major inspection. While the aircraft was cruising at 2500 feet en route, the pilot stated that he smelt smoke and almost immediately noticed oil streaming over the windscreen. He closed the throttle and commenced an approach to a large paddock. The aircraft was landed without further damage. The pilot vacated the aircraft via the rear door to avoid the billowing smoke from the engine compartment and attempted to extinguish the fire with a portable fire extinguisher. On realising the attempt would be unsuccessful, he collected his luggage from the cabin of the aircraft and cleared the area. The aircraft was subsequently destroyed by fire.

Inspection of the rear of the engine compartment was hampered by the degree of damage caused by the intensity of the fire. The investigation did not discover any malfunction that might have caused the fire.

27 Sep 86, DE HAV 82 A, VH-ART, Private, KINGSTON SE SA, 167 hrs
During the takeoff run, the pilot reported that the aircraft encountered a crosswind from the left. Despite the application of left rudder and aileron the aircraft continued to drift towards the right of the strip. The pilot attempted to manoeuvre the aircraft over a gable marker but one of the mainwheels struck the marker and caused the aircraft to turn further to the right. The aircraft continued and the lower right wing was torn off after it struck a fence post. The aircraft came to rest 13 metres beyond the boundary fence.

During the takeoff the wind velocity had changed appreciably and the aircraft had drifted well to the right of the strip before the pilot had attempted to take corrective action. The takeoff was not abandoned until after the aircraft had struck the fence.

17 Oct 86, CESSNA 310-R, VH-DZH, Commercial, PARAFIELD SA, 703 hrs
On arrival in the circuit area at Streaky Bay the pilot selected the gear down and obtained an instrument indication that the gear was locked down. While the aircraft was on final approach it encountered turbulence and the gear warning horn sounded, the gear unlocked indicator light illuminated and the nosegear down light extinguished. The pilot initiated a go-around and after unsuccessful attempts to obtain a gear locked down indication, diverted the aircraft to Parafield. On landing at Parafield the nosegear collapsed.

Inspection of the nosegear revealed that the bolt which secures the nosegear retraction linkage to the drag brace had failed in the thread area due to fatigue. It is evident that the bolt failed and partially withdrew in the circuit area at Streaky Bay, giving rise to the unsafe gear condition.

31 Oct 86, PIPER PA32-260, VH-PYV, Private, ROBE SA, 311 hrs
Prior to the flight the pilot had an associate check that the strip was serviceable. On arrival overhead the airfield the pilot chose to land on the shorter of the two strips into a 30 knot wind. During the landing roll, as the aircraft crossed the other strip, the pilot observed that the strip had been recently hoed. The nosewheel sunk into the soft surface, the aircraft veered to the left and the nosegear leg folded rearwards.

The associate did not check the condition of the strip but advised the pilot that the strip was "always okay". The pilot did not check with the owner of the strip to ascertain its status, which at the time of the accident was undergoing reconstruction. Although not required for an ALA, the owner had placed a white 'unserviceable' cross adjacent to the windsock. The pilot reported that he did not see that marker.

This accident was not the subject of an on-site investigation.

28 Dec 86, PIPER 32 R300, VH-BRG, Commercial, COOBER PEDY SA, 2026 hrs
Shortly after takeoff, the pilot discovered that the aircraft had suffered an electrical failure and he elected to return and land. On selecting the landing gear down, he advised that he felt the aircraft slow down and thought that the gear was extended. No gear position lights were available because of the electrical malfunction. During the landing flare the pilot realised that the aircraft was lower than normal, and applied full power in an attempt to go around. The aircraft settled onto the runway with the gear retracted before the power application was able to take effect.

The reason for the electrical failure could not be determined. The pilot was unaware that, although the gear extension system is hydraulically actuated, the hydraulic pump is electrically operated and thus did not function following the electrical failure.

This accident was not the subject of an on-site investigation.

09 Jul 86, BEECH A23 24, VH-TYY, Private restricted, CUNDERDIN WA, 137 hrs
The pilot was conducting the second leg of his first solo cross-country exercise. He subsequently reported that during the takeoff the aircraft failed to become airborne when expected. Power was reduced in order to abandon the attempt, but the aircraft then momentarily became airborne. The pilot applied forward pressure to the control column to place the aircraft back onto the ground, but a heavy touchdown occurred. The nosegear collapsed and the aircraft slid for 183 metres before coming to a stop. After vacating the aircraft, the pilot realised that he had attempted to takeoff with a downwind component of about 10 to 15 knots.

The pilot stated that he had not considered the wind direction prior to the take off attempt due to his feeling of elation after successfully completing the first leg of his first solo navex. The runway assumes a down slope past the intersection and the pilot misidentified the gable markers near the runway intersection as delineating the end of the strip. From the position at which the aircraft came to rest there were 917 metres remaining of the 1900 metre strip.

17 Jul 86, CESSNA A188B A1, VH-SUA, Commercial, ROCKY GULLY 15E, 948 hrs
During the course of the day's activities, the pilot had landed at the strip on 24 occasions. The surface was wet and landings had been made with a quartering tailwind. On each occasion the pilot had stopped the aircraft about 100 metres short of a cattle yard at the end of the strip. The pilot was making his first approach after changing operations to another paddock. The aircraft touched down about 100 metres beyond the previous touchdown area. However, the pilot continued with the landing and despite heavy braking he was unable to prevent the aircraft colliding with the fence of the cattle yard.

It was reported that while the aircraft was on approach the wind strength increased to about 15 knots.

31 Jul 86, CESSNA A188 A2, VH-DOD, Commercial, ESPERANCE WA 120W, 500 hrs
The pilot was engaged in the spreading of urea. During the operation he had observed that the aircraft was not performing as well as normal. He carried out a trouble check and after the completion of some rectifications and an engine run, believed he had rectified the problem. Six more sorties were completed without problem. However, shortly after takeoff on the next sortie the engine again partially lost power. The pilot decided to return and land, but not dump the load. During the turn toward the airstrip the aircraft stalled and impacted the ground with the left wingtip.

The investigation determined that the loss of engine power was caused by a faulty magneto and contributed to by the generally poor condition of the engine. The engine had not been operating normally for some time, and attempts to rectify the problems, by unlicensed maintenance personnel, had not been successful.

04 Oct 86, MOONEY M20J, VH-SXT, Commercial, PERTH WA, 3900 hrs
The pilot in command estimated that there were approximately 26 gallons of fuel in the tanks before the flight commenced. They intended to conduct exercises in the training area for about 20 minutes, followed by a series of circuits and landings. Shortly after takeoff for the fifth circuit, the engine failed. The pilot in command took control, selected the landing gear down, and attempted to hold the aircraft off the ground until the gear had extended. However, touchdown occurred with the gear only partially extended and the aircraft slid to a halt on the runway.

The aircraft had not been refuelled following a flight of 4.8 hours duration. The estimate of the fuel remaining onboard the aircraft was based on the reading from a fuel metre that subsequently proved to be unserviceable. When the engine failed, due to fuel exhaustion, the aircraft had been airborne for 1.1 hours and the exhaustion of the fuel supply was consistent with the flight time since the last refuel.

11 Oct 86, CESSNA A188 A2, VH-KVA, Private, KALANNIE WA 30N, 562 hrs
Before commencing spraying operations, the pilot discovered that the left maingear tyre was deflated. The tube was patched, however about half way through the spraying task the pilot noticed that the tyre was partially deflated. Air was added to the tyre, and the operation was continued. On the last landing for the day the left gear commenced to vibrate and the aircraft veered to the left. The pilot was unable to maintain adequate directional control, and the aircraft entered the crop at the side of the strip before ground looping to a halt. The left main tyre was found to be flat.

15 Oct 86, CESSNA 150 M, VH-WNT, Private, GASCOYNE JTN 70NE, 400 hrs
On the day preceding the accident the station manager was informed that the pilot hired to carry out the muster would be late in arriving. He asked Mr Mainwaring, who was employed as a stockman, if he would carry out spotting duties until the other pilot arrived.

About 20 minutes after the operation had commenced, the ground party heard the sounds of an aircraft impact. The pilot stated that he had been flying at between 400 and 500 feet above the ground when he lost control of the aircraft in a turn. The aircraft was discovered to have struck the ground while in a nose-low, stalled condition. The engine was not developing power at the time of impact, however no defect was subsequently found with the engine or systems of the aircraft. The pilot did not hold a mustering endorsement and had apparently not received formal training in low level operations.

22 Dec 86, BEECH C23, VH-SHP, Private, BIG BELL WA 1SW, 4419 hrs
The pilot was carrying out a check of the station windmills prior to commencing mustering operations. About 15 minutes after departure he reported that an acrid smelling gas entered the cabin. He turned off the radios, the master switch and closed the cabin air vent and diverted to the nearest suitable strip. En route the acrid smell intensified and as the pilot was having trouble breathing he decided to land the aircraft in a nearby clearing. The throttle was closed in an endeavour to reduce the fumes but reapplied when this was not successful. However, the engine did not respond and the aircraft was landed short of the cleared area. During the landing roll the aircraft collided with trees.

Following the last engine start the starter relay contacts remained closed due to internal corrosion, this resulted in the motor continuing to operate. The continuous operation of the starter produced enough heat to melt the non-standard engine earth strap at the attachment point to the firewall. Earth was then made through the tachometer cable and magneto switch leads, which overheated and burnt causing the magnetos to earth and the engine to subsequently fail.

21 Feb 87, CESSNA A188B-A1, VH-HOP, Commercial, THANGOOL QLD 44NW, 1064 hrs
The pilot was engaged in the spraying of a crop of beans and had successfully completed several spray runs. At the commencement of the next spray run the aircraft flew into power lines which struck the main landing gear. The aircraft subsequently struck the ground in a steep nose-down attitude, then nosed over and came to rest inverted some 73 metres beyond the point of collision with the wires.

The pilot's memory was affected by trauma suffered in the accident and he could not remember details of the wire strike. Consequently, a reason for the wire strike was not established. However, it was noted that the power lines were oxidised and that the span between the poles was quite long. Both of these factors could have adversely affected the pilot's ability to see the wires against the natural background.

17 May 87, PIPER 32 300, VH-TPJ, Private, SWEERS ISLAND QLD, 1038 hrs
The pilot reported that just after touchdown he felt a bump. As the aircraft slowed the nose of the aircraft sank slightly, allowing the propeller to strike the strip surface several times. An inspection of the aircraft revealed that a wallaby had struck and bent the nosegear strut.

This accident was not the subject of an on-site investigation.

15 Apr 87, BEECH 200, VH-MSZ, Commercial, TIBOOBURRA NSW, 4575 hrs
The pilot was making a night landing approach. Late in the flare a thump was heard, and shortly after touchdown the nosegear collapsed. The aircraft came to rest on the strip 390 metres further on. It was discovered that a large kangaroo had struck the nosegear, and that a number of other kangaroos were in the immediate vicinity.

This accident was not subject to an on scene investigation.

04 Jan 87, CESSNA U206 A, VH-RPZ, Commercial, PAKENHAM VIC 1S, 1100 hrs
The two parachutists were preparing for a jump in which one pulled the other from the aircraft. During the final stages of the preparation, the reserve parachute of the front jumper prematurely deployed. Both persons were ejected from the aircraft, and the leading jumper struck the tailplane. A portion of the horizontal stabiliser was torn off and the aircraft pitched down beyond the vertical. The pilot was unable to regain any control, and, with some difficulty, abandoned the aircraft. He deployed his parachute at about 500 feet above the ground, and landed safely. The parachutist who had struck the tailplane was initially rendered unconscious, and had suffered a broken right arm. She recovered sufficiently to deploy her main parachute and control her descent when close to the ground. The aircraft was destroyed when it impacted the ground in a steep nose-down attitude at high speed.

The inadvertent deployment of the reserve parachute was probably caused by the body movements of the parachutist as she moved to her jump position outside the aircraft. The most likely explanation for the inadvertent deployment was that either the securing pins were not engaged correctly or that the rip chord was too short. The rip chord was not recovered.

26 Apr 87, PIPER 28 180, VH-DMB, Commercial, MATARANKA HS 1SW, 1470 hrs
Just after the aircraft reached the top of climb, at 1000 feet above the ground, the engine failed. The pilot was unable to rectify the problem and decided to land the aircraft on a road. During the landing roll the left wing struck a road sign and the aircraft ran off the road, then travelled a further 100 metres before colliding with a tree.

Engineering investigation revealed that the stepped dowel used to align the crankshaft timing gear had failed. This resulted in the crankshaft and camshaft timing being 30 degrees out of alignment, hence the inability of the engine to deliver any power. The stepped dowel failed due to the crankshaft timing gear retaining bolt being incorrectly torqued which allowed the gear to move on the crankshaft and eventually shear the dowel. The engine had been overhauled prior to the occurrence and it is likely that the bolt

was incorrectly torqued due to oil or dirt being located between the gear and the crankshaft during engine reassembly.

Rotary Wing

16 Jul 86, ROBINSON R22-ALPHA, VH-UXV, Commercial — helicopter, CAMDEN NSW, 2200 hrs

An exercise in emergency procedures was being carried out in the circuit area. A number of landings were completed, with the instructor simulating a jammed tail rotor pedal. On the last landing, a jammed right pedal was being simulated. After a standard approach for the circumstances, the student flared at about 45 centimetres above the ground and at a speed of about 15 knots. As he then began to reduce power, the engine apparently suffered a substantial loss of power and the aircraft landed heavily. The left landing skid dug in, and the helicopter somersaulted before coming to rest on its right side.

No fault or defect was subsequently found with the engine or its systems which might have explained the reported power loss. Atmospheric conditions at the time of the accident were conducive to the formation of carburettor icing, particularly during descents with reduced power. The pilots had not used carburettor heat during the approach, possibly because the carburettor air temperature gauge was indicating a temperature just above the caution range. This instrument was later found to be reading in error by 9 degrees. The pilots had not checked the reading of the gauge against the ambient temperature prior to engine start, and were therefore unaware of the malfunction.

When the power loss occurred, the helicopter was in such a position that it had contacted the ground before the instructor could initiate any corrective action.

11 Jul 86, BELL 47-G5A, VH-LEF, Commercial — helicopter, OLD DELAMERE 20SE, 4015 hrs

During mustering activities the aircraft was operating between 50 and 80 feet above the ground, when the engine suddenly stopped. The wind at the time was a quartering tailwind, and during the attempted autorotation the aircraft struck the ground in a tail-low attitude. The tail boom was severed, the aircraft bounced, spun to the right and came to rest with the landing skids collapsed.

An inspection of the engine revealed that the magneto idler shaft had sheared due to overload caused by foreign objects fouling the magneto drives. The foreign objects were identified as crankshaft flange bolts which had been incorrectly torqued at overhaul.

25 Mar 87, HUGHES 269 C, VH-PHK, Commercial — helicopter, MAREEBA QLD 31S, 135 hrs

On the previous day the pilot had ferried the aircraft to a maintenance organisation for a scheduled servicing. No abnormalities were discovered and a satisfactory engine run was carried out by the pilot prior to departure for the return flight. A search was commenced when the helicopter did not arrive at the destination, and the wreckage of the aircraft was located after a VSB signal was heard. The aircraft was lodged in the branches of a tree some 18 metres above ground level. The tail boom was lying near the base of the tree and most components had received substantial impact damage.

Examination of the wreckage revealed that the engine had failed during flight. This was caused by a fatigue failure in the number 2 cylinder connecting rod big end cap. The damaged end of the connecting rod broke away a large piece of the crankcase housing the lubricating oil gallery. This led to overheating of bearings through a lack of essential lubrication. The fatigue failure of the connecting rod end cap was consistent with failure caused by the connecting rod bolts being insufficiently torqued. The terrain over which the aircraft was flying was unsuitable for a forced landing.

Gliders

25 Oct 86, SCHEMP NIMBUS 2, VH-GEL, Glider, LAKE KEEPIT NSW, 500 hrs

The pilot was approaching to land in strong crosswind conditions. The area near the threshold of the strip was obstructed by machinery and another glider, and the usable strip width was reduced because of long grass. Although there was adequate strip length, the pilot elected to land close to the other glider. During the landing flare the aircraft drifted towards the obstructions, and the pilot raised one wing in an effort to avoid them. The other wing entered the long grass and the aircraft slewed sharply before falling to the ground.

This accident was not subject to an on scene investigation.

22 Nov 86, GLASER-DIRK DG 400, VH-HDE, Glider, GAWLER SA, 3000 hrs

Before lining up for takeoff, the motor glider pilot estimated that there would be sufficient time for his takeoff to be completed between a landing glider, and the tug aircraft that had just joined the circuit. The takeoff was delayed by the time taken to clear the landing glider from the strip. The tug aircraft, just prior to turning final, was observed to increase power and head towards the departing motor glider which had just commenced its takeoff run. It passed low over the motor glider and the tow rope struck the right aileron of that aircraft.

The glider pilot had lined his aircraft up for takeoff on the strip the tug pilot intended to use for landing. The tug pilot stated that his intention was to teach the glider pilot a lesson not to attempt to takeoff in front of him again. In taking this action the tug pilot forgot that the tow rope was still attached and trailing his aircraft.

22 Nov 86, GLASFLUGEL LIBELLE, VH-GYN, Glider, BORDERTOWN SA 5N, 258 hrs

The pilot was competing in a cross country gliding competition when it became apparent to him that an outlanding would be necessary. He then positioned the glider to carry out a circuit for a landing in a paddock. After turning the aircraft onto final approach and deploying full airbrake, the pilot noticed that the indicated airspeed had greatly reduced. He then attempted to close the airbrake but the nose of the aircraft dropped and struck the ground. The aircraft bounced on impact and came to rest 17 metres beyond the initial point of impact.

14 Jan 87, ENTWICKLUNG PHOEBUS, VH-GYC, Glider, MARYBOROUGH 13SSW, 3000 hrs

The pilot was returning to land after a period of thermalling flight, when severe turbulence was encountered. The pilot's head hit and broke the canopy, and he then had problems with his vision. Heavy sink was also experienced, and an outlanding was attempted in a cane field. The area selected was a 5 metre wide strip between areas of cane growing to about 1.7 metres in height. The left wing caught in the cane and the aircraft slewed violently before coming to rest with the wing completely torn out of the fuselage.

Ultralights

05 Jun 87, HANG GLIDER ULTRATRIKE, NOT REG, Hang glider, HOLBROOK NSW 4N, 300 hrs

Although the pilot was experienced in operating unpowered hang gliders, he had only limited exposure to powered versions. He had been conducting a short local flight, and subsequently advised that he had probably misjudged the landing flare. The aircraft struck the ground in a relatively steep nose-down attitude. The landing gear collapsed and the aircraft overturned before coming to rest on the flight strip.

This accident was not subject to an on scene investigation. —

One of the major roles of the Bureau of Air Safety Investigation is to interpret the accident and incident statistics and to recommend ways to prevent or at least reduce, recurrences. BASI has just completed its latest study — into accidents and incidents which involved fuel starvation and fuel exhaustion. It came about because approximately one third of all engine-failure accidents since 1969, were fuel related.

The results are published in a report which is being distributed free-of-charge to all registered training organisations in Australia. It is titled:

AUSTRALIAN AVIATION OCCURRENCES
INVOLVING FUEL STARVATION AND
EXHAUSTION, 1969 — 1986
BASI Report Number 87 — 116
ISBN 0 644 06463 3

The report is also on sale at Australian Goverment Bookshops for $3.95.

The study found that the 'human factor' was again the culprit in most cases. Fuel starvation frequently arose from mismanagement of the fuel system while fuel exhaustion was more commonly the result of inadequate pre-flight preparation.

The report makes recommendations for both the industry and the Department to reduce the incidence of similar occurrences in future. The major recommendation to industry is for consideration of fleet standardisation with regard to fuel selection and management systems — and to the Department, for a pilot education program on fuel-management related topics.

BASI is currently undertaking other studies — into landing accidents and the relationship between pilot experience and accidents or incidents. These reports should be released shortly.

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AERONAUTICAL INFORMATION SERVICE AUSTRALIA

NOTICE

CURRENT DOCUMENTATION & PLANNED NEXT ISSUE

Document	Current Issue #	Planned Next Issue #
DAP(E)	22.10.87	19.11.87
DAP(W)	22.10.87	17.12.87
AGA 3	22.10.87	05.05.88
AGA 0-1-2	02.07.87	05.05.88
Aerodrome Diagrams	22.10.87	17.12.87
ERS	30.07.87	19.11.87
AIP (book)	30.07.87	17.12.87
VFG (book)	30.07.87	17.12.87
AIP/MAP	20.11.86 ‡	TBA *
VFG/MAP	20.11.86 ‡	TBA *
DAH	20.11.86	TBA *

dates quoted are effective dates

* depends upon opening of new Brisbane airport

‡ ERC 9/10 - 22.10.87.

NOTE: CLASS 1 & CLASS 11 NOTAM ARE TO BE CONSULTED WHEN USING ANY OF THE ABOVE DOCUMENTS.

ISSUE: 1
DATE: 3 NOV 87.

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AIRFLOW

Dear Sir,

The point I wanted to raise is the *non*-issuing of your *Digest* to student pilots. I understand from learned pilot friends that the attrition rate is high and that instructors (one I know) constantly drum safety into students. Reading your articles, though, reminded me of many years of potentially lethal 'hit and miss' trials of keeping my car on the road and managing my washing machine.

One surely cannot assume that *most* instructors will relay *most* of these *extra* safety tips e.g. cleaning the oil slick from the appropriate places to avoid loss of windscreen vision (Autumn 1987 *Digest*).

The best learning, unfortunately, seems to take place on the 'rocky roads'. Would it not help to present these to students prior to setting off?

Margaret Safron

I think you have a very valid point, Margaret. I would like to see the Digest *reach every student during the early stages of his or her training. Unfortunately, the turnover in students who begin training and for various reasons discontinue, means it is almost impossible to keep track of all active students without the enormous cost of sending copies to everyone who only does a TIF.*

The solution is to send a batch of ten or so copies to every ground and flying training organisation and to ask the Chief Instructors to encourage their students to read and discuss the issues. This method relies of course on the motivation and dedication of the instructors but ultimately I believe that is the case anyway. In any event we'll give it a try for a while and see what response it receives.

Dear Sir,

I was surprised to see my private letter (Bush techniques — Survival) published in the last *Digest*. As it could not be made clear that this guide was written to a 350 hour pilot (with a brand new instrument rating) proceeding to the Solomon Islands several years ago, some readers could possibly assume all recommended procedures were applicable to Australia. Most, but not all.

I do not wish to be held accountable for the consequences of Australian pilots attempting Papua New Guinea and Solomon Island bush flying procedures here. Therefore, I'd like to clarify certain aspects of the guide. *Gap flying, low flying and pressing on visually in poor weather have no place in Australian flying operations* (with the exception of low flying in ag work). The main reason PNG style flying can easily be fatal here is the profusion of *wires* strung over the countryside. Importantly, with reference to VFR — my original letter stated 'In the tropics, Australian VFR rules don't apply, etc' (I meant PNG and the Solomons). The stress of weather up there, especially during 'the wet', necessitated different techniques to cope — and nav-aids were rare. Waiting for VMC would mean being permanently grounded. Certain 'contentious' aspects should be viewed in the light of logical priorities and advice given to one so inexperienced venturing into equatorial, mountain and island flying for the first time.

- Practising instrument flying with maps on the windscreen was recommended *only* for the Solomons where there's little traffic and full radio reporting. Above LSALT, for short periods and without passengers was about the only way (albeit illegally) to retain currency/IFR skills. Around Camden such a practice would be fatal.
- 'Harmless lightning' — was mental conditioning (like ignoring flak) to avoid panic and ensure the priority of controlling the aircraft in severe turbulence.
- 'Fuel overload' — the lesser of two evils — and Solomons only, (long overwater flights are normally to/from longer airstrips) considering type performance. I am dead against blatant overloading but know of several cases of fuel exhaustion (some fatal) and was concerned (given his low experience) that 'Dan' may get caught-out flying in 'the wet' on island ops. If he made a mistake — my preference was — 'a little too much fuel'.

While it was true that certain procedures recommended were slightly less than legal (even up there) the aim of the exercise was *survival*. Such techniques have been used in PNG for many years where common-sense is a prerequisite for survival. My intention was to pass on some hard-won experience to an above average, but inexperienced pilot. 'Dan' came through, I hope I helped a little.

signed

ex-PNG bush pilot

Dear 'Bush Pilot',

I am indebted to you for both your letters. In the transcription of your original letter there was an error — what should have read, 'In the bush, (meaning PNG and the Solomons), Australian VFR rules don't apply,' was incorrectly written as, 'In the Australian *bush, VFR rules don't apply.' I share your concern regarding possible mis-interpretation by inexperienced pilots and indeed this was one aspect that caused me to consider not publishing the letter. Now that your intent is clear, I value more than ever the 'wisdom' of your original advice.*

Thank you.

AIRFLOW

Dear Sir,

During my training I had an incident which has made me extremely cautious as far as checking all systems very thoroughly before I attempt to take off. The incident is as follows:

I had reached the stage of going solo but only to do a few circuits. My very thorough and competent instructor told me to do four circuits and I was instructed to come to a full stop and return to the threshold before each takeoff. I had completed three circuits and landings quite successfully.

I was just airborne after the fourth takeoff when I discovered I could not gain altitude. I noted each time I pulled back on the yoke my flying speed fell alarmingly. After two more attempts to establish my climb attitude, I flew down the strip, 'porpoising' and just managed to clear the aerodrome fence. I became quite alarmed at the situation — being a student of only a few hours experience — and also realising I had to clear a hill about a mile away from the aerodrome.

A quick glance out of the cockpit showed that I was crawling through the air so I had a careful listen to the engine. It was performing quite normally. At this point I decided to take a grip on myself and falling back on my thorough training, I went through a systematic cockpit check and discovered I was trying to take off with 30 degrees of flap!

At the time I was flying a Cessna 150 Aerobat which was noted for its poor performance even when things were normal. As soon as I retracted the flaps I climbed away quite normally and completed my circuit and landing — much to my relief.

I hope that you consider this article worthy of publication because I feel it is an excellent example of how disaster can be the result of one simple moment of carelessness.

Yours faithfully,

W.J. McKillop

During circuit training there is a very real danger of missing the pretakeoff vital actions in a stop-and-go or where the aircraft is taxied back for a further circuit. The only protection of course is to complete the checks as if every takeoff is the first.

In your case, the flap setting represented a serious hazard. In another aircraft an incorrect trim position can be sufficient to cause loss of control.

We are all vulnerable to this insidious trap — irrespective of our experience. As I said, the only protection is to run through the pretakeoff vital actions from beginning to end before every takeoff.

Dear Sir,

My eyes are dim, but I CAN see, thanks to trifocals. I hasten to write in their defence after the somewhat less than enthusiastic comments in the article on pages 22 and 23 of *Aviation Safety Digest* No. 133.

My sight followed the basic pattern — perfect till my late forties when the arms became too short. In keeping with aviation requirements I went to bi-focals (even though there was no correction in the top half). They nearly drove me mad. As the years passed, I had two changes in the reading prescription and was irritated every time I had to tilt my head back to read clearly the instrument panel of the plane or car. I then tried the graduated lenses but they and I were not compatible so I went to tri-focals. They are the best thing since Bleriot crossed the channel.

With scarcely any head movement, I can clearly read ALL the instruments and by looking down through the reading section, can equally clearly read maps, flight plan etc. And far vision is just as easy. I would certainly have to agree that for normal and less interesting occupations such as bench work or (worse) house-work, the middle segment IS too small, but for flying (or driving) I have never had a single moment when I have found the middle segment less than optimum. On my glasses this seems to be about 7-8 mm in depth, but I can't see too well without my glasses! So, if your eyes ARE dim, then I strongly recommend you to 'tri-focals'.

Since I'm writing, I might as well add my comments on statements in conclusions 3, 6, 7, 8 and 9. Conclusion 3 states '... there is evidence that [difficulty in seeing charts and manuals] arises in part through the prescription of glasses to ensure clear vision for instruments at the cost of the ability to see charts and manuals.' It has been my opthalmological experience that the patient had a large say in what (s)he needs and wants, especially where the basic problem is only ageing.

Conclusion 6 concerns sunglasses. I, along with the rest of the two-thirds of pilots, like to wear sunglasses when flying, to combat the glare. Probably illegally, my second compulsory set of prescription glasses are therefore (tri-focal) sunglasses.

Conclusion 7 — charts. The Department is to be reproached for its economy in reducing the size of the aerodrome diagrams. And whilst nobody really wants to carry any MORE paper in the cockpit, YOU try reading the NDB for Cobar on a VEC chart, or worse, in the ERS, whilst trying to fly a light aircraft without auto-aids in summer turbulence.

AIRFLOW

Conclusions 8 and 9. Fortunately I don't fly aircraft with overhead panels or oxygen masks and I know I couldn't read the first or wear the second with ANY glasses. This problem is not specific to TRI-FOCALS. Anyone confronted with these problems has my sympathy.

Be seeing you.

Be seeing you.

Be seeing you.

Beverley F. Young.

PPL

As you have found from personal experience, Beverley, tri-focals do work in some — perhaps many, cases. The general caution about tri-focals was based on some problems discovered in American use. Their suitability for you in your aircraft can only be determined by trial and very much depends on the care with which the pilot's requirements are explained to the opthalmologist.

There has been tremendous interest in this topic and so I will be publishing a major article in the next issue which will include advice as to how to define the power and size of the segments to suit each individual requirement.

Your point about the paperwork is noted and I would appreciate suggestions as to how aeronautical information can best be presented to GA pilots.

Dear Sir,

I read with interest, in the *Aviation Safety Digest* on 'The Human Factor', your article on Ratbaggery and enclose a photo, I consider, of a ratbag in action.

In 1981 my wife and I, with friends, were on a flying trip in a Cessna 172 and landed for fuel at Maroochy Airport. As we were taxiing to the fuel pump my wife noticed a helicopter following behind, spraying vapour, and managed to take the accompanying photo through the rear window.

When we stopped, the helicopter hovered above us and dropped a *very* unpleasant smelling oily substance, completely enveloping our aircraft. Of course, we quickly closed the windows in an endeavour to prevent the vapour entering.

We concluded from his action that the helicopter pilot had expected us to allow him to receive fuel first. Apparently this was the penalty. In my opinion, this pilot was a ratbag.

Name and Address supplied.

It's difficult to understand the attitude of someone who would do a thing like this. Fortunately, such an attitude is rare in aviation circles. Let's hope it stays that way.

What goes up may have trouble getting down

The following account of a glider pilot's encounter with an intense frontal passage has a message for all of us

I WAS LAUNCHED in my ES60 Boomerang from Bridgewater just after four o'clock in the afternoon. The wind was varying a bit but was generally from the north. A very high cloud base was reported and some of the club pilots were going to attempt a 'Gold C' height gain.

The tow was quite satisfactory — a bit turbulent but it was not difficult to maintain station behind the Auster. I eventually released in moderate turbulence while we were orbiting a large thermal at 1700 ft agl. This took me up to 7000 ft. The thermal varied considerably in its strength and width, so that sometimes I had to turn very steeply and at other times a wide, leisurely circle kept me in the lift. I had to work at it though and I felt that, while my centring ability could be improved, that wasn't the whole trouble.

At 7000 ft the lift was still there and I was still several thousand feet below the main cloud-base. I thought I'd fly around for a while, so I flew over to the Bridgewater township, about four miles NW of the airfield.

The breeze was quite stiff and I didn't encounter any more lift. By now I was down to 3000 ft and so I headed for home. About halfway back, still at 3000 ft, I found another good thermal (or the original one) which I worked to 5000 ft. During this time I saw several other gliders, all below me, including a Ka6 and a Libelle, then subsequently the Golden Eagle, a beautiful antique glider which I watched admiringly for quite a while.

I noticed that operations were continuing on the field and that aircraft were still taking-off into the north.

At 5000 ft, I was a little disturbed to find the air rather hazy, even though the base of my own cloud looked to be thousands of feet above me. Other cloud bases I could see were all at comparable height.

I could now see heavy cloud formations about twenty miles to the south-west extended right down to ground level, and I thought it looked like an intense cold front.

I was painfully aware that I knew very little about fronts, other than that they sometimes arrived very suddenly with a marked change in wind direction and with some violence — winds which had been known to tear well tied-down gliders from their anchorages and cause severe damage. Behind the front there could well be continued high winds for a period, and sometimes heavy rain and thunderstorms.

Of their effects at altitude, I was uncertain although I knew there could be severe sink just behind them.

I considered these factors and decided to commence a descent. I had been flying for about an hour and a half and although I didn't like leaving good lift, nor did I relish the thought of getting caught in a front.

While the alarm bells had commenced ringing in my mind they were not very loud and the presence of the Golden Eagle, still about fifteen hundred feet below me, was very reassuring. Its crew were very experienced, and they wouldn't risk damage to their beloved old glider.

I flew upwind (to the north) for about two miles at 60 knots and I then turned back towards the airfield. I could see the tug doing a very long final approach, about a mile it seemed, from the south.

I always trim to speed. I trimmed nose down for this speed and there the trim stayed for the rest of this flight.

When I arrived back at my starting point, I was still at 5000 ft. I opened the air-brakes and completed another two mile run to the north — this time deviating to the right and left considerably — actively searching for sink, and ready to circle in it when I found it. The air was turbulent but not alarmingly so, and everywhere I went I found either broken lift, or at best, no sink. I was now cruising at 65-70 knots, trim forward, brakes open.

Five minutes later, I was at 5500 ft, and the air had a peculiar dark colour, with patches of haze sweeping past. The cloud-base was still several thousand feet above me, extending about twenty miles to the south-west, where the full, but multi-coloured cloud-bank extended all the way down to the ground. By multi-coloured, I mean that some were typically blue-black and some grey, with sharp definitions between the banks. It was like looking horizontally at a vertical stormy sky, instead of looking up at a horizontal sky.

To the east I could see Bendigo, apparently underneath the same huge cloud.

In the distance, further south I could see the bases of several other large clouds, also much higher than me.

I then carefully reviewed my situation and the options that were open to me.

I didn't want to get caught in the intense front, which was what I certainly faced — I could now see huge dust-clouds rolling along the ground ahead of the front.

I'd heard of glider pilots flying ahead of a front and eventually landing successfully. Indeed I had retrieved a pilot who had successfully done this. But on that day, our Club CFI had been most critical of the exercise, pointing-out that a landing in high winds was still inevitable, with possible risk of injury and damage or loss of the glider.

I then considered staying airborne until it passed, but I was deterred by the possibilities of poor visibility in heavy cloud behind the front, with accompanying rain and by now I appeared to be well in the grip of a powerful cu-nim and the thought of my glider breaking-up and my being swept up and flung down several thousand feet on the end of my parachute didn't appeal to me one little bit.

The front still looked to be twenty miles away, so I decided to use all the height-loss techniques available to me and to land back at the airfield. At least there I could expect help in handling the glider on the ground when the inevitable high winds came through, help which I felt I was sure to need and which would not be available if I outlanded.

The brakes were still open and I was circling fairly tightly, carefully considerinng that my old wooden glider has a rough-air limiting airspeed of 80 knots. The turbulence was still not too bad, despite the almost continual lift and I kept the airspeed fairly stable at about 65 knots, although the ASI was fluctuating a bit.

I still didn't lose much height and occasional bursts of lift would negate much of my height loss, so I decided to try a prolonged side-slip.

I straightened and stabilized at 60 knots, then put on a fairly steep left bank and a lot of right rudder. The glider slipped alright, but I had trouble controlling the airspeed.

I hadn't carried out a sustained side-slip previously in the Boomerang (what glider pilot wants to lose height at thousands of feet per minute?) — so I was monitoring the speed and altitude very carefully.

At 70 knots, which it reached very quickly, a pronounced buffeting started, which I could damp-out by reducing the airspeed but at anything below 60 knots, my sink-rate wasn't very high. Furthermore, at much below 60 knots, it was very easy to suddenly lose all feel of the glider as if it was fully stalled. Centring the controls and levelling the wings quickly cured that and I set-up the slip again. This happened a couple of times.

I flew in long upwind and downwind beats of about a mile.

(Years ago, I had Ingo Renner give me a specific lesson in side-slipping, in a Bocian, in case I ever needed the technique — and I'm very glad that I did.)

In this way, I gradually lost height to 3000 ft, all in the vicinity of the airfield. I still had time to keep an eye on the front, and I estimated it had moved about ten miles in about twenty minutes. I had also noticed the Auster take off without a tow, do a big circuit and another of its very long approaches, landing still into the north. 'Ah', I thought, 'they have spotted the front but the wind hasn't changed yet.'

I could see no other gliders in the air, but several on the ground.

At 3000 ft, from a point a little to the north-west of the northern end of the strip, I levelled out and completed one more fairly steep, slipping turn under full brakes and then decided to set up a normal left-hand circuit for the northerly runway and see how the conditions were. I was still experiencing a lot of minor lift and not much sink.

I flew on a very long downwind leg to a point about 400 ft past the threshold, turned crosswind and onto final, at about 1000 ft. From here, with my full brake technique, I knew I could get in safely with a fast, steep approach, which would be well suited to the high wind conditions.

During the downwind leg, I had been trying to find the windsock and couldn't. I had stopped monitoring the approach of the front, which I thought was still miles away.

As I turned on to final, I suddenly saw it — or the great dust cloud heralding its arrival — coming from the south-west, with me heading north! In other words, I had a forty-five degree tail-wind component.

The strip runs along the western boundary of a large paddock. Just outside this boundary, to my left, was the home paddock with the homestead, a very large dam, and three or four farm buildings — as well as an assortment of disused farm machinery, the clubhouse, and three hangers.

I couldn't land there, so I abandoned that circuit and immediately turned on to a new downwind leg to enable me to land into wind.

This took me diagonally across the paddocks, in a north-easterly direction ahead of or with, the front. Only for a very brief period though, because I was now in the thick of the high-speed air mass.

My airspeed was still 60 knots, and my speed over the ground was enormous — my spell-bound wife, Margaret, said I went by like a whiplash. I could see the northern boundary fence but only with difficulty, because of the dust. I turned into wind, monitoring my airspeed carefully because I am inclined to pick up speed in final turns. When I straightened up, by then only about 150 ft high, I was diagonally over the fence, although I couldn't see it directly below. My airspeed was 65 knots.

Then a second or two later, to my great concern, the fence appeared below and to my right, slowly creeping ahead of me as I was now flying backwards and descending onto the fence. The wind must have been over 80 knots and my height was then well under 100 ft, perhaps only 50 ft.

As I was still flying with full brakes, I closed them and lowered the nose. To my relief, the glider picked-up speed and the fence slid convincingly behind me.

Instinct then took over, as reason had deserted me, and I opened the brakes again. I had been flying fast, under nose-down trim, but when I immediately tried to raise the nose, there was no response. The glider struck the ground in a fifteen-degree nose-down attitude — with an enormous bang.

I was badly winded by the harness, and my head struck the canopy relatively lightly. This combined with the canopy springing forward on impact, caused it to be knocked-off its hinges, fortunately without damage. My hat and spectacles flew off.

I was fully conscious and retained full control. The ground run was very short and the wings remained level but at quite a low speed, the glider gave a great swing to the left, as if to ground-loop. I immediately applied full right rudder and the glider swung back on course before stopping. I somehow don't feel that my control input helped much, and I decided that I had run through patches of turbulence in the air mass. My son, who was running to help and was then only a few feet away, formed identical impressions.

I was so badly winded and bruised I could only breathe with difficulty, and had to be lifted from the glider.

My first reaction was how light the wind was, but the people on the ground didn't think so.

I was surprised at the extent of the soreness and bruising around my entire rib cage, front and rear. My harness is a good one with a broad abdominal band, and the main webbing was replaced at the last C of A inspection, only a few months ago.

The damage to the glider was relatively light and was confined mainly to the fibreglass fairing from about two feet behind the nose, back to the wheel, and there was some damage to the wheel mounting brackets and axle.

I concluded that I hadn't pulled the lap-strap down tightly enough before tightening the shoulder straps, as I have previously observed that it is difficult to position the lap-strap properly over my comfortable middle-aged belly.

It is difficult to reach conclusions as to what else I could have done having once decided on my course of action. Certainly I was badly at fault in not recognizing the front earlier and getting straight down.

Altogether, I treated the early part of the situation too casually, and having decided to lose height and land, I hadn't allowed for the time it took to escape from the cu-nim, altogether about twenty minutes. Even without this delay, my time allowance was too marginal.

I don't regret not staying up — to me the unknown possibilities already mentioned were too numerous and the potential risk too high.

While I was sore and bruised and my glider damaged, I did manage to land it right into the face of a very strong front, and the important decision was to land into wind. The opening of the brakes at the last moment was wrong. If they were closed, there was still the posibility of control difficulty in the flare, but the probability of a better landing was high.

In retrospect I think I may have been closer to the cloud-base — or at least to its area of influence — than appeared at the time.

While I could see upwind quite clearly for several miles and the downwind view was excellent, I think the cloud base was wedge-shaped, lowering as the front approached. The grip of the cu-nim perservered, however, for at least two thousand feet from the height at which I commenced my descent, and I didn't fly through any perceptible sink down to 1000 ft agl — from where I was too busy to continue monitoring my Variometer.

And to pilots generally, if you feel that you may indulge in such antics, I advise you not to have your wife watching! □

Any landing that you walk away from

forced landing that is . . .

THE PILOT OF the Cessna 150 was to fly from Cooroy in Queensland to Noosa to pick up a passenger and then on to Roma.

He dipped the tanks at Cooroy and again at Noosa where he obtained a reading of 10 gallons in the right tank and 11 gallons in the left. The pilot always dipped the tanks and flew on 'time'. He never trusted the fuel gauges.

He had a total of 650 hours of which 450 were on the C150. He had flown nearly 90 hours in the previous 90 days of which 50 were on type. He held constant-speed, retractable, formation and aerobatic endorsements.

He picked up the passenger at Noosa and they departed for Roma at about 0900 hours.

The aircraft was established in the cruise at 4000 feet and the mixture was leaned with reference to the EGT. The pilot planned on a fuel consumption of five gallons per hour — on the basis of previous experience where he usually obtained 4.7 gallons an hour at that altitude.

As the aircraft approached Roma the passenger noticed that the fuel gauges were getting close to empty. The pilot agreed but thought there must be something wrong with the gauges as he had dipped the tanks and should have had enough fuel for over four hours flying.

About five miles east of Roma the engine stopped completely and without warning. The pilot pushed the mixture to full rich and pumped the throttle. The engine spluttered but no more.

He continued towards the airfield as there was a chance he could make the cross runway but he also started looking for a paddock. He could see there was a fairly strong headwind and decided not to continue towards the airfield as there were houses in that direction.

He considered the highway but there was a lot of traffic. The football field looked wet and the goalposts looked too high to clear. There were several roads but too many power lines. He selected a paddock but on getting close, it looked very wet so he rejected it.

He then spotted another newly-constructed road in a sub-division and was by then committed to getting down pretty quickly. He noticed there was a truck at the approach end which left him little room. He also realised he was landing downwind but at this stage, had no choice.

On short final he selected flap and had to avoid the truck and land as close to it as he could. Indicated airspeed on landing was 50 knots but the groundspeed was obviously higher. He realised the road was newly-surfaced and he braked heavily.

About 145 metres from touchdown the road veered 65 degrees to the right. The pilot could see he was running out of room. There were poles ahead and the area to the right of the larger pole looked wet and had some stumps in it. He was worried about overturning. He applied left rudder and steered between two poles.

The passenger was looking at the pole coming towards him and observed, 'If you don't move over, I'm going to wear this power pole.'

The pilot replied, 'Look mate. I'm doing my best to move over!'

The pilot aimed between the large pole, a shorter pole and the staywires — with the intention of taking the impact on the wing roots. The aircraft was still travelling at about 50 knots.

Then it was bang! Stop! The aircraft stopped in a distance of about one metre.

The passenger was caught and could not release his seat belt. He appeared to be in pain. The pilot released his own and the passenger's belts and they exited the aircraft.

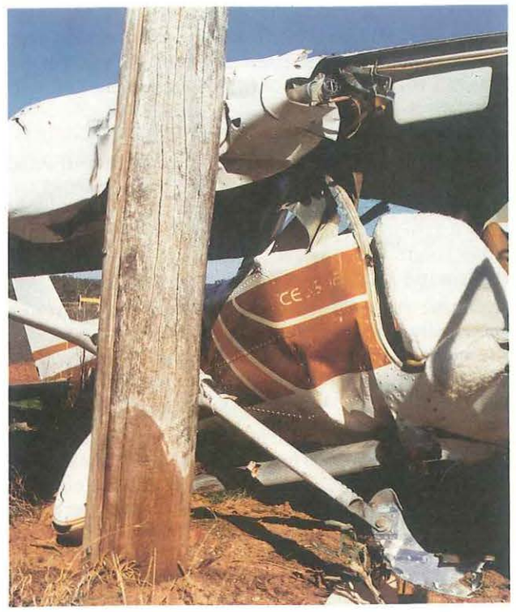
There was no fire and no serious injury.

There was no usable fuel remaining in the tanks.

The forecast wind at 4000 feet was south-westerly at 15-20 knots. The pilot had not checked the forecast and had planned for a TAS (and presumably a groundspeed) of 90 knots with a fuel comsumption of five gallons per hour. With this wind, the ground speed was 74 knots (a 16 knot headwind) and the total fuel required for the trip was 19 gallons — with no reserves. The aircraft had 21 gallons of which 2.5 were unusable.

NINETEEN REQUIRED AND EIGHTEEN POINT FIVE AVAILABLE — unfortunate arithmetic!

(Remember the WWII song, 'Coming in on a wing and a prayer'?)



There is much to be learnt from this accident and not just in regard to fuel planning. The pilot's handling of the forced landing, his decision to forget stretching the glide to Roma, his avoidance of the power lines and his cool manoeuvring between the poles, are all positive clues as to how, having been caught, the pilot can in most cases recover the situation to the extent of avoiding serious injury. I think he coped pretty well.

BUT HE SHOULDN'T HAVE BEEN IN THAT SITUATION IN THE FIRST PLACE. Where have I heard that before? □

The humble windsock —

Therein lies a tail.

IN THE NINTH decade of the twentieth century, a transport aircraft weighing close to half a million pounds is still vulnerable to a puff of wind.

And in the ninth decade of the twentieth century, the most important clue to the behaviour of the wind is the humble windsock.

Every licensed aerodrome has one. Every ALA has to have a wind indicator — also generally a windsock.

And the windsock — despite its primitive appearance — is a very valuable, valid and informative aid.

But do we glean every ounce of information out of it?

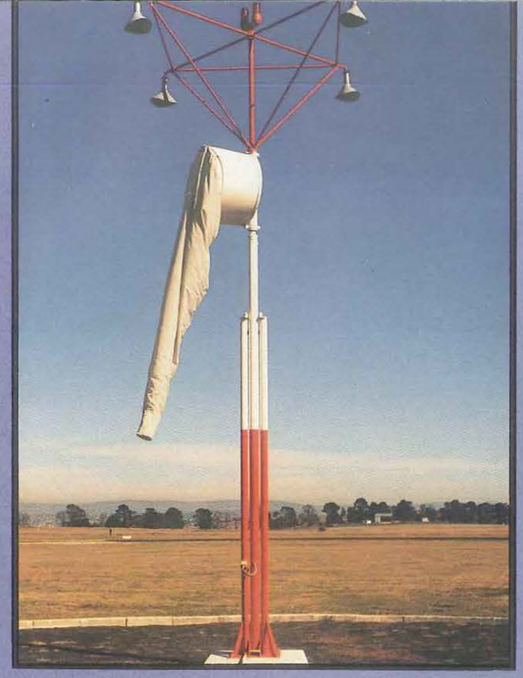
What can it tell us. The direction of the wind certainly. The strength of the wind, certainly. The consistency of the direction of the wind — and the consistency of the strength of the wind. In relation to other wind cues or in those cases where there are two or more socks we can actually read the wind pattern around the airfield and especially around the threshold. We can also read a trend by comparing the upwind sock with the downwind sock?

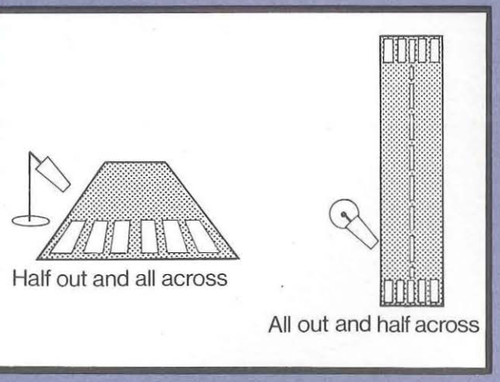
There's more to it than meets the eye.

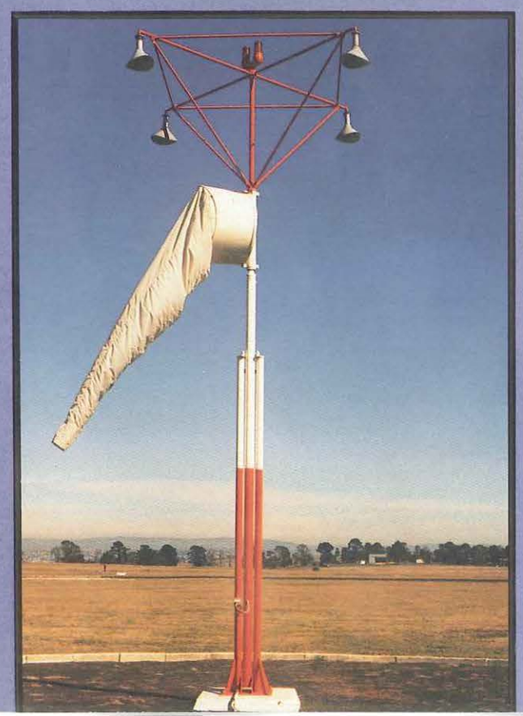
Let's start at the beginning.

Firstly direction. This can be read directly from the sock and relative to the runway. The velocity can then be factored to determine the headwind and the crosswind components. The consistency of the direction or conversely, its inconsistency can be observed.

Next strength. The strength or speed of the wind can be read from the angle of the sock from the vertical or the horizontal. If the sock is hanging vertically there is no wind (or someone has filled the sock with lead). If the sock is absolutely horizontal the wind speed is 30 knots or more. If the sock is half way between vertical and horizontal the speed is approximately 15 knots. If the angle is varying the speed is varying or there is a vertical gust component affecting the sock.







Patterns can be interpreted. A difference in direction or speed as indicated by two socks can show a transient change or the influence of mechanical interference such as trees or buildings. It is not unusual during the passage of a front to have windsocks at either end of the runway showing wind directions directly opposed — and willy-willies can produce all sorts of interesting effects.

What is the significance of the windsock?

All takeoffs and landings should be as into-wind as possible for the following reasons:

- shorter ground-roll
- lower groundspeed on liftoff and touchdown
- better aerodynamic control at a lower groundspeed
- steeper climb and approach angle for obstacle clearance
- in the case of engine failure the shortest ground-roll and lowest ground speed
- the greatest remaining runway for aborted takeoff or go-around
- the least wear and tear on the undercarriage and brakes.

Remember that a calm day is a disadvantage as far as takeoff and landing performance are concerned.

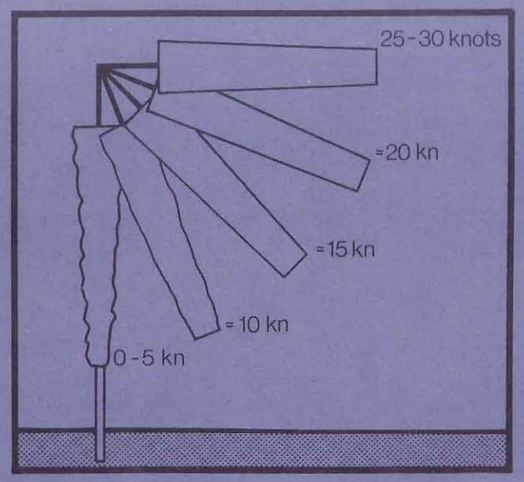
Now that all-over fields are rare we are left with the inevitable — the strip never points exactly into wind — there is always an element of crosswind.

Many GA aircraft seem to have a crosswind limit in the region of 15 knots. Tailwheelers are generally lower, perhaps 10-12 knots and some trikes can be as high as 25 knots. But as a general rule, 15 knots is a good figure to watch out for.

The sock at a vertical angle of 45 degrees indicates a wind speed of 15 knots so if it is all across the runway, then the aircraft's limit is close. The sock at a directional angle of 30 degrees to the runway indicates that half the wind speed will be felt as crosswind so that if the sock is horizontal (indicating about 30 knots) the 15 knot crosswind is again reached. Similarly if the sock is 45 degrees to the runway direction and almost horizontal, the crosswind is again close to 15 knots.

As a guide, remember — ALL OUT AND HALF ACROSS or
HALF OUT AND ALL ACROSS

Then WATCH OUT — you are close to or have just exceeded the aircraft's demonstrated crosswind limit.



As to gusts there is no absolute rule. If the sock is varying rapidly or significantly in direction or angle then I would treat the approach very cautiously indeed. It may even be worthwhile to set up a dummy approach at a higher than normal approach speed to feel-out the conditions and the severity of the shear. On the basis of this approach a safer decision can be made.

If there were significant airspeed fluctuations I would go-around and wait for the storm, front or willy-willy to pass — or go somewhere else.

How to best use a windsock:

- Take a slow look around as you walk out to the aircraft. Compare the information from the windsock with other sources of wind information as well as the ATIS and other socks. Note any differences in wind velocity between these sources and mentally put together a picture of the air circulation around the airfield.
- Imagine the wind that will be present at the point of rotation, liftoff and initial climb-out and anticipate the effect on the aircraft's control and performance.
- Check the wind indications as you line-up and double-check the expected effect of any trees or obstructions on the upwind side of the strip, particularly around the point of liftoff.
- Estimate the head and crosswind components and compare them to your aircraft's performance and limits.
- Anticipate the effect on the behaviour of your aircraft and use the recommended technique.
- Compare the wind effect you experienced with the effect you predicted and store that data for future reference.
- If the wind at the destination is forecast to be above the crosswind limits of your aircraft, don't forget to plan for an alternate.
- As you approach your destination, start looking for clues as to the predominant wind direction and offset your circuit entry accordingly.
- Select the optimum runway taking into account the wind, approaches, strip length, aircraft performance, use of flap and escape routes.
- Note the drift on crosswind and downwind to confirm the prevailing wind direction.
- Reconnoitre the area of the strip for wind clues and possible problem areas.
- Anticipate the wind pattern in the area of the threshold and the touchdown points.
- Adjust your planned approach speed if necessary.
- Anticipate the possible effects on the aircraft, its possible behaviour, your control inputs and decision criteria.
- Set up the recommended landing configuration early, trim the aircraft and concentrate on checking the effect of the wind and update your expectation of the pattern on final.
- If anything seems wrong, go-around and set up another approach with the benefit of the knowledge you gained on the first attempt.
- If you have any doubts about the ability of the aircraft or the pilot to cope with the conditions, wait for it to improve or go elsewhere.
- After landing, think about the conditions which existed and compare them with your expectations — again store this information for future reference.
- Don't relax until the aircraft is stationary and if possible, shut-down into wind or in a sheltered position.
- Carry out a post-flight inspection especially if there was any drift on touchdown or if you had to use heavy braking. Lock the controls and tie-down the aircraft.

As far as other clues to wind velocity are concerned, there are many and the corresponding wind speed can be estimated fairly accurately.

A simpler guide was sent to me by Bill Benbow, a very experienced instructor who operates from Gilgandra in NSW. His guide is as follows:

- Winds up to 10 knots are audible by the russle of leaves and crops.
- Winds of 10 to 15 knots will move loose articles, leaves, clothes and hair
- Winds of 20 knots will lift loose particles, raise dust, move tree branches and show on the surface of dams and lakes.

Don't forget too that a windsock shows the direction to which the wind is blowing and not the direction from which it comes. As Bill says, ' If at any time you can see any part of the large end, the rim opening or part of the throat of the large end, don't land that way. The air goes into the large end and out the small end — always takeoff and land into the little end.' □

TRAPS FOR YOUNG PLAYERS

Trap 1

The pilot arrived at what he thought was Laglan and saw that the homestead had 'Beresford' painted on the roof. Beresford, according to the map, is 10 miles east of Laglan.

Consequently, the pilot headed west to try and locate Laglan but was unable to find it.

He landed at a property but there was no one home. He waited until the owners returned then rang flight service to cancel his SAR.

He later discovered the owner of Laglan had bought the Beresford homestead some time ago — *and had transported it to Laglan, leaving the name 'Beresford' painted in large letters on the roof.*

The owner has undertaken to remove the name.

Trap 2

The pilot was making a night approach into Tibooburra. It was a medevac flight to pick up a patient and flares were arranged to mark the strip. Police were in attendance.

Late in the flare, a thump was heard and shortly after touchdown the nosegear collapsed. The aircraft came to rest 390 metres later.

The nosegear had failed after a 'Roo strike.

Prior to the arrival of the aircraft several kangaroos had been chased away.

Trap 3

Soon after takeoff the pilot realised the ailerons were jammed. He was uncertain of the extent of the problem and avoided any large control inputs in case he ended up in a worse predicament — jammed and displaced ailerons.

He decided not to 'wave-off' the glider he was towing because he couldn't risk trying to waggle the wings. He also delayed releasing the glider because of their low altitude and while the Super Cub remained stable in the climb.

The ailerons subsequently came free and the aircraft was able to land without incident.

When the aircraft was inspected it was found that foreign objects were jamming the rear control column at a fulcrum point below the stick. The objects were not detected during the daily inspection.

The foreign objects were ballpoint pens and caps which due to the design of the Super Cub cockpit, had found their way into a position where they jammed the rear control column.

Trap 4

The pilot arranged for a check-flight in the aircraft as it was a type he had not flown for some time. The instructor commented that as the pilot applied rudder corrections during the takeoff roll, he also inadvertently applied light braking. After a period of general flying, the aircraft returned to the circuit for a landing in moderate crosswind conditions.

Touchdown was made in a three-point attitude, but shortly afterwards the aircraft commenced a swing to the right. Corrective measures by both pilots failed to arrest the swing and the left main gear subsequently collapsed.

The pilot had used left aileron and right rudder inputs to align the aircraft on touchdown and it was possible that brake had been inadvertently applied to the right wheel.